



Alice Thompson, MS, SPWS

Thompson & Associates Wetland Services. LLC
1514 Menomonee Ave.
South Milwaukee WI 53172
414-571-8383

April 20, 2023

ADDENDUM TO REVIEW OF ENBRIDGE LINE 5 WISCONSIN SEGMENT RELOCATION PROJECT
FIELD REVIEW SEPTEMBER 26-27, 2022

Alice Thompson of Thompson and Associates Wetland Services, LLC was retained by the Mashkiiziibii Natural Resources Department (NRD), formerly the Bad River Natural Resources Department, to review the wetland data provided by Enbridge in the relocation project, located in Ashland and Iron Counties, Wisconsin¹. The proposed re-route skirts the Bad River Reservation on the west, south and east sides to join an existing pipeline route. The re-route is in a very water and wetland rich area of the state crossing major waterways and huge wetland complexes that primarily drain towards the Bad River Reservation to outfall into Lake Superior. The Bad River also flows through Copper Falls State Park and State Natural Area.

Previous reports (Report 1, 7.10.2020 , Response to WDNR EIS 3.13.2022, and Response to USACOE IP 3.13.2022) documented issues following a desktop review of the EIS, and IP permit data and a field review of wetlands in Iron and Ashland County public land on August 17-20, 2021. In 2021 we focused on significant forested wetlands in the Iron County corridor adjacent the Potato River, as well as wetlands in Iron County Forest Land in the vicinity of County Line Road. These wetlands had a state endangered plant, which was underreported by Enbridge consultants.

In this 2022 field review we focused on wetlands in the vicinity of **Tyler Forks River** (WBIC 2923100), a tributary to the Bad River that crosses the southeast corner of the Bad River Reservation. The entire river is considered a cold-water trout stream by the WDNR (Surface Water Data Viewer), an Outstanding

¹ There is additional work being proposed in Bayfield County (valve sites) and Douglas County (temporary pipe yard) as well related to the project, but these counties were not the focus of this review.

Resource Water under the Tribe's Water Quality Standards on-Reservation, and has stretches classified as an Exceptional Resource Water by the State of Wisconsin.

Methods: We recorded vegetation, landscape position, hydrology and wildlife for wetlands encountered. Plant names will feature the scientific name and common name the first time they are noted, with further mention using the common name. Ojibwe names are in bold. We used a 6 foot long section of rebar to measure the depth of wetland soils. Positions were noted with a Bad Elf GPS device and tracks were recorded with a Montana Garmin GPS device. The pipeline proposed route, company wetland polygons, WDNR mapped wetland polygons and points too small to delineate were uploaded on the Bad Elf. In addition thick and thin blue streamlines were uploaded from Great Lakes Indian Fish and Wildlife Commission (GLIFWC). These lines were based on an ArcGIS model of LIDAR data modeled by GLIFWC and their contractors. The polygons and lines allowed us to understand our positions on the route and inform us as to additional areas to investigate. Bad Elf notes are added in parenthesis as (BE...). Missed wetlands were noted if they had significant wetland vegetation, were in an appropriate landscape position and had evidence of hydrology. The designation of "Missed Wetland" is our best professional judgement in the field.

The map set in the WDNR Draft EIS Appendix H (52 pages) is dated 8/12/2020. The map set in the USACE permit application Appendix A, Attachment B map set (50 pages) is dated 12/30/2021. The USACE permit map set is referenced below as it is more recently created.

Wetland names by Enbridge consultants begin with W for wetland, the county Ashland (as) or Iron (ir) and the final e refers to emergent, s is scrub shrub and f is forested. WWI wetlands may be noted as well if they were not noted by Enbridge.

EXECUTIVE SUMMARY

The findings of our field review uncovered multiple missed wetlands within the survey corridor. We noted at least 14 basins with wetland vegetation on an appropriate landscape setting (Missed wetlands MW 2022_A to N). We did not do a soils examination, so these wetlands are potential, however the company did not have data points to demonstrate that they were not wetland.

This is very concerning as the wetland impacts are underreported in the permit application. Aside from direct impacts for unreported wetlands within the construction corridor, unreported wetlands outside the immediate corridor could be harmed by dewatering operations that unknowingly delivering sediment to them. Unmapped wetlands are vulnerable to driving



Figure 1. Wetland complex wirc013f_x.

and rutting within them. Tree clearing and equipment staging could happen outside of planned areas. Over-clearing trees and pushing logs, soils or debris into unreported wetlands will cause harm. Besides the obvious habitat loss in the over-clearing of trees there is a change in water transpiration out of the ground and a loss of leaf litter dropped by deciduous trees that alters the soil surface.

Some wetlands that were delineated had more extensive boundaries and surface water connections than the company mapped, as demonstrated south of the Tyler Forks crossing. This underreporting both underrepresents wetland impacts within the construction corridor and outside it.

There are more connections between wetlands than is noted in the company delineation. There are more drainages and wetland swales. These features will be destroyed during construction and the resultant landscape will potentially have less hydrologic connection. The connections also pose a risk related to construction dewatering by allowing sediment to travel greater distances. The wetlands we reviewed had no invasive species and were biodiverse. We found amphibians and amphibian habitat in multiple wetlands including spring peepers, wood frog, bullfrog, and red backed salamanders.



Figure 2. Wetland wirc013f

The wetland system south of Vogues Road, Wetland **wirc013f_x** (description starting on page 18 below) is a stunning wetland with at least two orchid species, and a plethora of native trees, shrubs, and forbs including mature northern white cedar and mature black ash. The habitat had pools of standing water and a running rivulets of water that do not appear on the company maps. Because this wetland is proposed for open trenching, along with many other forested wetlands in this project, there is high risk of decades or more of damage to the structure, functions and wildlife that inhabit this wetland, both within the immediate construction corridor and outside of it.

The company's calculation of harm with the summary of direct, indirect, and cumulative impacts to each of these wetlands *underestimates* the actual physical and biological damage that will follow this proposed pipeline construction and long-term maintenance. There are cumulative repercussions by the construction of this proposed pipeline, that we cannot quantify yet. For example, an improved forest road system and access may open the public lands to more logging or other unknown impacts.

These wetlands are in public land in the ceded territory of the Ojibwe (Treaty of 1842, GLIFWC Map). There are multiple plants and animals present of cultural significance that are available by treaty rights for the Tribes to harvest.

The uplands adjacent the wetlands were commonly forested and had mature trees that are valuable buffers to the wetlands. There were two delicate bird nests found—small songbird nests that are a visible reminder of the value of this forest wetland/upland system to Wisconsin songbirds.

Field Review:

On September 26 and 27, 2022 a team performed field reviews of wetlands within the proposed Line 5 re-route on Iron County Forest Land open to the public. The field team on September 26 and 27, 2022 was composed of Alice Thompson and Aaron Menke of Thompson & Associates Wetland Services, LLC; Jessica Strand, Environmental Specialist and Zakk Zander, Wetland Specialist at the NRD; and Dawn White, Treaty Resource Specialist at the Great Lakes Indian Fish and Wildlife Committee (GLIFWC).

We focused on the **Tyler Forks** watershed, walking north on the first day towards the Tyler Forks HDD location, and we walked south towards the Tyler Forks HDD crossing the second day.

We began our review on September 26, 2022 after parking cars on Vogues Road and Casey Sag Road, on the east side of **Tyler Forks** river.

[REDACTED]. We crossed the river (**sira004p**) and walked north on forest road AR 083 (This portion of the project shown on Maps 39 of 50 - 12/30/21). Our goal was to field review wetlands mapped by Enbridge consultants, review additional areas mapped by Wisconsin Wetland Inventory, and note any unmapped and unreported wetlands within the survey corridor. We also assessed the possible impacts of pipeline construction on the wetlands.

The growing season was in effect as all the trees had leaves. The weather was intermittent rain showers with an overcast sky. The temperature was ~ 50 degrees F.

Map Page 39 of 50 (USACE Permit) September 26, 2022:

The forest trail AR 083 is proposed to be used during Line 5 construction. The trail had an unreported wetland at just west of the trail and within the survey corridor approximately 385 feet north of Casey Sag Road. (BE Wetland 1, Line1). The wetland **MW 2022_A** extends west of the forest road and consisted of *Populus tremuloides* (quacking aspen) and *Ilex verticillata* (winterberry) in the tree and shrub layer and *Glyceria striata* (fowl manna grass), *Dryopteris carthusiana* (spinulose wood fern), and *Rubus pubescence* (dwarf red raspberry) in the ground layer. A ruffed grouse drumming was heard. Wetland soils were 15" to bedrock.

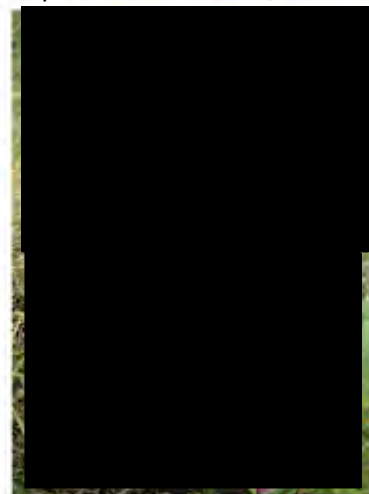


Figure 3. [REDACTED]



Figure 4. MW 2022_A west of AR 083

North on AR 083 wetland **Wirb 040e** crosses the trail and joins **Wirb 040f**. Vegetation included *Typha sp.* (cattail), fowl manna grass, *Carex gynandra* (nodding sedge), *Cleome glabra* (turtlehead), *Verbena hastata* (blue vervain), *Persicaria sagittata* (tear thumb), and *Impatiens capensis* (jewel weed). There was standing water in ruts on the trail (Figure 5). There is a drainage feature, mapped by GLIFWC that is unreported on Enbridge mapping.



Figure 5. Wirb040_e: Standing water in trail ruts.

Wirb 040f connects to the above Wirb 040e and is a black ash swamp to the west of the trail. **Bine**, *Bonasa umbellus* (Ruffed Grouse) were heard drumming.

Wirb 041e_w was reviewed on the trail.

Northeast of Wirb 041e_w and close to the junction of the trail to the proposed pipeline route is a **missed wetland MW2022_B** (BE Wetland 2) that is outside the trail but well within the company survey corridor. Missed wetlands are a concern even outside the presumed company workspace disturbance width due to the possible construction impacts including but not limited to spoils, erosional deposition, trench water flow, and equipment or materials staging.



Figure 6. MW2022_B

This wetland was a concave basin with blackened leaves. It had downed logs with moss, *Fraxinus nigra* (black ash) seedlings, *Equisetum sylvaticum* (woodland horsetail), *Athyrium filix-femina* (Lady fern), and *Onoclea sensibilis* (sensitive fern), Wetland soils were 15 inches to bedrock.

At this point the trail joins the proposed pipeline route and we walked north parallel to the route.

Approximately 340 feet north of the trail/pipeline junction was an area of **missed wetlands** in an upland/wetland mosaic that form like pearls on a string, from the west side of the proposed pipe to the northwest connecting with **wirb038e_w**, located west of the pipe centerline.



Figure 7. Missed wetland MW2022_C

Missed wetland MW2022_C (BE3) was not delineated by the company. It is a WWI point “too small to delineate” within the company mapped workspace and well within the delineated survey corridor.

The wetland was a concave basin with blackened leaves and watermarks on trees at 11” above the ground. Trees had buttressed roots. Vegetation included woodland horsetail, Lady fern, *Carex*

intumescens (bladder sedge) and *Parthenocissus quinquefolia* (Virginia creeper). Wetland soils were 24.5 inches to rock. *Thuja occidentalis* or Northern white cedar seedlings were found in and adjacent the wetland. A *Pseudacris crucifer* (spring peeper) was observed.

Missed wetland MW 2022_D (BE Basin 1) was not delineated by the company, and is found west of the centerline of the proposed pipe and south of **wirb038e_w**. It is within company mapped workspace. It was a concave basin with blackened leaves. Vegetation included woodland horsetail, Lady fern, and *Deparia acrostichoides* (silvery speenwort).

Missed Wetland MW 2022_E is west of the proposed pipe and connects to **wirb038e_w**. The concave basin had blackened leaves. Vegetation included black ash seedlings, *Carex bromoides* (brome hummock sedge), Lady fern, silvery speenwort, and bladder sedge. Wetland soils were 23" deep.

A delicate songbird nest was found 4 feet off the ground in a sugar maple sapling that was woven of thin fibers and sheds of birchbark (Figure 9).

We field reviewed wetland **wirb038e_w** delineated by the company west of the proposed pipeline and south of Tyler Forks. This wetland was a concave basin with blackened leaves and high water marks on trees to 16" above soil surface. Vegetation included brome sedge, *Scirpus atrovirens* (blue green bulrush), fowl manna grass, *Osmunda cinnamomea* (cinnamon fern), *Onoclea sensibilis* (sensitive fern), *Arisaema triphyllum* (jack in the pulpit), *Matteuccia struthiopteris* (ostrich fern). There were silver maple in the overstory with water marks at 16 inches above the ground. Wetland soils were 15 " to rock.

The series of basins described as Missed Wetlands **MW 2022_C** to **MW 2022_E** (Bad elf wet basin 2) form a drainageway that flows from the east side of the centerline, across the centerline and northwest to **wirb 038e_w** which in turn flows to Tyler Forks. We mapped drainages connected these basins (BE Track1, BE Track2). This series of connected unmapped wetlands not only represents wetland acreage missed but a potential risk to Tyler Forks. These wetlands are in the location of the proposed HDD bore portion of Tyler Forks, but could potentially be impacted by equipment, travel corridors that create erosion, or a path for an unanticipated release of drilling fluid to reach Tyler Forks.



Figure 8. MW 2022_D



Figure 9. Songbird nest 2 1/4" across, 2" deep

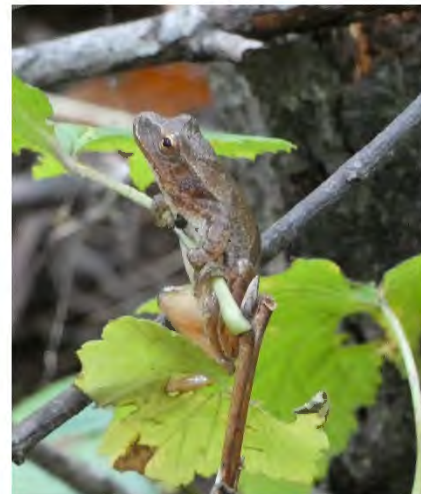


Figure 10. Spring peeper perched on a twig in MW 2022_F.

As we walked north within the delineated route to Tyler Forks (west of the centerline) we found Missed Wetland **MW 2022_F** (BE Basin 3) south of the river. This concave basin had blackened leaves, in a topographic low point. There was scarce vegetation, it was a sparsely vegetated concave basin. Wetland soils were 16" deep. Lady fern was noted, and a spring peeper was observed (Figure 10).

Tyler Forks (sirb012p) banks showed multiple [REDACTED]. The river water was clear with iron-stained water. The bottom cobble was visible.

This portion of the route is a recovered cutover forest with 90-100% tree canopy. Trees included *Acer saccharum* (sugar maple), *Abies balsamea* (balsam fir), *Prunus serotina* (black cherry), and *Ulmus americana* (basswood). Woodpecker holes were evident on trees. Beaver cuts on stumps were visible



Figure 12. Zakk standing at centerline facing north to river edge. Mature trees in clear zone.



Figure 11. Tyler Forks at Pipeline crossing facing west.

and a possible beaver dam or log jam downstream was visible. This wetland **wirb037s_w** is mapped by the company as shrub or PSS wetland, despite abundant trees. It would be more accurate to classify as forested or PFO (Figure 12). As proposed for HDD a wider workspace is shown on both side of the river which will entail deforestation and disturbance to vegetation and soils. The workspace is proposed to be an additional 50 feet for a total of 150 feet.

The company delineated two wetlands, **wirb037s_w** and **wirb035e_w** east of the proposed pipeline corridor and within the delineated corridor.

Wetland **wirb037s_w** extends to the southeast of the centerline and curves away from the river. The company polygon is *not representative of the actual size of the wetland*. We found concave basins outside the mapped polygon with blackened leaves and basswood had buttressed roots. The vegetation included woodland horsetail, Lady fern, fowl manna grass and brome sedge. Wetland soils were 26" deep. *This wetland extended farther south than the mapped polygon.*



Figure 13. Water clarity of Tyler Forks- cobble visible

Wirb037s_w connects (BE Track 4) to **wirb035e_w** that was delineated by the company as an isolated basin. Our field review found a connected system. The vegetation continued as above with black ash trees overhead and the addition of *Equisetum hymale* (tall scouring rush), bladder sedge, and sensitive fern. Wetland soils were 23" deep. Multiple spring peepers were seen. We found a more connected system with series of basins including these two and extending south and southwest with other missed wetlands that were missed in the company delineation. The basin are connected with shallow drainages, and curve back towards the construction corridor.

Missed Wetland **MW 2002_F** (BE Track 5, 6) were basins west and southwest of wirb035e_w. They were concave basins with blackened leaves, buttressed tree roots, and high water marks on trees. Vegetation included black ash in the overstory, *Scheonoplectus tabernaemontani* (soft-stem bulrush), bladder sedge, *Rumex britannica* (great water dock), and woodland horsetail. Spring peepers were observed.



Figure 15. MW 2022_F



Figure 16. MW 2022_F - a long connected series of basins



Figure 14. MW 2022_F- Blackened leaves, woodland horsetail and great dock



Figure 17. Missed Wetland MW2022_F

This Missing Wetland MW 2002_F continues east of the pipeline corridor as a basin with blackened leaves. Water marks were 16 inches above soil surface on black ash.

There were two **jiibegob** *Dirca palustris* (leatherwood) adjacent the wetland. **Jiibegob** (*Dirca palustris*) has traditional cultural uses in this public land in the ceded territory of the Ojibwe (Treaty of 1842, GLIFWC Map). The bark is smooth and pliable and used in basket weaving, bow strings and fish line.

Skaa'agon-mins^v or Musclewood (*Carpinus caroliniana*) was found in the vicinity as well. **Skaa'agon-mins** is a cultural resource, and traditionally used as main support posts in wigwams or tents due to the strong close-grained wood.



Figure 18. Skaa'agon-mins or musclewood with D. White



Figure 19. Jiibegob or leatherwood



Figure 20. Seersucker sedge

Carex plantaginea or seersucker sedge was found on the bank of this basin as well. There are no known locations of the plant in Iron County according to Wisc Flora. *Carex plantaginea* also has a Coefficient of Conservation of 10, which is indicative of a very low tolerance for human disturbance. Although it is not mentioned in the NHI database in WI, it is considered an endangered plant in Minnesota as it is in the western edge of its range there.

BE Line Drainage 2 in centerline- Missed Wetland **MW 2002_G** is found within the proposed pipeline centerline. This concave basin had not been mapped by the company. It was a drainageway with 11.5 inches of soft soils. We could not verify that it met all wetland criteria. However these missed topographic drainages confound how the construction will alter hydrology.



Figure 22 Possible MW 2022_G on centerline



Figure 21. Zakk at MW 2022_G standing on centerline.

Missed Wetland **MW 2002_H** (BE Wetland 4) was found within the surveyed corridor. The vegetation included woodland horsetail, lady fern, fowl manna grass, *Osmunda claytoniana* (interrupted fern), *Mitchella repens* (partridgeberry), and *Sanguinaria canadensis* (bloodroot). Wetland soils were 4 inches deep.

We walked south on the forest trail and cut over west to **wirb039s_w** delineated by the company, in the vicinity of the pipeline centerline.

We had seen trucks parked from other environmental firms on Vogues Road and Casey Sag Road, on the east side of Tyler Forks River at the start of our field work, and noted 5 persons leaving as we were walking in. At this wetland (wirb039s_w) we noted a recent soil core ~27 inches deep that appears to be a soil sample close to the centerline (photo to right). A second area of disturbed soil was noted a bit later in the day approximately 20 feet north.



Figure 23 recent soil core at wirb039s_w

This wetland **wirb039s_w** is classified as a shrub dominated wetland by the company. The classification of forested would be more appropriate. We found a mosaic of forested, shrub, and sedge dominated wetland. The trees were immature forest with a shrub layer, varying from 50-60% tree cover. Shrub cover was estimated to be ~ 25% cover. Vegetation included *Populus tremuloides* (quacking aspen), *Acer rubrum* (red maple) and black ash in the overstory. Shrubs included winterberry and *Salix sp.* (willows), likely *Salix petiolaris* or slender leaved willow. The understory included *Carex crinita* (fringed sedge), blue green bullrush, *Doellingeria umbellata* (flat topped aster), woodland horsetail, *Geum macrophyllum* (large leaved avens), *Cleome glabra* (turtlehead), *Symphoricarpos puniceum* (purple stemmed aster), sensitive fern, *Pteridium aquilinum* (bracken fern), *Osmunda regalis* (royal fern), and *Osmunda claytoniana* (interrupted fern).

This wetland extends into the construction zone farther than mapped by the company. The wetland extended to the northeast (BE wetland 5) . Black ash was in the tree and shrub layer, otherwise, the vegetation was similar to that noted above in **wirb039s_w**. The concave basin had blackened leaves, with microtopography throughout, trees had shallow roots. Wetland soils were 11 inches deep.

Another point (BE Wetland 6) was a concave basin with blackened leaves, and microtopography. Black ash in the tree and shrub layer had shallow roots. *Carex crinita* (fringed sedge) was found in the understory.

The company missed numerous wetland basins, in a wetland/upland mosaic. These areas are within the mapped construction corridor and correspond with a mapped blue line created by GLIFWC.

The wetland mosaic continued until solid upland was reached close to the company upland plot. This area was 1-2 feet higher on the landscape with planted spruce. A number of large **ajiadamoo** or red squirrel caches were found surrounding spruce trees.

This wetland mosaic is undervalued in size, with wetland areas outside the delineated polygons not included on company maps. It is also undervalued as a shrub community. It is an immature forest complex with shrub, sedge openings.

Wirb040f_xw was briefly field reviewed on the hike back to our cars. We noted a lot of microtopography and woody debris in the basin, and a wood frog was observed (photo to right).

Map Page 40 of 50 (USACE Permit) September 27, 2022:

The second day of field work we parked our cars at Vogues Road. The day's weather was intermittent rain, overcast skies, and ~48 degrees F. The growing season was in effect, all the trees had leaves on, and maple leaves were turning red. The team of Thompson, Menke, Strand, Zander and White were present.



Figure 24 wirb039s_w



Figure 25 Ajiadamoo or red squirrel cache



Figure 26. Ajiadamoo or red squirrel



Figure 27 wood frog in wirb040f_xw

We walked on the proposed pipeline centerline from Vogues Road south. The entire length of our field review was in wetlands that are proposed to be open trenched. Only a small segment of wetland on the north side of Tyler Forks is proposed to have an HDD.

The following are a series of potentially missed wetlands. We did not do a full investigation including soils, but based on vegetation, hydrology and landscape position these areas appear as likely wetlands. There is no company data that ruled these out.

A small, missed wetland was noted on the centerline (BE_A). **MW 2022_I** was an oblong concave basin. Vegetation included woolgrass, blue green bullrush, *Schoenoplectus tabernaemontani* (soft stemmed bullrush), *Solidago gigantea* (late goldenrod), *Carex* sp. and *Eutrochium maculatum* (Joe Pye weed).

A missed hillslope seep **MW 2022_J** was located east of the proposed work area but within the survey corridor BE B Hill side seep). It had vegetation similar to the previous missed wetland with the addition of purple stemmed aster, fowl manna grass and *Juncus effusus* (soft rush).

Another missed hillslope seep **MW 2022_K** ~ 6 feet east of the eastern proposed workspace had similar species to A and B (BE C Seep Hill). Vegetation included woolgrass, woodland horsetail, soft rush and Joe Pye weed.

We then noted wetland **wirc1018-f** a small basin that appears to be delineated by the company. There was 7 inches of standing water in this basin and thin 3 inch deep wetland soils. This wetland may be larger than delineated.

South of this wetland is another **missed hillslope seep MW 2022_L** with similar vegetation to the previous seeps (BE E seepy slope).

We reviewed **wirc1019f** that was delineated by the company and extends across and beyond the pipeline corridor. This wetland is proposed to be open cut and trenched. We meandered through the wetland. This forested wetland contained mature Northern white cedar and cedar saplings, showing active regeneration. Trees also included black ash, *Betula alleghaniensis* (yellow birch), *Tsuga canadensis* (Eastern hemlock) and red maple. The understory included Lady fern, ostrich fern, *Lycopus uniflorus* (Northern water-horehound), *Persicaria sagittate* (arrow leaved tear thumb) and a carpet of sphagnum moss. The wetland soils varied from 8 ½ to 38 to 56 inches in depth. There were blackened leaves and microtopography with shallow pools of water. The trees had shallow roots. The forest was recovering from past harvesting likely in the last century, however there were many good sized trees and areas that were mature and not harvested recently. The wetland forest overall was in good condition. Cutover stumps were moss covered, some acting as nurse log with hemlock and yellow birch as Figure 28 documents.



Figure 28 nurse log in wirc1019f

This forested wetland provides good habitat for amphibians. We found an Eastern Red-backed Salamander (*Plethodon cinereus*) under a log.

According to WDNR information on this salamander:

“Redbacks live in woodlands with moist soils and undisturbed ground cover. They are commonly found in or under moist downed logs. Eastern red-backed salamanders, because of their high densities, are an extremely important component of Wisconsin's northern forest ecosystems. They subsist on arthropods, snails and annelids.”



Figure 29 red-back salamander under a log in wirc1019f

Multiple wetlands in the vicinity of Tyler Forks provide moist rotting logs, and rocks that provide appropriate habitat for the Eastern red-backed salamander. *The proposed pipeline construction will destroy and displace the forest logs and microtopography that harbor amphibians.*

We also noted cut **aninaandag** or balsam fir boughs that are a cultural resource in the ceded territory. These appear to have been harvested (Figure 30).

As we meandered through this wetland there were lower areas with an inch of standing water (GLIFWIC mapped blue line on our maps). Vegetation included cattail, and *Iris versicolor* (blue flag). Slightly higher ground had carpets of club mosses (*Lycopodium sp.*) and *Gaultheria procumbens* (wintergreen).



Figure 30 harvest of balsam fir evident



Figure 31 Sphagnum moss carpet in wirc1019f

The forested wetland (wirc1019f) continued with areas of mature northern white cedar (Figures 34 & 35 below). Eight large mature cedars were counted in one area. Large logs provide shelter and the red-backed salamander was present. The depth of wetland soil was 56 inches in this area.



Figure 33. Another red-backed salamander in wirc1019f



Figure 32. Microtopography and downed logs provide critical habitat in wirc1019f.



Figure 34. mature white cedar in wirc1019f with Dawn White



Figure 35. Mature white cedar in wirc1019f

We found another area of recently disturbed soil on the southeast border of the wetland within the proposed construction corridor.

South of **wetland wirc1019f** in company mapped upland (Figure 37) we encountered depressions with microtopography that supported obligates such as woolgrass. Because we do not see that the company collected data here, it is another possible **Missed Wetland** (Oly 288).

Wetland **wirc1022f** was reviewed (BE_H). the vegetation was forested with black ash in the overstory. Dawn White noted that Black ash or **aagimaak** has cultural uses including strips of wood used in basketmaking. Trees for this purpose need to be healthy, full leaved, straight, with few bulges, and bark surrounding the trunk. An example of a possible tree for this use was found by Dawn and is shown in Figures 39 & 40 (BE I).

The understory of this wetland was dominated by sedge tussocks including *Carex crinita* (fringed sedge) and *Carex tuckermanii* (Tuckerman's sedge). Other plants included Canada bluejoint grass, *Boehmeria cylindrica* (false nettle) and Northern water-horehound.



Figure 36. recent soil bore in wirc1019f.



Figure 37. Possible missed wetland in mapped upland.



Figure 39. Black ash is culturally important.



Figure 38. Dawn White with a black ash suitable for cultural uses.

We noted another missed wetland **MW 2022_M** (BE J) just on or close to the survey corridor southeast of Wirc1022f. It had microtopography with low points and supported wetland vegetation including woolgrass. This is also close to the large mapped WDNR wetland surrounding the corridor.



Figure 41. Closeup of the same black ash in Figure 39.

Figure 40. Zakk at possible MW 2022_M

Missed Wetland **MW 2022_N** (BE K) was found 150 feet north of wirc013f. It is within the survey corridor and within the proposed 120 feet corridor with additional 50-foot workspace north of mapped wirc013f (total of 170 feet in width). This undelineated forested wetland had an overstory of black ash and red maple with one northern white cedar. The understory contained black ash and northern white cedar seedlings, woolgrass, Joe Pye weed, *Symphotrichum lateriflorum* (calico aster) and *Euthamia graminifolia* (grass leaved goldenrod). There was slash on the ground. The basin had microtopography and wetland soils were 21 inches deep. **The construction impact to this wetland is unreported or uncounted.**



Figure 42. Missed wetland MW 2022_N.

Walking south we encountered an upland mature old growth forest of massive northern white cedar and hemlock trees that is due north of wetland **wirc013f**. The Eastern hemlock or **gaagaagimizh** are shade tolerant, slow growing and long lived (up to 600 years). Although these trees are not protected in uplands, they provide important ecosystem services to the adjoining wetland slowing down water flow and harboring wildlife. **Gaagaagimizh** has cultural importance as a traditional medicine. These old trees are in the centerline of the pipeline disturbance. Although there is evidence of forestry harvest in uplands to the north, the upland buffer to this large wetland has not been disturbed. This buffer is unreported by the company, despite being on the proposed centerline.



Figure 43. Mature old growth hemlock in uplands as buffer to extensive wetland complex

The delineated wetland **wirc013f_x** is a portion of a very extensive undisturbed swamp forest. Previous delineations also delineated this forest to the east on a former route. The mapped WWI polygon is over **83 acres in size**, this proposed pipeline route bisects the eastern portion of the wetland.

The wetland was of high habitat value, high wildlife value, and high aesthetic value. It is also so rich in water, seeps and small streams that the prospect of an open trench to install the pipeline will create a construction nightmare.

We could only review a small portion of this wetland due to time constraints and the difficulty traversing the wetland. Also the biodiversity and microtopography was so rich that it was extremely difficult to move fast. However, based on where the company took one wetland data point, our team covered more of the wetland.



Figure 44. Mature old growth white cedar on upland buffer.



Figure 45. Zakk standing on centerline, facing south with old growth cedar and hemlock in direct impact zone.

The wetland appears to have had little historical disturbance. The overstory included Northern white cedar, Eastern hemlock, red maple, and *Acer spicatum* (mountain maple). All age class of trees were present including northern white cedar seedlings. The understory included sedges, Brome hummock sedge, dwarf red raspberry, *Chrysosplenium americanum* (American golden saxifrage), sensitive fern, false nettle, *Cicuta bulbifera* (bulblet-bearing water hemlock) and multiple orchids past bloom. The possible identification is a *Platanthera sp* green bog-orchid however there are difficulties identifying to the species level according to Risen (Risen, Orchids of the North Woods 2010). We counted eight *Platanthera sp.* in one area. The company delineation notes a different orchid present: *Corallorhiza trifida* or early coralroot (page 5251 of Application Attachment C1_2020 data). Based on this there are at least two orchid species present.

Wildlife included **bine** or ruffed grouse drumming, in multiple locations. We found an American bullfrog (*Lithobates catesbeianus*). Although we suspect this is similar habitat to wetland **wirc 1019f** for the red backed salamander, the logs in this wetland were too embedded and large to roll over.

This area should be surveyed for threatened and endangered plant and animal species including Pine Marten .

Waabizheshi, *Martes americana*, Pine Marten is a state endangered mammal known to Ashland and Iron County. They were re-introduced into the state after being extirpated in 1939 due to trapping and habitat loss. According to the WDNR: “American martens live in mature, dense conifer, deciduous, and mixed conifer-hardwood forests. They prefer forests with a mixture of conifers and deciduous trees including cedar, balsam, hemlock, white pine, yellow birch, maple, fir and spruce. Especially critical to marten use is the presence of large snags, fallen trees, stumps and root mounds, known as coarse woody debris. These forests provide prey, protection and den sites. Mature trees with large cavities are also important, meaning yellow birch may be an important species. Areas with windfalls provide the needed shelter, prey abundance, and access to the prey at ground surface under deep snow. Optimal winter habitat is characterized as mature to overmature conifer forest with 40% fir or spruce and canopy closure greater than 50%. Martens rarely cross open areas. Historically, cutting of large areas of mature conifer forests destroyed much marten habitat.” WDNR

This large undisturbed wetland swamp habitat could harbor **waabizheshi** or pine marten.

The wetland soils measured were 16 inches in depth. There were downed logs covered in moss and lichen, and pools of water creating micro habitats within. Hydrology included pools of standing water ranging from an inch to several inches in depth, saturated soils to the surface, water stained leaves and microtopography. We also found a stream of water actively flowing across the prospective work space. This was in a fairly dry time of year.



Figure 46. Unidentified orchids- possible *Platanthera sp.*



Figure 47. American bullfrog in wirc013f_x

It is painful to imagine how this wetland forest would fare after tree and log removal, vegetation removal, trenching with spoil banks, dewatering a trench that would continuously fill with water, transport of sediment laden trench water to other parts of the wetland, compression of muck and soft soils with timber mats and heavy equipment, equipment rutting, eventually replacing the trench and leveling out all microtopography and altering hydrology. The construction will cause irreparable harm to this wetland system, and cause the death of trees, seedlings, vegetation and amphibians among others.

Habitat suitable for rare species including rare mammals will be lost, and the corridor will create route for invasive species.

The company functional assessment contains some errors. It notes the Potato River as the watershed, when in fact it is within the Tyler Forks watershed (10 digit HUC 0401030202). The Potato River is north of this wetland proposed crossing. The notes state that “wetland is adjacent to harvested area and appears to have had previous selective harvests.” (page 5252) Our field work- walking the proposed centerline- in fact found large mature upland trees that have not been harvested, and large wetland trees. There was some slash, but very mature old growth trees near the wetland boundary had been spared timber harvest. The company data points are on the far northeast portion of the survey corridor. In our examination, the upland forest harvest used forestry best management practices, harvesting selectively, sparing old growth trees and leaving an upland buffer to the wetland. This is not discussed by the company.

The functions (page 5253) are rated as 6 High including Floristic Integrity, Wildlife Habitat, Fish and Aquatic Life Habitat and Stormwater, Water Quality and Groundwater Processes. The Medium was for Human Use, and N/A for Shoreline protection. Despite these high rankings, the company describe Direct Impacts of temporary trenching, soil storage and backfilling (page 5254) as Low. Secondary impacts described as vegetation removal for construction are ranked Medium. Cumulative Impacts described as Operational vegetation maintenance is ranked Low. Spacial/Habitat Integrity describe as Temporary construction impacts is ranked as Medium. The company rates the impacts to Rare Plant/Animal Communities/Natural Areas as N/A.



Figure 48. Standing and flowing water in wirc013f_x



Figure 49. mature white cedars in wirc013F_x.

Compared to the WDNR Functional Rapid Assessment user guide: Direct impacts (WDNR) are immediate impacts as a result of the activity. Secondary Impacts (WDNR) are closely linked but occur over a longer period of time. This includes impacts to wetland buffers.

The parsing out of tree removal as a secondary impact appears to minimize it, especially as the cumulative maintenance of vegetation is ranked as low impact. This assessment also ignores the impact of forest removal of mature trees in the immediate upland buffer- which have no protection either by law or in terms of the width of removal in the corridor. Longer range impacts will be high as the probable importation of invasive species into the corridor, continual maintenance, the potential for disturbance if there is a pipeline rupture, and loss of critical habitat due to the bisection of a large undisturbed wetland complex.

The WDNR states that *Spatial/Habitat Integrity* refers to the loss of wetlands within an area where these wetlands may be critical habitat components to a species or assemblage of species. This is a loss not temporary but long term as the mature conifer/hardwood swamp will not recover due to constant maintenance. Both the physical and biological heterogeneity of the wetland will be lost for our lifetime and beyond the lifetime of the pipeline.

Cumulative impacts are impacts attributable to the proposed activity which may occur, based upon past or reasonably anticipated impacts on wetland functional values of similar activities in the affected area (WDNR). First, the cumulative impact of each wetland crossing for this project is additive. Each can be minimized by the company as negligible, low to medium impacts. But a pipeline of extending over two counties over so many Company admitted wetland crossings most of which harbor great biological and

topographical diversity, and few invasive species is additive or cumulative, and the designation of "Low" for cumulative impacts is disingenuous.



Figure 51. flowing water and abundant microtopography in wirc013f_x.



Figure 50. Water rich swamp in wirc013f_x.

A woman wearing an orange jacket, black beanie, and glasses stands in a forest. She is reaching out with her right hand towards a branch with yellowing leaves. The background is filled with trees and foliage, suggesting an autumn setting.

A close-up photograph of a cup-shaped, mud-lined bird's nest hanging from a branch, surrounded by green and yellowing leaves in a forest setting.

T&A Report Map 1 - Vouges Rd and South - Hillshade w/ 2022 Data Points

Iron County Forest Land - Vouges Rd

0 187.5 375 750 Feet

Legend

MNRD Bad Elf Data 2022

- Flowing Water
- Missed Wetland
- Wetland
- Wetland Length

Enbridge Data 2019 & 2020

- Upland_ACOE2020
- Wetland_ACOE2020
- Mileposts_Proposed_ACOE2020
- Centerline_Proposed_ACOE2020
- Workspace_ACOE2020
- Wetlands_Delineated_WDNR2019
- Wetlands_Delineated_ACOE2020
- Wetlands_Delineated_WDNR2020
- Survey_Corridor_ACOE2020

0 160 320 640 Feet



