

## **Attachment M**

### **Site-Specific HDD Inadvertent Release Response Plans**

**Enbridge Energy, Limited Partnership  
Line 3 Replacement Project  
Inadvertent Release Response Plan  
Red River of the North**



**I. HDD Information**

|   |  |
|---|--|
| Milepost: 801.8                               | Length of Wetlands: 1,840 feet               |
| HDD Length: 2,110 feet                        | Waterbody Width (OHWM): 220 feet             |
| Estimated Duration: 18 days                   | Distance from Waterbody to Entry: 1,193 feet |
| Risk of Inadvertent Return: Moderate to High* | Distance from Waterbody to Exit: 917 feet    |
| Enbridge ID Number: s-160n50w5-a              | Depth of HDD Under Waterbody: 40 feet        |

\*Elevated risk approximately 1,035 feet from entry point (north bank of river) and 1,540 feet from entry point (200 feet south of south bank).

**II. Stream Data**

The Red River of the North is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from March 15 to June 15. Rosgen surveys conducted in 2015 classify the crossing location within a non-wadeable reach of the stream, with the proposed drill profile located underneath a riffle feature of the streambed. The maximum depth within the 50-foot permanent easement measured 25.0 feet from bankfull elevation, with an average thalweg (deepest channel) depth of 24.5 feet from bankfull elevation for a channel reach 50 feet upstream and downstream of the proposed centerline. Analysis of geomorphic survey data estimated total bank erosion for the studied 1,300-foot river reach at 101.4 tons per year (0.076 tons/year/foot). Additional stream hydraulic data is provided in the table below.

| Description            | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|------------------------|-------------------|-----------------|-----------------|
| Baseflow <sup>a</sup>  | 1.7               | 2,738.2         | 10.6            |
| 50% Bankfull Capacity  | 1.8               | 5,467.5         | 17.1            |
| 75% Bankfull Capacity  | 2.0               | 7,290.0         | 19.6            |
| 100% Bankfull Capacity | 1.9               | 9,720.0         | 22.9            |

<sup>a</sup> Baseflow is approximately 1 cfs per square mile of drainage area.

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 5.7 to 8.3 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 1.3   | 2.4       | 3.1      | 4.9       | 4.4      | 6.5       | 5.3      | 7.9       | 5.6      | 8.2       | 5.7      | 8.4       | 5.7      | 8.3       |

**III. Containment, Response and Clean-up Equipment**

Prior to commencing drilling operations, the following list of items will be transported and available at the Red River of the North crossing in accordance with Section 11.2 of the Environmental Protection Plan (“EPP”) and as depicted in the attached figure.

- A. Straw bales and staking
- B. Pre-filled sandbags
- C. Silt fence
- D. Plastic sheeting and/or geotextile



- E. Shovels, brooms, buckets, and other appropriate hand tools
- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- G. Fluid storage tank(s)
- H. Vacuum truck
- I. One small boat (motorized jon boat)
- J. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### **IV. Site Access and HDD Monitoring**

The attached figure outlines access points to the Red River of the North crossing. The direction of flow of the river has also been included. Access from the north and south sides will traverse non-forested wetlands. There is approximately a 15% slope to the river from the entry side, and a 10% slope from the exit side, neither of which will present access issues to the crossing location. Prior to commencing drilling operations, trees will be cleared within proposed workspace, during which time construction mats may be placed along the drill path within wetlands as necessary. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside of the proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### **V. Aquatic Release Response, Containment, and Clean-up**

Initial response to an inadvertent release in the Red River of the North will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures downstream of the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. Due to the stream depths expected to be encountered, establishing containment measures capable of isolating a release location from stream flow will be most likely when near the water's edge at depths less than 5 feet. The table below anticipates the variable conditions at the Red River of the North crossing and likely containment measure options that may be employed, including alternative materials that will be made available to enhance initial response if warranted. The in-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.

| Water Conditions                  |            | Distance from Water's Edge  |   |                                    |
|-----------------------------------|------------|---|---|------------------------------------|
| Flow Velocity                     | Depth      | 0-10 Feet   | 10-20 Feet  | Greater than 20 feet               |
| Still/Slow<br>( $< 1$ ft/sec)     | 0-2 Feet   | <i>n/a</i>  | <i>n/a</i>  | <i>n/a</i>                         |
|                                   | 2-5 Feet   | <i>n/a</i>  | <i>n/a</i>  | <i>n/a</i>                         |
|                                   | $> 5$ Feet | <i>n/a</i>  | <i>n/a</i>  | <i>n/a</i>                         |
| Slow/Moderate<br>(1-3 ft/sec)     | 0-2 Feet   | Sandbag cofferdam;<br>vertical culvert  | <i>n/a</i>  | <i>n/a</i>                         |
|                                   | 2-5 Feet   | Turbidity curtain;<br>Geotextile pipeline weights<br>cofferdam; vertical culvert;<br>bladder dams; jersey<br>barriers and plastic<br>sheeting | Turbidity curtain; geotextile<br>pipeline weights cofferdam;<br>vertical culvert; bladder<br>dams | <i>n/a</i>                         |
|                                   | $> 5$ Feet | <i>n/a</i>  | Turbidity curtain; geotextile<br>pipeline weights; bladder<br>dams                                | Turbidity curtain; bladder<br>dams |
| Moderate/Rapid<br>( $> 3$ ft/sec) | 0-2 Feet   | <i>n/a</i>  | <i>n/a</i>  | <i>n/a</i>                         |
|                                   | 2-5 Feet   | <i>n/a</i>  | <i>n/a</i>  | <i>n/a</i>                         |
|                                   | $> 5$ Feet | <i>n/a</i>  | <i>n/a</i>  | <i>n/a</i>                         |

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the in-water containment measure installation, and recovery efforts will be localized to that location.

## VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 302 feet of the proposed drill path crosses wetlands that may be temporarily or seasonally inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| Wetland ID   | Eggers & Reed            | Hydrologic Regime                 | Linear Feet |
|--------------|--------------------------|-----------------------------------|-------------|
| w-160n50w5-b | Wet to Wet-Mesic Prairie | Saturated                         | 1,009.8     |
| w-160n50w5-b | Shrub-Carr               | Saturated to seasonally inundated | 43.8        |
| w-160n50w9-a | Floodplain Forest        | Temporarily inundated             | 258.0       |
| w-160n50w9-a | Fresh (wet) Meadow       | Saturated                         | 528.8       |

Low ground pressure equipment (e.g., UTV, argo, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. Temporary access will be supported by construction matting as necessary, and a vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.

## **VII. Resumption of HDD Operations**

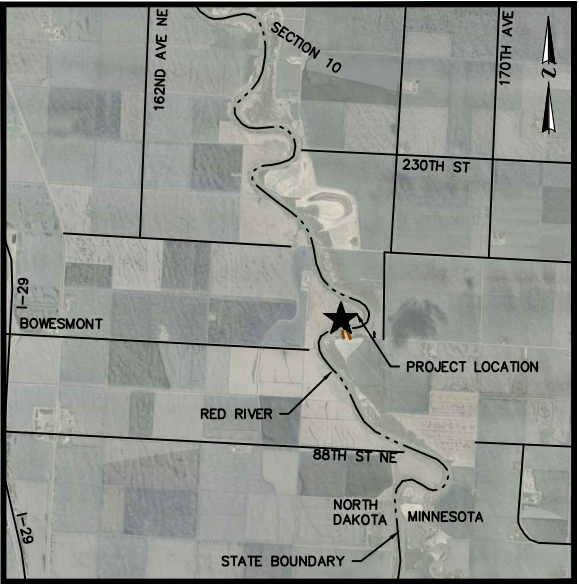
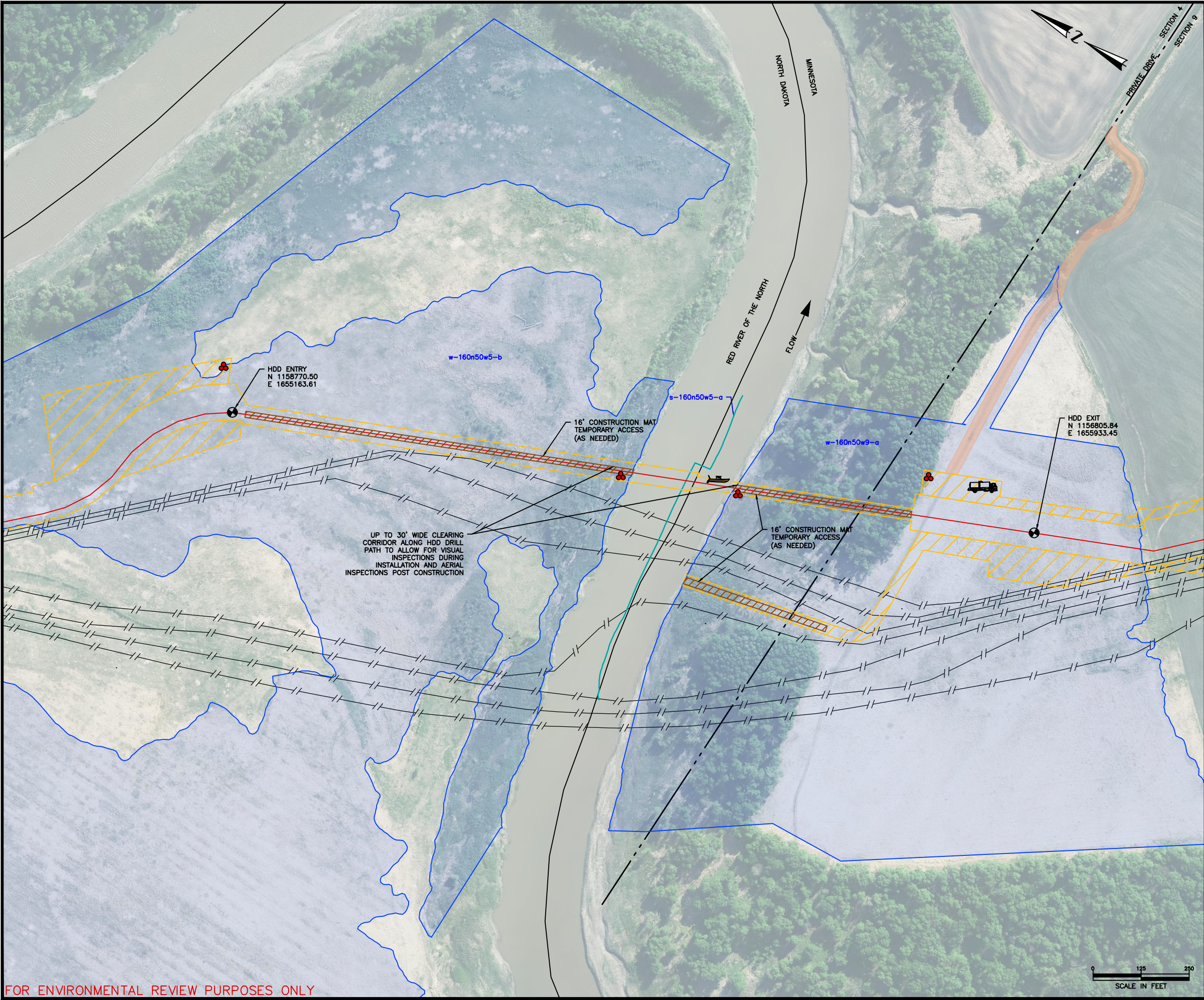
Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be accessed by representatives onsite for adequacy and ability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport into either a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

## **VIII. Crossing Photo**



**Photo 1.** *Red River of the North from the south bank facing upstream (west) at the drill path.*





LOCATION PLAN

PEMBINA COUNTY, NORTH DAKOTA & KITTSON COUNTY, MINNESOTA  
SECTION 4, TOWNSHIP 160, RANGE 50  
SURVEY ID S-160N50W5-A

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY ACCESS
- XXX.X APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF RED RIVER OF THE NORTH  
ENBRIDGE MP 801.8  
PEMBINA COUNTY, ND & KITTSON COUNTY, MN

|       |                        |
|-------|------------------------|
| SCALE | DWG. NO.               |
| NOTED | B-93-5.84-PUC-1-REVX-B |



# Enbridge Energy, Limited Partnership

## Line 3 Replacement Project

### Inadvertent Release Response Plan

#### Tamarac River



#### I. HDD Information

|                                    |   |
|------------------------------------|---|
| Milepost: 828.5                    | Length of Wetlands: 194 feet                |
| HDD Length: 1,463 feet             | Waterbody Width (OHWM): 25 feet             |
| Estimated Duration: 27 days        | Distance from Waterbody to Entry: 375 feet  |
| Risk of Inadvertent Return: Low*   | Distance from Waterbody to Exit: 1,088 feet |
| Enbridge ID Number: s-157n47w16-aa | Depth of HDD Under Waterbody: 40 feet       |

\*Elevated risk last 40 feet of crossing.

#### II. Stream Data

The Tamarac River is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from March 15 to June 15. Rosgen surveys conducted in 2019 classify the crossing location within a wadeable reach of the stream, with the proposed drill profile located underneath a pool feature of the streambed. The maximum depth within the 50-foot permanent easement measured 5.9 feet from bankfull elevation, with an average thalweg (deepest channel) depth of 5.4 feet from bankfull elevation for a channel reach 50 feet upstream and downstream of the proposed centerline. Analysis of geomorphic survey data estimated total bank erosion for the studied 1,134-foot river reach at 305.4 tons per year (0.27 tons/year/foot). Additional stream hydraulic data is provided in the table below.

| Description            | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|------------------------|-------------------|-----------------|-----------------|
| Baseflow <sup>a</sup>  | 1.4               | 44.6            | 1.0             |
| 50% Bankfull Capacity  | 1.3               | 58.7            | 1.6             |
| 75% Bankfull Capacity  | 1.7               | 131.8           | 2.4             |
| 100% Bankfull Capacity | 2.1               | 233.1           | 3.2             |

<sup>a</sup> Baseflow is approximately 1 cfs per square mile of drainage area.

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 5.7 to 8.3 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 1.3   | 2.4       | 3.1      | 4.9       | 4.4      | 6.5       | 5.3      | 7.9       | 5.6      | 8.2       | 5.7      | 8.4       | 5.7      | 8.3       |

#### III. Containment, Response and Clean-up Equipment

Prior to commencing drilling operations, the following list of items will be transported and available at the Tamarac River crossing in accordance with Section 11.2 of the Environmental Protection Plan ("EPP") and as depicted in the attached figure.

- A. Straw bales and staking
- B. Pre-filled sandbags
- C. Silt fence
- D. Plastic sheeting and/or geotextile
- E. Shovels, brooms, buckets, and other appropriate hand tools

- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- G. Fluid storage tank(s)
- H. Vacuum truck
- I. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### **IV. Site Access and HDD Monitoring**

The attached figure outlines access points to the Tamarac River crossing. The direction of flow of the river has also been included. Access from the west and east will traverse forested wetlands. Prior to commencing drilling operations, trees will be cleared within proposed workspace, during which time construction mats may be placed along the drill path within wetlands as necessary. Additionally, a temporary free span bridge will be installed over the Tamarac River. There will be at least one full-time construction observer at the site. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### **V. Aquatic Release Response, Containment, and Clean-up**

Initial response to an inadvertent release in the Tamarac River will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures downstream of the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. The table below anticipates the variable conditions at the Tamarac River crossing and likely containment measure options that may be employed, including alternative materials that will be made available to enhance initial response if warranted. In-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.

| Water Conditions                  |            | Distance from Water's Edge   |   |                      |
|-----------------------------------|------------|--|---|----------------------|
| Flow Velocity                     | Depth      | 0-10 Feet  | 10-20 Feet  | Greater than 20 feet |
| Still/Slow<br>( $< 1$ ft/sec)     | 0-2 Feet   | Sand bag isolation structure; vertical culvert   | n/a   | n/a                  |
|                                   | 2-5 Feet   | n/a  | n/a   | n/a                  |
|                                   | $> 5$ Feet | n/a  | n/a   | n/a                  |
| Slow/Moderate<br>(1-3 ft/sec)     | 0-2 Feet   | Sandbag cofferdam; vertical culvert  | Sandbag cofferdam; vertical culvert; geotextile pipeline weights cofferdam; jersey barriers with plastic sheeting                 | n/a                  |
|                                   | 2-5 Feet   | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams; jersey barriers and plastic sheeting | Turbidity curtain; geotextile pipeline weights cofferdam; vertical culvert; bladder dams; water gates (as upstream diversion aid) | n/a                  |
|                                   | $> 5$ Feet | n/a  | n/a   | n/a                  |
| Moderate/Rapid<br>( $> 3$ ft/sec) | 0-2 Feet   | n/a  | n/a   | n/a                  |
|                                   | 2-5 Feet   | n/a  | n/a   | n/a                  |
|                                   | $> 5$ Feet | n/a  | n/a   | n/a                  |

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the in-water containment measure installation, and recovery efforts will be localized to that location.

## VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 194 feet of the proposed drill path crosses wetlands that may be temporarily inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| Wetland ID     | Eggers & Reed     | Hydrologic Regime     | Linear Feet |
|----------------|-------------------|-----------------------|-------------|
| w-157n47w16-db | Floodplain Forest | Temporarily inundated | 193.9       |

Low ground pressure equipment (e.g., UTV, argo, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. Temporary access will be supported by construction matting as necessary, and a vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.

## **VII. Resumption of HDD Operations**

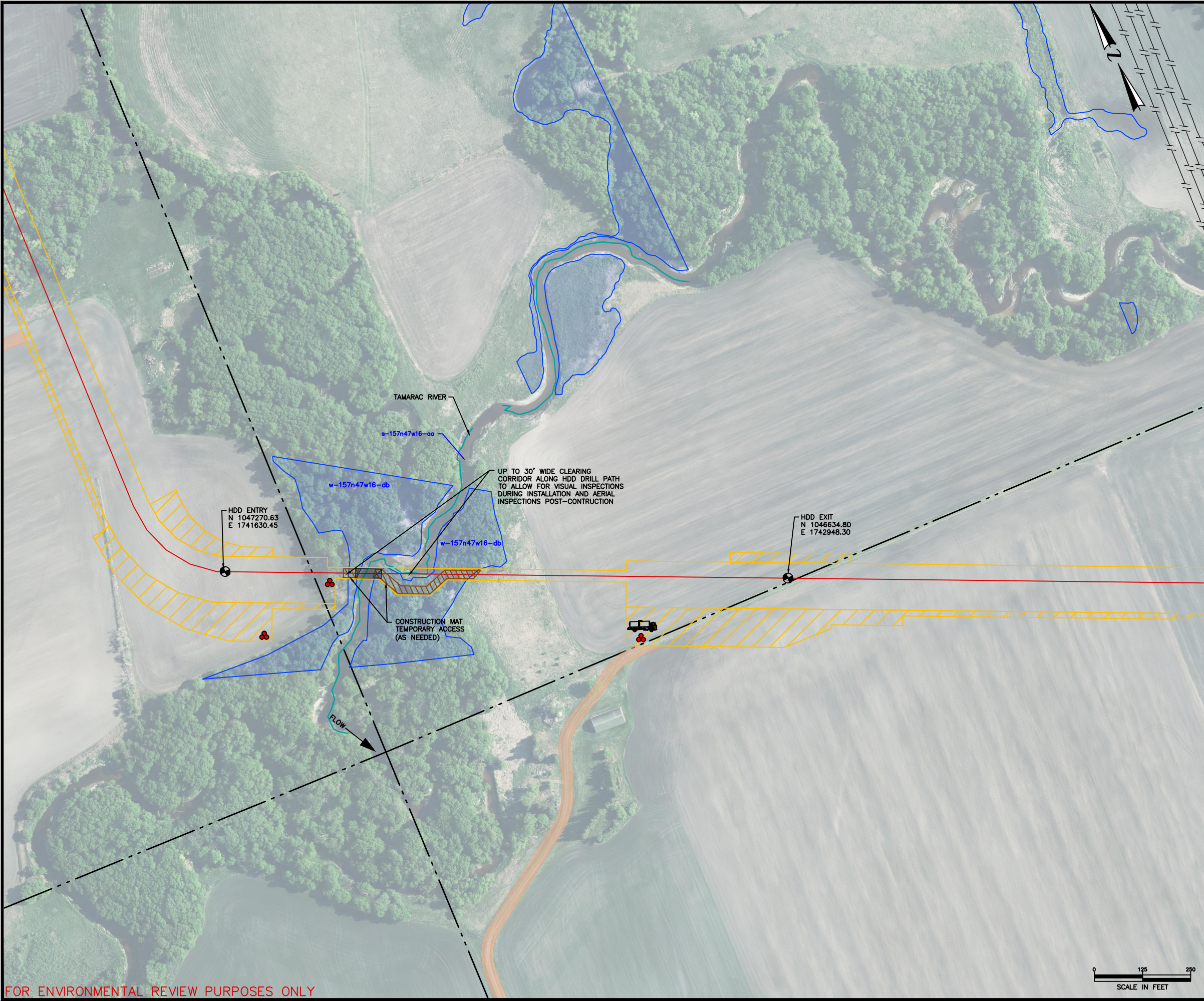
Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be assessed by representatives onsite for adequacy and ability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport to either a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

## **VIII. Crossing Photo**



***Photo 1.** Tamarac River facing downstream (southwest) at the crossing location.*





LOCATION PLAN

MARSHALL COUNTY, MINNESOTA  
SECTION 16, TOWNSHIP 157, RANGE 47  
SURVEY ID S-157N47W16-AA

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY BRIDGE
- TEMPORARY ACCESS
- APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF TAMARAC RIVER  
ENBRIDGE MP 828.3  
MARSHALL COUNTY, MN

|       |                        |
|-------|------------------------|
| SCALE | DWG. NO.               |
| NOTED | B-93-5.84-PUC-4-REVX-B |



# Enbridge Energy, Limited Partnership

## Line 3 Replacement Project

### Inadvertent Release Response Plan

#### Middle River



#### I. HDD Information

|                                  |  |
|----------------------------------|--|
| Milepost: 835.9                  | Length of Wetlands: 68 feet                |
| HDD Length: 1,755 feet           | Waterbody Width (OHWM): 30 feet            |
| Estimated Duration: 27 days      | Distance from Waterbody to Entry: 563 feet |
| Risk of Inadvertent Return: Low* | Distance from Waterbody to Exit: 811 feet  |
| Enbridge ID Number: s-156n46w7-c | Depth of HDD Under Waterbody: 40 feet      |

\*Elevated risk last 70 feet of crossing.

#### II. Stream Data

The Middle River is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from March 15 to June 15. Rosgen surveys conducted in 2015 classify the crossing location within a wadeable reach of the stream, with two crossing points along the proposed drill path. The first is approximately 550 feet into the drill path and located underneath a pool feature of the streambed, while the second is approximately 950 feet into the drill path, further upstream and underneath a riffle feature of the streambed. The maximum depth within the 50-foot permanent easement measured 5.8 feet from bankfull elevation, with an average thalweg (deepest channel) depth of 4.66 feet from bankfull elevation for a channel reach 50 feet upstream and downstream of the proposed centerline at the first crossing, and 1.69 feet for a channel reach 50 feet upstream and downstream of the proposed centerline at the second crossing. Analysis of geomorphic survey data estimated total bank erosion for the studied 1,394-foot river reach at 147.0 tons per year (0.11 tons/year/foot). Additional stream hydraulic data is provided in the table below.

| Description            | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|------------------------|-------------------|-----------------|-----------------|
| Baseflow <sup>a</sup>  | 2.8               | 125.5           | 2.0             |
| 50% Bankfull Capacity  | 1.8               | 186.4           | 3.2             |
| 75% Bankfull Capacity  | 2.1               | 279.6           | 3.9             |
| 100% Bankfull Capacity | 2.3               | 372.8           | 4.4             |

<sup>a</sup> Baseflow is approximately 1 cfs per square mile of drainage area.

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 5.7 to 8.3 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 1.3   | 2.4       | 3.1      | 4.9       | 4.4      | 6.5       | 5.3      | 7.9       | 5.6      | 8.2       | 5.7      | 8.4       | 5.7      | 8.3       |

#### III. Containment, Response, Containment, and Clean-up Equipment

Prior to commencing drilling operations, the following list of items will be transported and available at the Middle River crossing in accordance with Section 11.2 of the Environmental Protection Plan (“EPP”) and as depicted in the attached figure.

- A. Straw bales and staking
- B. Pre-filled sandbags

- C. Silt fence
- D. Plastic sheeting and/or geotextile
- E. Shovels, brooms, buckets, and other appropriate hand tools
- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- G. Fluid storage tank(s)
- H. Vacuum truck
- I. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine if additional materials and equipment will be needed.

#### IV. Site Access and HDD Monitoring

The attached figure outlines access points to the Middle River crossing. The direction of flow of the river has also been included. Due to a landowner requirement, Enbridge will not clear trees within the drill path. Access to the river from the northwest side will traverse a forested wetland and will be limited to foot-traffic only. Access from the southwest consists of agricultural land use where no clearing will be necessary. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### V. Aquatic Release Response, Containment, and Clean-up

Initial response to an inadvertent release in the Middle River will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. The table below anticipates the variable conditions at the Middle River crossing and likely containment measure options that may be employed, including alternative materials that will be made available to enhance initial response if warranted. The in-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.

| Water Conditions              |          | Distance from Water's Edge                     |            |                      |
|-------------------------------|----------|--|------------|----------------------|
| Flow Velocity                 | Depth    | 0-10 Feet                                      | 10-20 Feet | Greater than 20 feet |
| Still/Slow<br>( $< 1$ ft/sec) | 0-2 Feet | Sand bag isolation structure; vertical culvert | n/a        | n/a                  |
|                               | 2-5 Feet | n/a  | n/a        | n/a                  |
|                               | > 5 Feet | n/a  | n/a        | n/a                  |

| Water Conditions               |          | Distance from Water's Edge  |   |                      |
|--------------------------------|----------|---|---|----------------------|
| Flow Velocity                  | Depth    | 0-10 Feet   | 10-20 Feet  | Greater than 20 feet |
| Slow/Moderate<br>(1-3 ft/sec)  | 0-2 Feet | Sandbag cofferdam;<br>vertical culvert  | Sandbag cofferdam;<br>vertical culvert; geotextile<br>pipeline weights cofferdam;<br>jersey barriers with plastic<br>sheeting | n/a                  |
|                                | 2-5 Feet | Turbidity curtain;<br>Geotextile pipeline weights<br>cofferdam; vertical culvert;<br>bladder dams; jersey<br>barriers and plastic<br>sheeting | Turbidity curtain; geotextile<br>pipeline weights cofferdam;<br>vertical culvert; bladder<br>dams                             | n/a                  |
|                                | > 5 Feet | n/a   | n/a   | n/a                  |
| Moderate/Rapid<br>(> 3 ft/sec) | 0-2 Feet | n/a   | n/a   | n/a                  |
|                                | 2-5 Feet | n/a   | n/a   | n/a                  |
|                                | > 5 Feet | n/a   | n/a   | n/a                  |

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the in-water containment measure installation, and recovery efforts will be localized to that location.

## VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 68 feet of the proposed drill path crosses wetlands that may be temporarily inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| Wetland ID   | Eggers & Reed  | Hydrologic Regime                       | Linear Feet |
|--------------|----------------|---|-------------|
| w-156n46w7-c | Hardwood Swamp | Saturated, may be temporarily inundated | 68.1        |

Low ground pressure equipment (e.g., UTV, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. A vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.

## VII. Resumption of HDD Operations

Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be assessed by representatives onsite for adequacy and ability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for

transport to either a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

#### **VIII. Crossing Photos**

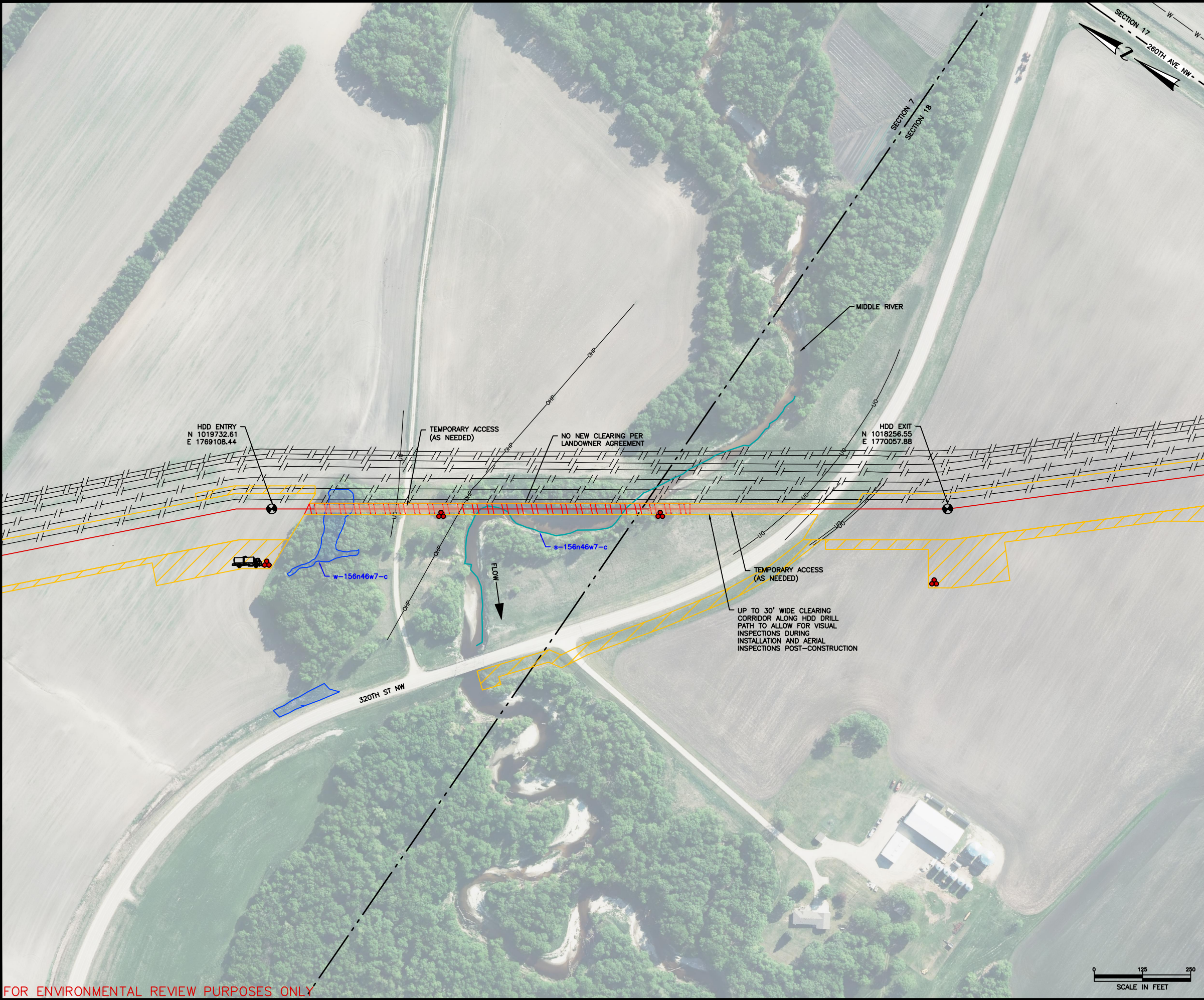


*Photo 1. Middle River facing upstream (northeast) at the pool crossing of the drill path.*



*Photo 2. Middle River facing upstream (east) at the riffle crossing of the drill path*





LOCATION PLAN

MARSHALL COUNTY, MINNESOTA  
SECTION 18, TOWNSHIP 156, RANGE 46  
SURVEY ID S-156N46W7-C

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY ACCESS
- NO NEW CLEARING AREA
- APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF MIDDLE RIVER  
ENBRIDGE MP 835.9  
MARSHALL COUNTY, MN

SCALE  
NOTED

DWG. NO.  
B-93-5.84-PUC-5-REVX-B



# Enbridge Energy, Limited Partnership

## Line 3 Replacement Project

### Inadvertent Release Response Plan

#### Snake River



#### I. HDD Information

|                                   |  |
|-----------------------------------|--|
| Milepost: 843.2                   | Length of Wetlands: 241 feet               |
| HDD Length: 1,574 feet            | Waterbody Width (OHWM): 25 feet            |
| Estimated Duration: 21 days       | Distance from Waterbody to Entry: 947 feet |
| Risk of Inadvertent Return: Low*  | Distance from Waterbody to Exit: 627 feet  |
| Enbridge ID Number: s-155n46w12-a | Depth of HDD Under Waterbody: 40 feet      |

\*Elevated risk last 40 feet of crossing.

#### II. Stream Data

The Snake River is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from March 15 to June 15. Rosgen surveys conducted in 2015 classify the crossing location within a wadeable reach of the stream, with the proposed drill profile located underneath a pool feature of the streambed. The maximum depth within the 50-foot permanent easement measured 5.8 feet from bankfull elevation, with an average thalweg (deepest channel) depth of 5.01 feet from bankfull elevation for a channel reach 50 feet upstream and downstream of the proposed centerline. Analysis of geomorphic survey data estimated total bank erosion for the studied 830-foot river reach at 254.2 tons per year (0.31 tons/year/foot). Additional stream hydraulic data is provided in the table below.

| Description            | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|------------------------|-------------------|-----------------|-----------------|
| Baseflow <sup>a</sup>  | 3.6               | 54.6            | 1.4             |
| 50% Bankfull Capacity  | 4.3               | 160.5           | 2.7             |
| 75% Bankfull Capacity  | 4.9               | 240.8           | 3.3             |
| 100% Bankfull Capacity | 5.4               | 321.0           | 3.8             |

<sup>a</sup> Baseflow is approximately 1 cfs per square mile of drainage area.

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 10.0 to 22.7 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 2.3   | 6.4       | 5.2      | 12.8      | 7.6      | 17.9      | 9.0      | 20.8      | 9.6      | 22.1      | 9.8      | 22.5      | 9.8      | 22.5      |

#### III. Containment, Response and Clean-up Equipment

Prior to commencing drilling operations, the following list of items will be transported and available at the Snake River crossing in accordance with Section 11.2 of the Environmental Protection Plan (“EPP”) and as depicted in the attached figure.

- A. Straw bales and staking
- B. Pre-filled sandbags
- C. Silt fence
- D. Plastic sheeting and/or geotextile
- E. Shovels, brooms, buckets, and other appropriate hand tools

- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- G. Fluid storage tank(s)
- H. Vacuum truck
- I. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### IV. Site Access and HDD Monitoring

The attached figure outlines access points to the Snake River crossing. The direction of flow of the river has also been included. Access from the northwest and southeast sides will traverse forested wetlands. Prior to commencing drilling operations, trees will be cleared within proposed workspace, during which time construction mats will be placed along the drill path within wetlands as necessary. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### V. Aquatic Release Response, Containment, and Clean-up

Initial response to an inadvertent release in the Snake River will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures downstream of the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. The table below anticipates the variable conditions at the Snake River crossing and likely containment measure options that may be employed, including alternative materials that will be made available to enhance initial response if warranted. In-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.

| Water Conditions              |            | Distance from Water's Edge                     |            |                      |
|-------------------------------|------------|--|------------|----------------------|
| Flow Velocity                 | Depth      | 0-10 Feet                                      | 10-20 Feet | Greater than 20 feet |
| Still/Slow<br>( $< 1$ ft/sec) | 0-2 Feet   | Sand bag isolation structure; vertical culvert | <i>n/a</i> | <i>n/a</i>           |
|                               | 2-5 Feet   | <i>n/a</i>                                     | <i>n/a</i> | <i>n/a</i>           |
|                               | $> 5$ Feet | <i>n/a</i>                                     | <i>n/a</i> | <i>n/a</i>           |
| Slow/Moderate<br>(1-3 ft/sec) | 0-2 Feet   | <i>n/a</i>                                     | <i>n/a</i> | <i>n/a</i>           |
|                               | 2-5 Feet   | <i>n/a</i>                                     | <i>n/a</i> | <i>n/a</i>           |
|                               | $> 5$ Feet | <i>n/a</i>                                     | <i>n/a</i> | <i>n/a</i>           |



| Water Conditions               |          | Distance from Water's Edge  |  |                      |
|--------------------------------|----------|---|--|----------------------|
| Flow Velocity                  | Depth    | 0-10 Feet   | 10-20 Feet   | Greater than 20 feet |
| Moderate/Rapid<br>(> 3 ft/sec) | 0-2 Feet | Sandbag cofferdam;<br>geotextile pipeline weights<br>cofferdam; vertical culvert;<br>jersey barriers and plastic<br>sheeting                  | Sandbag cofferdam;<br>geotextile pipeline weights<br>cofferdam; vertical culvert;<br>jersey barriers and plastic<br>sheeting | n/a                  |
|                                | 2-5 Feet | Turbidity curtain;<br>Geotextile pipeline weights<br>cofferdam; vertical culvert;<br>bladder dams; jersey<br>barriers and plastic<br>sheeting | Turbidity curtain; geotextile<br>pipeline weights; bladder<br>dams   | n/a                  |
|                                | > 5 Feet | n/a   | n/a  | n/a                  |

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the in-water containment measure installation, and recovery efforts will be localized to that location.

## VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 173 feet of the proposed drill path crosses wetlands that may be temporarily inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| Wetland ID    | Eggers & Reed      | Hydrologic Regime     | Linear Feet |
|---------------|--------------------|-----------------------|-------------|
| w-155n46w12-b | Fresh (wet) Meadow | Saturated             | 67.3        |
| w-155n46w12-b | Floodplain Forest  | Temporarily inundated | 173.3       |

Low ground pressure equipment (e.g., UTV, argo, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. Temporary access will be supported by construction matting as necessary, and a vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.

## VII. Resumption of HDD Operations

Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be assessed by representatives onsite for adequacy and ability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and

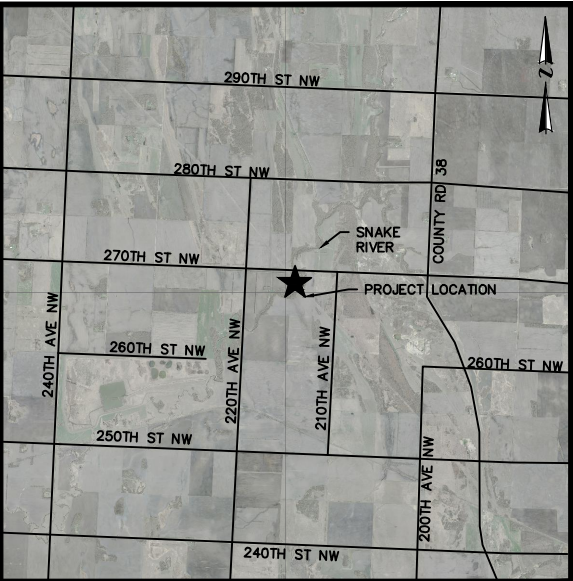
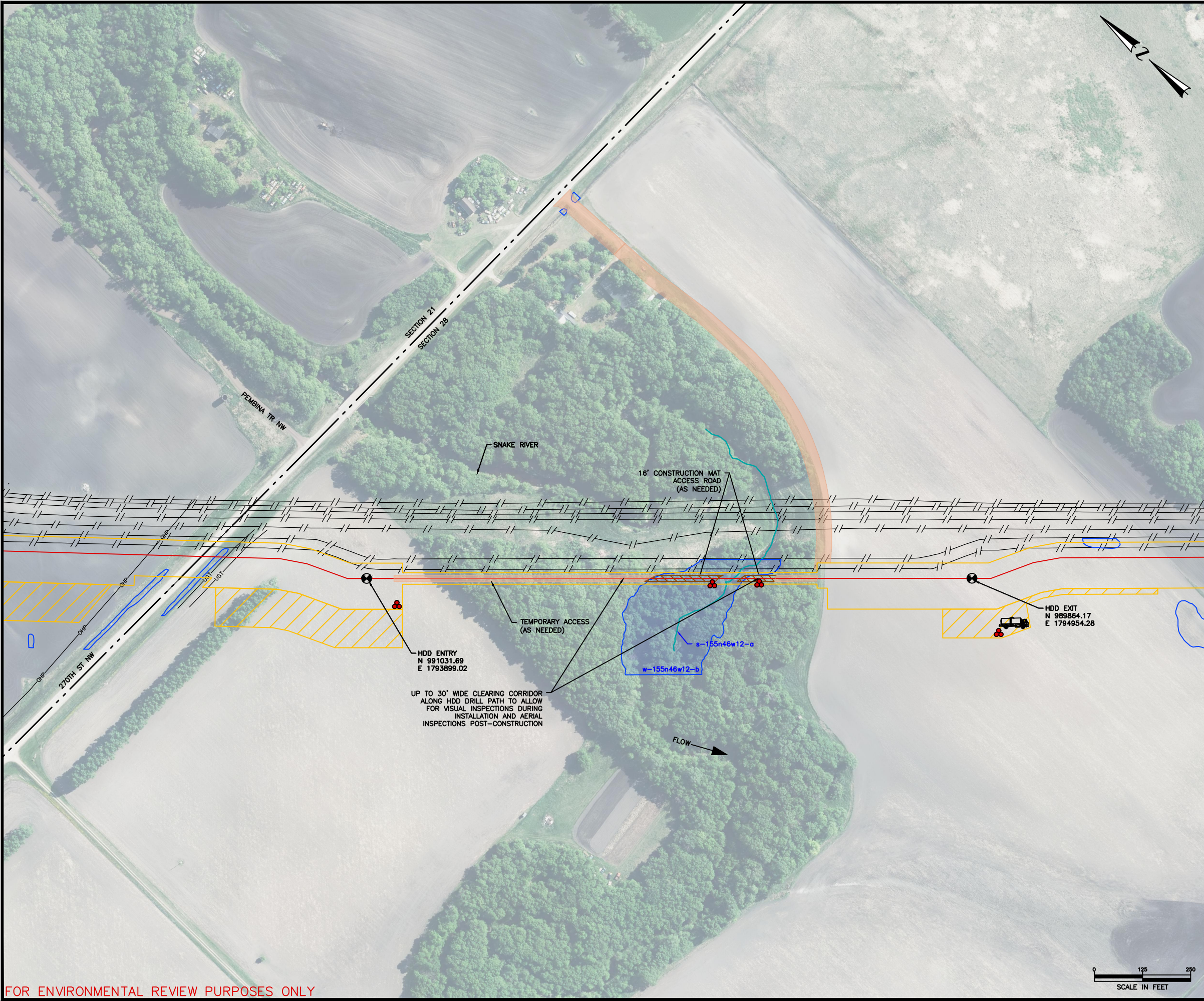
if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport to either a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

#### **VIII. Crossing Photo**



**Photo 1.** *Snake River facing downstream (west) at the drill path.*





LOCATION PLAN

MARSHALL COUNTY, MINNESOTA  
SECTION 12, TOWNSHIP 155, RANGE 46  
SURVEY ID S-155N46W12-A

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY ACCESS
- XXX.X APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF SNAKE RIVER  
ENBRIDGE MP 843.2  
MARSHALL COUNTY, MN

|       |                        |
|-------|------------------------|
| SCALE | DWG. NO.               |
| NOTED | B-93-5.84-PUC-6-REVX-B |



# Enbridge Energy, Limited Partnership

## Line 3 Replacement Project

### Inadvertent Release Response Plan

### Red Lake River and Unnamed Ditch



#### I. HDD Information

|                                     |  |
|-------------------------------------|--|
| Mileposts: 864.3; 864.7             | Length of Wetlands: 325 feet                   |
| HDD Length: 3,182 feet              | Waterbody Width (OHWM): 215 feet; 10 feet      |
| Estimated Duration: 57 days         | Distance from Waterbody to Entry: 485 feet     |
| Risk of Inadvertent Return: Low*    | Distance from Waterbody to Exit: 2,697 feet    |
| Enbridge ID Numbers: s-153n43w29-a; | Depth of HDD Under Waterbody: 40 feet; 40 feet |
| s-153n43w32-a                       |  |

\*Elevated risk last 70 feet of crossing.

#### II. Stream Data

The Red Lake River is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from March 15 to June 15. Rosgen surveys conducted in 2015 classify the crossing location within a non-wadeable reach of the stream, with the proposed drill profile located underneath a riffle feature of the streambed. The maximum depth within the 50-foot permanent easement measured 8.3 feet from bankfull elevation, with an average thalweg (deepest channel) depth of 7.45 feet from bankfull elevation for a channel reach 50 feet upstream and downstream of the proposed centerline. Analysis of geomorphic survey data estimated total bank erosion for the studied 1,430-foot river reach at 424.6 tons per year (0.30 tons/year/foot). Additional stream hydraulic data is provided in the table below.

| Description            | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|------------------------|-------------------|-----------------|-----------------|
| Baseflow <sup>a</sup>  | 3.1               | 2,031.5         | 5.3             |
| 50% Bankfull Capacity  | 3.8               | 3,499.9         | 6.7             |
| 75% Bankfull Capacity  | 4.4               | 5,249.9         | 8.0             |
| 100% Bankfull Capacity | 4.8               | 6,999.8         | 9.2             |

<sup>a</sup> Baseflow is approximately 1 cfs per square mile of drainage area.

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 5.7 to 8.3 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 1.3   | 2.4       | 3.1      | 4.9       | 4.4      | 6.5       | 5.3      | 7.9       | 5.6      | 8.2       | 5.7      | 8.4       | 5.7      | 8.3       |

#### III. Containment, Response and Clean-up Equipment

Prior to commencing drilling operations, the following list of items will be transported and available at the Red Lake River and Unnamed Ditch crossings in accordance with Section 11.2 of the Environmental Protection Plan (EPP) and as depicted in the attached figure.

- A. Straw bales and staking
- B. Pre-filled sandbags
- C. Silt fence
- D. Plastic sheeting and/or geotextile

- E. Shovels, brooms, buckets, and other appropriate hand tools
- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- G. Fluid storage tank(s)
- H. Vacuum truck
- I. One small boat (non-motorized jon boat)
- J. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### **IV. Site Access and HDD Monitoring**

The attached figure outlines access points to the Red Lake River crossing. The direction of flow of the river has also been included. Due to a landowner requirement, Enbridge will not clear trees from the drill on the southeast side of the river. River access will be from the northwest side via proposed workspace associated with the HDD entry abutting the river. There are minimal elevation changes and no access issues to the crossing location. Access to the drill path from the southeast side will be limited to non-mechanized means (e.g., foot-traffic, sleds) within the forested areas not cleared, and will include a temporary bridge over the Unnamed Ditch. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means. The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### **V. Aquatic Release Response, Containment, and Clean-up**

Initial response to an inadvertent release in the Red Lake River will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures downstream of the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. Due to the stream depths expected to be encountered, establishing containment measures capable of isolating a release location from stream flow will be most likely when near the water's edge at depths less than 5 feet. The table below anticipates the variable conditions at the Red Lake River crossing and likely containment measure options that may be employed, including alternative materials that will be made available to enhance initial response if warranted. The in-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.

| Water Conditions                |          | Distance from Water's Edge   |  |                                 |
|---------------------------------|----------|--|--|---------------------------------|
| Flow Velocity                   | Depth    | 0-10 Feet  | 10-20 Feet   | Greater than 20 feet            |
| Still/Slow<br>( < 1 ft/sec)     | 0-2 Feet | Sand bag isolation structure; vertical culvert   | n/a  | n/a                             |
|                                 | 2-5 Feet | n/a  | n/a  | n/a                             |
|                                 | > 5 Feet | n/a  | n/a  | n/a                             |
| Slow/Moderate<br>(1-3 ft/sec)   | 0-2 Feet | Sandbag cofferdam; vertical culvert  | n/a  | n/a                             |
|                                 | 2-5 Feet | n/a  | n/a  | n/a                             |
|                                 | > 5 Feet | n/a  | n/a  | n/a                             |
| Moderate/Rapid<br>( > 3 ft/sec) | 0-2 Feet | Sandbag cofferdam; geotextile pipeline weights cofferdam; vertical culvert; jersey barriers and plastic sheeting               | n/a  | n/a                             |
|                                 | 2-5 Feet | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams; jersey barriers and plastic sheeting | Turbidity curtain; geotextile pipeline weights; bladder dams | Turbidity curtain; bladder dams |
|                                 | > 5 Feet | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams                                       | Turbidity curtain; geotextile pipeline weights; bladder dams | Turbidity curtain; bladder dams |

Separately, initial response to an inadvertent release at the narrow Unnamed Ditch crossing would include placement of sandbag dams upstream and downstream of the release location to isolate the drilling fluid. Pumps would be deployed to maintain downstream flow if encountered during the response.

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the in-water containment measure, and recovery efforts will be localized to that location.

## VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 325 feet of the proposed drill path crosses wetlands that may be temporarily inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| Wetland ID    | Eggers & Reed  | Hydrologic Regime                       | Linear Feet |
|---------------|----------------|---|-------------|
| w-153n43w29-j | Hardwood Swamp | Saturated, may be temporarily inundated | 82.5        |
| w-153n43w29-i | Hardwood Swamp | Saturated, may be temporarily inundated | 57.3        |
| w-153n43w29-h | Hardwood Swamp | Saturated, may be temporarily inundated | 44.7        |
| w-153n43w29-k | Hardwood Swamp | Saturated, may be temporarily inundated | 50.1        |
| w-153n43w29-l | Hardwood Swamp | Saturated, may be temporarily Inundated | 0.6         |
| w-153n43w29-n | Hardwood Swamp | Saturated, may be temporarily Inundated | 89.4        |

Low ground pressure equipment (e.g., UTV, argo, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. A vacuum truck will be deployed if required by the volume of release. If a release were to occur along the drill path on the southeast side of the river and beyond the reach of a vacuum truck with extension hose, recovery will consist primarily of manual methods (e.g., buckets, shovels). If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.

## **VII. Resumption of HDD Operations**

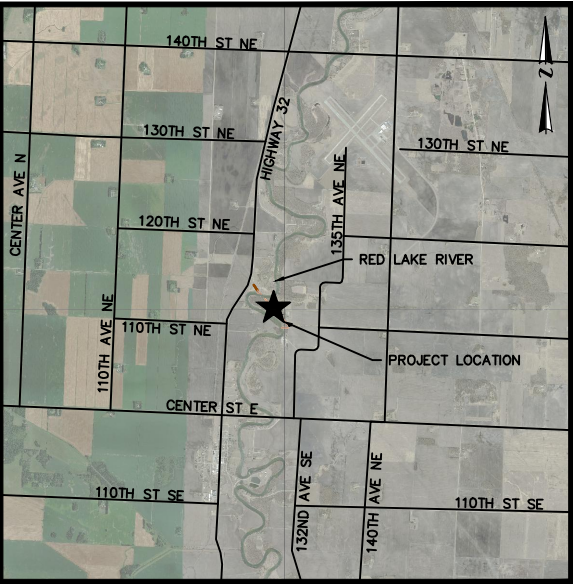
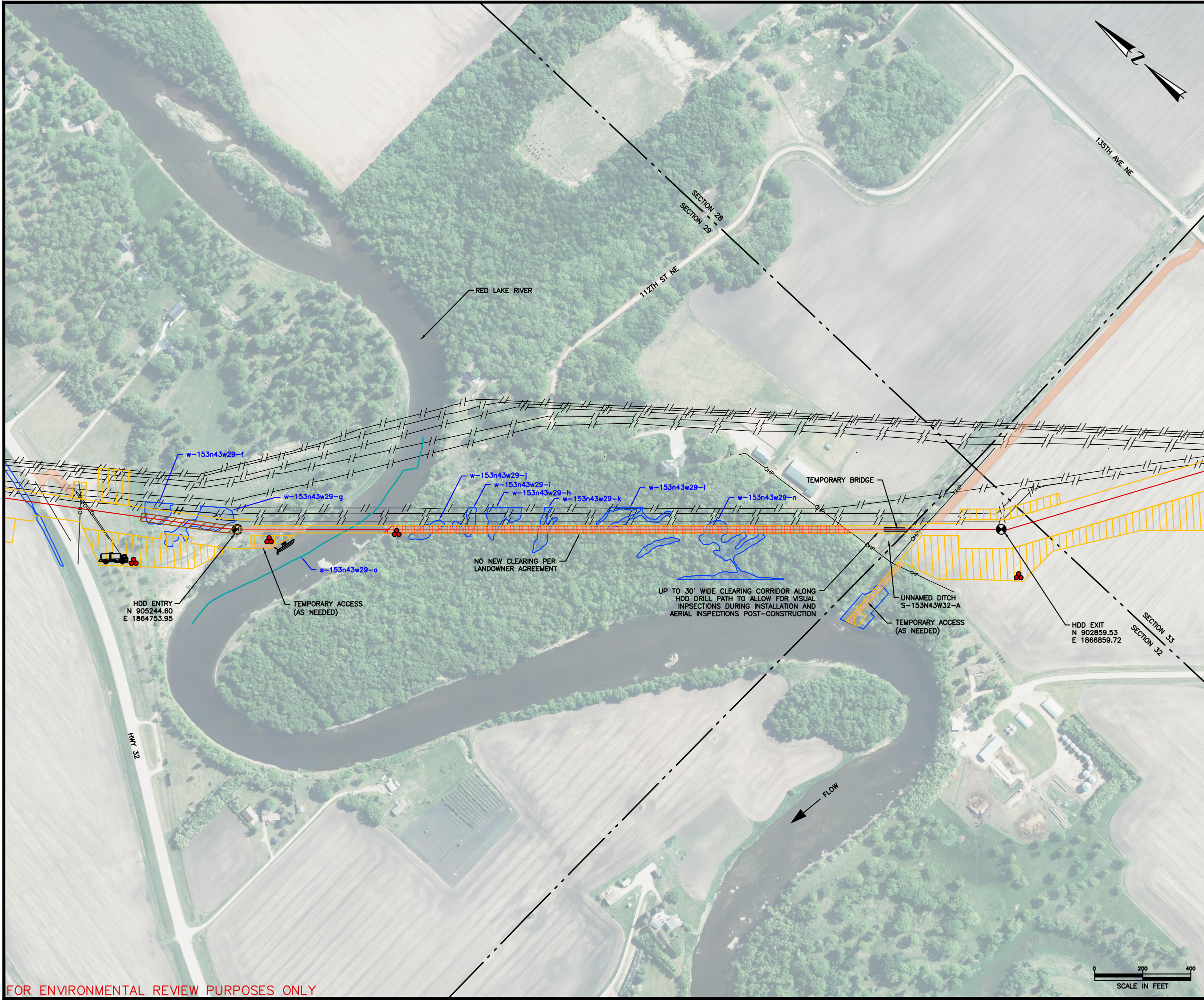
Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be assessed by representatives onsite for adequacy and ability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport to either a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

## **VIII. Crossing Photo**



***Photo 1.** Red Lake River facing downstream (west) at the drill path.*





LOCATION PLAN

PENNINGTON COUNTY, MINNESOTA  
SECTION 29, TOWNSHIP 153, RANGE 43  
SURVEY ID S-153N43W29-A & S-153N43W32-A

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY BRIDGE
- TEMPORARY ACCESS
- NO NEW CLEARING AREA
- xxx.x APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF RED LAKE RIVER & UNNAMED DITCH  
ENBRIDGE MP 864.3 & MP 864.7  
PENNINGTON COUNTY, MN

|       |                        |
|-------|------------------------|
| SCALE | DWG. NO.               |
| NOTED | B-93-5.84-PUC-8-REVX-B |



# Enbridge Energy, Limited Partnership

## Line 3 Replacement Project

### Inadvertent Release Response Plan

#### Clearwater River



#### I. HDD Information

|                                  |   |
|----------------------------------|---|
| Milepost: 875.4                  | Length of Wetlands: 854 feet                |
| HDD Length: 2,768 feet           | Waterbody Width (OHWM): 60 feet             |
| Estimated Duration: 48 days      | Distance from Waterbody to Entry: 397 feet  |
| Risk of Inadvertent Return: Low* | Distance from Waterbody to Exit: 2,381 feet |
| Enbridge ID Number: s-151n42w4-a | Depth of HDD Under Waterbody: 34 feet       |

\*Elevated risk last 75 feet of crossing.

#### II. Stream Data

The Clearwater River is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from March 15 to June 15. Rosgen surveys conducted in 2015 classify the crossing location within a non-wadeable reach of the stream, with the proposed drill profile located underneath a riffle feature of the streambed. The maximum depth within the 50-foot permanent easement measured 6.0 feet from bankfull elevation, with an average thalweg (deepest channel) depth of 5.5 feet from bankfull elevation for a channel reach 50 feet upstream and downstream of the proposed centerline. Analysis of geomorphic survey data estimated total bank erosion for the studied 1,100-foot river reach at 96.1 tons per year (0.087 tons/year/foot). Additional stream hydraulic data is provided in the table below.

| Description            | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|------------------------|-------------------|-----------------|-----------------|
| Baseflow <sup>a</sup>  | 3.1               | 320.7           | 2.0             |
| 50% Bankfull Capacity  | 3.9               | 768.1           | 3.4             |
| 75% Bankfull Capacity  | 4.3               | 1,024.1         | 3.9             |
| 100% Bankfull Capacity | 3.9               | 1,365.5         | 5.3             |

<sup>a</sup> Baseflow is approximately 1 cfs per square mile of drainage area.

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 5.7 to 8.3 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 1.3   | 2.4       | 3.1      | 4.9       | 4.4      | 6.5       | 5.3      | 7.9       | 5.6      | 8.2       | 5.7      | 8.4       | 5.7      | 8.3       |

#### III. Containment, Response, and Clean-up Equipment

Prior to commencing drilling operations, the following list of items will be transported and available at the Clearwater River crossing in accordance with Section 11.2 of the Environmental Protection Plan (“EPP”) and as depicted in the attached figure.

- A. Straw bales and staking
- B. Pre-filled sandbags
- C. Silt fence
- D. Plastic sheeting and/or geotextile
- E. Shovels, brooms, buckets, and other appropriate hand tools

- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- G. Fluid storage tank(s)
- H. Vacuum truck
- I. One small boat (non-motorized jon boat)
- J. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### IV. Site Access and HDD Monitoring

The attached figure outlines access points to the Clearwater River crossing. The direction of flow of the river has also been included. Due to a landowner requirement, Enbridge will not clear trees within the drill path. Access from the west and east sides includes non-forested wetlands as well as forested wetlands on the southern edge of the drill path, which will not impede equipment access. There is approximately an 8% slope to the river from the entry side, and minimum to no slope from the exit side, neither of which will present access issues to the crossing location. Prior to commencing drilling operations, construction mats will be placed along the drill path within the non-forested wetlands as necessary. Additionally, a temporary free span bridge will be installed over the Clearwater River. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### V. Aquatic Release Response, Containment, and Clean-up

Initial response to an inadvertent release in the Clearwater River will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures downstream of the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. The table below anticipates the variable conditions at the Clearwater River crossing and likely containment measure options that may be employed, including alternative materials that will be made available to enhance initial response if warranted. The in-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.

| Water Conditions           |          | Distance from Water's Edge                     |            |                      |
|----------------------------|----------|--|------------|----------------------|
| Flow Velocity              | Depth    | 0-10 Feet                                      | 10-20 Feet | Greater than 20 feet |
| Still/Slow<br>(< 1 ft/sec) | 0-2 Feet | Sand bag isolation structure; vertical culvert | n/a        | n/a                  |
|                            | 2-5 Feet | n/a  | n/a        | n/a                  |
|                            | > 5 Feet | n/a  | n/a        | n/a                  |

| Water Conditions               |          | Distance from Water's Edge   |   |  |
|--------------------------------|----------|--|---|--|
| Flow Velocity                  | Depth    | 0-10 Feet  | 10-20 Feet  | Greater than 20 feet   |
| Slow/Moderate<br>(1-3 ft/sec)  | 0-2 Feet | Sandbag cofferdam;<br>vertical culvert   | Sandbag cofferdam;<br>vertical culvert; geotextile<br>pipeline weights cofferdam;<br>jersey barriers with plastic<br>sheeting       | n/a  |
|                                | 2-5 Feet | Geotextile pipeline weights<br>cofferdam; vertical culvert;<br>bladder dams; jersey<br>barriers and plastic<br>sheeting      | Turbidity curtain; geotextile<br>pipeline weights; vertical<br>culvert; bladder dams;<br>water gates (as upstream<br>diversion aid) | Turbidity curtain; bladder<br>dams; water gates (as<br>upstream diversion aid) |
|                                | > 5 Feet | n/a  | n/a   | n/a  |
| Moderate/Rapid<br>(> 3 ft/sec) | 0-2 Feet | Sandbag cofferdam;<br>geotextile pipeline weights<br>cofferdam; vertical culvert;<br>jersey barriers and plastic<br>sheeting | n/a   | n/a  |
|                                | 2-5 Feet | Geotextile pipeline weights<br>cofferdam; vertical culvert;<br>bladder dams; jersey<br>barriers and plastic<br>sheeting      | Turbidity curtain; geotextile<br>pipeline weights; bladder<br>dams; water gates (as<br>upstream diversion aid)                      | Turbidity curtain; bladder<br>dams; water gates (as<br>upstream diversion aid) |
|                                | > 5 Feet | n/a  | Turbidity curtain; geotextile<br>pipeline weights; bladder<br>dams; water gates (as<br>upstream diversion aid)                      | n/a  |

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the in-water containment measure installation, and recovery efforts will be localized to that location.

## VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 220 feet of the proposed drill path crosses wetlands that may be seasonally or temporarily inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| Wetland ID   | Eggers & Reed      | Hydrologic Regime     | Linear Feet |
|--------------|--------------------|-----------------------|-------------|
| w-151n42w4-a | Fresh (wet) Meadow | Saturated             | 20.8        |
| w-151n42w4-a | Floodplain Forest  | Temporarily inundated | 5.8         |
| w-151n42w9-a | Shallow Marsh      | Seasonally inundated  | 47.5        |
| w-151n42w9-a | Floodplain Forest  | Temporarily inundated | 136.9       |
| w-151n42w9-a | Fresh (wet) Meadow | Saturated             | 569.1       |
| w-151n42w9-b | Fresh (wet) Meadow | Saturated             | 12.0        |
| w-151n42w9-c | Fresh (wet) Meadow | Saturated             | 17.5        |
| w-151n42w9-d | Shallow Marsh      | Seasonally inundated  | 30.2        |
| w-151n42w9-e | Fresh (wet) Meadow | Fresh (wet) Meadow    | 14.4        |

The point of entry onto the drill path from the east will be off County Road 126 due to railroad and highway constraints shown in the attached map. Low ground pressure equipment (e.g., UTV, argo, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. Temporary access will be supported by construction matting as necessary, and a vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.

## **VII. Resumption of HDD Operations**

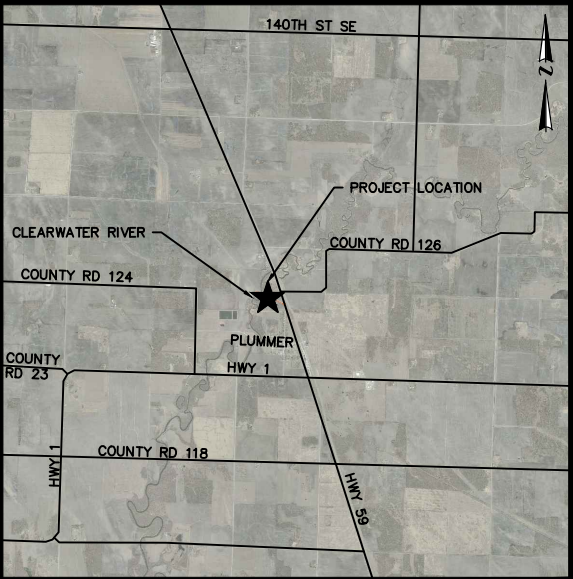
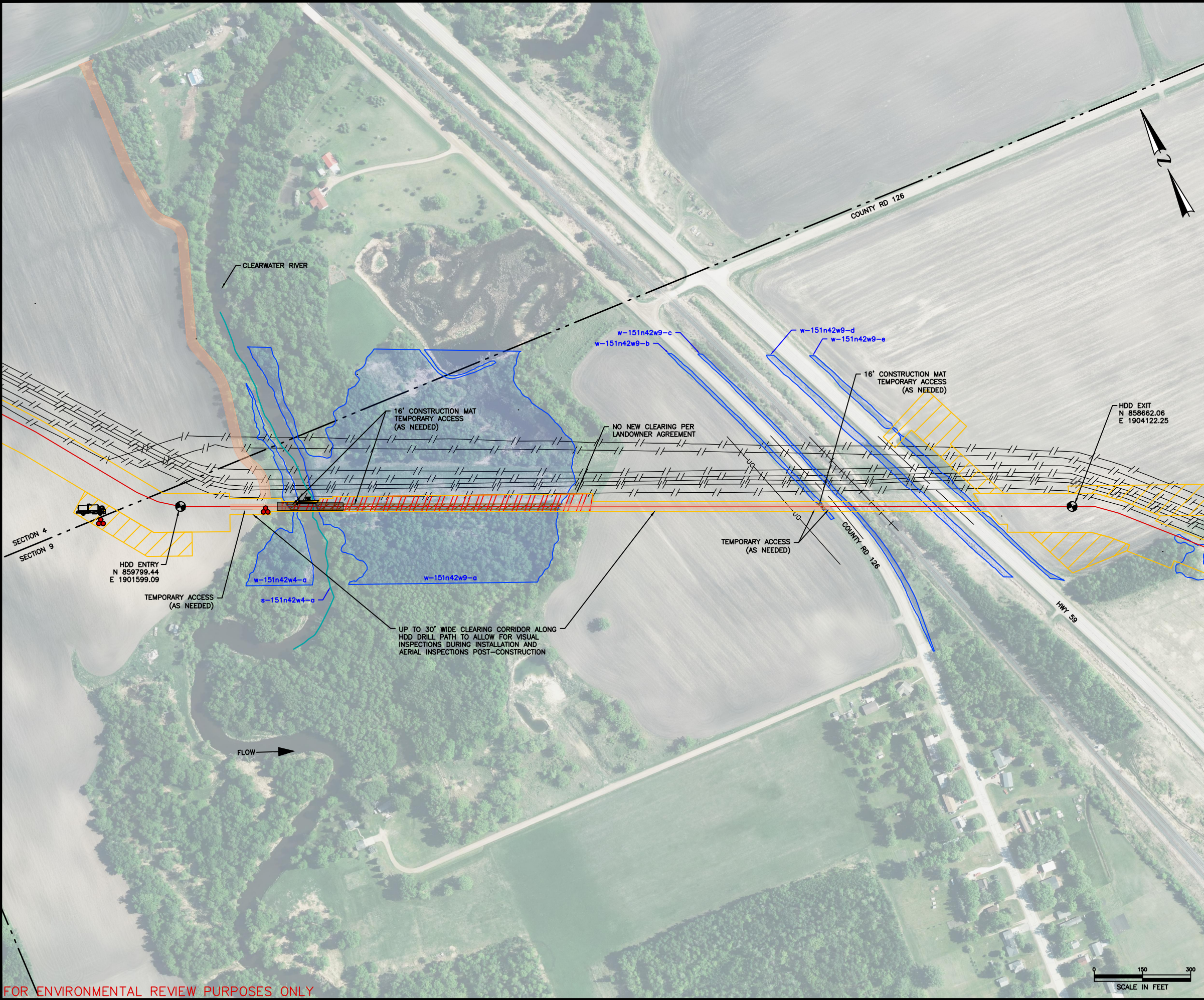
Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be assessed by representatives onsite for adequacy and ability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport into either a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

## **VIII. Crossing Photo**



**Photo 1.** *Clearwater River facing downstream (south) at the drill path.*





LOCATION PLAN

RED LAKE COUNTY, MINNESOTA  
SECTION 9, TOWNSHIP 151, RANGE 42  
SURVEY ID S-151N42W4-A

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY BRIDGE
- TEMPORARY ACCESS
- NO NEW CLEARING AREA
- APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF CLEARWATER RIVER  
ENBRIDGE MP 875.4  
RED LAKE COUNTY, MN

|       |                         |
|-------|-------------------------|
| SCALE | DWG. NO.                |
| NOTED | B-93-5.84-PUC-11-REVX-B |

FOR ENVIRONMENTAL REVIEW PURPOSES ONLY



**Enbridge Energy, Limited Partnership**  
**Line 3 Replacement Project**  
**Inadvertent Release Response Plan**  
**Clearwater River and Tributary of Clearwater River**



**I. HDD Information**

|                                  |  |
|----------------------------------|--|
| Milepost: 922.2; 922.3           | Length of Wetlands: 1,528 feet                 |
| HDD Length: 2,818 feet           | Waterbody Width (OHWM): 42 feet; 12 feet       |
| Estimated Duration: 45 days      | Distance from Waterbody to Entry: 788 feet     |
| Risk of Inadvertent Return: Low* | Distance from Waterbody to Exit: 1,817 feet    |
| Enbridge ID Number: CLC5037aWB;  | Depth of HDD Under Waterbody: 69 feet; 64 feet |
| CLC5038aWB                       |  |

\*Elevated risk last 90 feet of crossing.

**II. Stream Data**

The Clearwater River is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from March 15 to June 15. Rosgen surveys conducted in 2015 classify the Clearwater River and Tributary of Clearwater River crossing locations within a wadeable reach of the stream, with the proposed drill profile located underneath a riffle feature of the streambed. The maximum depth within the 50-foot-permanent easement measured 3.0 feet from bankfull elevation, with an average thalweg (deepest channel) depth of 2.9 feet from bankfull elevation for a channel reach 50 feet upstream and downstream of the proposed centerline. Analysis of geomorphic survey data estimated total bank erosion studied for the 1,400-foot river reach at 10.7 tons per year (0.008 tons/year/foot). Additional stream hydraulic data is provided in the table below.

| Description                        | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|------------------------------------|-------------------|-----------------|-----------------|
| Baseflow <sup>a</sup>              | -                 | -               | -               |
| 50% Bankfull Capacity <sup>a</sup> | -                 | -               | -               |
| 75% Bankfull Capacity <sup>a</sup> | -                 | -               | -               |
| 100% Bankfull Capacity             | 0.7               | 151.9           | 3.0             |

<sup>a</sup> Flows below bankfull and above baseflow elevation expand into wetlands. Velocity and depth similar to bankfull.

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 5.7 to 8.3 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 1.3   | 2.4       | 3.1      | 4.9       | 4.4      | 6.5       | 5.3      | 7.9       | 5.6      | 8.2       | 5.7      | 8.4       | 5.7      | 8.3       |

**III. Containment, Response and Clean-up Equipment**

Prior to commencing drilling operations, the following list of items will be transported and available at the Clearwater River and Tributary of Clearwater River crossings in accordance with Section 11.2 of the Environmental Protection Plan (“EPP”) and as depicted in the attached figure.

- A. Straw bales and staking
- B. Pre-filled sandbags

- C. Silt fence
- D. Plastic sheeting and/or geotextile
- E. Shovels, brooms, buckets, and other appropriate hand tools
- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- G. Fluid storage tank(s)
- H. Vacuum truck
- I. One small boat (non-motorized jon boat)
- J. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### **IV. Site Access and HDD Monitoring**

The attached figure outlines access points to the Clearwater River and Tributary of Clearwater River crossings. The direction of flow of the river has also been included. Access from the northwest and southeast sides will traverse non-forested wetlands. Crews will have a traffic control plan for access off Highway 2, if needed, for monitoring and response. Prior to commencing drilling operations brush will be cleared within proposed workspace, during which time construction mats will be placed along the drill path within wetlands as necessary. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### **V. Aquatic Release Response, Containment, and Clean-up**

Initial response to an inadvertent release in the Clearwater River will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures downstream of the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. The table below anticipates the variable conditions at the Clearwater River crossing and likely containment measure options that may be employed, including alternative materials that will be made available to enhance initial response if warranted. The in-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.

| Water Conditions                  |            | Distance from Water's Edge   |  |                      |
|-----------------------------------|------------|--|--|----------------------|
| Flow Velocity                     | Depth      | 0-10 Feet  | 10-20 Feet   | Greater than 20 feet |
| Still/Slow<br>( $< 1$ ft/sec)     | 0-2 Feet   | Sand bag isolation structure; vertical culvert   | Sand bag isolation structure; vertical culvert   | n/a                  |
|                                   | 2-5 Feet   | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams; jersey barriers and plastic sheeting | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams; jersey barriers and plastic sheeting | n/a                  |
|                                   | $> 5$ Feet | n/a  | n/a  | n/a                  |
| Slow/Moderate<br>(1-3 ft/sec)     | 0-2 Feet   | n/a  | n/a  | n/a                  |
|                                   | 2-5 Feet   | n/a  | n/a  | n/a                  |
|                                   | $> 5$ Feet | n/a  | n/a  | n/a                  |
| Moderate/Rapid<br>( $> 3$ ft/sec) | 0-2 Feet   | n/a  | n/a  | n/a                  |
|                                   | 2-5 Feet   | n/a  | n/a  | n/a                  |
|                                   | $> 5$ Feet | n/a  | n/a  | n/a                  |

Initial response to an inadvertent release at the Tributary of the Clearwater River will include placement of sandbag dams upstream and downstream of the release location to isolate the drilling fluid. Pumps will be deployed to maintain downstream flow if encountered during the response.

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the in-water containment measure installation, and recovery efforts will be localized to that location.

## VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 205 feet of the proposed drill path crosses wetlands that may be seasonally inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| Wetland ID       | Eggers & Reed      | Hydrologic Regime                 | Linear Feet |
|------------------|--------------------|-----------------------------------|-------------|
| CLC5037a1W       | Fresh (wet) Meadow | Saturated                         | 869.3       |
| CLC5037a1W       | Shrub-Carr         | Saturated to Seasonally inundated | 65.6        |
| CLC5038c1W       | Fresh (wet) Meadow | Saturated                         | 77.1        |
| CLC5038a1W       | Fresh (wet) Meadow | Saturated                         | 322.5       |
| CLC5038a1W       | Shrub-Carr         | Saturated to Seasonally inundated | 139.4       |
| CLC5038d1W       | Fresh (wet) Meadow | Saturated                         | 34.1        |
| CLC5040_000RRa1W | Fresh (wet) Meadow | Saturated                         | 19.6        |

Low ground pressure equipment (e.g., UTV, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. Temporary access will be supported by construction matting as necessary, and a vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize



lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.

## **VII. Resumption of HDD Operations**

Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be assessed by representatives onsite for adequacy and ability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drill fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport into either a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

## **VIII. Crossing Photos**

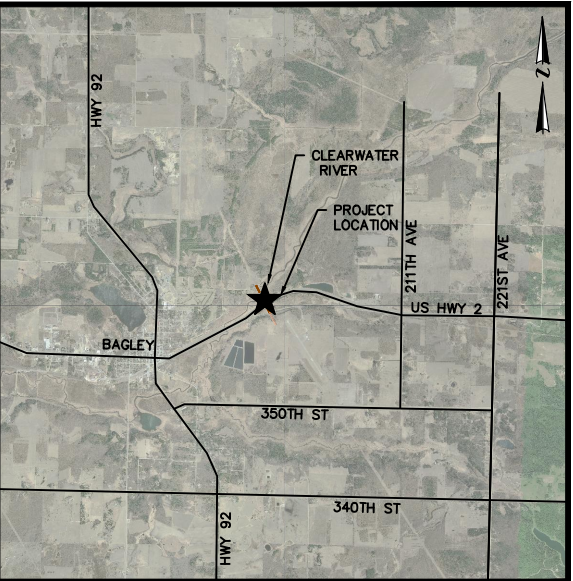
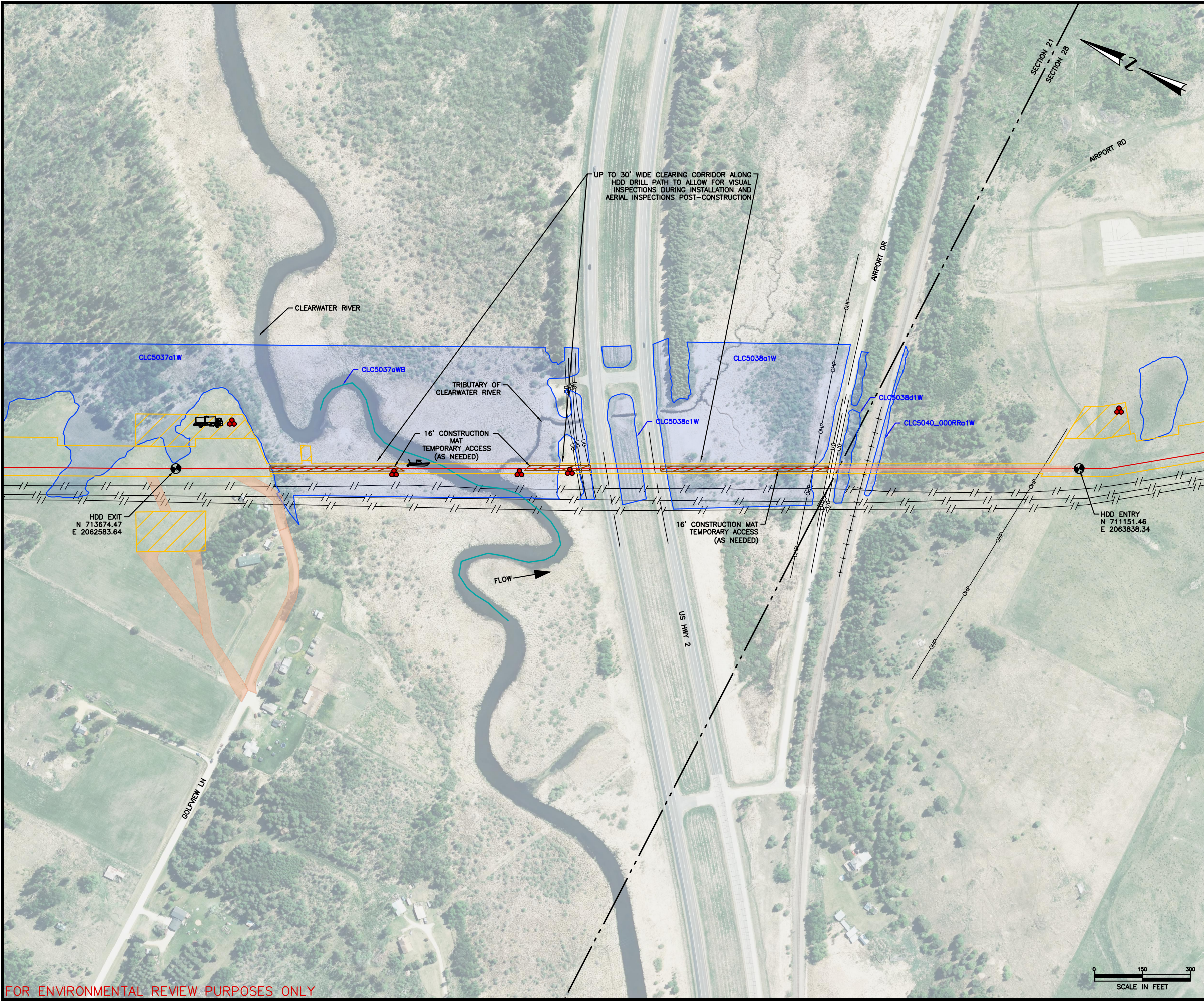


**Photo 1.** *Clearwater River facing downstream (north) from the drill path.*



***Photo 2. Tributary of Clearwater River crossing location.***





LOCATION PLAN

CLEARWATER COUNTY, MINNESOTA  
SECTION 21, TOWNSHIP 147, RANGE 37  
SURVEY ID CLC5037AWB

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY ACCESS
- APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF CLEARWATER RIVER AND TRIBUTARY  
ENBRIDGE MP 922.2 & MP 922.3  
CLEARWATER COUNTY, MN

|       |                         |
|-------|-------------------------|
| SCALE | DWG. NO.                |
| NOTED | B-93-5.84-PUC-20-REVV-B |



# Enbridge Energy, Limited Partnership

## Line 3 Replacement Project

### Inadvertent Release Response Plan

#### Mississippi River



#### I. HDD Information

|                                  |  |
|----------------------------------|--|
| Milepost: 941.0                  | Length of Wetlands: 1,782 feet               |
| HDD Length: 2,217 feet           | Waterbody Width (OHWM): 13 feet              |
| Estimated Duration: 50 days      | Distance from Waterbody to Entry: 1,149 feet |
| Risk of Inadvertent Return: Low* | Distance from Waterbody to Exit: 1,068 feet  |
| Enbridge ID Number: CLC5098aWB   | Depth of HDD Under Waterbody: 63 feet        |

\*Elevated risk last 70 feet of crossing.

#### II. Stream Data

The Mississippi River is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from March 15 to June 15. Rosgen surveys conducted in 2015 classify the crossing location within a wadeable reach of the stream, with the proposed drill profile located underneath a riffle feature of the streambed. The maximum depth within the 50-foot permanent easement measured 4.2 feet from bankfull elevation, with an average thalweg (deepest channel) depth of 3.67 feet from bankfull elevation for a channel reach 50 feet upstream and downstream of the proposed centerline. Analysis of geomorphic survey data estimated total bank erosion studied for the 680-foot river reach at 38.07 tons per year (0.06 tons/year/foot). Additional stream hydraulic data is provided in the table below.

| Description            | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|------------------------|-------------------|-----------------|-----------------|
| Baseflow <sup>a</sup>  | 0.5               | 7.2             | 1.2             |
| 50% Bankfull Capacity  | 0.9               | 33.6            | 2.5             |
| 75% Bankfull Capacity  | 1.0               | 44.8            | 2.9             |
| 100% Bankfull Capacity | 1.1               | 59.8            | 3.4             |

<sup>a</sup> Baseflow is approximately 1 cfs per square mile of drainage area.

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 5.1 to 7.6 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 1.3   | 2.3       | 2.9      | 4.6       | 4.3      | 6.4       | 4.9      | 7.4       | 5.2      | 7.7       | 5.3      | 7.9       | 5.3      | 7.9       |

#### III. Containment, Response and Clean-up Equipment

Prior to commencing drilling operations, the following list of items will be transported and available at the Mississippi River crossing in accordance with Section 11.2 of the Environmental Protection Plan (“EPP”) and as depicted in the attached figure.

- A. Straw bales and staking
- B. Pre-filled sandbags
- C. Silt fence
- D. Plastic sheeting and/or geotextile
- E. Shovels, brooms, buckets, and other appropriate hand tools

- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- G. Fluid storage tank(s)
- H. Vacuum truck
- I. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### IV. Site Access and HDD Monitoring

The attached figure outlines access points to the Mississippi River crossing. The direction of flow of the river has also been included. Access from the northwest and southeast sides will traverse forested wetlands. There is minimal to no slope to the river from the entry side, and a 6-8% slope from the exit side, neither of which will present access issues to the crossing location. Crews will have a traffic control plan for access off 230<sup>th</sup> Street, if needed, for monitoring and response. Prior to commencing drilling operations, trees will be cleared within proposed workspace, during which time construction mats will be placed along the drill path within wetlands as necessary. Additionally, a temporary free span bridge will be installed over the Mississippi River. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### V. Aquatic Release Response, Containment, and Clean-up

Initial response to an inadvertent release in the Mississippi River will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members either for the deployment of the appropriate in-water containment measures downstream of the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. The table below anticipates the variable conditions at the Mississippi River crossing and likely containment measure options that may be employed, including alternative materials that will be made available to enhance initial response if warranted. The in-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.

| Water Conditions              |          | Distance from Water's Edge   |            |                      |
|-------------------------------|----------|--|------------|----------------------|
| Flow Velocity                 | Depth    | 0-10 Feet  | 10-20 Feet | Greater than 20 feet |
| Still/Slow<br>( $< 1$ ft/sec) | 0-2 Feet | Sand bag isolation structure; vertical culvert   | n/a        | n/a                  |
|                               | 2-5 Feet | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams | n/a        | n/a                  |
|                               | > 5 Feet | n/a  | n/a        | n/a                  |

| Water Conditions               |          | Distance from Water's Edge  |            |                      |
|--------------------------------|----------|---|------------|----------------------|
| Flow Velocity                  | Depth    | 0-10 Feet   | 10-20 Feet | Greater than 20 feet |
| Slow/Moderate<br>(1-3 ft/sec)  | 0-2 Feet | Sandbag cofferdam;<br>vertical culvert  | n/a        | n/a                  |
|                                | 2-5 Feet | Turbidity curtain;<br>Geotextile pipeline weights<br>cofferdam; vertical culvert;<br>bladder dams | n/a        | n/a                  |
|                                | > 5 Feet | n/a   | n/a        | n/a                  |
| Moderate/Rapid<br>(> 3 ft/sec) | 0-2 Feet | n/a   | n/a        | n/a                  |
|                                | 2-5 Feet | n/a   | n/a        | n/a                  |
|                                | > 5 Feet | n/a   | n/a        | n/a                  |

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the in-water containment measure installation, and recovery efforts will be localized to that location.

#### VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 1,024 feet of the proposed drill path crosses wetlands that may be temporarily or seasonally inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| Wetland ID | Eggers & Reed      | Hydrologic Regime                       | Linear Feet |
|------------|--------------------|---|-------------|
| CLC5096a1W | Coniferous Swamp   | Saturated, may be temporarily inundated | 41.0        |
| CLC5096a1W | Shrub-Carr         | Saturated to Seasonally inundated       | 52.1        |
| CLC5096a1W | Sedge Meadow       | Saturated                               | 97.7        |
| CLC5098a1W | Fresh (wet) Meadow | Saturated                               | 623.5       |
| CLC5098a1W | Shrub-Carr         | Saturated to Seasonally inundated       | 406.1       |
| CLC5098a1W | Coniferous Swamp   | Saturated, may be temporarily inundated | 422.8       |
| CLC5098a1W | Hardwood Swamp     | Saturated, may be temporarily inundated | 139.0       |

Low ground pressure equipment (e.g., UTV, argo, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. Temporary access will be supported by construction matting as necessary, and a vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.

#### VII. Resumption of HDD Operations

Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be assessed by representatives onsite



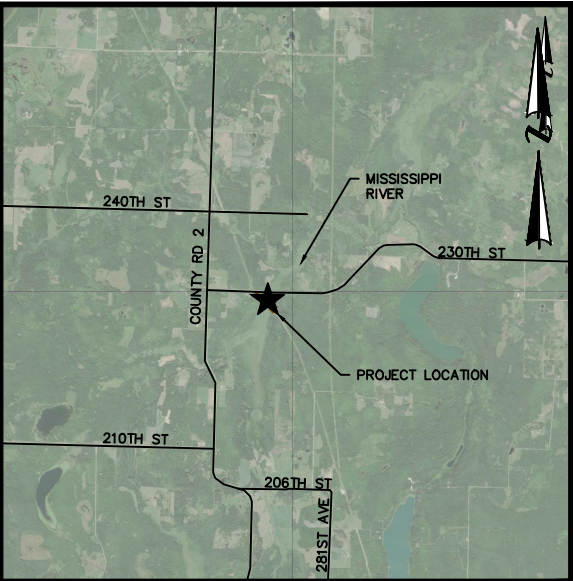
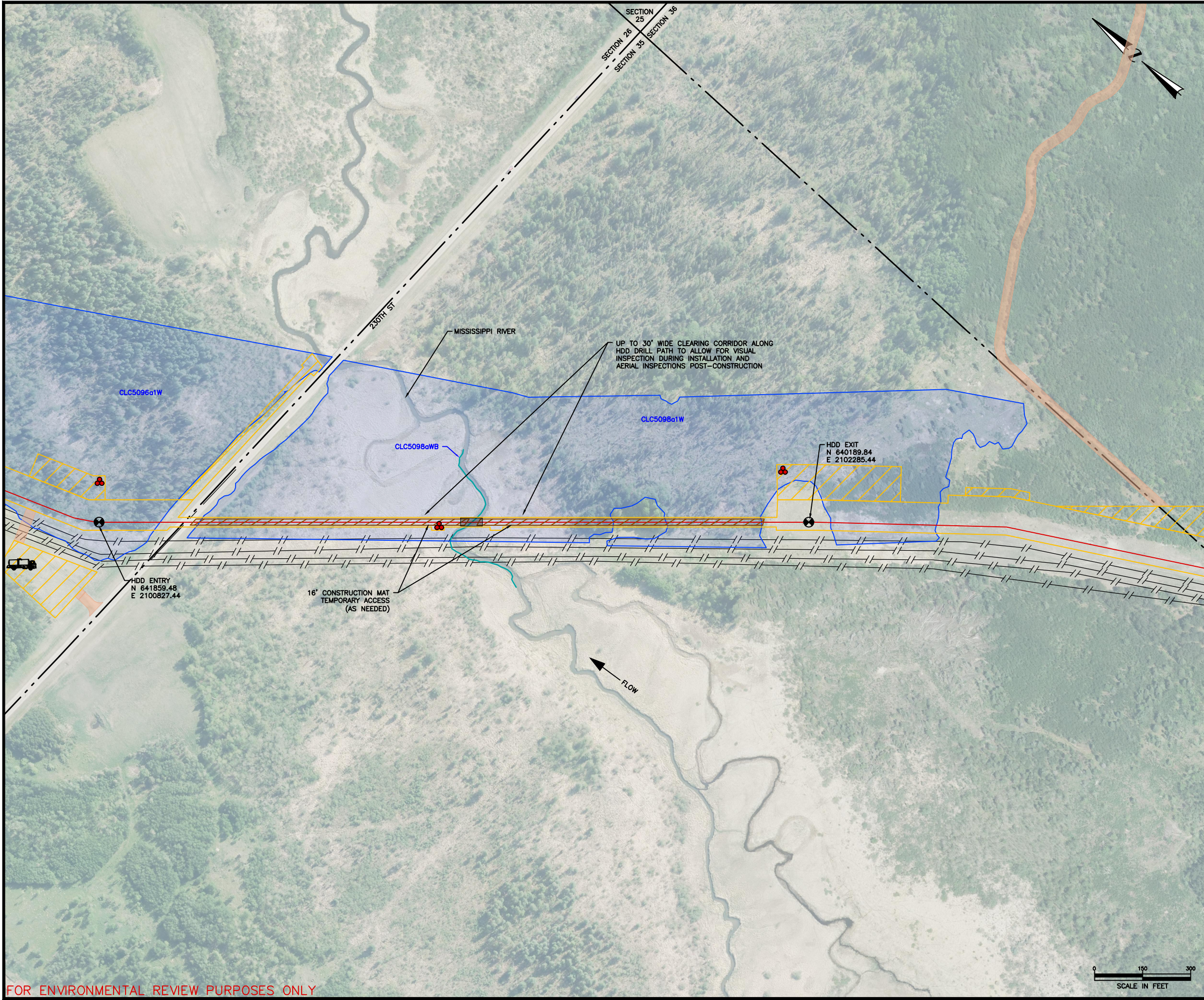
for adequacy and ability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport into either a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

#### **VIII. Crossing Photo**



***Photo 1. Mississippi River facing downstream (northeast) from the drill path.***





LOCATION PLAN

CLEARWATER COUNTY, MINNESOTA  
SECTION 35, TOWNSHIP 145, RANGE 36  
SURVEY ID CLC5098AWB

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY BRIDGE
- TEMPORARY ACCESS
- APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF MISSISSIPPI RIVER  
ENBRIDGE MP 941.0  
CLEARWATER COUNTY, MN

|       |                         |
|-------|-------------------------|
| SCALE | DWG. NO.                |
| NOTED | B-93-5.84-PUC-28-REVV-B |



# Enbridge Energy, Limited Partnership

## Line 3 Replacement Project

### Inadvertent Release Response Plan

#### Hay Creek



#### I. HDD Information

|                                    |  |
|------------------------------------|--|
| Milepost: 963.7                    | Length of Wetlands: 1,555 feet               |
| HDD Length: 2,802 feet             | Waterbody Width (OHWM): 424 feet             |
| Estimated Duration: 50 days        | Distance from Waterbody to Entry: 1,883 feet |
| Risk of Inadvertent Return: Low*   | Distance from Waterbody to Exit: 919 feet    |
| Enbridge ID Number: HUC5122_200aWB | Depth of HDD Under Waterbody: 47 feet        |

\*Elevated risk last 60 feet of crossing.

#### II. Stream Data

Hay Creek is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from March 15 to June 15. Rosgen surveys conducted in 2015 classify the crossing location within a non-wadeable reach of the waterway, with the proposed drill profile located underneath a pool feature of the bed. The maximum depth within the 50-foot-permanent easement measured 2.4 feet from bankfull elevation. Hay Creek has lacustrine characteristics that meet an open bog Eggers & Reed classification and is not applicable to a geomorphic survey. Additional data is provided in the table below.

| Description                         | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|-------------------------------------|-------------------|-----------------|-----------------|
| Baseflow <sup>a</sup>               |                   |                 |                 |
| 50% Bankfull Capacity <sup>a</sup>  | -                 | -               | -               |
| 75% Bankfull Capacity <sup>a</sup>  | -                 | -               | -               |
| 100% Bankfull Capacity <sup>a</sup> | -                 | -               | 3.1             |
| <sup>a</sup> Impounded site.        |                   |                 |                 |

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 21.2 to 35.5 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 5.2   | 10.6      | 11.6     | 20.7      | 17.9     | 29.8      | 20.2     | 34.1      | 21.6     | 36.2      | 21.6     | 36.2      | 21.6     | 36.2      |

#### III. Containment, Response and Clean-up Equipment

Prior to commencing drilling operations, the following list of items will be transported and available at the Hay Creek crossing in accordance with Section 11.2 of the Environmental Protection Plan (“EPP”) and as depicted in the attached figure.

- Straw bales and staking
- Pre-filled sandbags
- Silt fence
- Plastic sheeting and/or geotextile
- Shovels, brooms, buckets, and other appropriate hand tools
- Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- Fluid storage tank(s)

- H. Vacuum truck
- I. One small boat (non-motorized jon boat)
- J. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### IV. Site Access and HDD Monitoring

The attached figure outlines access points to the Hay Creek crossing. The direction of flow of the river has also been included. Access from the north side will traverse forested wetlands, and forested upland areas from south side. There are minimal elevation changes and no access issues to the crossing location. Prior to commencing drilling operations, trees will be cleared within proposed workspace, during which time construction mats will be placed long the drill path within wetlands as necessary. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### V. Aquatic Release Response, Containment, and Clean-up

Initial response to an inadvertent release in the Hay Creek will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures at the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts from spreading. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on water depth and location of a release. The table below anticipates the variable conditions at the Hay Creek crossing and likely containment measure options that may be employed, including alternative materials that will be made available to enhance initial response if warranted. The in-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.

| Water Conditions                  |            | Distance from Water's Edge   |  |  |
|-----------------------------------|------------|--|--|--|
| Flow Velocity                     | Depth      | 0-10 Feet  | 10-20 Feet   | Greater than 20 feet                               |
| Still/Slow<br>( $< 1$ ft/sec)     | 0-2 Feet   | Sand bag isolation structure; vertical culvert   | Sand bag isolation structure; vertical culvert   | Sand bag isolation and structure; vertical culvert |
|                                   | 2-5 Feet   | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams | Turbidity curtain; vertical culvert; bladder dams  |
|                                   | $> 5$ Feet | n/a  | n/a  | n/a  |
| Slow/Moderate<br>(1-3 ft/sec)     | 0-2 Feet   | n/a  | n/a  | n/a  |
|                                   | 2-5 Feet   | n/a  | n/a  | n/a  |
|                                   | $> 5$ Feet | n/a  | n/a  | n/a  |
| Moderate/Rapid<br>( $> 3$ ft/sec) | 0-2 Feet   | n/a  | n/a  | n/a  |
|                                   | 2-5 Feet   | n/a  | n/a  | n/a  |
|                                   | $> 5$ Feet | n/a  | n/a  | n/a  |



The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the surrounding water, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid will eventually settle to the bed of the waterway in still water applications and recovery efforts will be localized to that location.

## **VI. Terrestrial Release Response, Containment, and Clean-up**

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 417 feet of the proposed drill path crosses coniferous swamps and alder thickets, which may be temporarily or seasonally inundated, respectively. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| <b>Wetland ID</b> | <b>Eggers &amp; Reed</b> | <b>Hydrologic Regime</b>                | <b>Linear Feet</b> |
|-------------------|--------------------------|---|--------------------|
| HUC5080a1W        | Hardwood Swamps          | Saturated, may be temporarily inundated | 131.3              |
| HUC5080a1W        | Coniferous Swamps        | Saturated, may be temporarily inundated | 31.4               |
| HUC5080a1W        | Sedge Meadows            | Saturated                               | 1,137.4            |
| HUC5080a1W        | Alder Thickets           | Saturated to Seasonally inundated       | 254.5              |

Low ground pressure equipment (e.g., UTV, argo, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. Temporary access will be supported by construction matting as necessary, and a vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.

## **VII. Resumption of HDD Operations**

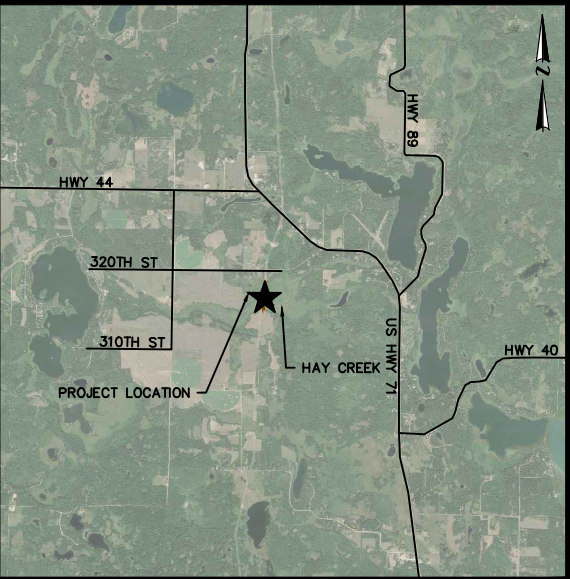
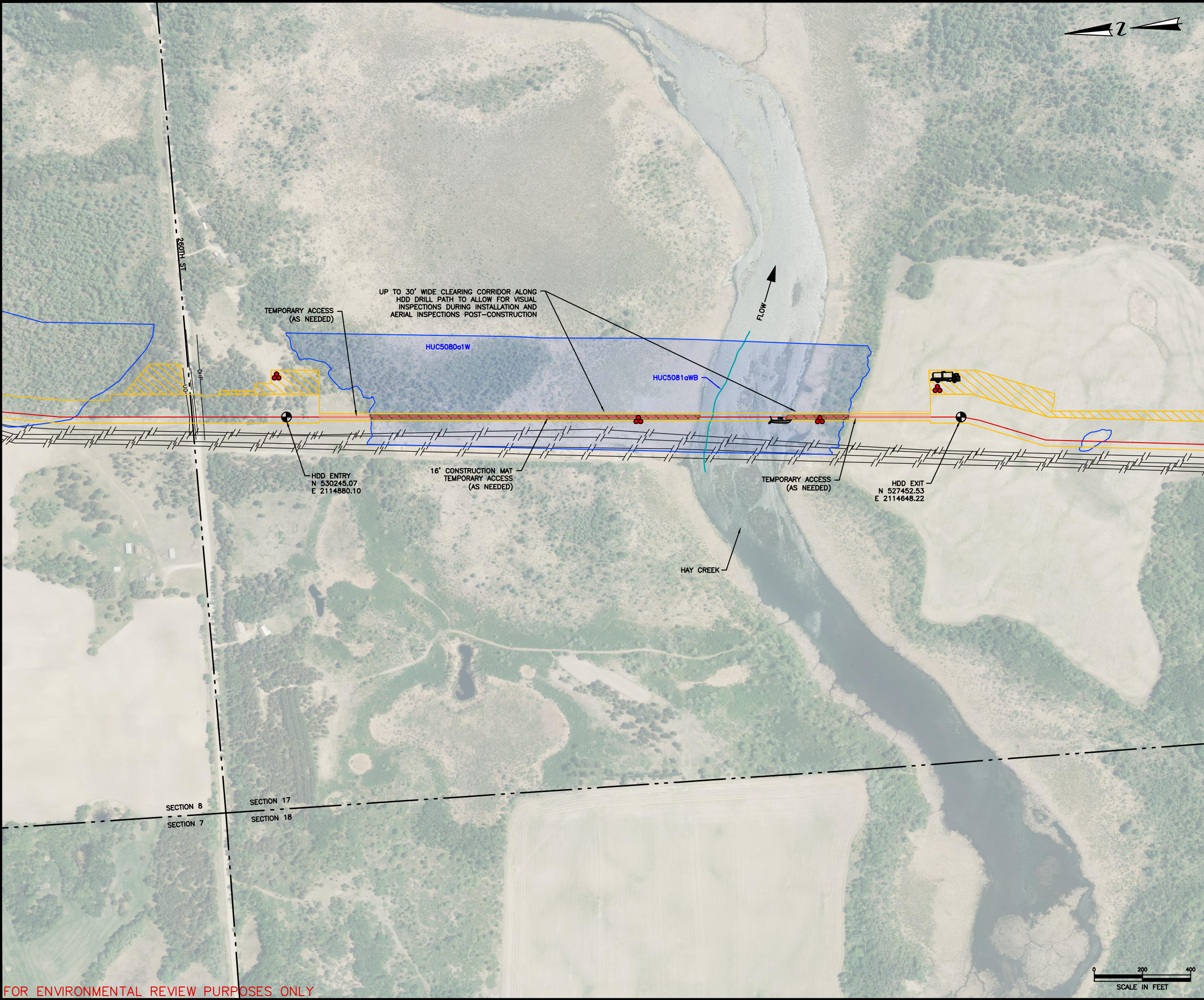
Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be accessed by representatives onsite for adequacy and ability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport into either a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

# VIII. Crossing Photo



**Photo 1.** *Hay Creek facing east at the drill path.*





LOCATION PLAN

HUBBARD COUNTY, MINNESOTA  
SECTION 17, TOWNSHIP 141, RANGE 35  
SURVEY ID HUC5081AWB

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY ACCESS
- APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF HAY CREEK  
ENBRIDGE MP 963.7  
HUBBARD COUNTY, MN

|       |                         |
|-------|-------------------------|
| SCALE | DWG. NO.                |
| NOTED | B-93-5.84-PUC-31-REVX-B |

FOR ENVIRONMENTAL REVIEW PURPOSES ONLY



**Enbridge Energy, Limited Partnership  
Line 3 Replacement Project  
Inadvertent Release Response Plan  
Straight River**



**I. HDD Information**

Milepost: 974.2  
HDD Length: 3,579 feet  
Estimated Duration: 75 days  
Risk of Inadvertent Return: Low\*  
Enbridge ID Number: HUC5122\_200aWB

Length of Wetlands: 1,020 feet  
Waterbody Width (OHWM): 90 feet  
Distance from Waterbody to Entry: 2,009 feet  
Distance from Waterbody to Exit: 1,570 feet  
Depth of HDD Under Waterbody: 57 feet

\*Elevated risk last 300 feet of crossing.

**II. Stream Data**

The Straight River is a designated Coldwater Fishery with a seasonal in-channel work restriction from September 1 to April 15. Rosgen surveys conducted in 2015 classify the crossing location within a non-wadeable reach of the stream, with the proposed drill profile located underneath a riffle feature of the streambed. The maximum depth within the 50-foot-permanent easement measured 5.4 feet from bankfull elevation, with an average thalweg (deepest channel) depth of 5.32 feet from bankfull elevation for a channel reach 50 feet upstream and downstream of the proposed centerline. Analysis of geomorphic survey data estimated total bank erosion studied for the 1,180-foot river reach at 12.2 tons per year (0.01 tons/year/foot). Additional stream hydraulic data is provided in the table below.

| Description  | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|--|-------------------|-----------------|-----------------|
| <b>Baseflow <sup>a</sup></b>   |                   |                 |                 |
| <b>50% Bankfull Capacity <sup>a</sup></b>  | -                 | -               | -               |
| <b>75% Bankfull Capacity <sup>a</sup></b>  | -                 | -               | -               |
| <b>100% Bankfull Capacity</b>  | 1.1               | 359.4           | 3.9             |
| <sup>a</sup> Flows below bankfull and above baseflow elevation expand into wetlands. Velocity and depth similar to bankfull. |                   |                 |                 |

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 21.2 to 35.5 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 4.5   | 10.1      | 11.6     | 20.7      | 17.9     | 29.8      | 20.2     | 34.1      | 21.3     | 35.5      | 21.3     | 35.5      | 21.3     | 35.5      |

**III. Containment, Response and Clean-up Equipment**

Prior to commencing drilling operations, the following list of items will be transported and available at the Straight River crossing in accordance with Section 11.2 of the Environmental Protection Plan ("EPP") and as depicted in the attached figure.

- A. Straw bales and staking
- B. Pre-filled sandbags
- C. Silt fence
- D. Plastic sheeting and/or geotextile
- E. Shovels, brooms, buckets, and other appropriate hand tools
- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)



- G. Fluid storage tank(s)
- H. Vacuum truck
- I. One small boat (non-motorized jon boat)
- J. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### **IV. Site Access and HDD Monitoring**

The attached figure outlines access points to the Straight River crossing. The direction of flow of the river has also been included. Access from the north side will traverse forested wetlands, and forested upland areas from south side. There are minimal elevation changes and no access issues to the crossing location. Prior to commencing drilling operations trees will be cleared within proposed workspace, during which time construction mats will be placed along the drill path within wetlands as necessary. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### **V. Aquatic Release Response, Containment, and Clean-up**

Initial response to an inadvertent release in the Straight River will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures downstream of the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. The table below anticipates the variable conditions at the Straight River crossing and likely containment measure options that may be employed, including alternative materials that will be made available to enhance initial response if warranted. The in-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.

| Water Conditions                  |            | Distance from Water's Edge  |  |  |
|-----------------------------------|------------|---|--|--|
| Flow Velocity                     | Depth      | 0-10 Feet   | 10-20 Feet   | Greater than 20 feet   |
| Still/Slow<br>( $< 1$ ft/sec)     | 0-2 Feet   | n/a   | n/a  | n/a  |
|                                   | 2-5 Feet   | n/a   | n/a  | n/a  |
|                                   | $> 5$ Feet | n/a   | n/a  | n/a  |
| Slow/Moderate<br>(1-3 ft/sec)     | 0-2 Feet   | Sandbag cofferdam;<br>vertical culvert  | n/a  | n/a  |
|                                   | 2-5 Feet   | Turbidity curtain;<br>Geotextile pipeline<br>weights cofferdam;<br>vertical culvert; bladder<br>dams; jersey barriers and<br>plastic sheeting | Turbidity curtain;<br>geotextile pipeline<br>weights cofferdam;<br>vertical culvert; bladder<br>dams; water gates (as<br>upstream diversion aid) | Turbidity curtain; bladder<br>dams; water gates (as<br>upstream diversion aid) |
|                                   | $> 5$ Feet | n/a   | Turbidity curtain;<br>geotextile pipeline<br>weights; bladder dams;<br>water gates (as upstream<br>diversion aid)                                | Turbidity curtain; bladder<br>dams; water gates (as<br>upstream diversion aid) |
| Moderate/Rapid<br>( $> 3$ ft/sec) | 0-2 Feet   | n/a   | n/a  | n/a  |
|                                   | 2-5 Feet   | n/a   | n/a  | n/a  |
|                                   | $> 5$ Feet | n/a   | n/a  | n/a  |

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the in-water containment measure installation, and recovery efforts will be localized to that location.

## VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 778 feet of the proposed drill path crosses wetlands that may be seasonally or temporarily inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| Wetland ID | Eggers & Reed  | Hydrologic Regime                       | Linear Feet |
|------------|----------------|---|-------------|
| HUC5121a1W | Sedge Meadow   | Saturated                               | 241.2       |
| HUC5121a1W | Shrub-Carr     | Saturated to Seasonally Inundated       | 18.3        |
| HUC5121a1W | Hardwood Swamp | Saturated, may be temporarily inundated | 243.1       |
| HUC5121a1W | Shallow Marsh  | Seasonally inundated                    | 68.5        |
| HUC5121a1W | Alder Thicket  | Saturated to Seasonally inundated       | 448.5       |

Low ground pressure equipment (e.g., UTV, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. Temporary access will be supported by construction matting as necessary, and a vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has



been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.

## **VII. Resumption of HDD Operations**

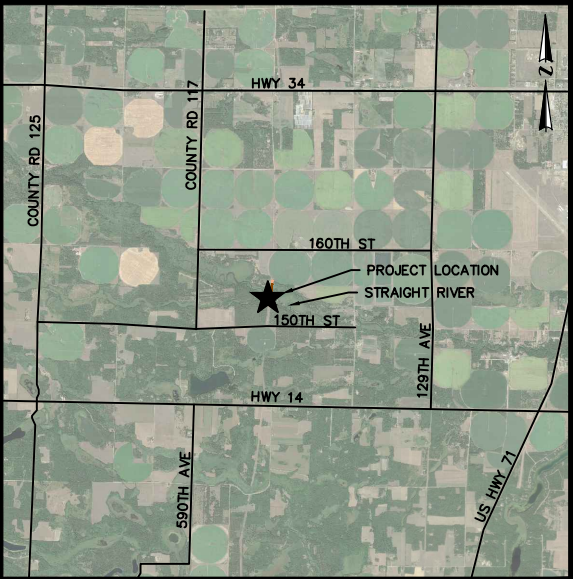
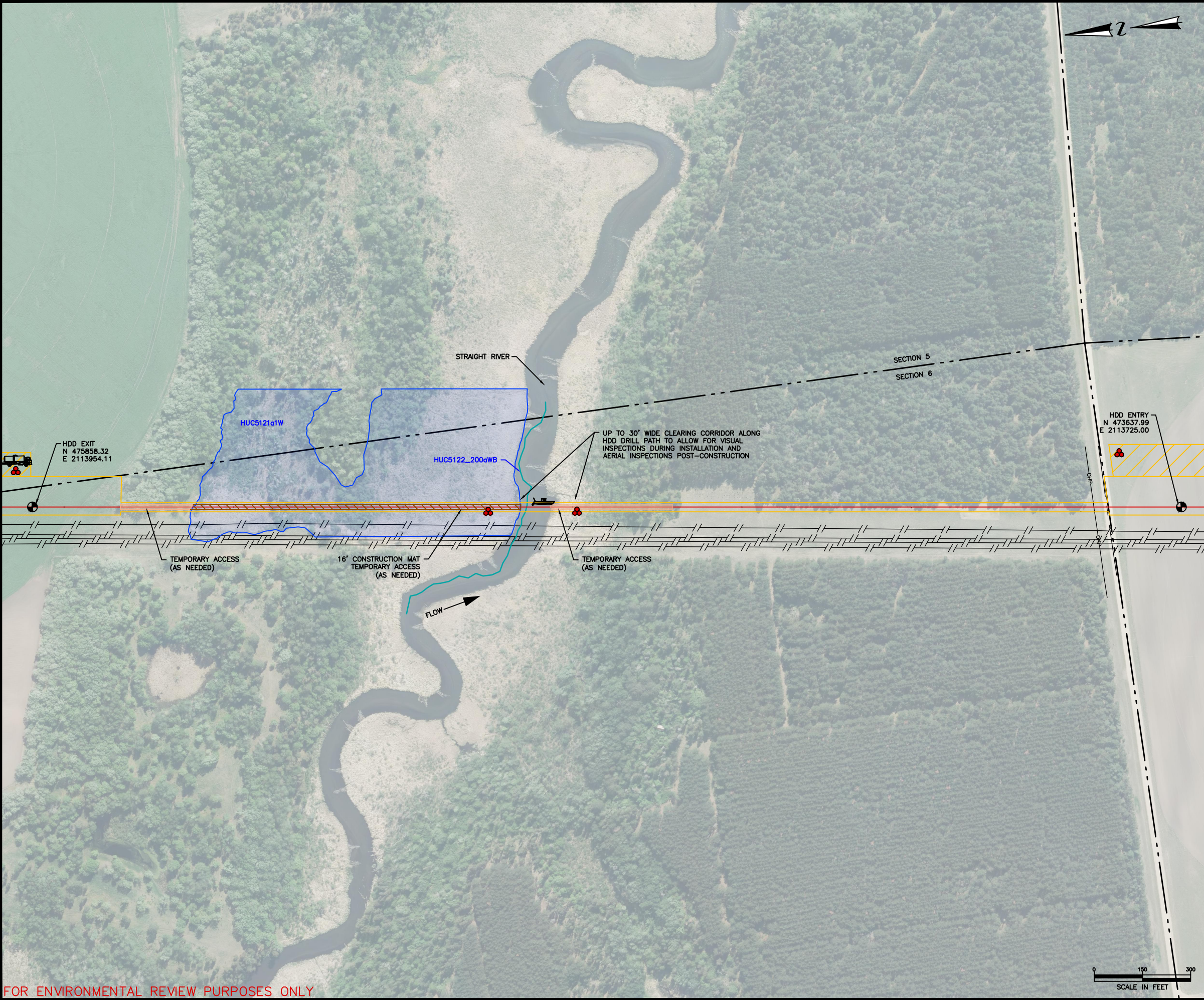
Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be assessed by representatives onsite for adequacy and capability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport into either a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

## **VIII. Crossing Photo**



**Photo 1.** *Straight River facing downstream (east) at the drill path.*





LOCATION PLAN

HUBBARD COUNTY, MINNESOTA  
SECTION 6, TOWNSHIP 139, RANGE 35  
SURVEY ID HUC5122\_200AWB

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY ACCESS
- xxx.x APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF STRAIGHT RIVER  
ENBRIDGE MP 974.2  
HUBBARD COUNTY, MN

|       |                         |
|-------|-------------------------|
| SCALE | DWG. NO.                |
| NOTED | B-93-5.84-PUC-33-REVV-B |



**Enbridge Energy, Limited Partnership  
Line 3 Replacement Project  
Inadvertent Release Response Plan  
Shell River**



**I. HDD Information**

|                                  |  |
|----------------------------------|--|
| Milepost: 983.7                  | Length of Wetlands: 1,256 feet               |
| HDD Length: 2,309 feet           | Waterbody Width (OHWM): 60 feet              |
| Estimated Duration: 45 days      | Distance from Waterbody to Entry: 1,085 feet |
| Risk of Inadvertent Return: Low* | Distance from Waterbody to Exit: 1,224 feet  |
| Enbridge ID Number: HUC5175aWB   | Depth of HDD Under Waterbody: 44 feet        |

\*Elevated risk last 140 feet of crossing.

**II. Stream Data**

The Shell River is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from March 15 to June 15. Rosgen surveys conducted in 2015 classify the crossing location within a non-wadeable reach of the stream, with the proposed drill profile located underneath a riffle feature of the streambed. The maximum depth within the 50-foot-permanent easement measured 4.7 feet from bankfull elevation, with an average thalweg (deepest channel) depth of 3.9 feet from bankfull elevation for a channel reach 50 feet upstream and downstream of the proposed centerline. Analysis of geomorphic survey data estimated total bank erosion studied for the 1,100-foot river reach at 10.0 tons per year (0.009 tons/year/foot). Additional stream hydraulic data is provided in the table below.

| Description                        | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|------------------------------------|-------------------|-----------------|-----------------|
| Baseflow <sup>a</sup>              |                   |                 |                 |
| 50% Bankfull Capacity <sup>a</sup> | -                 | -               | -               |
| 75% Bankfull Capacity <sup>a</sup> | -                 | -               | -               |
| 100% Bankfull Capacity             | 0.8               | 200.5           | 4.0             |

<sup>a</sup> Flows below bankfull and above baseflow elevation expand into wetlands. Velocity and depth similar to bankfull.

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 21.2 to 35.5 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 4.5   | 10.1      | 11.6     | 20.7      | 17.9     | 29.8      | 20.2     | 34.1      | 21.3     | 35.5      | 21.3     | 35.5      | 21.3     | 35.5      |

**III. Containment, Response and Clean-up Equipment**

Prior to commencing drilling operations, the following list of items will be transported and available at the Shell River crossing in accordance with Section 11.2 of the Environmental Protection Plan (“EPP”) and as depicted in the attached figure.

- A. Straw bales and staking
- B. Pre-filled sandbags
- C. Silt fence
- D. Plastic sheeting and/or geotextile
- E. Shovels, brooms, buckets, and other appropriate hand tools

- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- G. Fluid storage tank(s)
- H. Vacuum truck
- I. One small boat (non-motorized jon boat)
- J. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### **IV. Site Access and HDD Monitoring**

The attached figure outlines access points to the Shell River crossing. The direction of flow of the river has also been included. Access from the west and east sides will traverse forested and non-forested wetlands. There are minimal elevation changes and no access issues to the crossing location. Prior to commencing drilling operations, trees and brush will be cleared within proposed workspace, during which time construction mats will be placed along the drill path within wetlands as necessary. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### **V. Aquatic Release Response, Containment, and Clean-up**

Initial response to an inadvertent release in the Shell River will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures downstream of the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. The table below anticipates the variable conditions at the Shell River crossing and likely containment measure options that may be employed, including alternative materials that will be made available to enhance initial response if warranted. The in-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.



| Water Conditions                  |            | Distance from Water's Edge   |  |   |
|-----------------------------------|------------|--|--|---|
| Flow Velocity                     | Depth      | 0-10 Feet  | 10-20 Feet   | Greater than 20 feet                              |
| Still/Slow<br>( $< 1$ ft/sec)     | 0-2 Feet   | Sand bag isolation structure; vertical culvert   | Sand bag isolation structure; vertical culvert   | n/a   |
|                                   | 2-5 Feet   | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams; jersey barriers and plastic sheeting | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams; jersey barriers and plastic sheeting | Turbidity curtain; vertical culvert; bladder dams |
|                                   | $> 5$ Feet | n/a  | n/a  | n/a   |
| Slow/Moderate<br>(1-3 ft/sec)     | 0-2 Feet   | n/a  | n/a  | n/a   |
|                                   | 2-5 Feet   | n/a  | n/a  | n/a   |
|                                   | $> 5$ Feet | n/a  | n/a  | n/a   |
| Moderate/Rapid<br>( $> 3$ ft/sec) | 0-2 Feet   | n/a  | n/a  | n/a   |
|                                   | 2-5 Feet   | n/a  | n/a  | n/a   |
|                                   | $> 5$ Feet | n/a  | n/a  | n/a   |

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the in-water containment measure installation, and recovery efforts will be localized to that location.

## VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 836 feet of the proposed drill path crosses wetlands that may be seasonally or temporarily inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| Wetland ID | Eggers & Reed      | Hydrologic Regime                       | Linear Feet |
|------------|--------------------|---|-------------|
| HUC5174a1W | Hardwood Swamp     | Saturated, may to temporarily inundated | 279.0       |
| HUC5174a1W | Sedge Meadow       | Saturated                               | 163.9       |
| HUC5174a1W | Shrub-Carr         | Saturated to Seasonally inundated       | 556.6       |
| HUC5174a1W | Fresh (wet) Meadow | Saturated                               | 256.4       |

Low ground pressure equipment (e.g., UTV, argo, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. Temporary access will be supported by construction matting as necessary, and a vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.

## **VII. Resumption of HDD Operations**

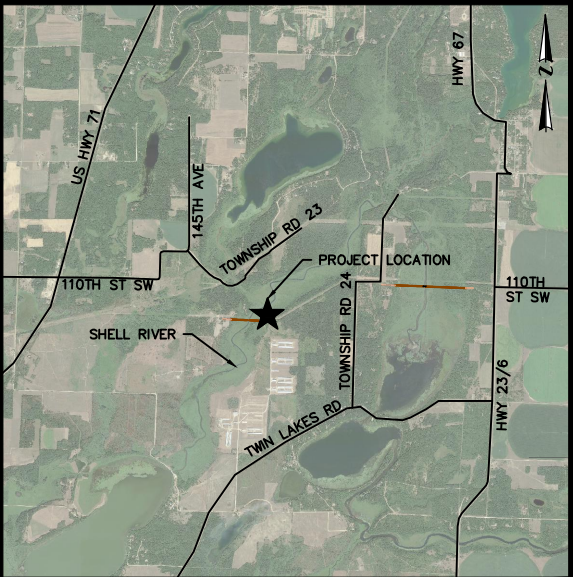
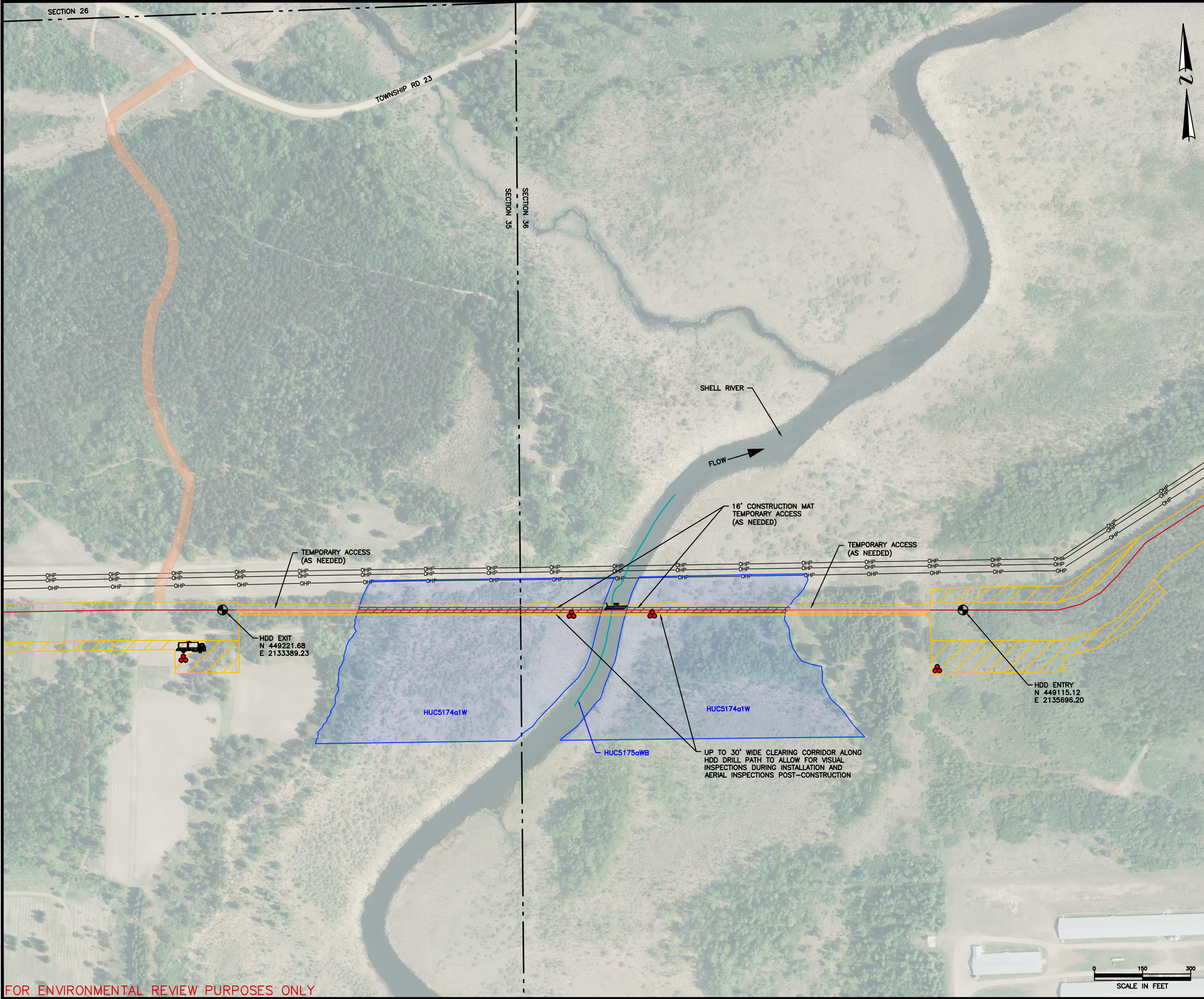
Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be assessed by representatives onsite for adequacy and capability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport into either a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

## **VIII. Crossing Photo**



***Photo 1. Shell River facing upstream (south) at the drill path.***





LOCATION PLAN

HUBBARD COUNTY, MINNESOTA  
SECTION 36, TOWNSHIP 139, RANGE 35  
SURVEY ID HUC5175AWB

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY ACCESS
- XXX.X APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF SHELL RIVER  
ENBRIDGE MP 983.7  
HUBBARD COUNTY, MN

|       |                         |
|-------|-------------------------|
| SCALE | DWG. NO.                |
| NOTED | B-93-5.84-PUC-37-REVV-B |



# Enbridge Energy, Limited Partnership

## Line 3 Replacement Project

### Inadvertent Release Response Plan

#### Oxbow Pond (Shell River)



## I. HDD Information

|                                    |  |
|------------------------------------|--|
| Milepost: 985.3                    | Length of Wetlands: 3,198 feet               |
| HDD Length: 4,413 feet             | Waterbody Width (OHWM): 70 feet              |
| Estimated Duration: 80 days        | Distance from Waterbody to Entry: 2,074 feet |
| Risk of Inadvertent Return: Low*   | Distance from Waterbody to Exit: 2,339 feet  |
| Enbridge ID Number: HUC5179_240aWB | Depth of HDD Under Waterbody: 53 feet        |

\*Elevated risk last 140 feet of crossing.

## II. Stream Data

The Oxbow Pond (Shell River) is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from March 15 to June 15. Rosgen surveys conducted in 2015 classify the crossing locations within a non-wadeable reach of the stream, with the proposed drill profile located underneath a riffle feature of the streambed. The maximum depth within the 50-foot-permanent easement measured 4.7 feet from bankfull elevation, with an average thalweg (deepest channel) depth of 4.44 feet from bankfull elevation for a channel reach 50 feet upstream and downstream of the proposed centerline. Analysis of geomorphic survey data estimated total bank erosion studied for the 1,300-foot river reach at 74.6 tons per year (0.057 tons/year/foot). Additional stream hydraulic data is provided in the table below.

| Description            | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|------------------------|-------------------|-----------------|-----------------|
| Baseflow <sup>a</sup>  | 0.8               | 91.9            | 1.9             |
| 50% Bankfull Capacity  | 0.8               | 145.9           | 2.6             |
| 75% Bankfull Capacity  | 0.9               | 194.6           | 3.0             |
| 100% Bankfull Capacity | 1.0               | 259.4           | 3.4             |

<sup>a</sup> Baseflow is approximately 1 cfs per square mile of drainage area.

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 21.3 to 35.5 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 4.5   | 10.1      | 11.6     | 20.7      | 17.9     | 29.8      | 20.2     | 34.1      | 21.3     | 35.5      | 21.3     | 35.5      | 21.3     | 35.5      |

## III. Containment, Response and Clean-up Equipment

Prior to commencing drilling operations, the following list of items will be transported and available at the Oxbow Pond (Shell River) crossing in accordance with Section 11.2 of the Environmental Protection Plan ("EPP") and as depicted in the attached figure.

- Straw bales and staking
- Pre-filled sandbags
- Silt fence
- Plastic sheeting and/or geotextile



- E. Shovels, brooms, buckets, and other appropriate hand tools
- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- G. Fluid storage tank(s)
- H. Vacuum truck
- I. One small boat (non-motorized jon boat)
- J. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### **IV. Site Access and HDD Monitoring**

The attached figure outlines access points to the Oxbow Pond (Shell River) crossing. The direction of flow of the river has also been included. Access from the east and west sides will traverse forested wetlands. There are approximately 30% slopes to the river at milepost 985.1 from the entry side, and again at milepost 985.7 from the exit side. A winch tractor will be made available, if needed, to assist with access to the crossing location. Prior to commencing drilling operations, trees will be cleared within proposed workspace, during which time construction mats will be placed along the drill path within wetlands as necessary. Additionally, a temporary free span bridge will be installed of the Oxbow Pond (Shell River). Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### **V. Aquatic Release Response, Containment, and Clean-up**

Initial response to an inadvertent release in the Shell River will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures downstream of the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. The table below anticipates the variable conditions at the Oxbow Pond (Shell River) crossing and likely containment measure options that be may employed, including alternative materials that will be made available to enhance initial response if warranted. The in-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.

| Water Conditions                  |            | Distance from Water's Edge   |  |  |
|-----------------------------------|------------|--|--|--|
| Flow Velocity                     | Depth      | 0-10 Feet  | 10-20 Feet   | Greater than 20 feet                               |
| Still/Slow<br>( $< 1$ ft/sec)     | 0-2 Feet   | Sand bag isolation structure; vertical culvert   | Sand bag isolation structure; vertical culvert   | Sand bag isolation and structure; vertical culvert |
|                                   | 2-5 Feet   | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams; jersey barriers and plastic sheeting | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams; jersey barriers and plastic sheeting | Turbidity curtain; vertical culvert; bladder dams  |
|                                   | $> 5$ Feet | n/a  | n/a  | n/a  |
| Slow/Moderate<br>(1-3 ft/sec)     | 0-2 Feet   | n/a  | n/a  | n/a  |
|                                   | 2-5 Feet   | n/a  | n/a  | n/a  |
|                                   | $> 5$ Feet | n/a  | n/a  | n/a  |
| Moderate/Rapid<br>( $> 3$ ft/sec) | 0-2 Feet   | n/a  | n/a  | n/a  |
|                                   | 2-5 Feet   | n/a  | n/a  | n/a  |
|                                   | $> 5$ Feet | n/a  | n/a  | n/a  |

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the in-water containment measure installation, and recovery efforts will be localized to that location.

## VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 2,420 feet of the proposed drill path crosses wetlands that may be seasonally or temporarily inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| Wetland ID | Eggers & Reed    | Hydrologic Regime                       | Linear Feet |
|------------|------------------|---|-------------|
| HUC5179a1W | Hardwood Swamp   | Saturated, may be temporarily inundated | 110.8       |
| HUC5179a1W | Shrub-Carr       | Saturated to Seasonally inundated       | 1,053.1     |
| HUC5179a1W | Shallow Marsh    | Seasonally inundated                    | 144.1       |
| HUC5179a1W | Sedge Meadow     | Saturated                               | 777.9       |
| HUC5179a1W | Coniferous Swamp | Saturated, may be temporarily inundated | 1,111.6     |

Low ground pressure equipment (e.g., UTV, argo, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. Temporary access will be supported by construction matting as necessary, and a vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.



## **VII. Resumption of HDD Operations**

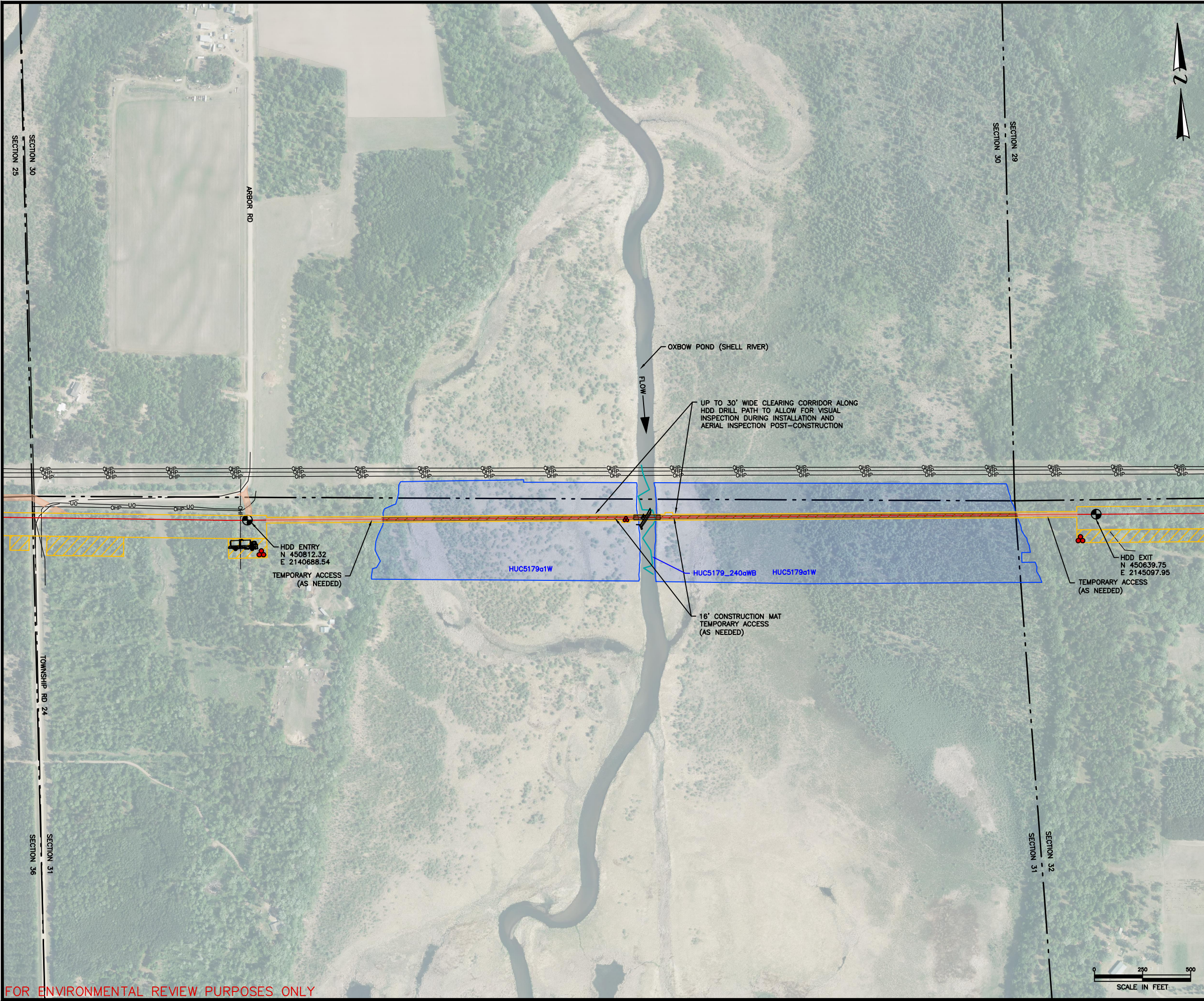
Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be assessed by representatives onsite for adequacy and capability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport into either a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

## **VIII. Crossing Photo**



**Photo 1.** *Oxbow Pond (Shell River) from the east bank facing upstream (north).*





LOCATION PLAN

HUBBARD COUNTY, MINNESOTA  
SECTION 31, TOWNSHIP 139, RANGE 34  
SURVEY ID HUC5179\_240AWB

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY BRIDGE
- TEMPORARY ACCESS
- APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF OXBOW POND (SHELL RIVER)  
ENBRIDGE MP 985.3  
HUBBARD COUNTY, MN

|       |                         |
|-------|-------------------------|
| SCALE | DWG. NO.                |
| NOTED | B-93-5.84-PUC-38-REVV-B |



**Enbridge Energy, Limited Partnership  
Line 3 Replacement Project  
Inadvertent Release Response Plan  
Shell River**



**I. HDD Information**

|                                  |  |
|----------------------------------|--|
| Milepost: 991.2                  | Length of Wetlands: N/A                    |
| HDD Length: 1,589 feet           | Waterbody Width (OHWM): 210 feet           |
| Estimated Duration: 45 days      | Distance from Waterbody to Entry: 719 feet |
| Risk of Inadvertent Return: Low* | Distance from Waterbody to Exit: 870 feet  |
| Enbridge ID Number: WA002aWB     | Depth of HDD Under Waterbody: 40 feet      |

\*Elevated risk last 60 feet of crossing.

**II. Stream Data**

The Shell River is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from March 15 to June 15. Rosgen surveys conducted in 2015 classify the crossing location within a wadeable reach of the stream, with the proposed drill profile located underneath a riffle feature of the streambed. The maximum depth within the 50-foot-permanent easement measured 2.4 feet from bankfull elevation, with an average thalweg (deepest channel) depth of 2.36 feet from bankfull elevation for a channel reach 50 feet upstream and downstream of the proposed centerline. Analysis of geomorphic survey data estimated total bank erosion studied for the 1,100-foot river reach at 46.5 tons per year (0.04 tons/year/foot). Additional stream hydraulic data is provided in the table below.

| Description            | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|------------------------|-------------------|-----------------|-----------------|
| Baseflow <sup>a</sup>  | 0.8               | 127.7           | 1.6             |
| 50% Bankfull Capacity  | 1.0               | 268.9           | 2.2             |
| 75% Bankfull Capacity  | 1.1               | 358.6           | 2.5             |
| 100% Bankfull Capacity | 1.2               | 478.1           | 3.0             |

<sup>a</sup> Baseflow is approximately 1 cfs per square mile of drainage area.

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 5.1 to 7.6 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 1.2   | 2.2       | 2.8      | 4.4       | 4.2      | 6.3       | 4.8      | 7.3       | 5.0      | 7.5       | 5.1      | 7.6       | 5.1      | 7.6       |

**III. Containment, Response and Clean-up Equipment**

Prior to commencing drilling operations, the following list of items will be transported and available at the Shell River crossing in accordance with Section 11.2 of the Environmental Protection Plan (“EPP”) and as depicted in the attached figure.

- A. Straw bales and staking
- B. Pre-filled sandbags
- C. Silt fence
- D. Plastic sheeting and/or geotextile
- E. Shovels, brooms, buckets, and other appropriate hand tools

- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- G. Fluid storage tank(s)
- H. Vacuum truck
- I. One small boat (non-motorized jon boat)
- J. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### **IV. Site Access and HDD Monitoring**

The attached figure outlines access points to the Shell River crossing. The direction of flow of the river has also been included. Access from the north and south sides will traverse upland forested areas. There is approximately a 20% slope to the river from the entry side, and a 10% slope from the exit side, neither of which will present access issues to the crossing location. Prior to commencing drilling operations, trees will be cleared within proposed workspace along the drill path. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### **V. Aquatic Release Response, Containment, and Clean-up**

Initial response to an inadvertent release in the Shell River will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures downstream of the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. The table below anticipates the variable conditions at the Shell River crossing and likely containment measure options that may be employed, including alternative materials that will be made available to enhance initial response if warranted. The in-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.



| Water Conditions                  |          | Distance from Water's Edge   |   |  |
|-----------------------------------|----------|--|---|--|
| Flow Velocity                     | Depth    | 0-10 Feet  | 10-20 Feet  | Greater than 20 feet   |
| Still/Slow<br>( $< 1$ ft/sec)     | 0-2 Feet | Sand bag isolation structure; vertical culvert   | Sand bag isolation structure; vertical culvert  | Sand bag isolation structure; vertical culvert                                 |
|                                   | 2-5 Feet | n/a  | n/a   | n/a  |
|                                   | > 5 Feet | n/a  | n/a   | n/a  |
| Slow/Moderate<br>(1-3 ft/sec)     | 0-2 Feet | Sandbag cofferdam; vertical culvert  | Sandbag cofferdam; vertical culvert; geotextile pipeline weights cofferdam; jersey barriers with plastic sheeting                 | Sandbag cofferdam; vertical culvert; geotextile pipeline weights; bladder dams |
|                                   | 2-5 Feet | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams; jersey barriers and plastic sheeting | Turbidity curtain; geotextile pipeline weights cofferdam; vertical culvert; bladder dams; water gates (as upstream diversion aid) | Turbidity curtain; bladder dams; water gates (as upstream diversion aid)       |
|                                   | > 5 Feet | n/a  | n/a   | n/a  |
| Moderate/Rapid<br>( $> 3$ ft/sec) | 0-2 Feet | n/a  | n/a   | n/a  |
|                                   | 2-5 Feet | n/a  | n/a   | n/a  |
|                                   | > 5 Feet | n/a  | n/a   | n/a  |

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the in-water containment measure installation, and recovery efforts will be localized to that location.

## VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. The nearest wetland is a floodplain forest, located approximately 105 feet from the proposed drill path. Floodplain forests may be temporarily inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (i.e. straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

Low ground pressure equipment (e.g., UTV, argo, morooka) will conduct limited passes to assist personnel carrying containment materials to a release. A vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed shown in the attached figure, Enbridge will mobilize lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.

## VII. Resumption of HDD Operations

Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be assessed by representatives onsite for adequacy and capability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually

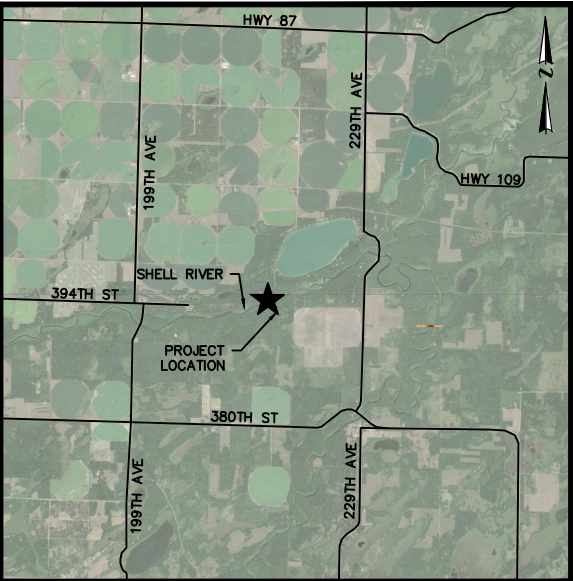
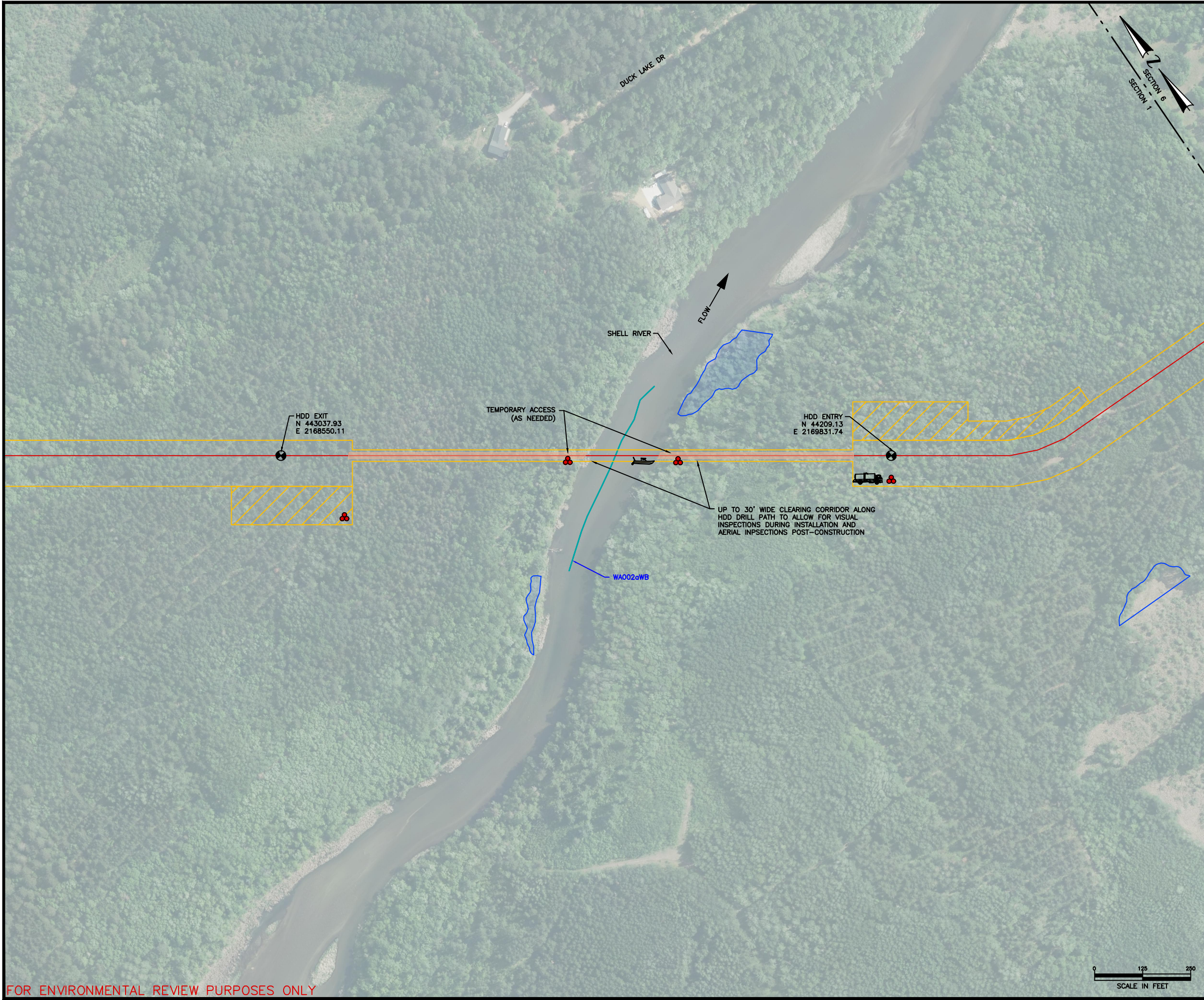
monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport into either a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

#### **VIII. Crossing Photo**



**Photo 1.** *Shell River facing downstream (east) at the drill path.*





LOCATION PLAN

WADENA COUNTY, MINNESOTA  
SECTION 1, TOWNSHIP 138, RANGE 34  
SURVEY ID WAO02AWB

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY ACCESS
- APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF SHELL RIVER  
ENBRIDGE MP 991.2  
WADENA COUNTY, MN

|       |                         |
|-------|-------------------------|
| SCALE | DWG. NO.                |
| NOTED | B-93-5.84-PUC-39-REVV-B |



# Enbridge Energy, Limited Partnership

## Line 3 Replacement Project

### Inadvertent Release Response Plan

#### Crow Wing River



#### I. HDD Information

Milepost: 993.3  
HDD Length: 1,816 feet  
Estimated Duration: 45 days  
Risk of Inadvertent Return: Low\*  
Enbridge ID Number: WA006aWB

Length of Wetlands: 314 feet  
Waterbody Width (OHWM): 210 feet  
Distance from Waterbody to Entry: 1025 feet  
Distance from Waterbody to Exit: 791 feet  
Depth of HDD Under Waterbody: 40 feet

\*Elevated risk last 40 feet of crossing.

#### II. Stream Data

The Crow Wing River is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from March 15 to June 15. Rosgen surveys conducted in 2015 classify the crossing location within a non-wadeable reach of the stream, with the proposed drill profile located underneath a riffle feature of the streambed. The maximum depth within the 50-foot-permanent easement measured 2.9 feet from bankfull elevation, with an average thalweg (deepest channel) depth of 2.77 feet from bankfull elevation for a channel reach 50 feet upstream and downstream of the proposed centerline. Analysis of geomorphic survey data estimated total bank erosion studied for the 1,160-foot river reach at 332.1 tons per year (0.29 tons/year/foot). Additional stream hydraulic data is provided in the table below.

| Description            | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|------------------------|-------------------|-----------------|-----------------|
| Baseflow <sup>a</sup>  | 1.1               | 377.5           | 2.8             |
| 50% Bankfull Capacity  | 1.3               | 562.6           | 3.4             |
| 75% Bankfull Capacity  | 1.4               | 750.1           | 3.9             |
| 100% Bankfull Capacity | 1.5               | 1,000.1         | 4.5             |

<sup>a</sup> Baseflow is approximately 1 cfs per square mile of drainage area.

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 5.1 to 7.6 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 1.2   | 2.2       | 2.8      | 4.4       | 4.2      | 6.3       | 4.8      | 7.3       | 5.0      | 7.5       | 5.1      | 7.6       | 5.1      | 7.6       |

#### III. Containment, Response and Clean-up Equipment

Prior to commencing drilling operations, the following list of items will be transported and available at the Crow Wing River crossing in accordance with Section 11.2 of the Environmental Protection Plan ("EPP") and as depicted in the attached figure.

- Straw bales and staking
- Pre-filled sandbags
- Silt fence
- Plastic sheeting and/or geotextile
- Shovels, brooms, buckets, and other appropriate hand tools



- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- G. Fluid storage tank(s)
- H. Vacuum truck
- I. One small boat (non-motorized jon boat)
- J. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### **IV. Site Access and HDD Monitoring**

The attached figure outlines access points to the Crow Wing River crossing. The direction of flow of the river has also been included. Access from the west and east sides will traverse forested wetlands. There are approximately a 20% slopes to the river from both sides of the crossing, neither of which will present access issues to the crossing location. Prior to commencing drilling operations, trees will be cleared within proposed workspace, during which time construction mats will be placed along the drill path within wetlands as necessary. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### **V. Aquatic Release Response, Containment, and Clean-up**

Initial response to an inadvertent release in the Crow Wing River will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures downstream of the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. The table below anticipates the variable conditions at the Crow Wing River crossing and likely containment measure options that may be employed, including alternative materials that will be made available to enhance initial response if warranted. The in-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.

| Water Conditions                  |            | Distance from Water's Edge   |   |  |
|-----------------------------------|------------|--|---|--|
| Flow Velocity                     | Depth      | 0-10 Feet  | 10-20 Feet  | Greater than 20 feet   |
| Still/Slow<br>( $< 1$ ft/sec)     | 0-2 Feet   | Sand bag isolation structure; vertical culvert   | n/a   | n/a  |
|                                   | 2-5 Feet   | n/a  | n/a   | n/a  |
|                                   | $> 5$ Feet | n/a  | n/a   | n/a  |
| Slow/Moderate<br>(1-3 ft/sec)     | 0-2 Feet   | Sandbag cofferdam; vertical culvert  | Sandbag cofferdam; vertical culvert; geotextile pipeline weights cofferdam; jersey barriers with plastic sheeting                 | Sandbag cofferdam; vertical culvert; geotextile pipeline weights; bladder dams |
|                                   | 2-5 Feet   | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams; jersey barriers and plastic sheeting | Turbidity curtain; geotextile pipeline weights cofferdam; vertical culvert; bladder dams; water gates (as upstream diversion aid) | Turbidity curtain; bladder dams; water gates (as upstream diversion aid)       |
|                                   | $> 5$ Feet | n/a  | n/a   | n/a  |
| Moderate/Rapid<br>( $> 3$ ft/sec) | 0-2 Feet   | n/a  | n/a   | n/a  |
|                                   | 2-5 Feet   | n/a  | n/a   | n/a  |
|                                   | $> 5$ Feet | n/a  | n/a   | n/a  |

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the in-water containment measure installation, and recovery efforts will be localized to that location.

## VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 314 feet of the proposed drill path crosses wetlands that may be seasonally or temporarily inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| Wetland ID | Eggers & Reed     | Hydrologic Regime                 | Linear Feet |
|------------|-------------------|-----------------------------------|-------------|
| WA006a1W   | Floodplain Forest | Temporarily inundated             | 11.1        |
| WA006b1W   | Shrub-Carr        | Saturated to Seasonally inundated | 138.7       |
| WA006b1W   | Floodplain Forest | Temporarily inundated             | 164.0       |

Low ground pressure equipment (e.g., UTV, argo, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. Temporary access will be supported by construction matting as necessary, and a vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.



## **VII. Resumption of HDD Operations**

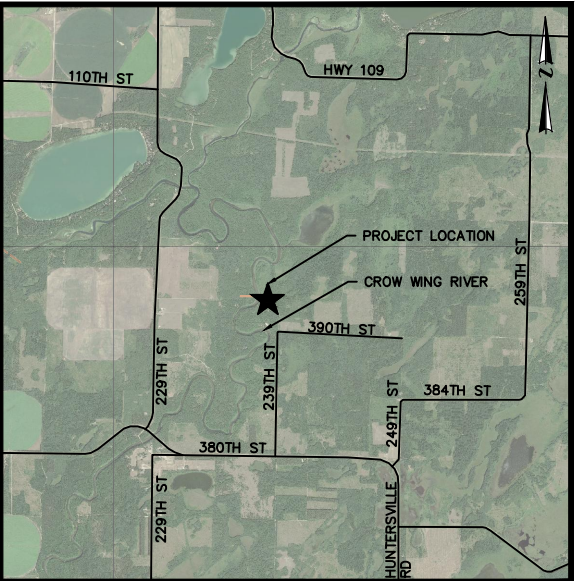
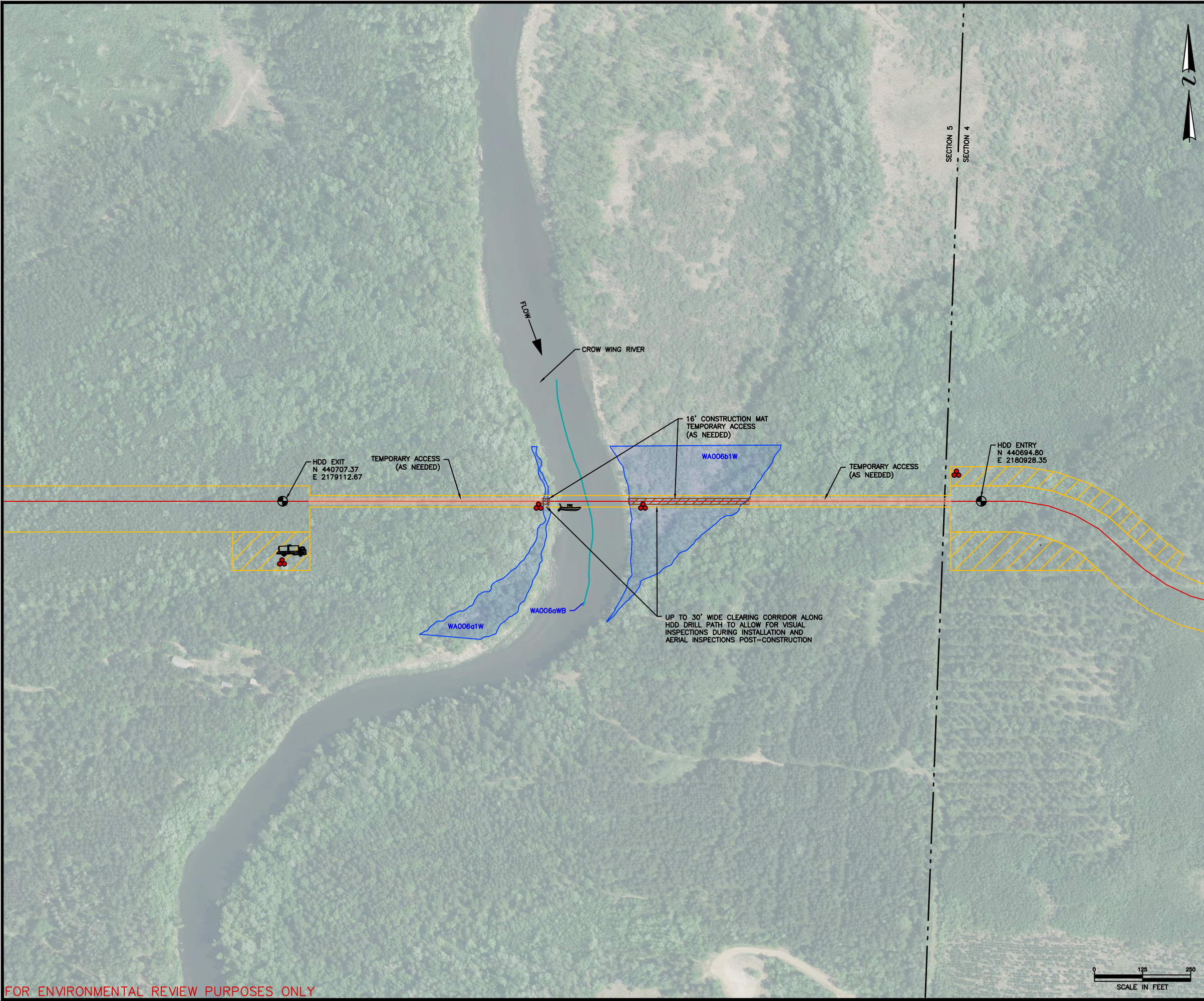
Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be assessed by representatives onsite for adequacy and ability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport into either a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

## **VIII. Crossing Photo**



***Photo 1. Crow Wing River facing downstream (south) at the drill path.***





LOCATION PLAN

WADENA COUNTY, MINNESOTA  
SECTION 5, TOWNSHIP 138, RANGE 33  
SURVEY ID WA006AWB

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY ACCESS
- APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF CROW WING RIVER  
ENBRIDGE MP 993.3  
WADENA COUNTY, MN

|       |                         |
|-------|-------------------------|
| SCALE | DWG. NO.                |
| NOTED | B-93-5.84-PUC-40-REVV-B |



**Enbridge Energy, Limited Partnership  
Line 3 Replacement Project  
Inadvertent Release Response Plan  
Pine River**



**I. HDD Information**

|                                  |  |
|----------------------------------|--|
| Milepost: 1017.3                 | Length of Wetlands: 40 feet                |
| HDD Length: 1,433                | Waterbody Width (OHWM): 100 feet           |
| Estimated Duration: 30 days      | Distance from Waterbody to Entry: 725 feet |
| Risk of Inadvertent Return: Low* | Distance from Waterbody to Exit: 708 feet  |
| Enbridge ID Number: CA063aWB     | Depth of HDD Under Waterbody: 40 feet      |

\*Elevated risk last 40 feet of crossing.

**II. Stream Data**

The Pine River is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from March 15 to June 15. Rosgen surveys conducted in 2015 classify the crossing location within a wadeable reach of the stream, with the proposed drill profile located underneath a glide feature of the streambed. The maximum depth within the 50-foot permanent easement measured 2.6 feet from bankfull elevation, with an average thalweg (deepest channel) depth of 2.5 feet from bankfull elevation for a channel reach 50 feet upstream and downstream of the proposed centerline. Analysis of geomorphic survey data estimated total bank erosion for the studied 1300-foot river reach at 5.4 tons per year (0.004 tons/year/foot). Additional stream hydraulic data is provided in the table below.

| Description                   | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|-------------------------------|-------------------|-----------------|-----------------|
| <b>Baseflow <sup>a</sup></b>  | 0.9               | 31.2            | 1.0             |
| <b>50% Bankfull Capacity</b>  | 1.1               | 68.0            | 1.4             |
| <b>75% Bankfull Capacity</b>  | 1.5               | 157.1           | 2.0             |
| <b>100% Bankfull Capacity</b> | 1.8               | 300.1           | 2.7             |

<sup>a</sup> Baseflow is approximately 1 cfs per square mile of drainage area.

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 4.9 to 7.4 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 1.2   | 2.3       | 2.7      | 4.3       | 4.2      | 6.2       | 4.8      | 7.3       | 4.9      | 7.4       | 4.9      | 7.4       | 4.9      | 7.4       |

**III. Containment, Response and Clean-up Equipment**

Prior to commencing drilling operations, the following list of items will be transported and available at the Pine River crossing in accordance with Section 11.2 of the Environmental Protection Plan (“EPP”) and as depicted in the attached figure.

- A. Straw bales and staking
- B. Pre-filled sandbags
- C. Silt fence
- D. Plastic sheeting and/or geotextile
- E. Shovels, brooms, buckets, and other appropriate hand tools

- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- G. Fluid storage tank(s)
- H. Vacuum truck
- I. One small boat (non-motorized jon boat)
- J. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### **IV. Site Access and HDD Monitoring**

The attached figure outlines access points to the Pine River crossing. The direction of flow of the river has also been included. Access from the west and east sides will traverse forested uplands and wetlands. Prior to commencing drilling operations, trees will be cleared within proposed workspace, during which time construction mats will be placed along the drill path within as necessary. Additionally, a temporary free span bridge will be installed over the Pine River. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### **V. Aquatic Release Response, Containment, and Clean-up**

Initial response to an inadvertent release in the Pine River will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures downstream of the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. The table below anticipates the variable conditions at the Pine River crossing and likely containment measure options employed, including alternative materials that will be made available to enhance initial response if warranted. The in-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.



| Water Conditions                  |            | Distance from Water's Edge   |   |  |
|-----------------------------------|------------|--|---|--|
| Flow Velocity                     | Depth      | 0-10 Feet  | 10-20 Feet  | Greater than 20 feet   |
| Still/Slow<br>( $< 1$ ft/sec)     | 0-2 Feet   | Sand bag isolation structure; vertical culvert   | n/a   | n/a  |
|                                   | 2-5 Feet   | n/a  | n/a   | n/a  |
|                                   | $> 5$ Feet | n/a  | n/a   | n/a  |
| Slow/Moderate<br>(1-3 ft/sec)     | 0-2 Feet   | Sandbag cofferdam; vertical culvert  | Sandbag cofferdam; vertical culvert; geotextile pipeline weights cofferdam; jersey barriers with plastic sheeting                 | Sandbag cofferdam; vertical culvert; geotextile pipeline weights; bladder dams |
|                                   | 2-5 Feet   | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams; jersey barriers and plastic sheeting | Turbidity curtain; geotextile pipeline weights cofferdam; vertical culvert; bladder dams; water gates (as upstream diversion aid) | Turbidity curtain; bladder dams; water gates (as upstream diversion aid)       |
|                                   | $> 5$ Feet | n/a  | n/a   | n/a  |
| Moderate/Rapid<br>( $> 3$ ft/sec) | 0-2 Feet   | n/a  | n/a   | n/a  |
|                                   | 2-5 Feet   | n/a  | n/a   | n/a  |
|                                   | $> 5$ Feet | n/a  | n/a   | n/a  |

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the in-water containment measure installation, and recovery efforts will be localized to that location.

## VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 40 feet of the proposed drill path crosses wetlands that may be temporarily inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| Wetland ID | Eggers & Reed | Hydrologic Regime                 | Linear Feet |
|------------|---------------|-----------------------------------|-------------|
| CA064bW    | Alder Thicket | Saturated to Seasonally inundated | 39.9        |

Low ground pressure equipment (e.g., UTV, argo, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. Temporary access will be supported by construction matting as necessary, and a vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.

## **VII. Resumption of HDD Operations**

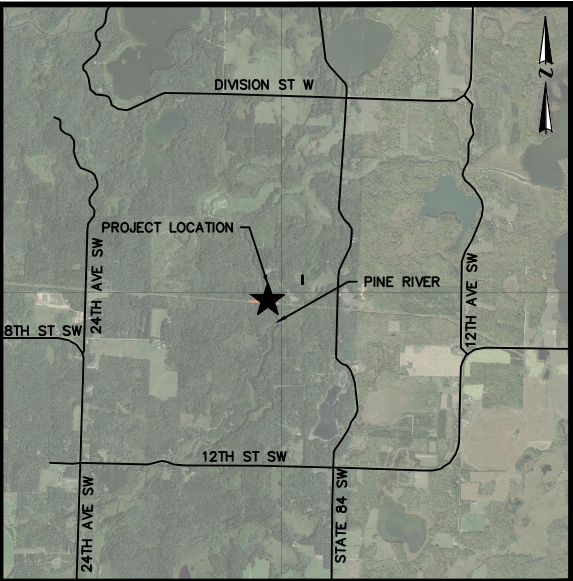
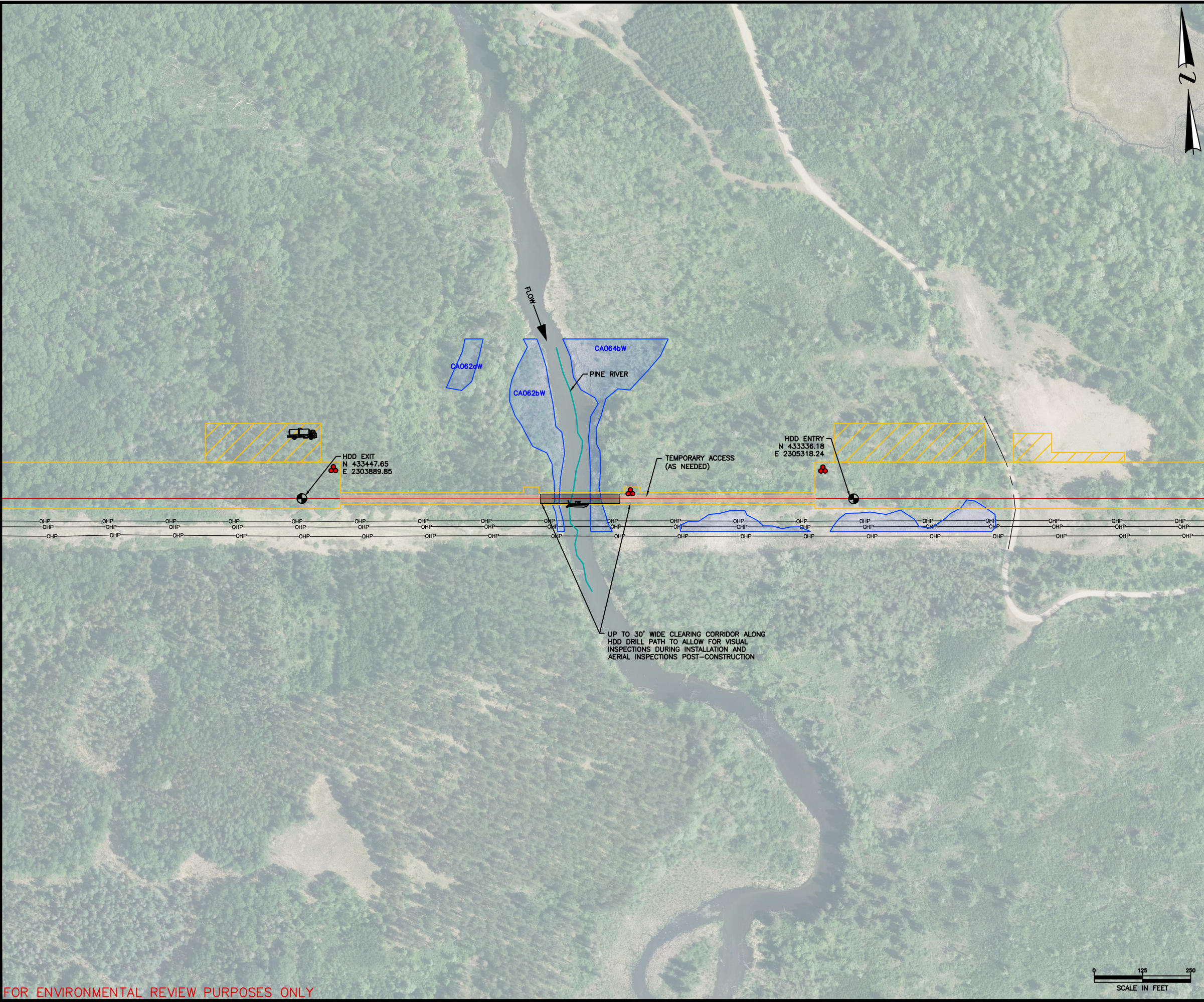
Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be assessed by representatives onsite for adequacy and ability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport into either a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

## **VIII. Crossing Photo**



**Photo 1.** *Pine River facing downstream (south) at the drill path.*





LOCATION PLAN

CASS COUNTY, MINNESOTA  
SECTION 8, TOWNSHIP 138, RANGE 29  
SURVEY ID CA063aWB

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY BRIDGE
- TEMPORARY ACCESS
- APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF PINE RIVER  
ENBRIDGE MP 1017.3  
CASS COUNTY, MN

|       |                         |
|-------|-------------------------|
| SCALE | DWG. NO.                |
| NOTED | B-93-5.84-PUC-44-REVV-B |



# Enbridge Energy, Limited Partnership

## Line 3 Replacement Project

### Inadvertent Release Response Plan

#### Daggett Brook



#### I. HDD Information

|                                  |  |
|----------------------------------|--|
| Milepost: 1037.4                 | Length of Wetlands: 684 feet                 |
| HDD Length: 2,262 feet           | Waterbody Width (OHWM): 40.0 feet            |
| Estimated Duration: 50 days      | Distance from Waterbody to Entry: 1,222 feet |
| Risk of Inadvertent Return: Low* | Distance from Waterbody to Exit: 1,040 feet  |
| Enbridge ID Number: CA133aWB     | Depth of HDD Under Waterbody: 40             |

\*Elevated risk last 80 feet of crossing.

#### II. Stream Data

The Daggett Brook is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from March 15 to June 15. Rosgen surveys conducted in 2015 classify the crossing location within a non-wadeable reach of the stream, with the proposed drill profile located underneath a riffle feature of the streambed. The maximum depth within the 50-foot permanent easement measured 2.6 feet from bankfull elevation. The studied 1,200-foot river reach is impounded by beaver dams and therefore not applicable to a geomorphic survey. Additional stream hydraulic data is provided in the table below.

| Description                         | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|-------------------------------------|-------------------|-----------------|-----------------|
| Baseflow <sup>a</sup>               |                   |                 |                 |
| 50% Bankfull Capacity <sup>a</sup>  | -                 | -               | -               |
| 75% Bankfull Capacity <sup>a</sup>  | -                 | -               | -               |
| 100% Bankfull Capacity <sup>a</sup> | -                 | -               | 2.6             |
| <sup>a</sup> Impounded site.        |                   |                 |                 |

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 20.5 to 34.5 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 4.9   | 10.5      | 11.2     | 20.2      | 17.3     | 28.8      | 20.2     | 34.1      | 20.5     | 34.5      | 20.5     | 34.5      | 20.5     | 34.5      |

#### III. Containment, Response and Clean-up Equipment

Prior to commencing drilling operations, the following list of items will be transported and available at the Daggett Brook crossing in accordance with Section 11.2 of the Environmental Protection Plan (“EPP”) and as depicted in the attached figure.

- A. Straw bales and staking
- B. Pre-filled sandbags
- C. Silt fence
- D. Plastic sheeting and/or geotextile
- E. Shovels, brooms, buckets, and other appropriate hand tools
- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- G. Fluid storage tank(s)



- H. Vacuum truck
- I. One small boat (non-motorized jon boat)
- J. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### **IV. Site Access and HDD Monitoring**

The attached figure outlines access points to the Daggett Brook crossing. The direction of flow of the river has also been included. Access from the west and east sides will traverse non-forested wetlands and upland forested areas. Prior to commencing drilling operations, trees and brush will be cleared within proposed workspace, during which time construction mats will be placed along the drill path within wetlands as necessary. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### **V. Aquatic Release Response, Containment, and Clean-up**

Initial response to an inadvertent release in the Daggett Brook will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures downstream of the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. The table below anticipates the variable conditions at the Daggett Brook crossing and likely containment measure options employed, including alternative materials that will be made available to enhance initial response if warranted. The in-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.

| Water Conditions                  |            | Distance from Water's Edge   |  |                      |
|-----------------------------------|------------|--|--|----------------------|
| Flow Velocity                     | Depth      | 0-10 Feet  | 10-20 Feet   | Greater than 20 feet |
| Still/Slow<br>( $< 1$ ft/sec)     | 0-2 Feet   | Sand bag isolation structure; vertical culvert   | Sand bag isolation structure; vertical culvert   | n/a                  |
|                                   | 2-5 Feet   | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams; jersey barriers and plastic sheeting | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams; jersey barriers and plastic sheeting | n/a                  |
|                                   | $> 5$ Feet | n/a  | n/a  | n/a                  |
| Slow/Moderate<br>(1-3 ft/sec)     | 0-2 Feet   | n/a  | n/a  | n/a                  |
|                                   | 2-5 Feet   | n/a  | n/a  | n/a                  |
|                                   | $> 5$ Feet | n/a  | n/a  | n/a                  |
| Moderate/Rapid<br>( $> 3$ ft/sec) | 0-2 Feet   | n/a  | n/a  | n/a                  |
|                                   | 2-5 Feet   | n/a  | n/a  | n/a                  |
|                                   | $> 5$ Feet | n/a  | n/a  | n/a                  |

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial turbidity curtain installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the curtain installation, and recovery efforts will be localized to that location.

## VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 684 feet of the proposed drill path crosses wetlands that may be temporarily inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| Wetland ID | Eggers & Reed | Hydrologic Regime                 | Linear Feet |
|------------|---------------|-----------------------------------|-------------|
| CA134dW    | Shallow Marsh | Seasonally inundated              | 356.2       |
| CA134dW    | Shrub-Carr    | Saturated to Seasonally inundated | 328.0       |

Low ground pressure equipment (e.g., UTV, argo, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. Temporary access will be supported by construction matting as necessary, and a vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.

## VII. Resumption of HDD Operations



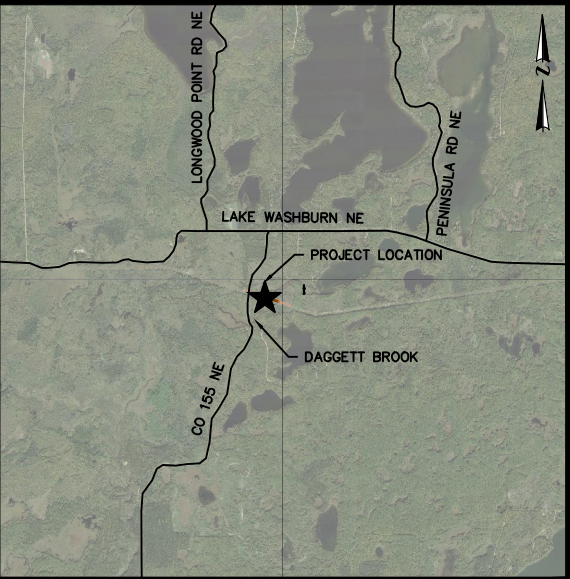
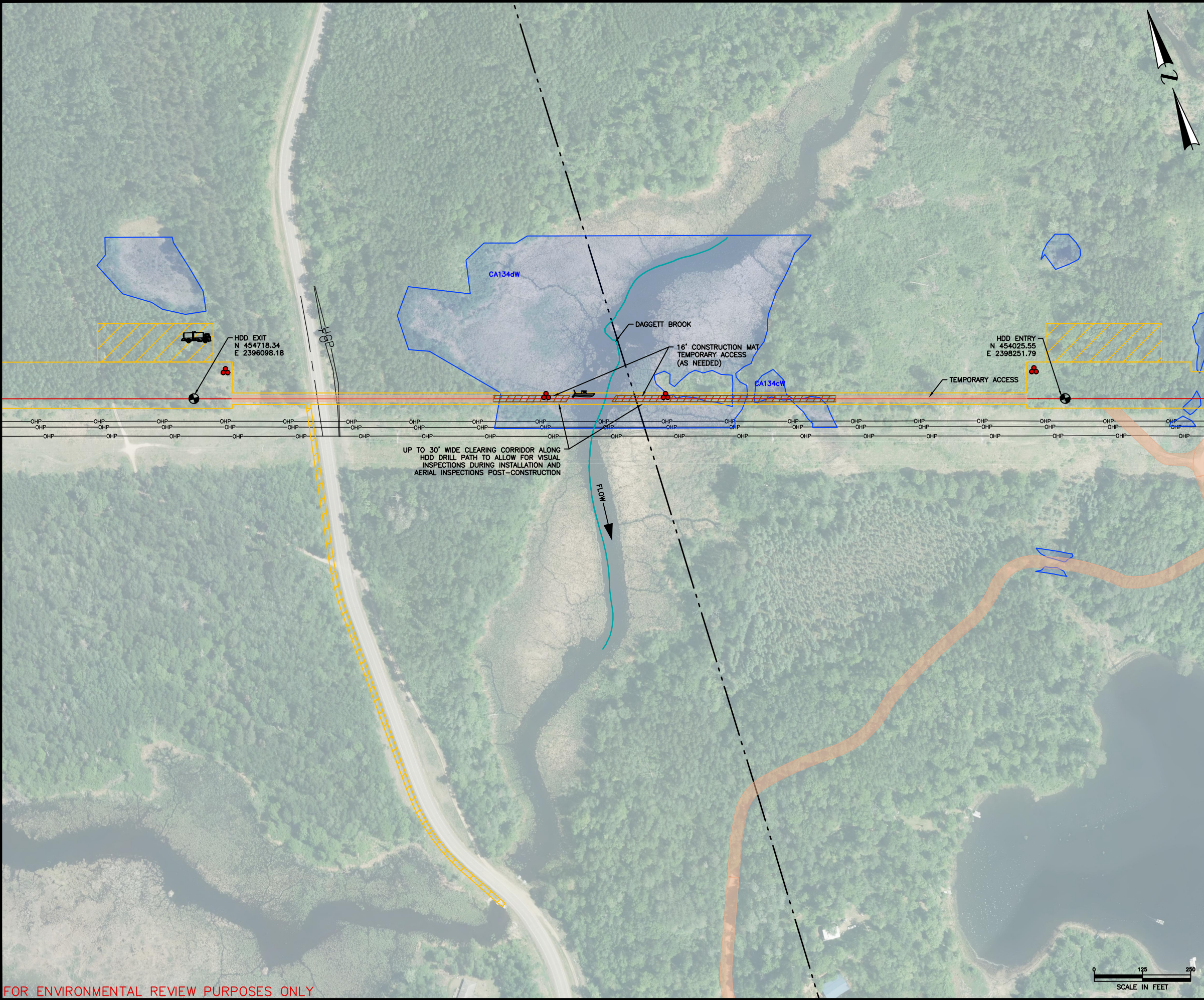
Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be assessed by representatives onsite for adequacy and ability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport into either into a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

#### **VIII. Crossing Photo**



***Photo 1. Daggett Brook facing downstream (south) at the drill path.***





LOCATION PLAN

CASS COUNTY, MINNESOTA  
SECTION 19, TOWNSHIP 139, RANGE 26  
SURVEY ID CA133aWB

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY ACCESS
- APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF DAGGETT BROOK  
ENBRIDGE MP 1037.4  
CASS COUNTY, MN

|       |                         |
|-------|-------------------------|
| SCALE | DWG. NO.                |
| NOTED | B-93-5.84-PUC-47-REVV-B |



**Enbridge Energy, Limited Partnership  
Line 3 Replacement Project  
Inadvertent Release Response Plan  
Willow River**



**I. HDD Information**

|                                  |  |
|----------------------------------|--|
| Milepost: 1066.4                 | Length of Wetlands: 1,023 feet             |
| HDD Length: 1,418 feet           | Waterbody Width (OHWM): 30 feet            |
| Estimated Duration: 50 days      | Distance from Waterbody to Entry: 957 feet |
| Risk of Inadvertent Return: Low* | Distance from Waterbody to Exit: 461 feet  |
| Enbridge ID Number: s-51n24w31-b | Depth of HDD Under Waterbody: 43 feet      |

\*Elevated risk last 50 feet of crossing.

**II. Stream Data**

The Willow River is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from April 1 to June 30. Rosgen surveys conducted in 2015 classify the crossing location within a non-wadeable reach of the stream, with the proposed drill profile located underneath a riffle feature of the streambed. The maximum depth within the 50-foot-permanent easement measured 7.5 feet from bankfull elevation, with an average thalweg (deepest channel) depth of 6.29 feet from bankfull elevation for a channel reach 50 feet upstream and downstream of the proposed centerline. Analysis of geomorphic survey data estimated total bank erosion studied for the 1,125-foot river reach at 19.34 tons per year (0.0172 tons/year/foot). Additional stream hydraulic data is provided in the table below.

| Description            | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|------------------------|-------------------|-----------------|-----------------|
| Baseflow <sup>a</sup>  | 1.5               | 115.6           | 2.1             |
| 50% Bankfull Capacity  | 1.2               | 258.4           | 4.1             |
| 75% Bankfull Capacity  | 1.3               | 344.6           | 4.7             |
| 100% Bankfull Capacity | 1.5               | 459.4           | 5.3             |

<sup>a</sup> Baseflow is approximately 1 cfs per square mile of drainage area.

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 5.1 to 7.6 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 0.9   | 2.1       | 2.7      | 4.4       | 4.0      | 6.0       | 4.7      | 7.0       | 4.9      | 7.3       | 4.9      | 7.3       | 4.9      | 7.3       |

**III. Containment, Response and Clean-up Equipment**

Prior to commencing drilling operations, the following list of items will be transported and available at the Willow River crossing in accordance with Section 11.2 of the Environmental Protection Plan (“EPP”) and as depicted in the attached figure.

- A. Straw bales and staking
- B. Pre-filled sandbags
- C. Silt fence
- D. Plastic sheeting and/or geotextile
- E. Shovels, brooms, buckets, and other appropriate hand tools

- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- G. Fluid storage tank(s)
- H. Vacuum truck
- I. One small boat (non-motorized jon boat)
- J. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### **IV. Site Access and HDD Monitoring**

The attached figure outlines access points to the Willow River crossing. The direction of flow of the river has also been included. Access from the west and east sides will traverse forested wetlands. Prior to commencing drilling operations, trees will be cleared within proposed workspace, during which time construction mats will be placed along the drill path within wetlands as necessary. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### **V. Aquatic Release Response, Containment, and Clean-up**

Initial response to an inadvertent release in the Willow River will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures downstream of the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. The table below anticipates the variable conditions at the Willow River crossing and likely containment measure options that may be employed, including alternative materials that will be made available to enhance initial response if warranted. The in-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.



| Water Conditions                  |            | Distance from Water's Edge  |   |                      |
|-----------------------------------|------------|---|---|----------------------|
| Flow Velocity                     | Depth      | 0-10 Feet   | 10-20 Feet  | Greater than 20 feet |
| Still/Slow<br>( $< 1$ ft/sec)     | 0-2 Feet   | n/a   | n/a   | n/a                  |
|                                   | 2-5 Feet   | n/a   | n/a   | n/a                  |
|                                   | $> 5$ Feet | n/a   | n/a   | n/a                  |
| Slow/Moderate<br>(1-3 ft/sec)     | 0-2 Feet   | Sandbag cofferdam;<br>vertical culvert  | n/a   | n/a                  |
|                                   | 2-5 Feet   | Turbidity curtain;<br>Geotextile pipeline weights<br>cofferdam; vertical culvert;<br>bladder dams; jersey<br>barriers and plastic<br>sheeting | Turbidity curtain; geotextile<br>pipeline weights cofferdam;<br>vertical culvert; bladder<br>dams; water gates (as<br>upstream diversion aid) | n/a                  |
|                                   | $> 5$ Feet | n/a   | Turbidity curtain; geotextile<br>pipeline weights; bladder<br>dams; water gates (as<br>upstream diversion aid)                                | n/a                  |
| Moderate/Rapid<br>( $> 3$ ft/sec) | 0-2 Feet   | n/a   | n/a   | n/a                  |
|                                   | 2-5 Feet   | n/a   | n/a   | n/a                  |
|                                   | $> 5$ Feet | n/a   | n/a   | n/a                  |

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the in-water containment measure installation, and recovery efforts will be localized to that location.

## VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 1,023 feet of the drill path crosses wetlands that may be temporarily inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| Wetland ID   | Eggers & Reed     | Hydrologic Regime                       | Linear Feet |
|--------------|-------------------|---|-------------|
| w-51n24w31-a | Hardwood Swamp    | Saturated, may be temporarily inundated | 90.2        |
| w-51n24w31-a | Floodplain Forest | Temporarily inundated                   | 932.7       |

Low ground pressure equipment (e.g., UTV, argo, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. Temporary access will be supported by construction matting areas as necessary, and a vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.

## **VII. Resumption of HDD Operations**

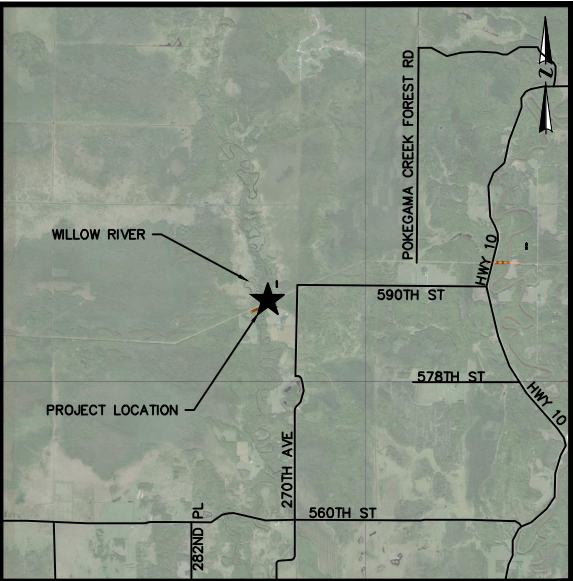
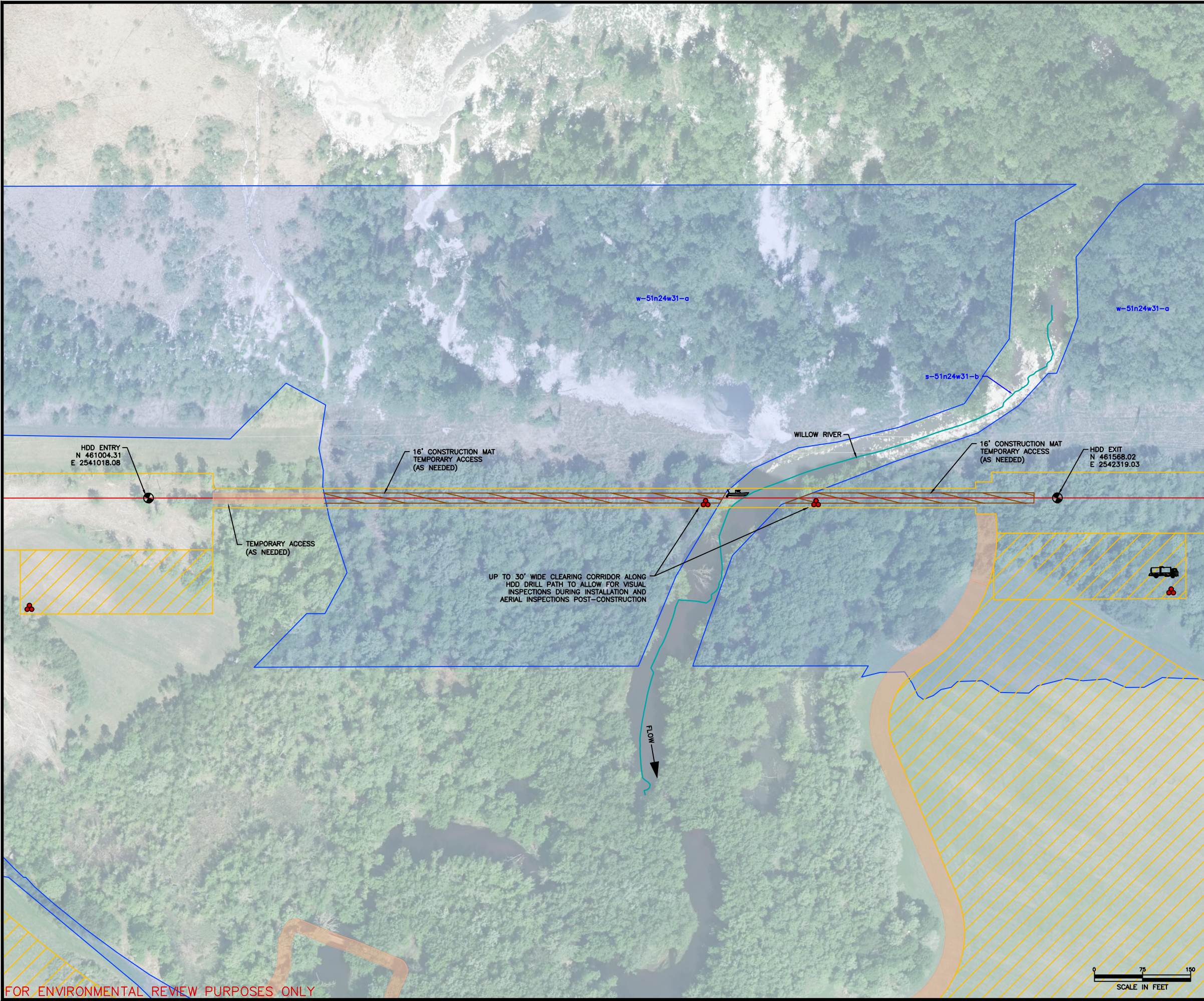
Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be assessed by representatives onsite for adequacy and ability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport into either a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

## **VIII. Crossing Photo**



**Photo 1.** *Willow River facing downstream (south) at the drill path.*





LOCATION PLAN

AITKIN COUNTY, MINNESOTA  
SECTION 31, TOWNSHIP 51, RANGE 24  
SURVEY ID S-51N24W31B

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY ACCESS
- APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF WILLOW RIVER  
ENBRIDGE MP 1066.4  
AITKIN COUNTY, MN

|       |                         |
|-------|-------------------------|
| SCALE | DWG. NO.                |
| NOTED | B-93-5.84-PUC-52-REVV-B |



**Enbridge Energy, Limited Partnership  
Line 3 Replacement Project  
Inadvertent Release Response Plan  
Mississippi River**



**I. HDD Information**

|                                  |   |
|----------------------------------|---|
| Milepost: 1069.6                 | Length of Wetlands: 546 feet                |
| HDD Length: 2,190 feet           | Waterbody Width (OHWM): 130 feet            |
| Estimated Duration: 50 days      | Distance from Waterbody to Entry: 715 feet  |
| Risk of Inadvertent Return: Low* | Distance from Waterbody to Exit: 1,475 feet |
| Enbridge ID Number: s-51n24w27-a | Depth of HDD Under Waterbody: 40 feet       |

\*Elevated risk last 80 feet of crossing.

**II. Stream Data**

The Mississippi River is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from April 1 to June 30. Rosgen surveys conducted in 2018 classify the crossing location within a non-wadeable reach of the stream, with the proposed drill profile located underneath a riffle feature of the streambed. The maximum depth within the 50-foot permanent easement measured 10.9 feet from bankfull elevation, with an average thalweg (deepest channel) depth of 10.76 feet from bankfull elevation for a channel reach 50 feet upstream and downstream of the proposed centerline. Analysis of geomorphic survey data estimated total bank erosion studied for the 1,340-foot river reach at 83.46 tons per year (0.0623 tons/year/foot). Additional stream hydraulic data is provided in the table below.

| Description            | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|------------------------|-------------------|-----------------|-----------------|
| Baseflow <sup>a</sup>  | 5.3               | 3,235.3         | 4.8             |
| 50% Bankfull Capacity  | 8.0               | 9,876.1         | 8.3             |
| 75% Bankfull Capacity  | 8.9               | 13,168.1        | 9.6             |
| 100% Bankfull Capacity | 9.8               | 17,557.4        | 11.3            |

<sup>a</sup> Baseflow is approximately 1 cfs per square mile of drainage area.

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 5.1 to 7.6 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 0.9   | 2.1       | 2.7      | 4.4       | 4.0      | 6.0       | 4.7      | 7.0       | 4.9      | 7.3       | 4.9      | 7.3       | 4.9      | 7.3       |

**III. Containment, Response and Clean-up Equipment**

Prior to commencing drilling operations, the following list of items will be transported and available at the Mississippi River crossing in accordance with Section 11.2 of the Environmental Protection Plan ("EPP") and as depicted in the attached figure.

- A. Straw bales and staking
- B. Pre-filled sandbags
- C. Silt fence
- D. Plastic sheeting and/or geotextile
- E. Shovels, brooms, buckets, and other appropriate hand tools



- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- G. Fluid storage tank(s)
- H. Vacuum truck
- I. One small boat (non-motorized jon boat)
- J. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### **IV. Site Access and HDD Monitoring**

The attached figure outlines access points to the Mississippi River crossing. The direction of flow of the river has also been included. Access from the west and east sides will traverse forested wetlands. There are 20-30% slopes to the river, and a winch tractor will be made available, if needed, for access to the crossing location. Crews will have a traffic control plan for access off Great River Road, if needed, for monitoring and response. Prior to commencing drilling operations, trees will be cleared within proposed workspace, during which time construction mats will be placed along the drill path within wetlands as necessary. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### **V. Aquatic Release Response, Containment, and Clean-up**

Initial response to an inadvertent release in the Mississippi River will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures downstream of the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. Due to the stream depths expected to be encountered, establishing containment measures capable of isolating a release location from stream flow will be most likely when near the water's edge at depths less than 5 feet. The table below anticipates the variable conditions at the Mississippi River crossing and likely containment measure options that may be employed, including alternative materials that will be made available to enhance initial response if warranted. The in-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.

| Water Conditions                  |            | Distance from Water's Edge  |  |  |
|-----------------------------------|------------|---|--|--|
| Flow Velocity                     | Depth      | 0-10 Feet   | 10-20 Feet   | Greater than 20 feet   |
| Still/Slow<br>( $< 1$ ft/sec)     | 0-2 Feet   | n/a   | n/a  | n/a  |
|                                   | 2-5 Feet   | n/a   | n/a  | n/a  |
|                                   | $> 5$ Feet | n/a   | n/a  | n/a  |
| Slow/Moderate<br>(1-3 ft/sec)     | 0-2 Feet   | n/a   | n/a  | n/a  |
|                                   | 2-5 Feet   | n/a   | n/a  | n/a  |
|                                   | $> 5$ Feet | n/a   | n/a  | n/a  |
| Moderate/Rapid<br>( $> 3$ ft/sec) | 0-2 Feet   | Sandbag cofferdam;<br>geotextile pipeline weights<br>cofferdam; vertical culvert;<br>jersey barriers and plastic<br>sheeting                  | n/a  | n/a  |
|                                   | 2-5 Feet   | Turbidity curtain;<br>Geotextile pipeline weights<br>cofferdam; vertical culvert;<br>bladder dams; jersey<br>barriers and plastic<br>sheeting | n/a  | n/a  |
|                                   | $> 5$ Feet | Turbidity curtain;<br>Geotextile pipeline weights<br>cofferdam; vertical culvert;<br>bladder dams   | Turbidity curtain; geotextile<br>pipeline weights; bladder<br>dams | Turbidity curtain; geotextile<br>pipeline weights; bladder<br>dams |

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the in-water containment measure installation, and recovery efforts will be localized to that location.

## VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.1 of the EPP for an upland release, or Section 11.3.2 for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 516 feet of the proposed drill path crosses the hardwood swamps or floodplain forests, that may be seasonally inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| Wetland ID   | Eggers & Reed      | Hydrologic Regime                       | Linear Feet |
|--------------|--------------------|---|-------------|
| w-51n24w27-a | Fresh (wet) Meadow | Saturated                               | 17.1        |
| w-51n24w27-b | Floodplain Forest  | Temporarily inundated                   | 289.9       |
| w-51n24w27-c | Floodplain Forest  | Temporarily inundated                   | 129.0       |
| w-51n24w27-d | Hardwood Swamp     | Saturated, may be temporarily inundated | 96.6        |
| w-51n24w27-g | Fresh (wet) Meadow | Saturated                               | 13.4        |

Low ground pressure equipment (e.g., UTV, argo, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. Temporary access will be supported by construction matting as necessary, and a vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize



lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.

## **VII. Resumption of HDD Operations**

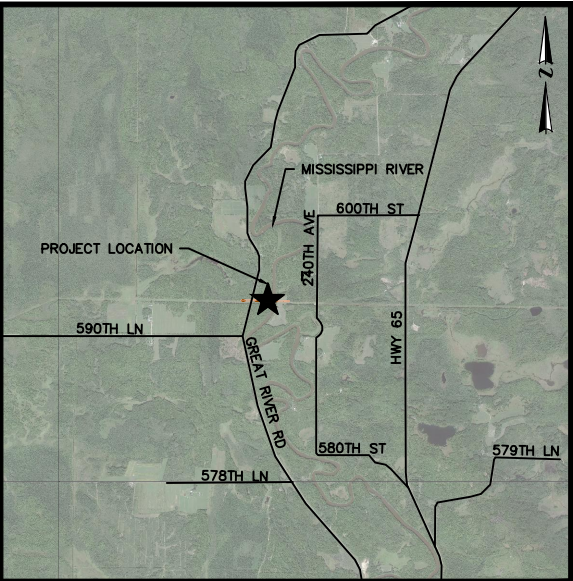
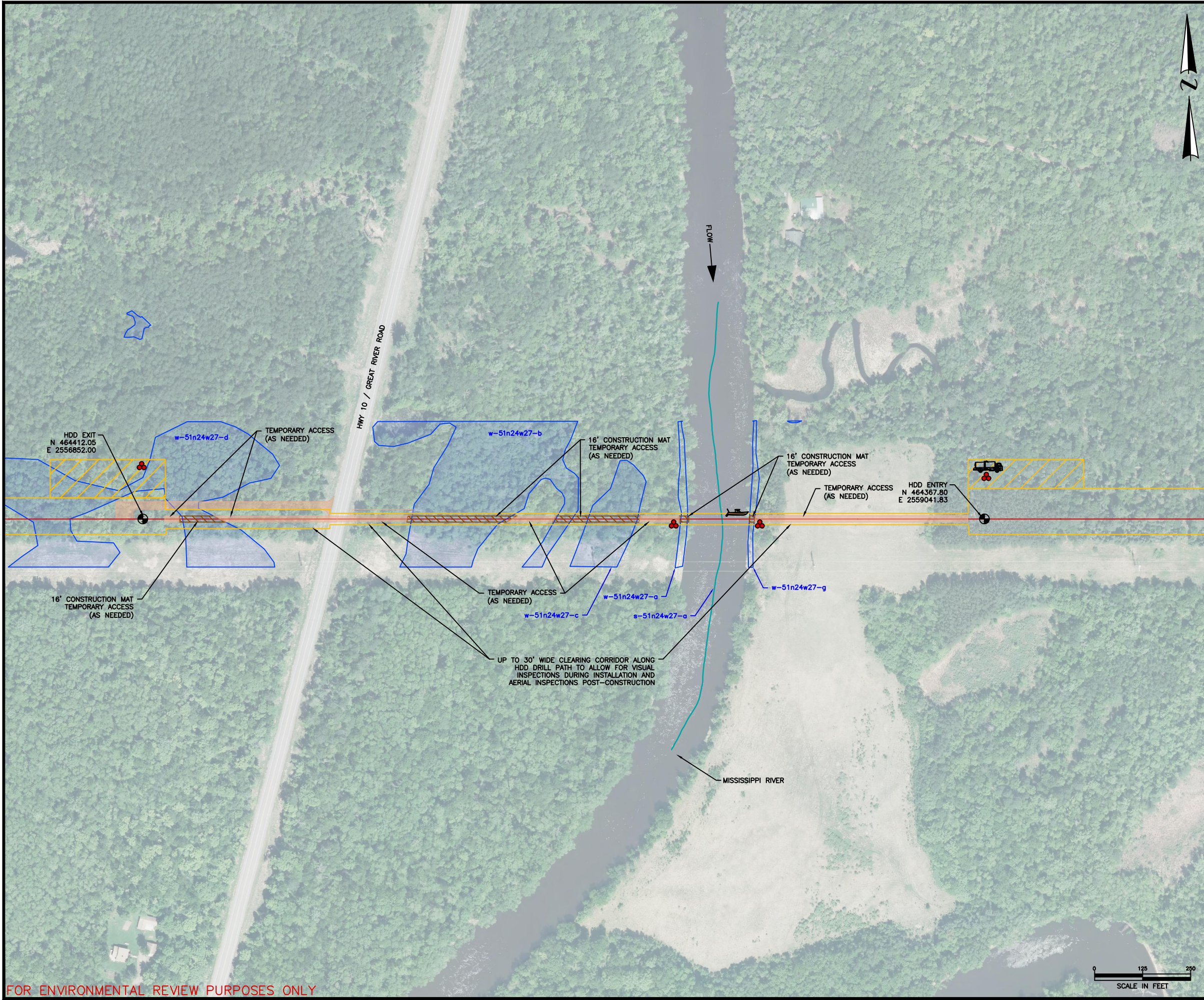
Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be assessed by representatives onsite for adequacy and ability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport into either a temporary storage tank or the mud pit at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

## **VIII. Crossing Photo**



**Photo 1.** *Mississippi River facing downstream (south) at the drill path.*





LOCATION PLAN

AITKIN COUNTY, MINNESOTA  
SECTION 27, TOWNSHIP 51, RANGE 24  
SURVEY ID S-51N24W27A

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY ACCESS
- APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF MISSISSIPPI RIVER  
ENBRIDGE MP 1069.6  
AITKIN COUNTY, MN

|       |                         |
|-------|-------------------------|
| SCALE | DWG. NO.                |
| NOTED | B-93-5.84-PUC-53-REVV-B |

FOR ENVIRONMENTAL REVIEW PURPOSES ONLY



# Enbridge Energy, Limited Partnership

## Line 3 Replacement Project

### Inadvertent Release Response Plan

#### East Savanna River



## I. HDD Information

|                                  |  |
|----------------------------------|--|
| Milepost: 1085.9                 | Length of Wetlands: 1,366 feet             |
| HDD Length: 1,447 feet           | Waterbody Width (OHWM): 20 feet            |
| Estimated Duration: 40 days      | Distance from Waterbody to Entry: 735 feet |
| Risk of Inadvertent Return: Low* | Distance from Waterbody to Exit: 712 feet  |
| Enbridge ID Number: s-51n21w20-a | Depth of HDD Under Waterbody: 53 feet      |

\*Elevated risk last 70 feet of crossing.

## II. Stream Data

The East Savanna River is a designated Cool/Warm Water Fishery with a seasonal in-channel work restriction from April 1 to June 30. Rosgen surveys conducted in 2018 classify the crossing location within a non-wadeable reach of the stream, with the proposed drill profile located underneath a riffle feature of the streambed. The maximum depth within the 50-foot-permanent easement measured 4.5 feet from bankfull elevation, with an average thalweg (deepest channel) depth of 4.21 feet from bankfull elevation for a channel reach 50 feet upstream and downstream of the proposed centerline. Analysis of geomorphic survey data estimated total bank erosion studied for the 1,280-foot river reach at 12.76 tons per year (0.01 tons/year/foot). Additional stream hydraulic data is provided in the table below.

| Description            | Velocity (ft/sec) | Discharge (cfs) | Mean Depth (ft) |
|------------------------|-------------------|-----------------|-----------------|
| Baseflow <sup>a</sup>  | 0.8               | 17.2            | 1.3             |
| 50% Bankfull Capacity  | 0.5               | 17.9            | 1.9             |
| 75% Bankfull Capacity  | 0.5               | 26.8            | 2.3             |
| 100% Bankfull Capacity | 0.4               | 35.7            | 3.4             |

<sup>a</sup> Baseflow is approximately 1 cfs per square mile of drainage area.

Regional ice thickness estimates using data from the National Operational Hydrologic Remote Sensing Center for a 10-year period from October 1, 2008 through May 30, 2018 indicate a total seasonal accumulation range of 8.9 to 20.8 inches.

| 10-Year Average Ice Thickness – Monthly Progression |           |          |           |          |           |          |           |          |           |          |           |          |           |
|---|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|----------|-----------|
| November  |           | December |           | January  |           | February |           | March    |           | April    |           | May      |           |
| Low (in)  | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) | Low (in) | High (in) |
| 1.5   | 5.5       | 4.8      | 12.0      | 6.9      | 16.5      | 8.0      | 18.9      | 8.5      | 19.8      | 8.6      | 20.2      | 8.6      | 20.2      |

## III. Containment, Response and Clean-up Equipment

Prior to commencing drilling operations, the following list of items will be transported and available at the East Savanna River crossing in accordance with Section 11.2 of the Environmental Protection Plan ("EPP") and as depicted in the attached figure.

- Straw bales and staking
- Pre-filled sandbags
- Silt fence
- Plastic sheeting and/or geotextile

- E. Shovels, brooms, buckets, and other appropriate hand tools
- F. Pumps and sufficient hose (150 feet with vacuum truck plus extension hose)
- G. Fluid storage tank(s)
- H. Vacuum truck
- I. One small boat (non-motorized jon boat)
- J. Light plant/generator (when operations are conducted outside of daylight hours)

Enbridge will complete a pre-construction visit at the site at least 2 weeks prior to initiating HDD setup and operations to determine what additional materials and equipment will be needed.

#### **IV. Site Access and HDD Monitoring**

The attached figure outlines access points to the East Savanna River crossing. The direction of flow of the river has also been included. Access from the west and east sides will traverse forested wetlands. There are minimal elevation changes and no access issues to the crossing location. Prior to commencing drilling operations, trees will be cleared within proposed workspace, during which time construction mats will be placed along the drill path within wetlands as necessary. Additionally, a temporary free span bridge will be installed over the East Savanna River. Drill path monitoring will follow the measures described in Section 11.1 of the EPP. There will be at least one full-time construction observer at the site. Should a release occur outside proposed workspace, Enbridge will consult with the applicable permitting agencies to obtain approval to remove vegetation and construct additional access within wetland areas adjacent to the proposed workspace and/or access path only if containment and response equipment cannot be mobilized to a release location via non-mechanized means (e.g., foot-traffic, sleds). The exact location of alternate access points will be dependent on the location of a release and are therefore difficult to predict at this time. Inadvertent release monitoring in frozen conditions is discussed in Section 11.1 of the Winter Construction Plan.

#### **V. Aquatic Release Response, Containment, and Clean-up**

Initial response to an inadvertent release in the East Savanna River will follow guidelines in Section 11.3.3 of the EPP, including the immediate suspension of all drilling operations and mobilization of crew members for the deployment of the appropriate in-water containment measures downstream of the release location. Inadvertent release response in frozen conditions is discussed in Section 11.3 of the Winter Construction Plan.

The purpose of the initial response will be to limit the volume of the release and turbidity impacts downstream. Following initial response measures, crew members will commence containment measures. Drilling fluid recovery is ultimately dependent on the ability to isolate stream flow from the release location through implementation of containment measures. The effectiveness of those measures and feasibility of recovery varies based on flow conditions and location of a release. The table below anticipates the variable conditions at the East Savanna River crossing and likely containment measure options that may be employed, including alternative materials that will be made available to enhance initial response if warranted. The in-water containment measures will remain in place at least until sustained drilling fluid circulation has been reestablished but may remain in place until HDD is complete.



| Water Conditions                  |          | Distance from Water's Edge   |  |                      |
|-----------------------------------|----------|--|--|----------------------|
| Flow Velocity                     | Depth    | 0-10 Feet  | 10-20 Feet   | Greater than 20 feet |
| Still/Slow<br>( $< 1$ ft/sec)     | 0-2 Feet | Sand bag isolation structure; vertical culvert   | Sand bag isolation structure; vertical culvert   | n/a                  |
|                                   | 2-5 Feet | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams; jersey barriers and plastic sheeting | Turbidity curtain; Geotextile pipeline weights cofferdam; vertical culvert; bladder dams; jersey barriers and plastic sheeting | n/a                  |
|                                   | > 5 Feet | n/a  | n/a  | n/a                  |
| Slow/Moderate<br>(1-3 ft/sec)     | 0-2 Feet | n/a  | n/a  | n/a                  |
|                                   | 2-5 Feet | n/a  | n/a  | n/a                  |
|                                   | > 5 Feet | n/a  | n/a  | n/a                  |
| Moderate/Rapid<br>( $> 3$ ft/sec) | 0-2 Feet | n/a  | n/a  | n/a                  |
|                                   | 2-5 Feet | n/a  | n/a  | n/a                  |
|                                   | > 5 Feet | n/a  | n/a  | n/a                  |

The containment measures will be selected based on the pre-construction site visit depending upon conditions close to the time of crossing. Enbridge will ensure that in-water containment measures are available on-site for deployment (e.g., turbidity curtains, cofferdams) (see Section V).

Drilling fluid recovery methodology is not as variable as containment measures. When such measures effectively isolate the release from the stream flow, pumps or other appropriate measures are used to recover drilling fluid. When the release location cannot be isolated after initial in-water containment measure installation, drilling fluid that has settled from the water column may deposit in the acute upstream angle of the in-water containment measure installation, and recovery efforts will be localized to that location.

## VI. Terrestrial Release Response, Containment, and Clean-up

Initial response to an inadvertent release will follow procedures in Section 11.3.2 of the EPP for a wetland release. Wetlands crossed by the drill path are shown in the table below. Saturated hydrologic regimes will not require response measures different than described in the EPP. Approximately 1,287 feet of the proposed drill path is crossed by wetlands that may be seasonally or temporarily inundated. Periods of inundation greater than 2 feet deep may warrant installation of turbidity curtain during initial response to an inadvertent release. However, for the conditions most likely to be encountered, terrestrial containment measures (e.g., straw bales, silt fence, sand bags) will be deployed in response to an inadvertent release.

| Wetland ID   | Eggers & Reed     | Hydrologic Regime                 | Linear Feet |
|--------------|-------------------|-----------------------------------|-------------|
| w-51n21w20-a | Floodplain Forest | Temporarily inundated             | 114.2       |
| w-51n21w20-a | Sedge Meadow      | Saturated                         | 78.9        |
| w-51n21w20-a | Shrub-Carr        | Saturated to Seasonally inundated | 526.0       |
| w-51n21w22-a | Floodplain Forest | Temporarily inundated             | 316.4       |
| w-51n21w22-a | Shrub-Carr        | Saturated to Seasonally inundated | 330.2       |

Low ground pressure equipment (e.g., UTV, argo, morooka) will conduct limited passes to assist personnel carrying containment materials to a release location. Temporary access will be supported by construction matting as necessary, and a vacuum truck will be deployed if required by the volume of release. If a release were to occur outside of the proposed workspace shown in the attached figure, Enbridge will mobilize lightweight containment materials (e.g., straw bales, silt fence, sand bags) on foot to the release location to isolate the drilling fluid immediately. Once drilling fluid has been contained, Enbridge will determine if equipment access is necessary to aid in the response, and initiate agency consultations for developing alternate access.

## VII. Resumption of HDD Operations

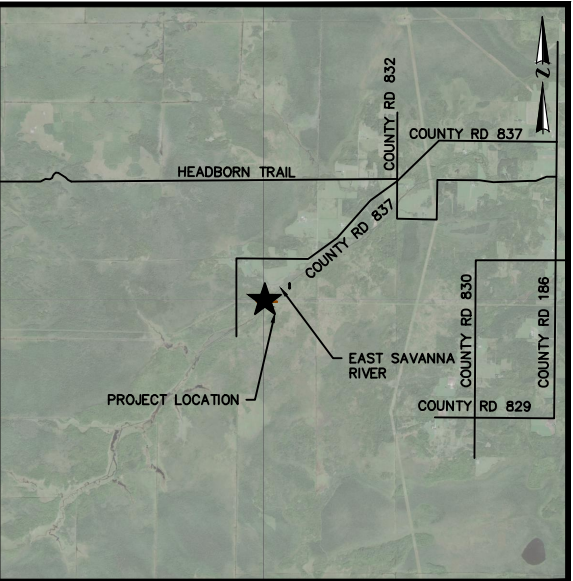
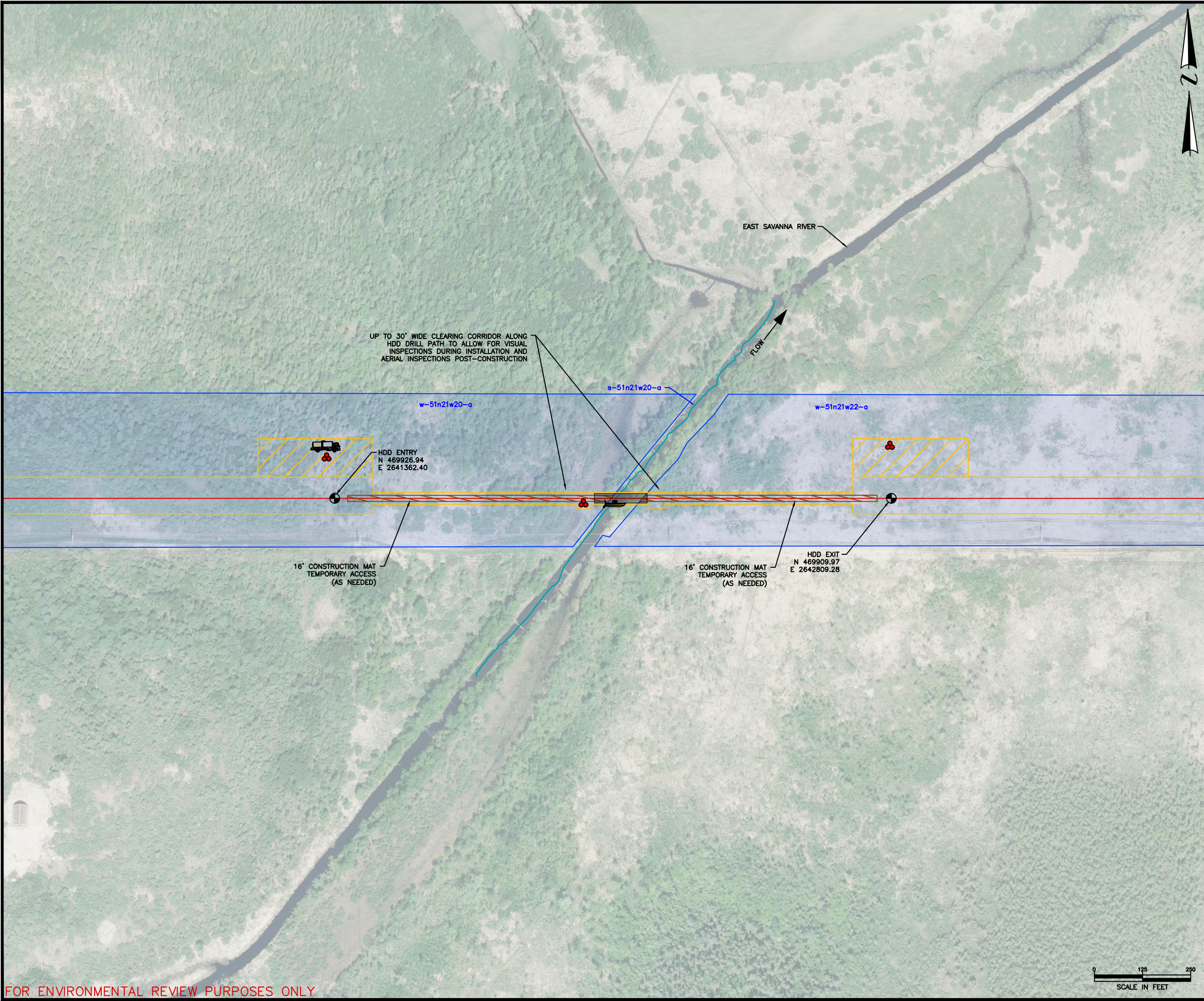
Prior to resuming HDD operations, agency notifications will be made in accordance with Section 11.4 of the EPP, and the effectiveness of containments and recovery efforts will be assessed by representatives onsite for adequacy and ability to capture a subsequent in-water release. Adjustments to drilling techniques to minimize or seal the release (e.g., modifying drill pressures, drill volume rates, drilling fluid viscosity and composition, or drill profile) will be agreed upon by Enbridge and Contractor and implemented. Containment measures will remain in place throughout HDD operations. Containments will be continually monitored, and if drilling mud resurfaces, drilling fluids will be collected by a vacuum truck and/or stationary pumps for transport into either a temporary storage tank or the mud pit excavated at the drill entry. Clean-up of all drilling fluid will follow protocols in Section 11.5 of the EPP upon permanent cessation of drilling fluid release. Reporting and documentation will occur as described in Section 11.7 of the EPP.

## VIII. Crossing Photo



*Photo 1. East Savanna River facing downstream (north) at the drill path.*





LOCATION PLAN

ST LOUIS COUNTY, MINNESOTA  
SECTION 20, TOWNSHIP 51, RANGE 21  
SURVEY ID S-51N21W20A

- PROPOSED ENBRIDGE L3R PIPELINE
- EXISTING PIPELINES
- STATE/COUNTY BOUNDARY
- PROPERTY LINE
- WATERBODY CHANNEL (THALWEG)
- SECTION LINE
- WATER UTILITY
- EDGE OF ROAD
- OVERHEAD POWER
- UNDERGROUND CABLE
- C/L RAILROAD
- TEMPORARY WORKSPACE
- WETLANDS
- ADDITIONAL TEMPORARY WORKSPACE
- CONSTRUCTION MAT (AS NEEDED)
- TEMPORARY BRIDGE
- TEMPORARY ACCESS
- APPROXIMATE 36" MILEPOST
- HDD ENTRY/EXIT
- SMALL BOAT
- VAC TRUCK
- CONTAINMENT AND RESPONSE MATERIALS
- FLOW DIRECTION

|     |                                 |     |         |       |       |
|-----|---------------------------------|-----|---------|-------|-------|
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
|     |                                 |     |         |       |       |
| B   | ISSUED FOR PERMIT               | AJJ | 11/2019 | JMH   | JMH   |
| A   | ISSUED FOR ENVIRONMENTAL REVIEW | JTT | 11/2018 | RBM   | RBM   |
| NO. | REVISION-DESCRIPTION            | BY  | DATE    | CHK'D | APP'D |



PROPOSED ENBRIDGE L3R PIPELINE  
INADVERTENT RELEASE RESPONSE PLAN  
CROSSING OF EAST SAVANNA RIVER  
ENBRIDGE MP 1085.9  
ST LOUIS COUNTY, MN

|       |                         |
|-------|-------------------------|
| SCALE | DWG. NO.                |
| NOTED | B-93-5.84-PUC-57-REVV-B |