Enbridge Line 5 Relocation Project Case Study – Enbridge Check Valve Installation Project

Case Study Name

Enbridge Check Valve Installation Project near the Bad River

Location (Latitude/Longitude)

Latitude: 46.53330362 **Longitude:** -90.66503829

Total Impacts: Post-Construction Comparison

Based on the application materials provided by Enbridge on April 4, 2023, an estimated 6.27 acres of temporary wetland fill was anticipated under the presumption that timber matting would be required across the 60-foot pipeline corridor. Therefore, MNRD authorized Enbridge to incur 6.27 acres of wetland impact associated with the Bad River Reservation Wetland and Watercourse Protection Ordinance (WWPO) permit issued for the check valve project. During project construction, timber matting was not installed across the entire pipeline corridor, rather, Enbridge utilized a primarily single-lane mat road, with several turnoffs.

Drone-based delineation[1] of wetland disturbance conducted after the construction phase of the project was 4.18 acres, which is more than double compared to Enbridge's quantified wetland impacts of 1.83 acres. This difference between acreages appears to be caused by the project proponent's apparent focus on mapping wetland impacts based primarily on the construction matting area in the post-project survey, approximately a 15-foot corridor within the greater 60-foot pipeline corridor. The wetland disturbance expands outside of the construction mat area due to project traffic. Additionally, water quality affects beyond the 4.18 acres of wetland disturbance occurred due to the check valve project, and these effects are discussed further below.

Compensatory Mitigation Measures

Compensatory mitigation was not required by the Corps. However, the Band's approvals require compensatory mitigation, and the project proponent has not yet complied with the wetland mitigation permit requirements.

Distance from the Reservation Waters

The project is associated with the Enbridge Line 5 pipeline within the Bad River Reservation boundaries. This project is an example of similar regulated activities and water quality effects that could be authorized by the Army Corps associated with the construction, maintenance, or operation of the Enbridge Line 5 relocation project in watersheds adjacent to the Reservation and connected to tribal waters.

Watercourse(s) Affected

- **Sugarbush Creek (WBIC: 2905700) (WBIC:5001630)**
  - **Tribal Designations:**
    - Exceptional Resource Water (Anishinaabosibiing)
    - Designated Uses include Cultural, Wildlife, Aquatic Life and Fish, Recreational, and Cool Water Fishery.
- **Intermittent Stream - Unnamed (WBIC: 5001594)**

[1] It is noted that drone-based impact delineations have the potential for false-positive and false-negative determinations.

- **Tribal Designations:**
  - Exceptional Resource Water (Anishinaabosibiing)
  - Designated Uses include Cultural, Wildlife, Aquatic Life and Fish, and Recreational.

- **Intermittent Stream - Unnamed Tributary to the Bad River (WBIC: 2905100)**
  - **Tribal Designations:**
    - Exceptional Resource Water (Anishinaabosibiing)
    - Designated Uses include Cultural, Wildlife, Aquatic Life and Fish, and Recreational.

Wetland(s) Affected

The wetlands affected by this project are classified as Exceptional Resource Waters under the Tribe's Antidegradation Policy and support cultural and wetland uses and functions. The project impacted many wetlands, including:

- A forested wetland near the excavation site (WWI Unique Identifier: 2423695878 and 2423695881).
- An emergent wet meadow along the access road (WWI Unique Identifier: 2423695947). The emergent wet meadow is connected to forested wetlands on both sides of the pipeline corridor (WWI Unique Identifier: 2423695897 and 2423695955).
- A forested wetland along the southern side of the pipeline corridor by the entrance of the project site (WWI Unique Identifier: 2423695999).
- An emergent wet meadow along the access road near the entrance of the project site (WWI Unique Identifier: 2423696019). The emergent wet meadow is connected to forested wetlands on both sides of the pipeline corridor (WWI Unique Identifier: 2423696003, 2423696021, and 2423695925).
- The Wisconsin Wetland Inventory identifies four wetlands too small to delineate that fall within the pipeline corridor (e.g. WWI Unique Identifier: 2731698540). These wetlands were mapped by the field delineation if they were present within the pipeline corridor.
- Additional wetlands were identified in a field delineation that were not mapped or identified by the Wisconsin Wetland Inventory. These wetlands include sedge meadows, emergent/wet meadows, seasonally flooded basins, and shallow marsh.

Permits Associated with Site

- **ACOE Permit:** Utility Regional General Permit

Other: Other permits and approvals were necessary for project implementation within the Bad River Reservation including, but not limited to, permits under the Bad River Reservation Wetland and Waterway Protection Ordinance and approvals under the Bad River Band Antidegradation Policy.

Narrative Description of Activity

The project was conditionally approved by the Band for Enbridge to install one check valve[2] on

[2] A check valve is a type of emergency flow restriction device capable of reducing the amount of oil and other hazardous liquids released as a result of a pipeline leak or rupture. The valve operates by only permitting the flow of oil in one direction. If a leak or rupture happens on a section of pipe upstream from the valve in the direction of oil

the Line 5 pipeline within the Bad River Reservation east of the Bad River. This pipeline project was completed between May and August 2024, resulting in the installation of the first valve within the Reservation boundaries. Approximately 1.5-mile-long pipeline corridor was used as an access route to the location of the installed check valve. The wetlands crossed and watercourses near this project are classified as Exceptional Resource Waters under the Tribe's Antidegradation Policy and are protected for cultural, wildlife, aquatic life and fish, and recreational uses, among other uses.

The check valve project consisted of accessing the installation site (including the use of construction mats), tree clearing, excavating, and installing the check valve below ground level. The general construction activities after initial surveying, staking, and site prep consisted of: installing temporary construction matting for access and workspaces (tree clearing occurred prior to matting); installing temporary erosion and sediment controls; excavating the existing pipeline and installing perimeter fencing; installing bypass or "stopple" valves onto the pipeline during a scheduled outage to temporarily bypass the space where the check valve will be added to allow for pipeline operation during construction; pouring the check valve foundation; recoating the pipeline and valves; backfilling the excavation, contouring, and reseeding; and removing construction materials and equipment from the site until demobilization is completed.

After demobilization, routine inspections of the project site occur to check erosion and sedimentation controls and monitor restoration efforts. Inspections completed by Enbridge's contractor on April 18, 2025 identified that the vegetative cover along the project's access route is 40 percent. The project site has not yet met the site stabilization criteria in the Band's approval of 70% vegetative cover of native species. Additional observations and inspections will continue throughout 2025 to evaluate vegetation regrowth percent.

Water Quality Affects

This case study is an example of the water quality impacts directly attributed by false assurance by the project proponent to MNRD of minimized impacts along the access route by using temporary construction matting. Instead, the use of the matting and vehicle activity beyond the matting resulted in soil compaction, permanent wetland impacts, increased sedimentation in aquatic resources, the take of herptiles (snakes and turtles), and impacts to culturally important plants (e.g. Large-Leaf Avens, Swamp Sarkaphrase). Construction matting was in place longer than project plans indicated. The planned completion for removal of the construction matting was 7-24-24, and Enbridge adjusted this completion date to 8-1-2024. The actual date for the removal of all matting was on 8/8/2024 increasing the duration of the impacts created by the construction matting and project traffic for weeks longer than anticipated.

During a pre-construction walk-through on May 13, 2024, the project proponent's lead construction manager for the project assured MNRD staff and the Band's contractors that all vehicle traffic and equipment operation would take place from on the mats. MNRD made

flow, the valve will close and prevent oil downstream of the valve from flowing backwards and through that rupture. Unlike a conventional, above-ground valve, a check valve operates automatically and immediately and without any additional comments or inputs from the company. The purpose of the check valve here is to reduce the potential amount of oil that could be released from the pipeline if a rupture were to occur on the stretch of the pipeline west of the proposed check valve location, including at a meander of the Bad River.

decisions based on these assurances to ensure adequate protection of cultural species and the design of the entrance to the site from the nearest roadway. However, as you can see from Figure 1 - Figure 3, heavy vehicle traffic occurred off the matting and through areas that should not have been directly impacted by construction vehicles. Construction fencing was only placed to protect targeted plant species within 5 feet of the proposed matting locations—rather than all locations where the target plant was surveyed—due to assurances from Enbridge staff that all activity was to remain on the installed construction matting. Post-construction survey will be needed to determine the full extent of harm to protected plants from this unpermitted activity.

Wetlands along the matted construction route were drastically altered by the placement of the mats which lasted from 49 to 84 days[3]. As shown in Figure 5, a wetland is impacted by mud, a pollutant, pushed out from underneath the construction matting, and the sediments released as mud transferred by vehicle traffic are left on the matting and washed off into the nearby wetland. Wetlands were affected due to the displacement of soils (Figure 6 and 7) from the wetlands that required regrading of the soils after the removal of the matting (Figure 8 and Figure 9) and soil sedimentation into adjacent parts of the wetland downstream of the construction zone (Figure 10).

Aside from the construction matting causing soil dispersion, it also caused soil compaction, with MNRD staff reporting that in some areas the soils were so compacted that it took them a moment to realize that they were not standing on the timber matting at that location anymore (Figure 11). Greater than six inches of soil compaction was documented after the matting was removed. Soil compaction can lead to increased runoff and less infiltration as well as slow revegetation in areas and change the overall plant composition of a site.

The longer matting is left in a wetland and the more crossings made over it, the greater the impact on the wetland will be as the matting will sink into the substrate and cause a large amount of disturbance once removed. This also impacts sedimentation off the construction sites and access routes (Figure 10) and damages the aquatic communities (e.g., native plants) already present. MNRD has documented severe impacts on vegetation from construction matting where the matting was installed for less than two months (Figure 12).
Amphibians and reptiles were also negatively impacted from the construction, with some direct take incidence documented (Figure 4) and sedimentation into the aquatic habitats nearby the site (Figure 5) affecting water quality and altering their suitability for aquatic and semi-aquatic organisms. Amphibians, like the adult frog in the picture, can still be found in the wetland; however, water quality was affected, and the suitability of this wetland for any larval amphibians that may have hatched out in the spring is drastically reduced. This illustrates the impact that causes or may contribute to an adverse effect on human, plant, animal, or aquatic life, or in quantities that may interfere with the normal propagation, growth, and survival of indigenous

[3] The first mats associated with this Enbridge project within the Reservation were installed on May 17, 2024, and as of May 31, 2024, all the mats along the access route were installed. On July 17, 2024, mats start being staged for removal from the project site, which started the following week, and on August 8, 2024, all the mats had been removed from the project site. This equates to a duration of at least 49 days, or less than two months, to up to 84 days, or less than three months, that the mats were installed within wetlands and uplands along the access route. This duration is shorter than the "several months" that is noted in the Corps Draft Environmental Assessment, Clean Water Action Section 404(b)(1) Guidelines Evaluation, and Public Interest Review published 5/20/24, page 10, that mats may remain in wetlands and uplands for access during the construction phase of the proposed project.

aquatic biota (E.6.ii.a.).

Water quality impacts also include:

- Stormwater discharges from construction site;
- Increased erosion and sedimentation (E.6.ii.e., E.2. through E.5.). Several instances of sediment traveling off the construction area were documented, traveling as much as 54 feet in a northernly direction. Since these soils can resuspend over time with additional rain and snow melt, the sediments can move into adjacent wetlands and eventually waterways over time (Thompson 2025);
- Increased turbidity (E.7.iii., E.2. through E.5.);
- Permanent wetland loss, including the loss of functions and uses (E.6.ii.c., E.6.ii.e., E.2. through E.5.);
- Wetland impacts categorized as temporary (including matting) result in permanent changes to wetland functions and uses even if BMPs are properly installed/maintained, and water quality impacts are amplified if BMPs are not properly installed/maintained. Temporary wetland impacts also result in permanent changes if the impacts are not properly restored and/or if the impacts are repetitive and continue due to access for monitoring, inspecting, and maintaining the project. These factors occurred at this remote project site including the associated access routes (E.6.i.g., E.6.ii.c., E.2. through E.5.);
- Watercourses classified as Exceptional Resources Waters (ERWs) are connected hydrologically to the wetlands within the project area. Changes in hydrology result in changes in wetland functions and uses and changes in water quality in both watercourses and wetlands (E.6.ii.c., E.6.ii.d., E.6.ii.e., E.2. through E.5.);
- Permanent and temporary wetland impacts occurred both directly and indirectly from the types of regulated activities described above (E.6.ii.d., E.2. through E.5.); and
- Cumulative impacts also impact water quality in perennial, intermittent, and ephemeral watercourses and wetlands (E.2. through E.5.).

These water quality affects are considered preliminary and additional impact assessments may result in modifications to the water quality affects listed above.

Images/Figures/Slides

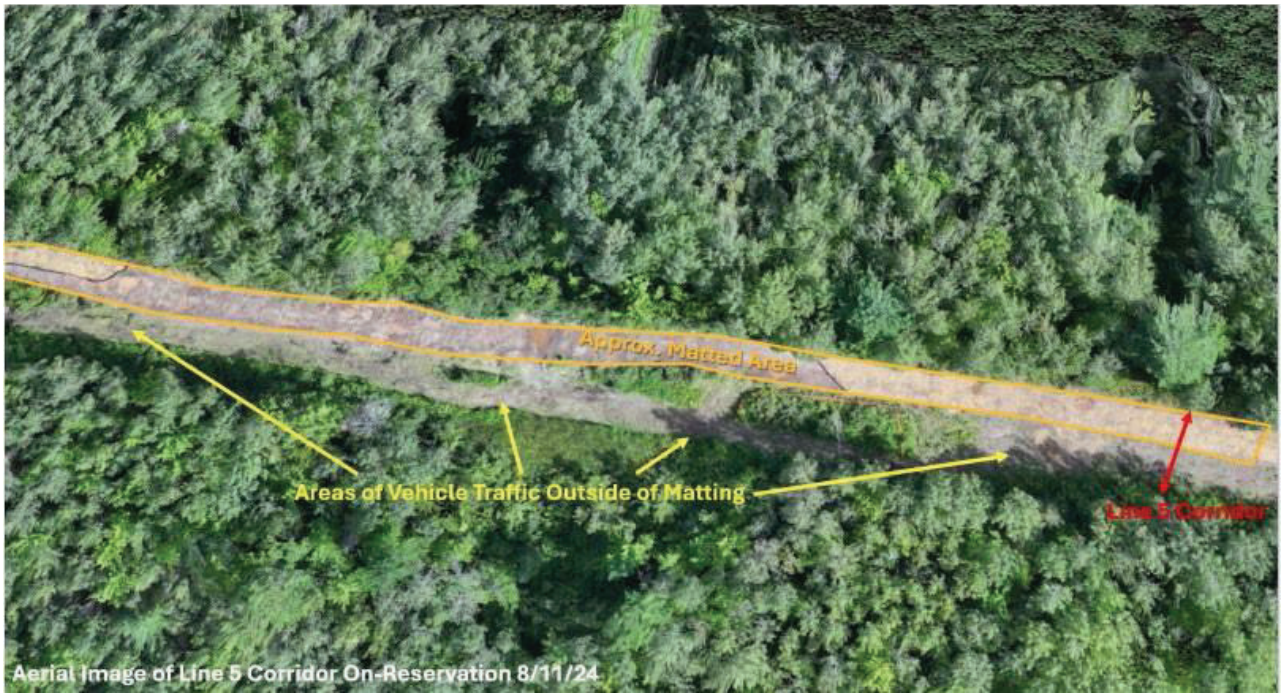

Figure 1. An annotated aerial image taken by drone over the Enbridge Line 5 corridor on August 11, 2024, shows a portion of the access route into a construction site where matting has been removed and some straw bales and sediment logs installed. Noted within the image are where the construction mats were placed per permit approval, the general width of Enbridge's Line 5 corridor, and areas where vehicle traffic clearly occurred not on the construction mats.

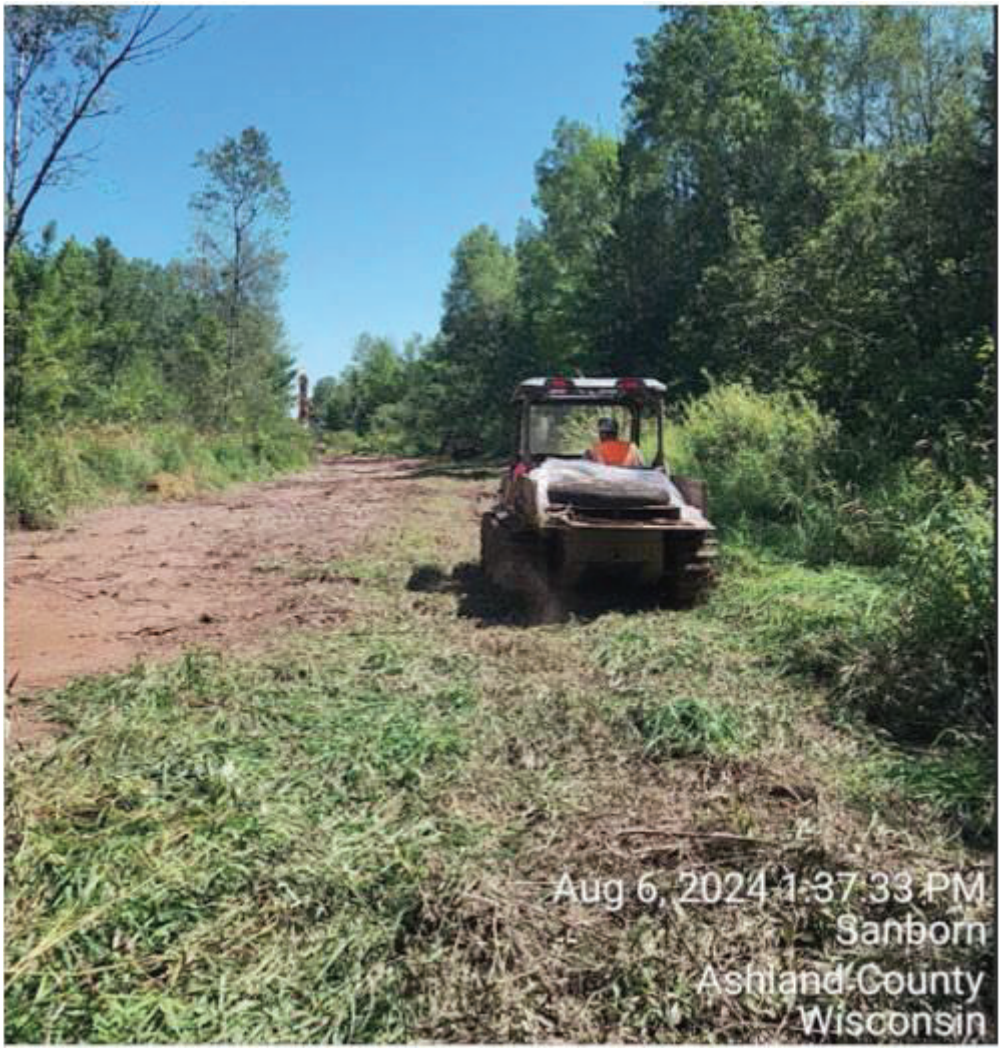

Figure 2. Photo from August 6, 2024, showing an Enbridge crew member operating a tracked vehicle off of the construction matting. The construction matting was placed in the muddy area shown on the left side of the photo—in the background, you can see the excavator that is picking up the construction matting as the Enbridge crew demobilizes from the site.

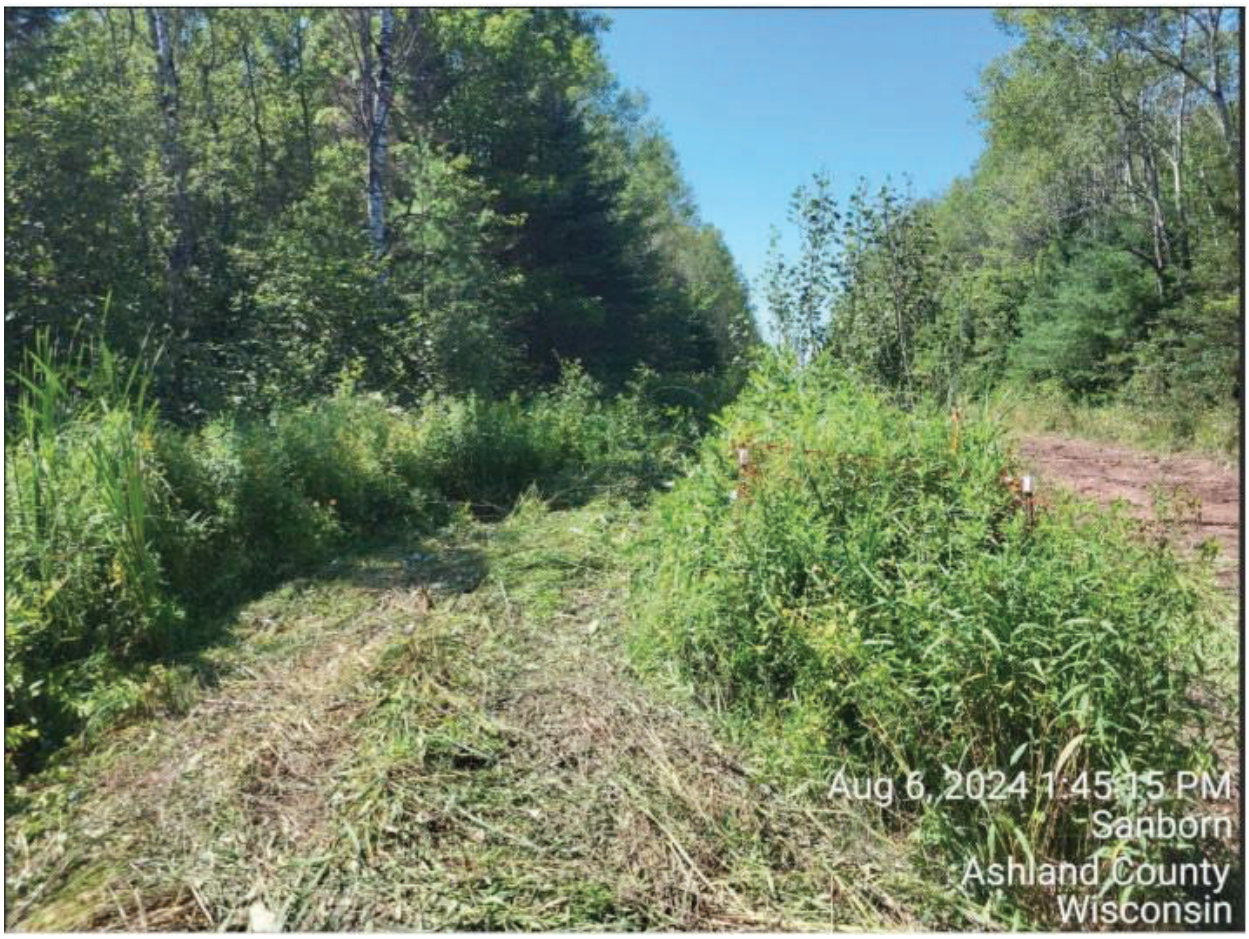

Figure 3. Areas of orange fencing were only installed around the culturally important plants that Enbridge was required to protect per tribal and federal permits when the plants were located within 5 feet of the construction matting. The lack of the orange construction fencing was not indicative of the lack of the protected plants, which were found at multiple locations along the corridor. The photo shows where Enbridge contractors drove around the fenced area (left side of the photo) instead of remaining on the construction matting, which would have been placed on the right side of the photo.

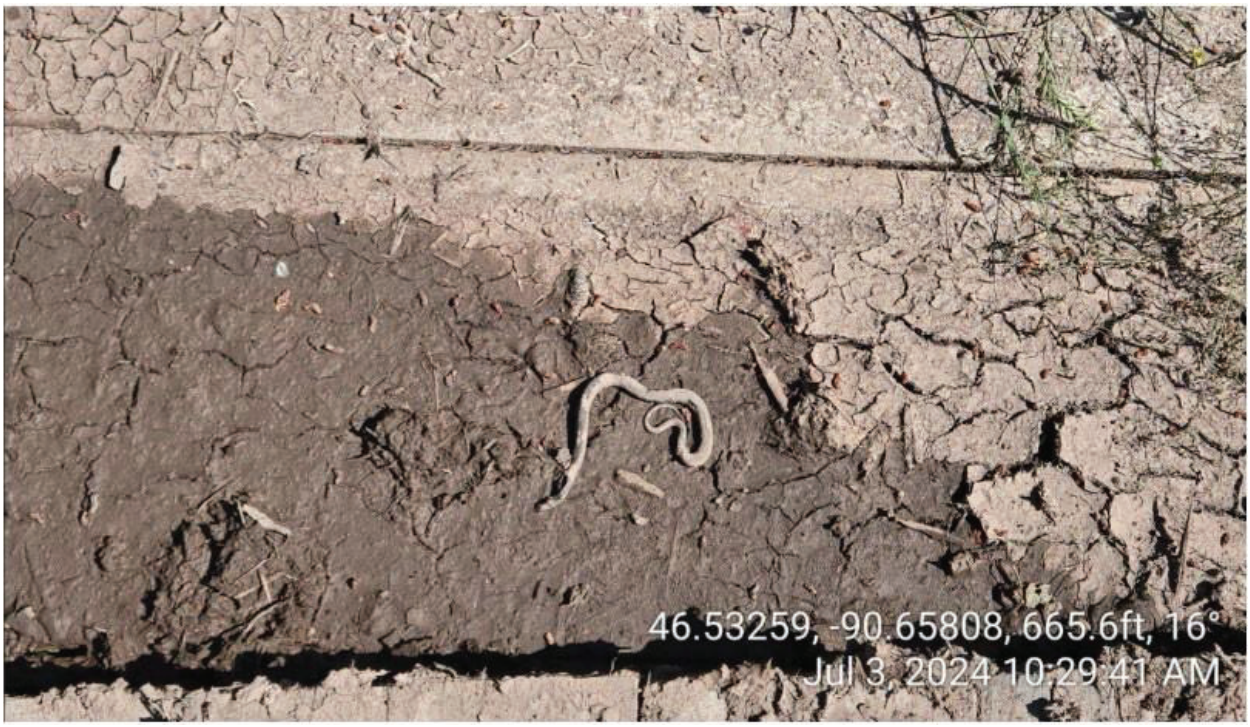

Figure 4. A dead snake alongside the construction matting used in Enbridge's Line 5 workspace. Snakes were observed by tribal staff as sunning themselves on construction matting—whether this snake was hiding or more obvious on top, it did not survive its encounter with the construction matting.

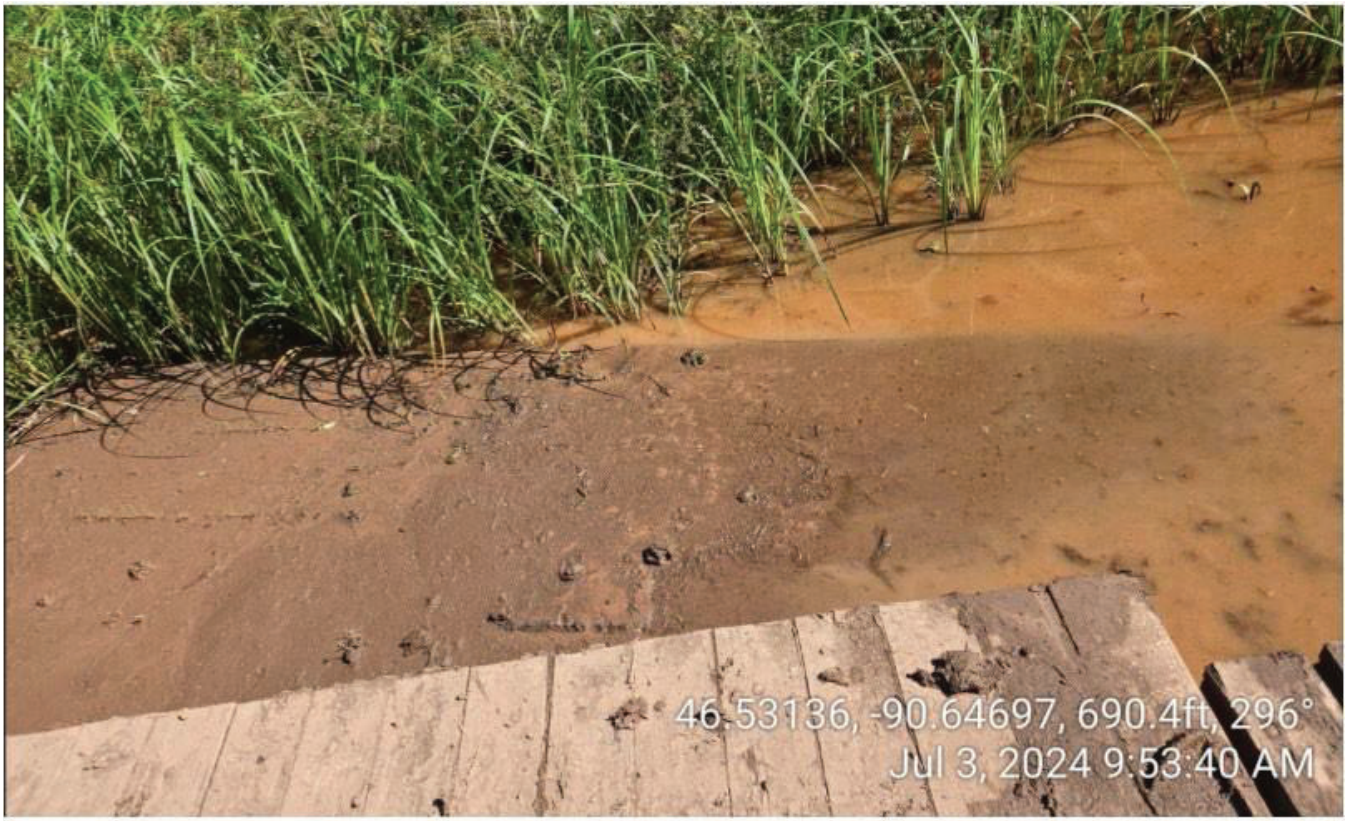

Figure 5. A wetland impacted by the mud pushed out from underneath the construction matting, and the sediments released as mud transferred by vehicle traffic is left on the matting and washed off into the nearby wetland amphibians, like the adult frog in the picture, can still be found in the wetland; however, water quality was effected, and the suitability of this wetland for any larval amphibians that may have hatched out in the spring is drastically reduced.

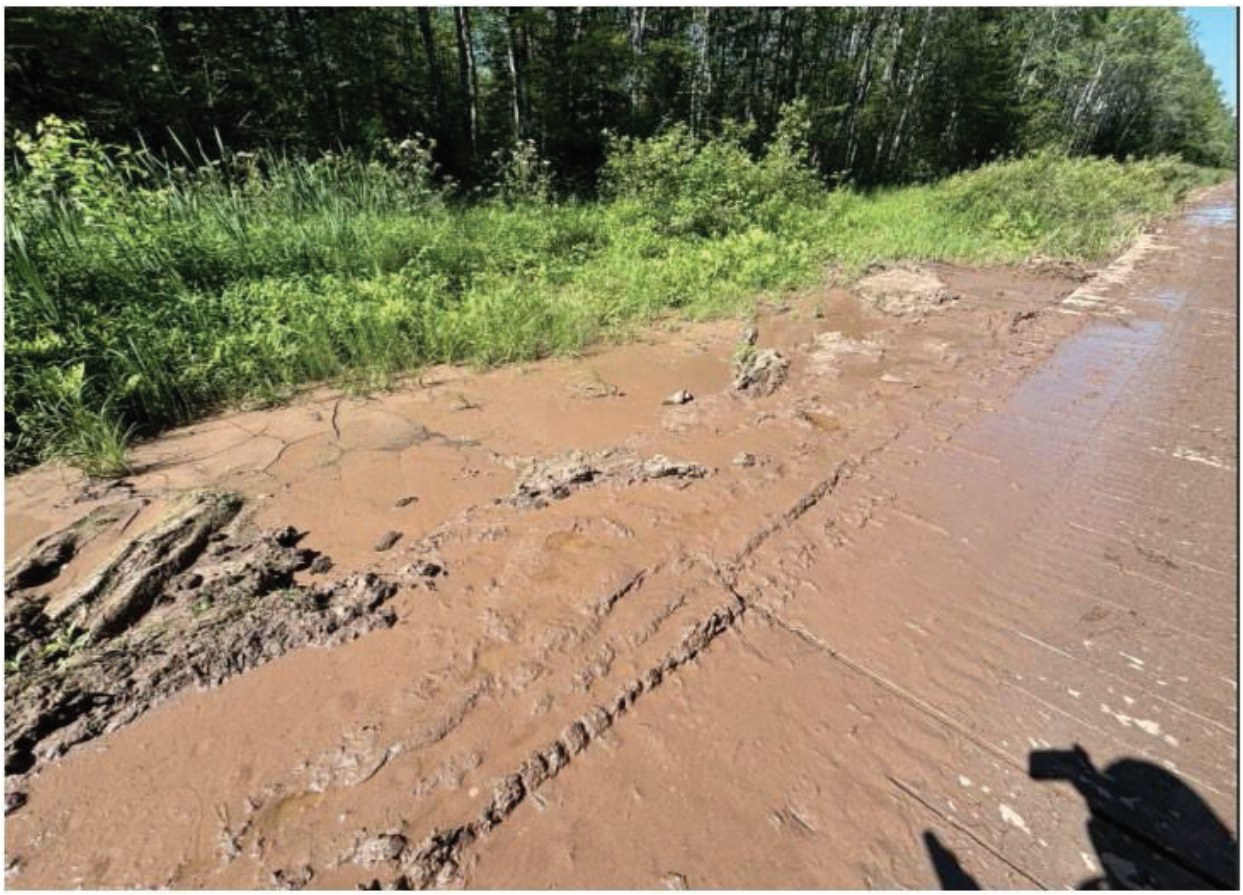

Figure 6. Soils being pushed out from under the construction matting and into adjacent wetlands as mats sink further into the soft substrate of the wetland, they were placed on top of from the vehicle traffic.

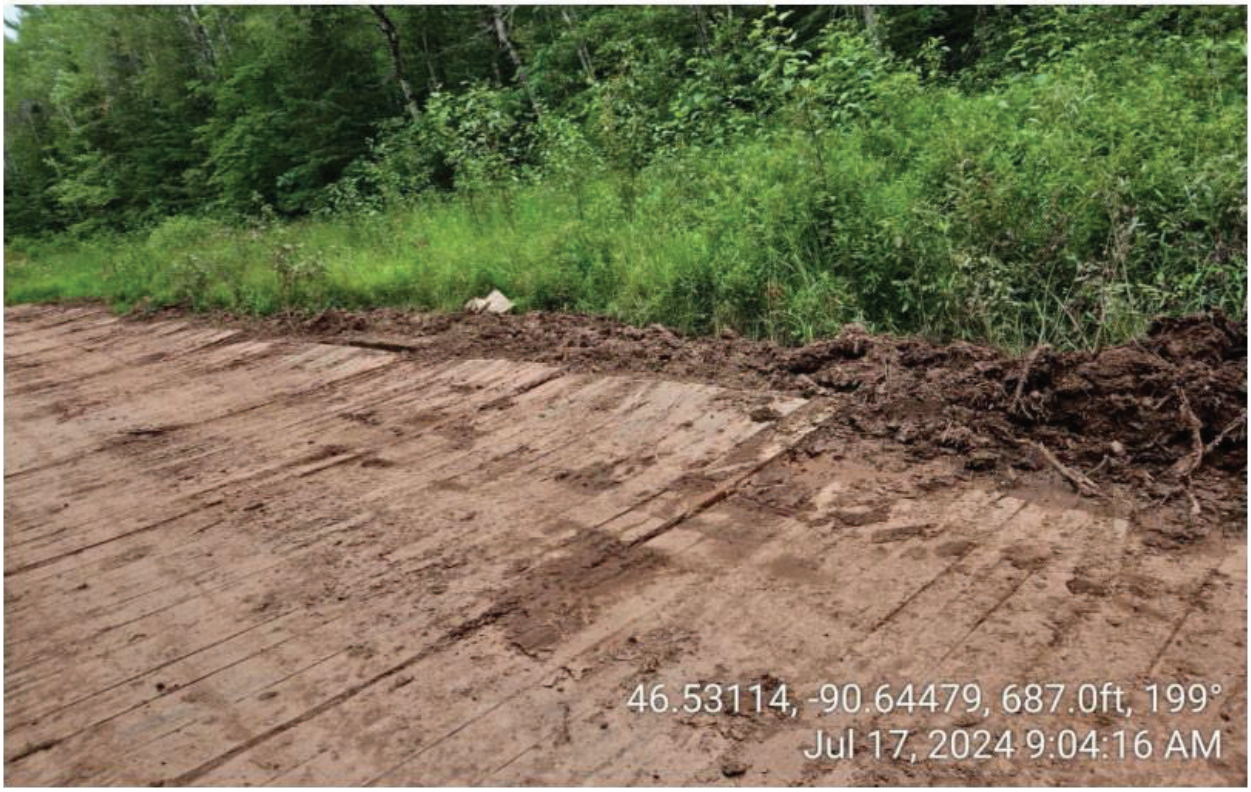

Figure 7. Soils are being pushed out from under the construction matting at drier areas along the access road (as compared to Figure 6) as soft topsoil is displaced from construction matting, which is supposed to be "protective" of the underlying landscape.

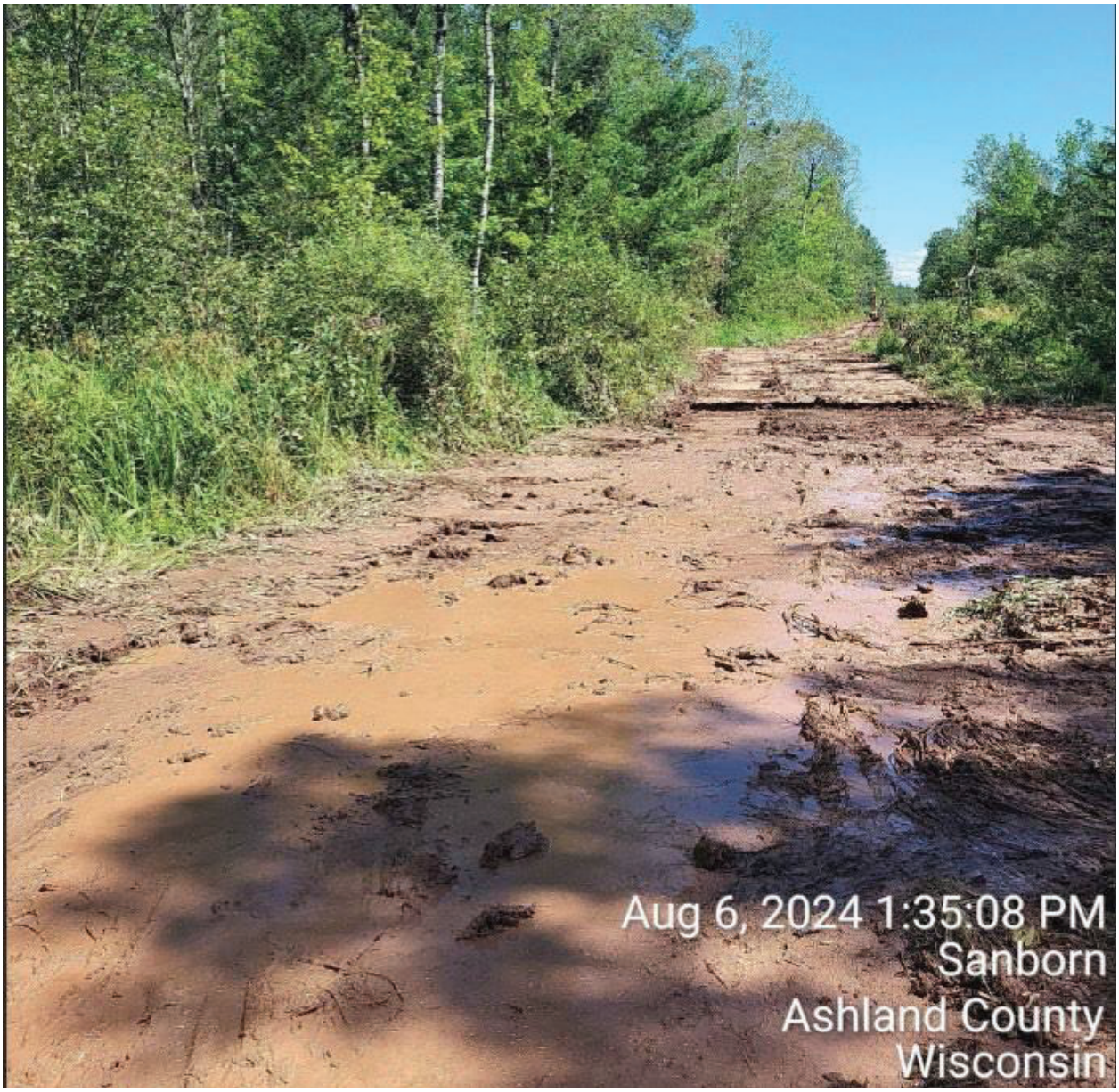

Figure 8. The photo shows the condition of the wetlands along the access route immediately after construction matting was removed. As you can see in the photo, the limits of soil disturbance are wider than the construction matting (see the width of construction matting in the background of the image).

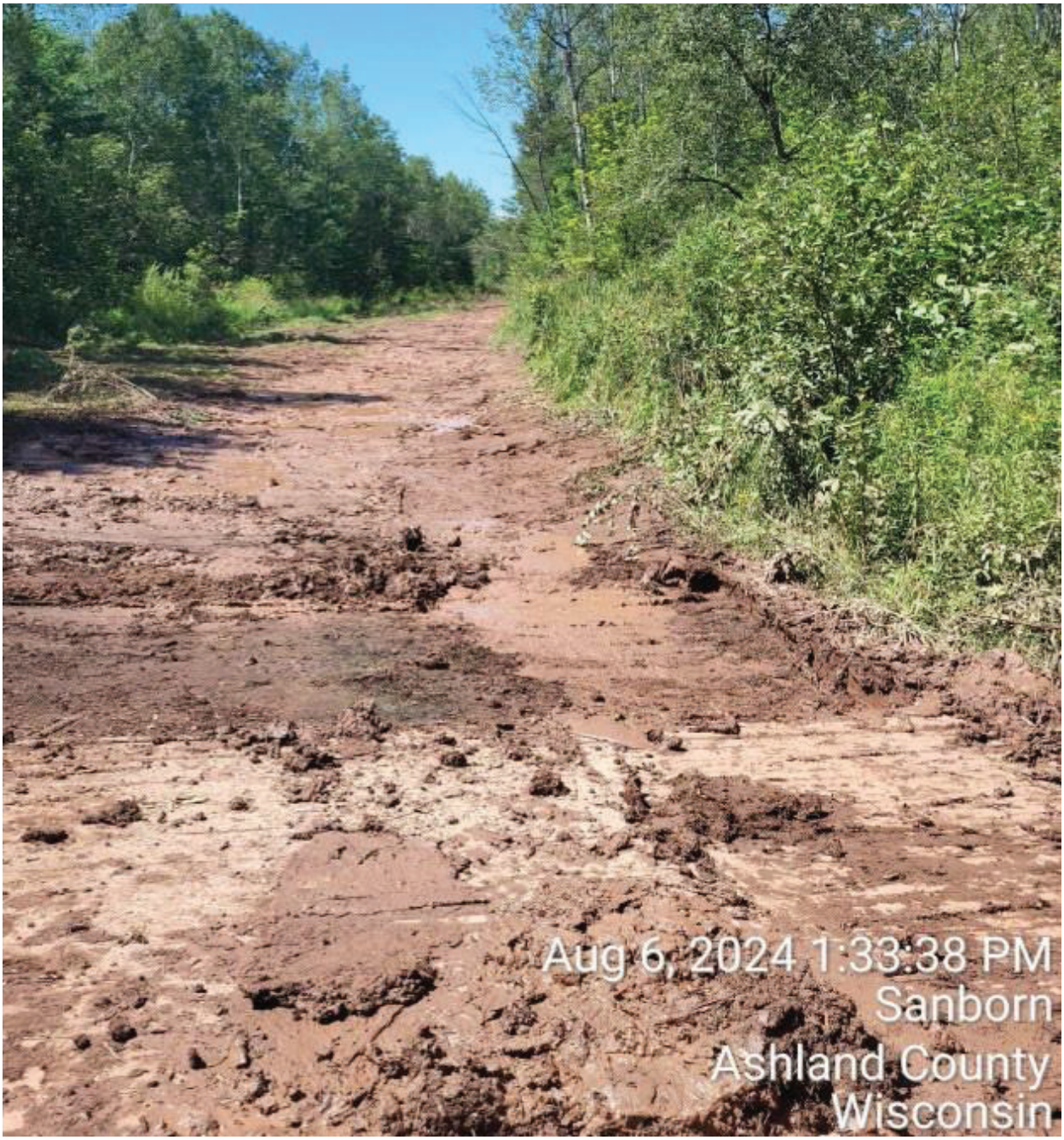

Figure 9. The photo shows a portion of the access route where the construction matting was removed—in the background, the exposed soils have been "smoothed" with the backhoe bucket, while the area in the foreground is still rough and uneven from the matting being installed and its removal.

Figure 10. The photo shows the installation of straw bales to attempt to contain sediment from soils disturbed by the construction matting moving outside of the construction corridor and farther into the wetlands. Sediment deposits can be seen on both sides of the straw bales, indicating that either these sediment control practices were not implemented when they should have been, or they were not installed correctly.

Figure 11. The photo of soil compaction left after the removal of the timber matting along an access route on the Bad River Reservation. The traffic along the matting pushed softer soils out from under the matting (built-up mud towards the top of the picture) and then compressed the soils that remained to the point they were as hard as the timbers that left the pattern on them (bottom of the photo).

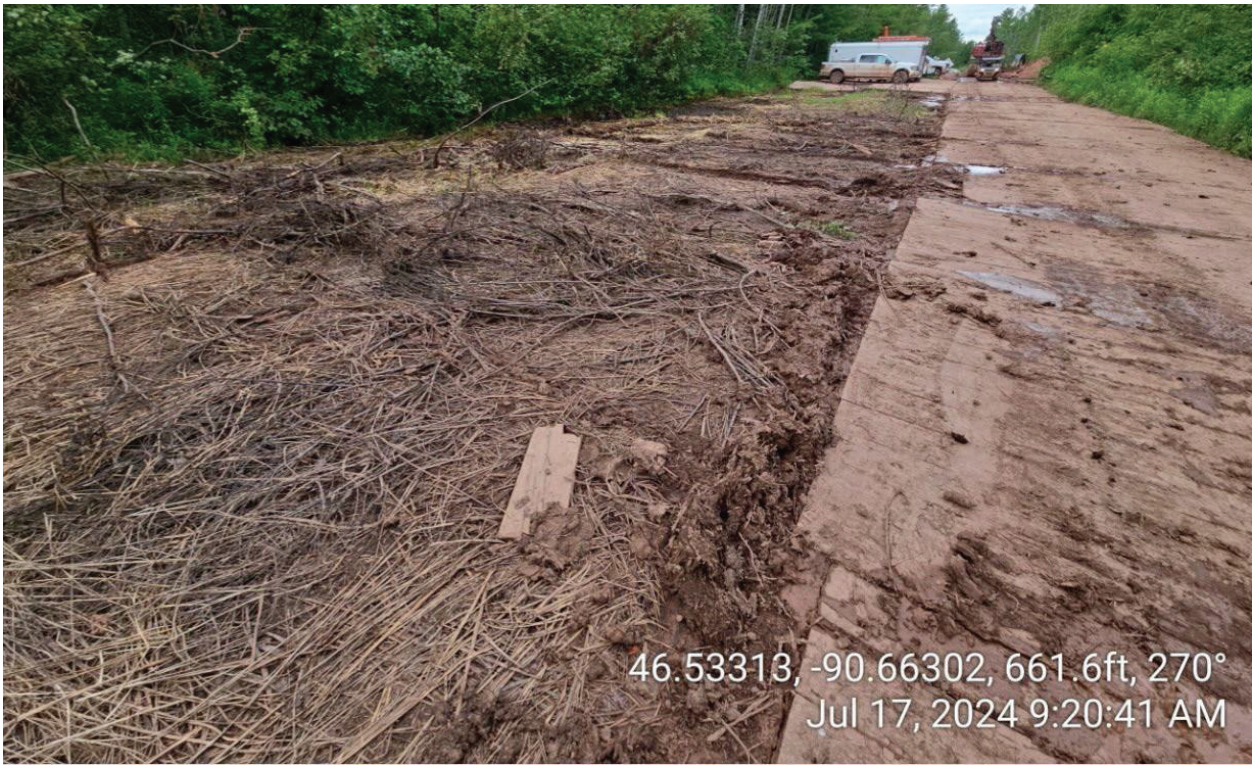

Figure 12. A photo from July 17, 2024, showing a location where timber matting was installed, then removed, for construction activities on the Reservation on Line 5.

References

Bad River Band of Lake Superior Tribe of Chippewa Indians. July 2011. Water Quality Standards. Resolution No. 7-6-11-441.

MNRD Environmental Report – Corps DCDD Public Comment – August 27, 2024. MNRD Wetland Report – Corps DCDD Public Comment – August 27, 2024.
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Wright Water Engineers, Inc. Line 5 Check Valve Wetland Impact Quantification Summary. June 10, 2025.

Thompson, A. 2025. Thompson Report on Bad River Tribe's CWA 401(a)(2) "will affect" determination of the impact of the Enbridge Line 5 Re-Route Project on Bad River Reservation Tribal Waters. June 9, 2025