

Jamie Batchelor, Planner
Rideau Valley Conservation Authority

July 5, 2021

Re.: Wetland Memo – 1009 Trim Road

Dear Jamie:

As discussed, the proponent is now planning the development of the full site. To facilitate the review of the Environmental Impact Statement (EIS) that will be prepared for this property along with the accompanying Habitat Enhancement Plan for the Site, we are providing our review of the wetland as a separate document. Information from this will be used in the EIS. The goal of this letter is to come to an agreement on the planned setbacks with respect to the provincially significant wetland and habitat restoration concept.

At this time it is noted that the full development of this site has been discussed with MECP and they have indicated that the project presented does not require an authorization under the *Endangered Species Act*. They have agreed with our assessment of the Site's value for turtles (all life stages). That discussion included the full lands labelled as Phase 1 and Future Phases on figures herein as the developable lands. A commitment to permanent turtle exclusion fencing has been made and will be installed 30 m from the edge of the wetland.

We also note that both the City and RVCA have agreed that the Headwater Feature, including the small pocket of wetland does not provide significant functions and can be removed (offset required). The size of the area to be offset has been agreed to be **525 m²**.

We have included the proposed habitat restoration work at the end of this letter. It includes rehabilitation of the lands into a combination of wetland, meadow and upland habitats and the removal of fill. That design has included a 30 m setback from the final wetland edge.

The main purpose of this letter is to support our conclusion that a 30 m setback from the existing PSW boundary is appropriate for this location for both the existing and future conditions. It is in response to the RVCA having indicated that a setback of 50 m could be required for the protection of the existing wetland and its functions. This letter begins with the provincial guidelines on this type of assessment, the review of scientific literature completed by others, description of findings of the PSW in concern and our conclusions. The conclusions include the draft habitat enhancement proposal for this 30 m setback.

EIS Guidelines/ Literature Review

This assessment of ecological functions are based on the guidelines summarized below.

1. Environmental Impact Statements are an analysis of the existing conditions and their functions.
2. PPS Section 2.1.8 states that development and site alteration within the adjacent lands of significant wetlands is not permitted unless the *ecological functions* have been evaluated and that there are no negative impacts to the features or their ecological functions. The PPS does not provide a recommended width of the adjacent lands for wetlands. It does state that a negative impact signifies:

c) in regard to other natural heritage features and areas, degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities.”

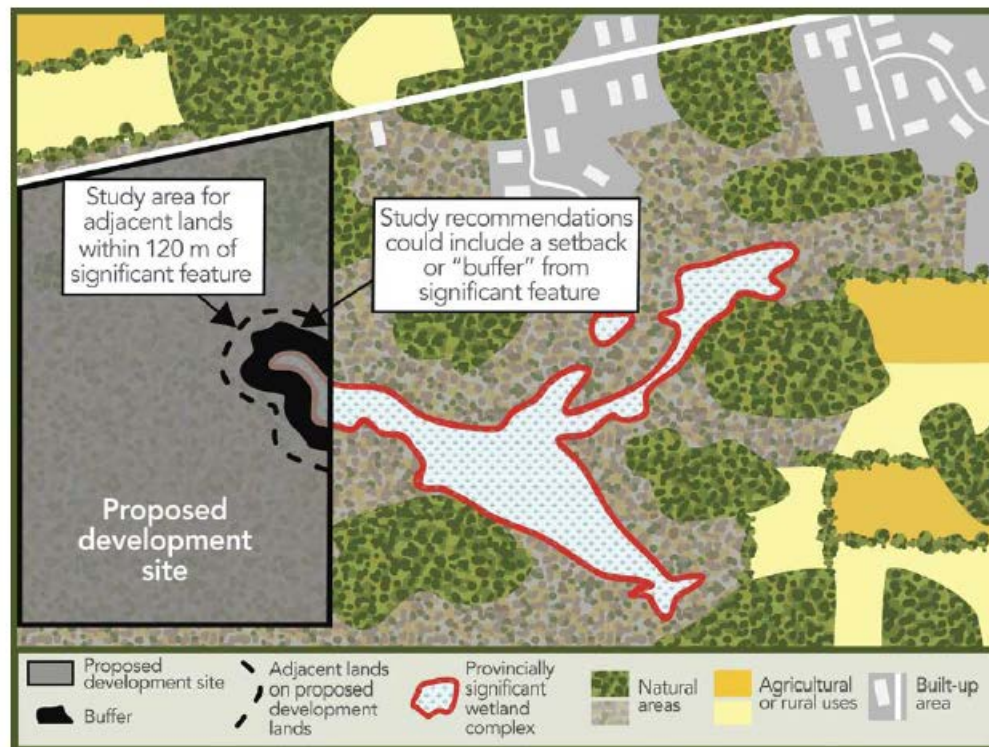
3. The province’s most recent guidelines on natural heritage features is the *Natural Heritage Reference Manual* (2010). This document does not provide a recommendation for the setback from wetlands other than noting that the adjacent lands (to be considered for potential negative impacts) is generally 120 m. The NHRF does go on state that these adjacent lands need to be assessed based on their “*relation to the functions of a wetland*”¹. For instance factors that should be considered could include:

- Local recharge area.
- Vegetated areas that protect the edge of the wetland from erosion and sedimentation.
- Overhanging trees that provide a source of food and large woody debris to the wetland.
- Use of adjacent upland by wetland fauna. For example, nesting turtles, nesting waterfowl, vernal pools for amphibians.
- Movement corridors for amphibians or turtles.

4. NHRM (2010) describes how one should measure the adjacent lands and provide an example using PSW. It clearly states that only the 120 m of the PSW **on the proposed development site needs to be evaluated** (the figure has been copied from the NHRM below).

¹ Page 62 of the NHRM

Figure 4-2: Illustration of the Relationship between Adjacent Lands and Buffers



(from NHRF 2010)

5. Beacon Environmental (2012) provided a review of ecological buffers for Credit Valley Conservation. They relied on peer reviewed literature and indicated that there was little information on the recommended setback. They also discussed setbacks with local conservation authorities who responded that they typically requested **30 m from PSWs**. Beacon also references published literature that indicates that the minimum buffers must be determined by considering the following factors:

- *“Adjacent land use activities*
- *Amount and configuration of development in the adjacent lands and landscape*
- *Structure and type of vegetation in the buffer*
- *Particular species that the buffer is designed to protect”*

Beacon’s final recommendation was to begin with a base buffer of 10 m (for those buffer functions for which there is scientific evidence of functionality) and increase this width following a risk-based assessment. They include discussions on biophysical factors (hydrologic dynamics, slopes, vegetation composition of buffer and soils) that may or may not require an increased width. The risk-based approach

involves identifying the wetland and its critical function zone as well as ecological functions to be protected. From there the assessment looks at sensitivity, identify the function the buffer is expected to perform, identify biophysical considerations that can influence the buffer and finally to look at the site plan (opportunities and constraints).

Study Area and Delineation of PSW

We do note that in some instances and for some species, considerations of habitats that are more than 120 m away and wider buffers would be recommended. However, this is site specific and, it is our opinion that it is not warranted here as there were no species or habitat documented that required terrestrial components such as that found on site other than the potential for turtle nesting/movement. Turtles in general and Blanding's Turtle. Again, it is noted that protection of Blanding's Turtle habitat has already been agreed upon with MECP and only the 30 m setback is required by that agency.

Following the above provincial guidance on what should be evaluated, we began with MNRF boundary of the PSW and its 120 m adjacent lands within the property. This includes the whole property. The actual PSW boundary was then delineated (and surveyed) in the field and is depicted by the yellow line on the figures. This along with the field delineation of the PSW and the 30 m and 50 m setbacks are shown on Figure 1. This boundary was completed by a certified OWES evaluator.

The proposed developable lands are shown on Figure 2. While there is a small portion that is over 50 m from the in field delineation of the PSW, most is just over 30 m.

Figure 1: NHRM PSW and its 120 Adjacent Lands to be Studied

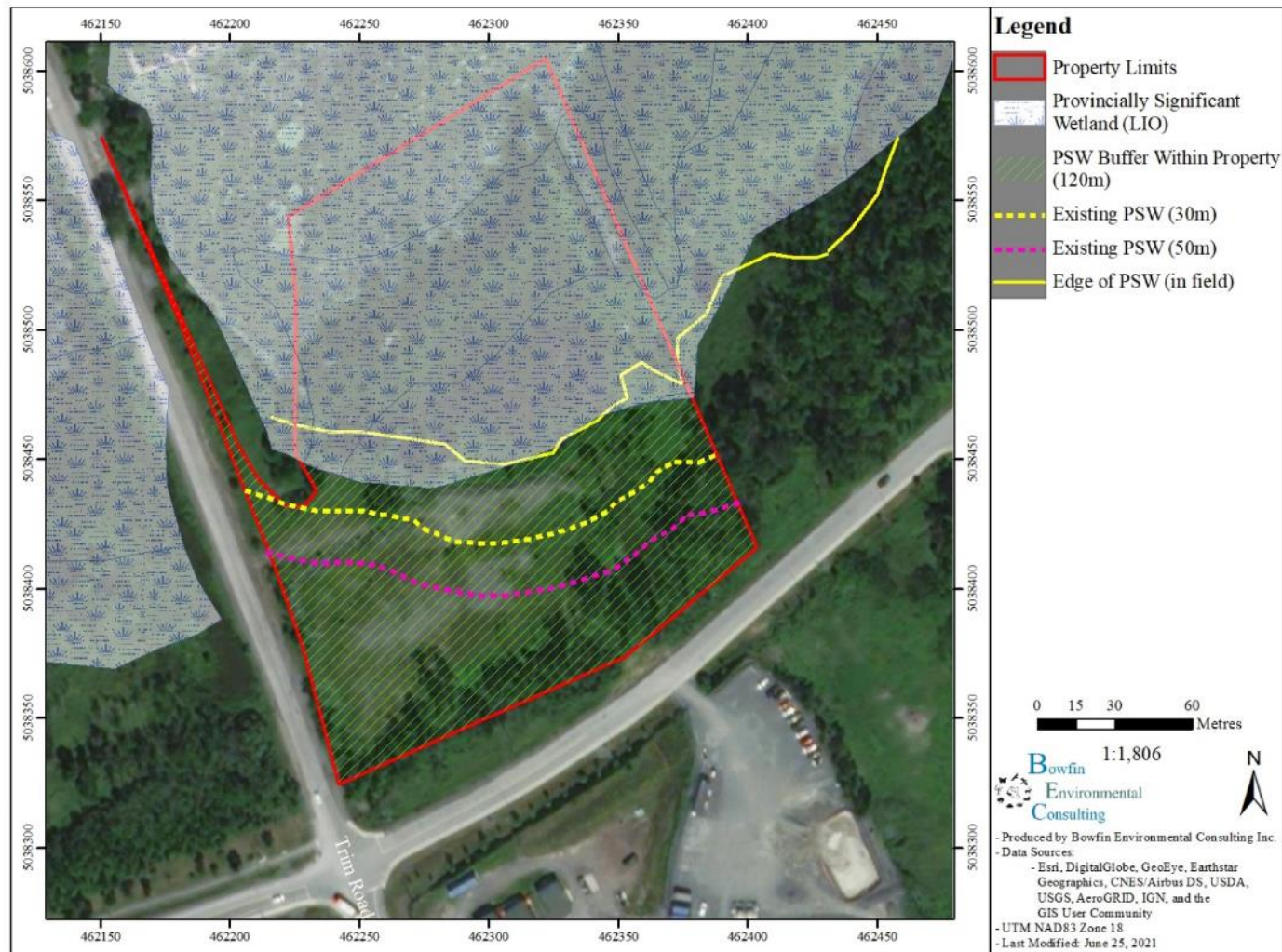
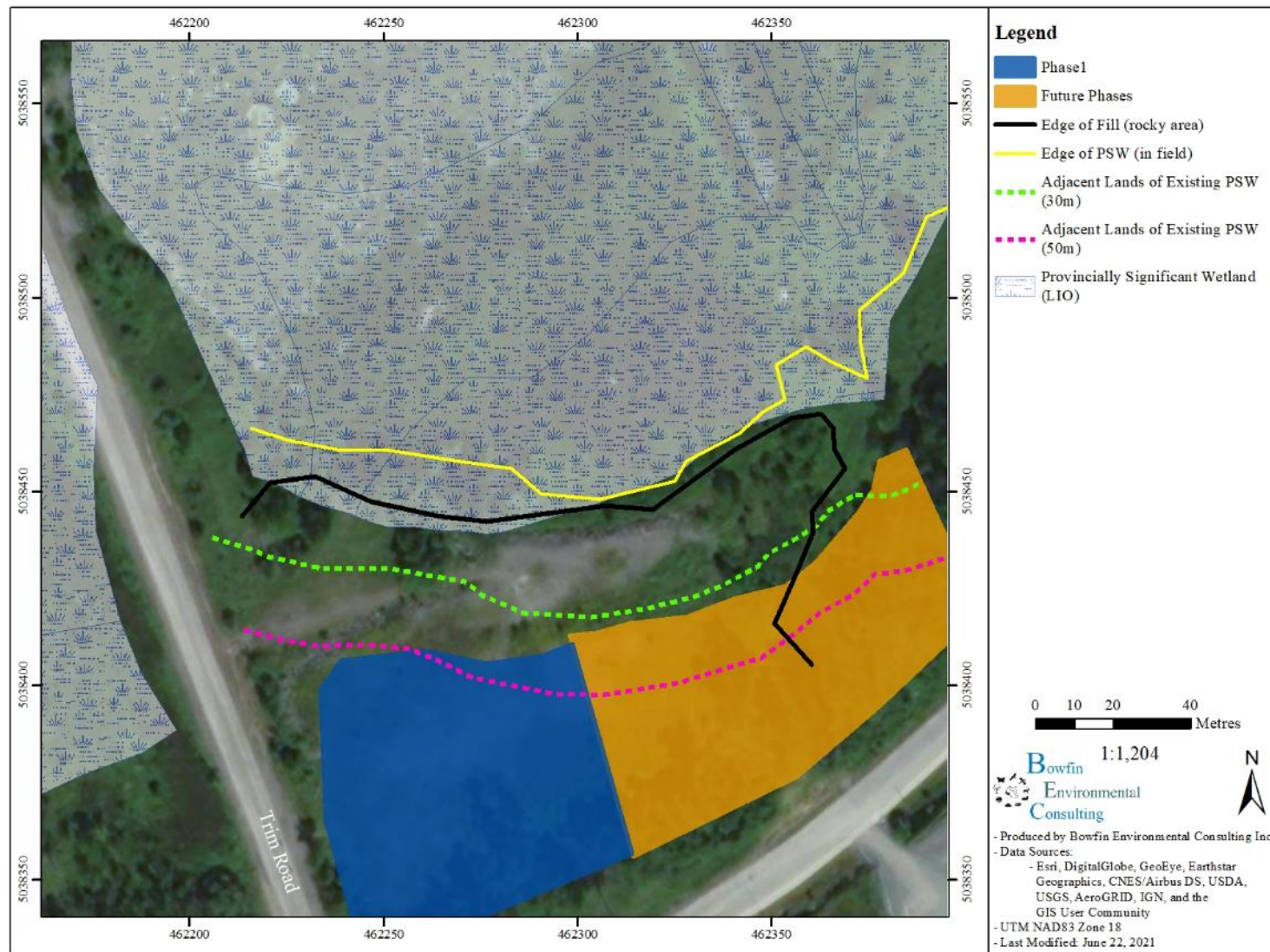


Figure 2: Existing PSW and 30 m and 50 m Setbacks and Lands to be Developed (Phase 1 and Future Phases)



Existing Vegetation Communities

The lands within the property, including the 120 m of the PSW (as per the above guidelines) were described. The full descriptions are appended to this memo.

Provincially Significant Wetland Habitat and Conditions

- The PSW at this location is restricted to marsh habitat. That within the property is robust emergent marsh that is 40-100 m wide and mostly cattails with few openings. By May 21, 2020, the portion of the marsh immediately north of the areas proposed for development was dry or nearly so. Further north is the submergent marsh (125-155 m wide) but portions of this includes the marina and docks. The dense vegetation in the PSW that is to be considered for this evaluation is distinctly different from that on the west side of Trim Road. As can be observed in Figure 3, the west side has many more fingers of small channels that improves the wetlands function in terms of wildlife (i.e. waterfowl use).
- A small portion of the PSW on site has been infilled.
- All of this portion of the wetland is hydrologically disconnected from the PSW west of the causeway. This can be seen on satellite images that depict the turbid water from Cardinal Creek backing up into this portion of the wetland but not continuing west of Trim Road (Figure 3).
- The section of the PSW within this property is also impacted by the water quality from Cardinal Creek (Figure 3).

Figure 3: Satellite Imagery Showing Hydrological Divide Created by Trim Road and Sedimentation of PSW on East Side by Cardinal Creek (June 18, 2015)



Adjacent Lands (Property)

The characteristics of the adjacent 120 m lands, which includes all of the property, differs from west to east.

- From the west edge of the property to roughly 127 m east represents the most recently disturbed area.
 - The majority of the Site has been disturbed, and fill brought in over the years (see aerial images on geoOttawa). There appears to be two levels of fill of which roughly 70% is now vegetated with herbaceous growth (see appended information on vegetation communities). It is understood that permit from RVCA was provided to the previous owners for this infill.
 - We understand that the Site is considered contaminated due to elevated levels of salt and note that there is a municipal salt storage facility on the southeast corner of the same intersection.
 - There is a small section of woody vegetation (roughly 40 m long and up to 30 m wide) but the remainder of the shoreline is cultural meadow or monoculture of reed canary grass on fill.
 - South of the fill there is remnant coniferous and deciduous trees (8-26 m wide).
 - Finally, the land between property and Jeanne d'Arc Boulevard North (City property) is cultural meadow.
- Remaining 49 m on the east side of the property.
 - East of the headwater feature, the adjacent lands still appear to be clay vegetated with a monoculture of reed canary grass (this area does not become inundated even during the 2017 floods) (25-45 m wide). There is a distinct elevation change in this area and it may have historically been filled. This transitions into a naturalized steep slope with some eroding banks. Garbage can be seen in the slopes (i.e. concrete, old trail/access road, fill, buried garbage, buried culverts). The vegetation in this area includes invasive shrubs (common buckthorn, honeysuckle). It is steep and does not offer any habitat such as vernal pools. This area is similar to what is described in the UNA 92 report as the community common on the lower slopes [*young to submature upland forest (Green Ash, White Birch, Red Maple)* – from UNA report]. The woody vegetation varies from 10-52 m wide.

Significant Vegetation

- No significant remnant vegetation communities were found.
- No Species at Risk or Special Concern were documented on Site.

Ecological Function of PSW and Adjacent Lands

Again, since this is an evaluation of the adjacent lands in terms of their functions that support wetland habitat. As per the NHRM, the portion of the PSW within the property limits is what is to be evaluated, however our notes includes some data on use just to the east of this line and this information is included below.

Significant Fauna

- No Special Concern were documented in the PSW evaluated or the property.
- While not documented in the property itself, Blanding's Turtle do occur within 2 km resulting in category habitat for this species being found on-site. MECP has reviewed and indicated that Bowfin's description of the Category 2 and 3 habitats are appropriate, and no authorization is required for this species. The Category 2 habitat includes the wetland and 30 m setback.

Significant Wildlife Habitat (as per the Significant Wildlife Habitat Ecoregion Criterion Schedule 6E)

In this part of Ontario, significant wildlife habitat (SWH) has been described by the province in the *Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E* (SWHCS) (2015). This document includes SWH associated with wetlands. This property and the PSW within the property, did not meet any of the criteria apart from the potential for Turtle Wintering Area. Turtle wintering area is restricted to the Ottawa River portion of the habitat and its value (water depths etc.) are controlled by the Ottawa River. The property will not impact the use of the Ottawa River by turtles. Other SWH listed for wetland habitats include:

- Aquatic waterfowl stopover, staging area – criteria not met
- Waterfowl nesting area. Upland area needs to be 120 m (this site is less than 120 m wide for all but the extreme western edge) and needs to have appropriate habitats for species listed. Minimum of 3 nesting pairs (if mallards are included in this count, then the minimum is 10 pairs). Criteria not met.
- Turtle nesting habitat confirmed to be absent.
- Amphibian breeding habitat woodland or wetland based on *Marsh Monitoring Protocol*.
 - Three amphibian surveys were completed, and no amphibians were heard (and no eggs/tadpoles were ever found) in the headwater feature or elsewhere on the property. Very few frogs were heard in the PSW/River proper (two northern leopard frogs in April and two spring peepers in May; none in June).
 - Criteria not met.
- Marsh breeding bird habitat

- Only one Sora nest. This is a species with low conservation value and is the most commonly observed rail. It was found near the northern edge of the cattails. This is the typical choice for nesting; areas along the edge next to dense cattails and shallow water depths (Sandilands, 2005). Its use of wetlands is strongly correlated with presence of only shallow water (Sandilands, 2005).
- Criteria not met.
- Amphibian movement corridor. Criteria not met.

Headwater Feature

- As mentioned at the start of this letter, a headwater feature with emergent vegetation was found on the east side of the fill. Upstream on the City's property south of Jeanne d'Arc Boulevard North, the headwater feature was dry and had been cleared (stripped to bare soil). The fill on this property has resulted in some ponding of water allowing the growth of cattails, purple loosestrife and common reed. This ponding was shallow (about 5 - 10 cm deep). There is some evidence of ground water here (oily sheen); this was also noted along Trim Road ditch next to the fill, along with iron staining in that area. Hand auguring found that the common reed was growing on fill (gravel). The headwater feature may have been historically filled on the downstream end. The existing conditions is that the water veers east around the fill and then is absorbed by the reed canary grass. There is no channel to the Ottawa River. There is no fish habitat or amphibian habitat in the headwater feature.

Fish Habitat

- Again, the only Fish Habitat is the Ottawa River; there is no connection to the headwater feature.

Wetland Birds

- As mentioned under the PSW condition bullets above, by May 21, 2020, the portion of the marsh immediately north of the property was dry or nearly so. That area consisted primarily of cattails. The wetland to the west of Trim Road offers more opportunities for wetland avian species. Even the section immediately east of the property offered better habitat due to the channel and this is where the waterfowl (not identified, see bullets below) were identified.
- The PSW in the property mostly provided habitat for red-winged blackbirds. Red-winged blackbirds are not protected by any legislation in Ontario.
- Few other aquatic birds were noted; most were observed in the area further east that was wetter and interspersed with channels, providing better access for chicks. Canada geese, and mallards (one pair of mallards with young) were noted there during the breeding bird

survey. Another waterfowl species (not a mallard) was seen later in the summer (with chicks), but they had entered the channel in the marsh, far to the east from the surveyor, before identification could be made (this was outside of the breeding bird survey period).

- In addition to those bird species heard during the survey period, the trail camera picked up a spotted sandpiper with one chick on-site; but this is a shoreline species and not a strictly wetland species.
- Other species sometimes associated with wetlands likely nesting in or nearby: Canada goose, swamp sparrow.
- Species sometimes associated with wetlands seen foraging during bird surveys: tree swallow, great blue heron.

Mammals

- No wetland mammals were noted. But beaver and muskrats would be expected, and muskrat mounds present offsite.

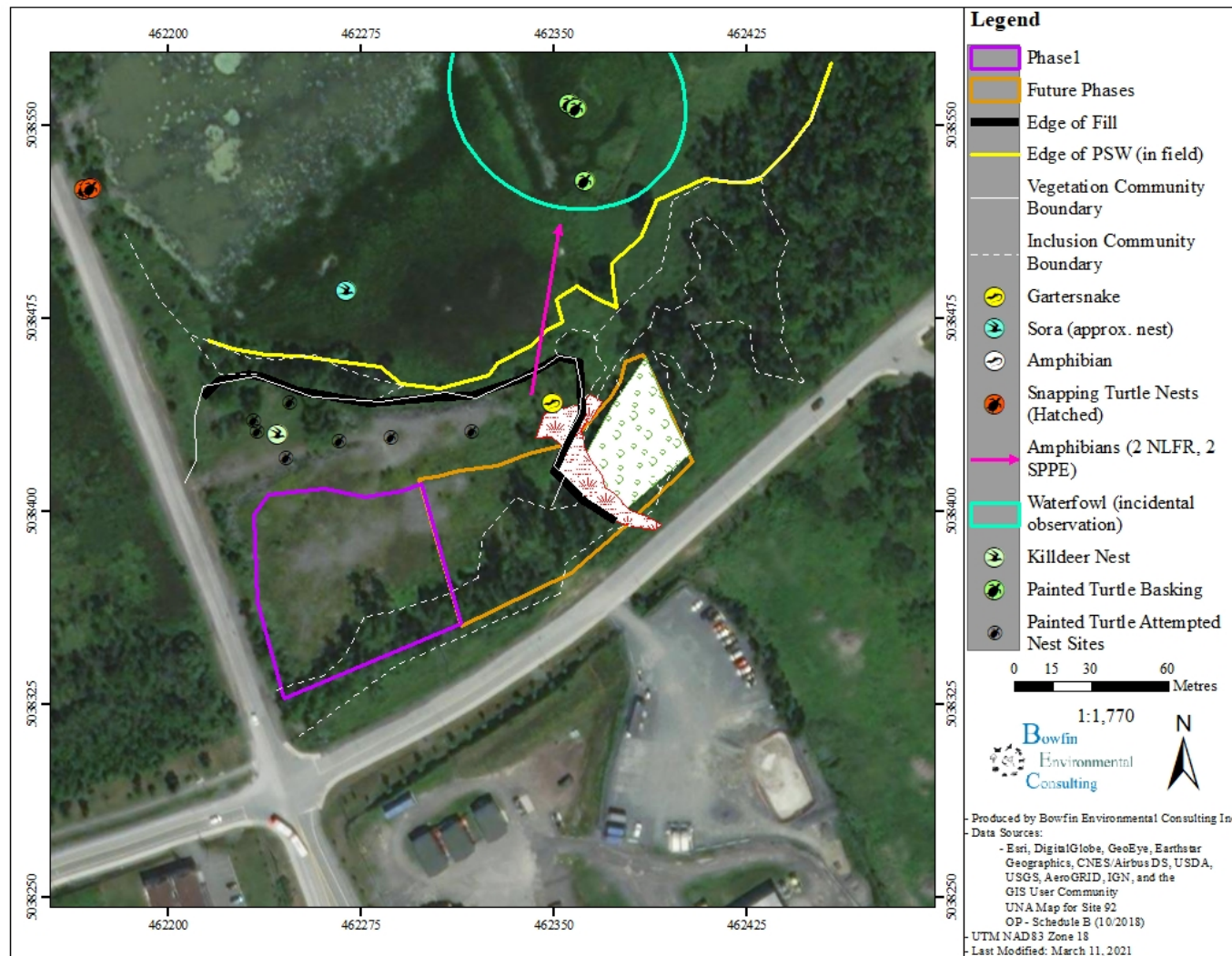
Turtles

- No Blanding's Turtle were present (basking, or nesting).
- Only turtle species that tried to nest on-site was Painted Turtle and it/they abandoned all nests. The fill was even more compacted at the depth of abandonment. This led us to conclude that the site did not provide turtle nesting habitat. MECP agreed with this assessment.
- Snapping Turtle nests were found during our surveys to the north in the City's parking area. None on this site.
- No road kills were noted.
- Background information was verified during the EIS writing for Phase 1 and iNaturalist was again reviewed (March 12, 2021). Despite the very high use of the causeway by bicyclists, hikers, especially during Covid-19, and trespassing onto the Site, no occurrences of Blanding's Turtle or any other SAR or Special Concern species have been uploaded by citizens.



Photo 1: Failed Painted Turtle nesting attempt, on Site (June 16, 2020)

Figure 4: Wildlife Findings (Upland and Wetland species included)



3. Establishing an appropriate setback to maintain wetland functions

The PSW within the area to be assessed, based on provincial guidelines, is limited.

1. The majority of the adjacent lands consist of fill.
2. The vegetated buffer to the PSW along the property is limited and in most places is less than 10 m.
3. While no amphibians were heard calling in this section during the marsh monitoring surveys, one would expect green frogs, northern leopard frogs and bullfrogs to be in the area.
4. The PSW's functions include fish habitat but again it is noted that most of the emergent vegetation and is not providing direct fish habitat for most of the year (very northern section could provide some habitat for small-bodied fishes).
5. While Sora nest was present, this species is of low conservation value as it stable in Ontario and a commonly encountered rail species. Other wetland species were mallards, swamp sparrow, Canada geese, and red-winged blackbirds. Note that red-winged blackbirds receive no protection from any acts in Ontario.
6. The potential for the rock fill to provide turtle nesting habitat was thoroughly assessed and the results were agreed to, with respect to the potential for Blanding's Turtle, by MECP. No turtle nesting habitat is present on-site. The only documented nesting habitat is that along the parking area to the north for Snapping Turtle. The development of this property will not affect turtle's ability to reach that nesting area.
7. The potential migration corridors was also assessed and agreed upon (for Blanding's Turtle) by MECP. The findings are that the migration corridor would be an east to west direction along the Ottawa River. There is no need to provide migration route between the Ottawa River and lands to the south. An acceptable width for migration corridor for turtles is 30 m. This has been approved by MECP.

Finally, in considering the functions of the existing buffer it:

1. DOES NOT provide any water quantity functions, to not help to attenuate flooding, or improve water quality. The only natural vegetation here is less than 10 m wide. Portion of the PSW adjacent to the property is hydrologically disconnected from that to the west of Trim Road. This project's development will not negatively impact interconnection with the rest of the wetland.
2. DOES NOT provide noise attenuation functions. The only natural vegetation along the PSW shoreline is less than 10 m wide and for the most part much is only reed canary grass.
3. DOES partially restrict human access to the PSW due to the steepness of the fill. However, the access from Trim Road negates any benefit this may have. As does the documented trespassing of the site by the public.

4. DOES help with preventing disturbances in the form of garbage into wetlands. Again, the steep banks prevent humans from dumping in this location. However, garbage was still present throughout the PSW likely brought in during high flows from the river.
5. DOES NOT protect the core habitat. The core habitat would be the marsh itself and in this area it is impacted by the marina. The poorly vegetated banks, fill do not help contribute to protecting this habitat.

As such, the key ecological functions (those considered by provincial guidelines to be significant) to be protected are:

- Turtle overwintering (no setback recommendations specific to overwintering habitat).
- Turtle movement corridor (established with MECP to be 30 m from in-field delineated wetland habitat).
- Fish habitat (NHRM recommends a setback of 30 m from warm-water fish habitat and while it can be reduced to 15 m under NHRM's guidelines, this is not recommended for larger bodies such as the Ottawa River).

Based on the above identified functions for the PSW a setback of 30 m is appropriate. Increasing this setback to 50 m does not gain any additional improvements for the functions of the wetland. As this area is compacted gravel fill. The existing lands within 30 m or even 50 m do not provide additional benefits in terms of hydrology, vegetation, shading, food source, source of large woody debris or use by wetland fauna. However, the ecological functionality of the 30 m buffer can be improved upon and that would result in a much greater gain to the natural environment than the protection of an additional 20 m of fill.

Please note that the details of the habitat enhancement area are pending this discussion as well as discussions with other agencies. At this time, the following is anticipated:

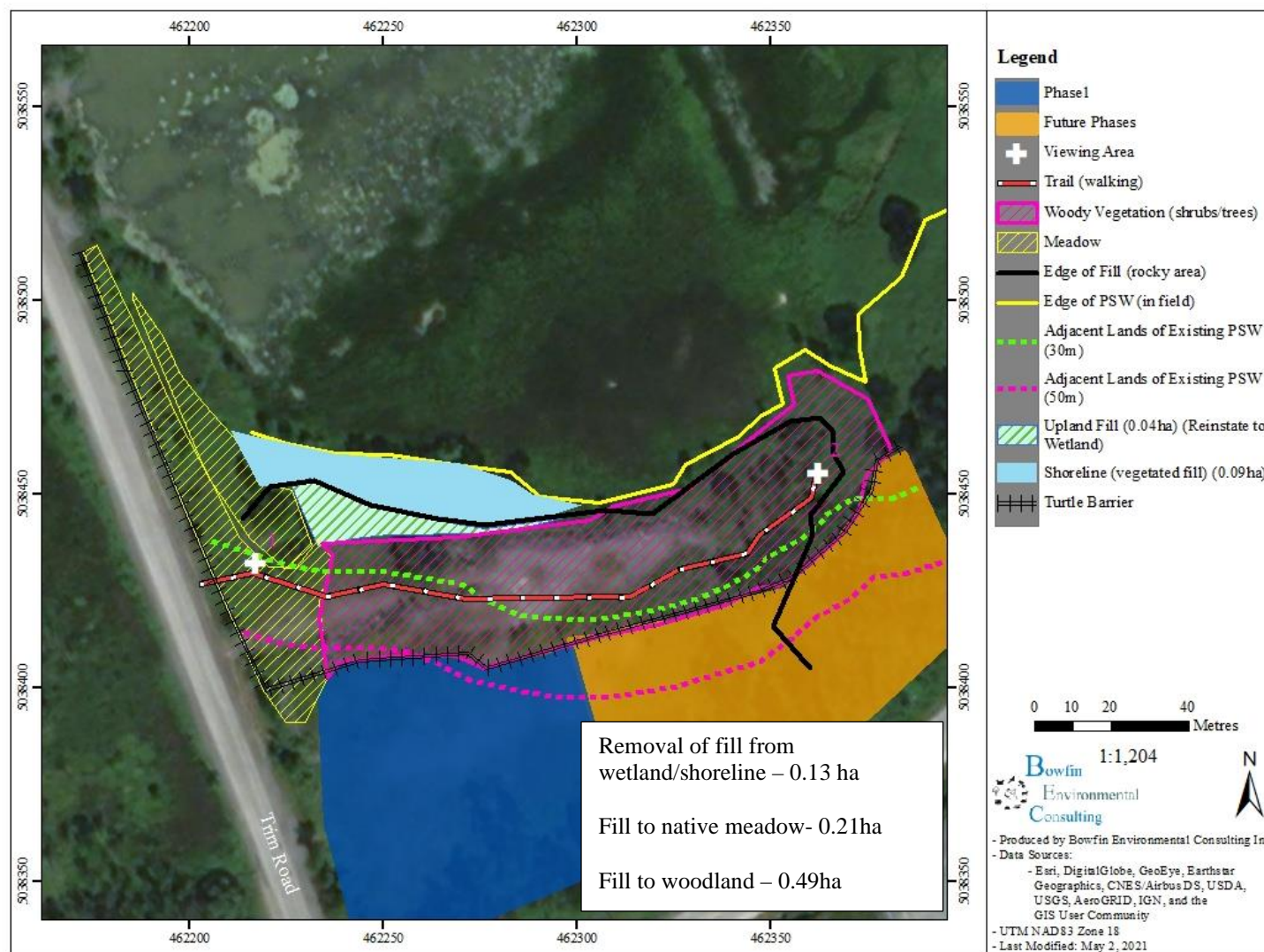
- The overall area available for enhancements is calculated at ± 0.83 ha (Figure 5).
- The existing conditions in the enhancement area consists of:
 - heavily compacted rocky fill vegetated with broad leaf herbaceous species such as bird's foot trefoil, common sow thistle, white sweet clover, wild carrot, cow vetch, burdock, viper's bugloss, field bindweed, smooth brome, coltsfoot, and common mullein. There were also a few scattered, young, eastern cottonwoods. These were less than 2 m tall and provided very little in terms of cover.
 - The shoreline on the west side consisted of fill. The species here were eastern cottonwood, black willow, Freeman's maple, green ash, red maple, and Manitoba maple with staghorn sumac (both 1-2 m tall and regeneration) and the ground layer included white sweet clover, bird's foot trefoil and tall goldenrod. On the east, it consisted of clay with reed canary grass (likely the invasive species).

- The intent is to create habitat that consists of a mosaic of native meadow, marsh/tall shrub swamp, shrub and treed habitats.
- The portion of wetland habitat created will be restricted to 30 m from the edge of the permanent footprint of this development.
- The option to transplant some of the woody vegetation from the proposed development lands to the enhancement area will be evaluated by the landscaper.
- The proponent plans on using potted stock for at least a portion of the wooded species. This will improve the speed at which the site becomes functional.
- The treed areas also need to allow for viewing from terraces, Trim Road and the walking trail. There will be a goal of reaching 0.22 ha with details determined as the information on how the site will be developed and where the public viewing could take place is gathered. For instance, the denser areas (with >60% canopy cover, at maturity) could be situated in front of parking areas while strategic plantings (groupings, tall shrubs) could be placed where viewing is desirable. It is expected that details for tree planting to ensure key views are provided for with tree planting framing and enhancing significant views would be informed through a view analysis to confirm key views to and from the development and for viewing areas.

Other important factors are:

- Timing
 - The intent is to complete the habitat enhancement works concurrently with the excavation activities - if possible, in its entirety. However it is noted that access to native vegetation may be problematic. If issues arise, then an annual cover crop would be sown, and the plantings completed as soon as possible.
 - The headwater feature will be removed immediately and will include a design feature to allow for the existing upstream contributing flow to continue to be directed to the reed canary grass below through the on-site stormwater management system to be provided with the development.
- Public Access is assumed to be a requirement of urban woodlands by the City (City has not provided comments to the woodland memo).
 - A public viewing area would be created along the edge of Trim Road.
 - Because of the need to create urban value to the wooded area, a narrow walking path will also be created. However to help discourage public access to the wetland, a buffer of native shrubs on a steep slope is anticipated along the new shoreline. Note that MECP may have comments on the location of the path.
 - A second viewing area may be established at the east end of the path.
- The enhancement plans will be receiving input from other agencies and the final design will be one that considers all benefits.

Figure 5: General Enhancement Concept

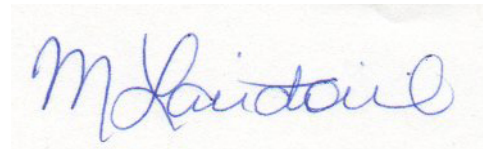


CONCLUSION

To allow for maximum density of housing in this area, situated next to the future LRT area, the proponent has proposed to remove a wooded area (and the headwater feature) but to create an enhancement area. The proposal includes a setback of 30 m from the wetland habitats. The total area to be removed is 0.16 ha [0.11 ha (wooded) and 0.05 ha (headwater)]. The enhancement area will be up to 5 times larger than the two types of habitats to be removed (anticipated to be ± 0.83 ha). It will result in the removal of fill and naturalization with native vegetation. It will create a vegetated buffer to the wetland and provide an opportunity for controlled public access. Pending comments from the City, some public access within the setback may be required. The existing conditions do not support the need for a wider setback than the proposed 30 m. Further, while the existing buffer to the PSW is not providing significant ecological function, the proposed enhancement area will.

Please do not hesitate to contact us should you have any questions.

Sincerely,



Michelle Lavictoire
Biologist

Beacon Environmental (2012) *Ecological Buffer Guideline Review*. Prepared for Credit Valley Conservation. 139pp.

OMNR. (2010). Natural Heritage Reference Manual for Natural Heritage Policies of the Provincial Policy Statement, 2005. Ontario Ministry of Natural Resources. Second Edition: xi + 233 pp

OMNRF. (2015). Significant Wildlife Habitat Criteria Schedules for Ecoregions 6E. Ontario Ministry of Natural Resources and Forestry, Regional Operations Division, Peterborough. i + 38 pp.

Ontario Provincial Policy Statement. (2020).

Sandilands, A. (2005). *Birds of Ontario Habitat Requirements, Limiting Factors and Status. Nonpasserines: waterfowl through cranes*. UBC Press Vancouver, BC. 283-286pp.

Site Investigation Summary

Table 1: Summary of Dates and Times of Site Investigations

| Date | Time (h) | Staff | Air Temperature (Min-Max) °C | Cloud Cover Beaufort Wind Scale [Descriptor (scale)] | Purpose |
|----------------|-----------|-------------------------|------------------------------|---|--|
| April 29, 2020 | 1845-2115 | M. Lavictoire | 14 (1.9-16.8) | Overcast, gentle breeze (3) changing to overcast, light rain, light air to light breeze (1-2) | - Wetland -Headwater Flow Assessment -Amphibian Survey |
| May 19, 2020 | 1915-1930 | C. Fontaine A. Yates | 16 (7.9-19.5) | Partially cloudy (20%), gentle breeze (2) | - Turtle Nesting |
| May 21, 2020 | 1330-1500 | M. Lavictoire | 24 (8.1-24.8) | Clear skies, gentle breeze (3) | -Turtle Basking -Turtle Nesting Predation -Snake Survey |
| May 27, 2020 | 0830-1130 | M. Lavictoire | 26.0 (18.3-35.0) | Clear skies, light air (1) | -Turtle Basking -Turtle Nesting Predation -Snake Survey |
| May 29, 2020 | 1600-1645 | M. Lavictoire | 30.0 (12.9-29.0) | Overcast, light to gentle breeze (2-3) | -Turtle Basking -Snake Survey |
| May 29, 2020 | 1915-1945 | S. Lafrance | 23.0 (12.9-29.0) | Overcast with light rain, gentle (3) to moderate breeze (4) changing to no rain, light breeze (2) | - Turtle Nesting -Amphibian Survey |
| May 30, 2020 | 1915-2000 | S. Lafrance | 11.0 (6.2-20.1) | Overcast, gentle (3) to moderate breeze (4) | - Turtle Nesting -Amphibian Survey |
| June 3, 2020 | 1930-2000 | S. Lafrance | 18.0 (12.3-19.4) | Partially cloudy (20%), light air (1) | - Turtle Nesting |
| June 4, 2020 | 2015-2145 | M. Lavictoire | 21.0 (9.5-25.4) | Partially cloudy (25%), calm (0) to light air (1) changing to 100% cloud cover with light air (1) | - Vegetation description |
| June 4, 2020 | 1930-2200 | S. Lafrance | 27.0 (9.5-25.4) | Partially cloudy (25%), calm (0) to light air (1) | - Turtle Nesting |

| Date | Time (h) | Staff | Air Temperature (Min-Max) °C | Cloud Cover Beaufort Wind Scale [Descriptor (scale)] | Purpose |
|---------------|------------------------|-------------------------|------------------------------|--|--|
| | | | | changing to overcast with light air (1) | |
| June 5, 2020 | 1545-1645 1945-2145 | S. Lafrance | 29.0 (12.9-28.7) | Scattered cloud cover (10%), light (2) to fresh breeze (3) changing to overcast (90%) with light air (1) to light breeze (2) | - Turtle Nesting -Turtle Basking -Snake Survey |
| June 8, 2020 | 1115-1200 | S. Lafrance | 17.0 (9.6-21.3) | Sunny, light air (1) to light breeze (2) | - Turtle Basking -Snake Survey |
| June 9, 2020 | 1600-1645 1900-1930 | S. Lafrance | 22.0 (12.8-21.3) | Partially cloudy (75%), light air (1) changing to overcast (90%) | - Turtle Basking -Turtle Nesting -Snake Survey |
| June 12, 2020 | 1915-1945 | S. Lafrance | 12.0 (6.5-17.2) | Overcast, gentle breeze (3) to moderate breeze (4) | - Turtle Nesting |
| June 16, 2020 | 2015-2130 | S. Lafrance A. Yates | 22.0 (8.7-27.3) | Clear skies, calm (0) | - Turtle Nesting -Amphibian Survey |
| June 17, 2020 | 0715-0830 | M. Lavictoire | 15.0 (10.5-30.0) | Clear skies, light air (1) | -Wetland Delineation -Breeding Bird Survey -Snake Survey |
| June 21, 2020 | 2030-2100 | S. Lafrance | 30.0 (17.9-31.8) | Clear skies, light breeze (2) | -Turtle Nesting |
| June 24, 2020 | 1845-1930 | C. Fontaine | 22.0 (15.2-21.7) | 50% cloud cover, gentle breeze (3) | - Turtle Nesting -Snake Survey |
| July 2, 2020 | 2015-2045 | S. Lafrance | 24.0 (20.6-30.4) | Overcast, light air (1) | - Turtle Nesting |
| July 27, 2020 | 0915-1315 | C. Fontaine | 20.0-30.0 (23.2-31.6) | 20% cloud cover, light air (1) changing to 30% cloud cover, light breeze (2) | -Tree Inventory -Snake survey |
| July 28, 2020 | 0715-0900 | M. Lavictoire | 21.0 (18.0-30.5) | Clear skies, light breeze (2) | -Vegetation Survey -Snake survey |

| Date | Time (h) | Staff | Air Temperature (Min-Max) °C | Cloud Cover Beaufort Wind Scale [Descriptor (scale)] | Purpose |
|-----------------------|---------------|-------------|---------------------------------|--|------------------------------------|
| July 30, 2020 | 0730-1300 | C. Fontaine | 19.0-25.0 (14.9-28.0) | Clear skies, calm (0) changing to 25% cloud cover, light air (1) | -Tree Inventory -Snake survey |
| September 21, 2020 | 1230- 1300 | S. Sinon | 16.0 (0.1-17.8) | Partially Cloudy Wind: light air (1) | -Turtle Nest Hatching Survey |

M. Lavictoire – Michelle (Nunas) Lavictoire – B. Sc. Wildlife Resources and M.Sc. Natural Resources

S. Lafrance – Sophie Lafrance – B.Sc. Biology and Graduate Certificate in Ecological Restoration

C. Fontaine - Cody Fontaine - Fisheries and Wildlife Technologist

A. Yates – Abby Yates – B.Sc. Env. Ecology

S. Sinon – Sarah Sinon – B. Sc. Environmental Science (double minor Biology and Physical Geography)

*Min-Max Temp Taken from: Environment Canada. National Climate Data and Information Archive. Ottawa International Airport. Available <http://climate.weatheroffice.gc.ca/> [August 11, 2020]

VEGETATION DESCRIPTIONS

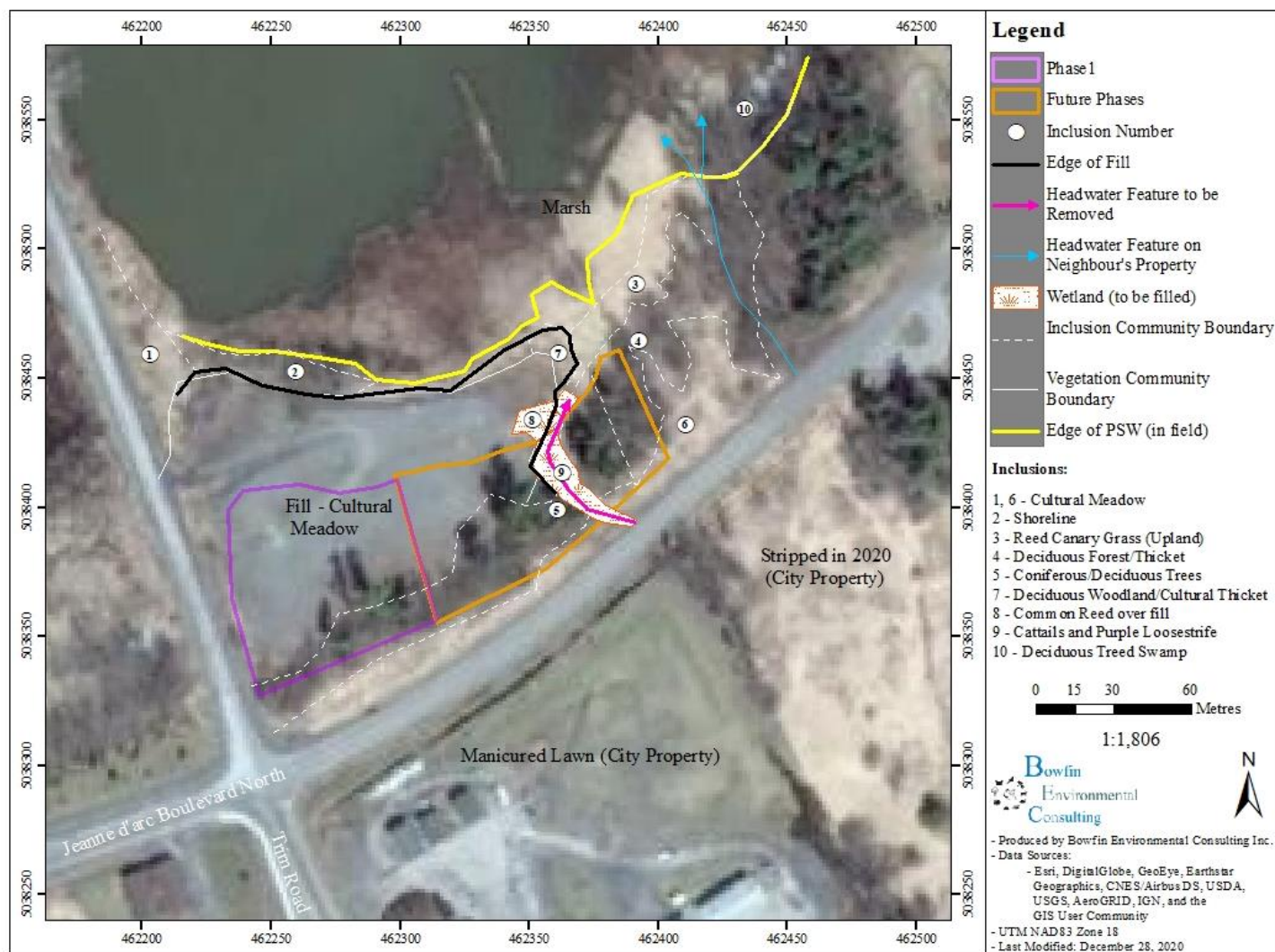
Methods

Habitat descriptions were based on the appropriate methodologies such as: *Ontario Wetland Evaluation System, Southern Manual* (OWES) for wetland habitats and the *Ecological Land Classification for Southern Ontario* (ELC) for terrestrial habitats. Under the ELC, a forest is a community with >60% canopy cover provided by any tree species, regardless of size.

Vegetation Results

The only natural habitats were in the Future Phases and in the adjacent lands. All treed communities were smaller than the minimum of 0.5 ha and considered inclusions for the purposes of this report (and the EIS). No special feature communities were encountered. The inclusions represent edge habitat (they were roughly 25 m wide) and as such do not fit with the ELC codes. This memo discusses the only two inclusions that make up the Candidate Woodland on-site (inclusions 4 and 5). The other communities are discussed in the EIS. It is noted that portions of inclusion 4 would not meet the definition of a forest because it was strongly dominated by shrub species (i.e. Staghorn Sumac). The Thicket habitats were mostly next to the meadow adjacent to Jeanne d'Arc Boulevard North and the two access roads to the river. We also note that our findings are very similar to those of WSP (2017).

Figure 6: Vegetation Mapping



Disturbed Area – Cultural Meadow

The Phase 1 and a portion of the Future Phases lands consisted of heavily compacted rocky fill vegetated with broad leaf herbaceous species such as bird's foot trefoil, common sow thistle, white sweet clover, wild carrot, cow vetch, burdock, viper's bugloss, field bindweed, smooth brome, coltsfoot, and common mullein. There were also a few scattered, young, eastern cottonwoods. These were less than 2 m tall and provided very little in terms of cover.



Photo 2: Looking across towards Trim Road (July 28, 2020)

Inclusion 1 – Cultural Meadow

This area also consisted of a cultural meadow but contained wetland species as well as upland. This area is the embankment of Trim Road and some of the area has been disturbed by the fill activities. The area is classed as upland because of the significant presence of upland species (bird's foot trefoil, wild carrot, and cow vetch) (Photo 3).



Photo 3: Cultural Meadow along Trim Road (July 28, 2020)

Inclusion 2 – Shoreline

The shoreline of the fill is much too small and disturbed to have an ELC community assigned to it, however, the plants have been described as it is shown as being part of the existing PSW boundary. The soil consisted of fill. The species here were eastern cottonwood, black willow, Freeman's maple, green ash, red maple, and Manitoba maple with staghorn sumac (both 1-2 m tall and regeneration) and the ground layer included white sweet clover, bird's foot trefoil and tall goldenrod. This area is on fill and is upland habitat.



Photo 4: Shoreline (May 21, 2020)



Photo 5: Shoreline (July 28, 2020)

Inclusion 3 – Reed Canary Grass - Upland

This community was almost exclusively vegetated with reed canary grass. The area does not flood (based on satellite imaging from 2017 during historically high flooding). The community sat on tablelands and is distinct from the PSW. The same community is found along the steep edge of the fill nearer to the property (Photo 6 and Photo 7) and also up the steep slope along an access road (Photo 8). This suggests that it was also historically filled and is not representative of true wetland habitat at this location. No surface water or iron staining noted in this community. Note that the portion of the reed canary grass that was at a lower elevation was included in the Marsh community (described further below).



Photo 6: Reed canary grass dominated slope (April 29, 2020)



Photo 7: Reed canary grass dominated slope with narrow treed area along Jeanne d'Arc Boulevard in background (April 29, 2020)



Photo 8: Reed canary grass dominated slope (April 29, 2020)



Photo 9: Reed Canary Grass on the east side of the adjacent lands (July 28, 2020)

Inclusion 4 – Deciduous Forest/Thicket

This community was edge habitat between the deciduous and coniferous trees along the roadway (inclusion 5) and the mixed forest situated further offsite to the east. The vegetation includes the area identified as woodland by the City. It is narrow and did not have any interior habitat. It is also disturbed with two access roads travelling through it down to the water along with evidence of fill (cement) and garbage. The portion within the adjacent lands included patches of Staghorn Sumac along with young (2-4 m tall; 50% cover) trees. The tree species included: white ash, bur oak, freeman's maple, silver maple, black cherry, white birch, and balsam fir. Other shrub species (in addition to the staghorn sumac) were common buckthorn and Tartarian honeysuckle which are both invasive. The ground layer included Virginia creeper, sarsaparilla, alternative-leaved dogwood, dwarf raspberry and purple-flower raspberry.



Photo 10: Deciduous Forest/Thicket (July 28, 2020)



Photo 11: Inclusion 4 - near the north edge looking south (April 12, 2021)



Photo 12: Metal Garbage becoming exposed in the middle of the slope (April 12, 2021)



Photo 13: A few metres uphill from previous photo, large amount of garbage is seen near the surface (April 12, 2021)

Inclusion 5 – Coniferous and Deciduous Trees

This inclusion included both the vegetation along the roadway and a part of the Candidate Woodland. There were various patches of treed areas with deciduous thickets. The Candidate

Woodland portion was to the east of the headwater feature. The woody vegetation was dominated by: eastern white cedar, white ash, green ash, along with black cherry, trembling aspen, basswood, and bur oak. The ground layer included poison ivy, wood fern and red baneberry.



Photo 14: Inclusion 5 – looking east from near the base of the slope (April 12, 2021)



Photo 15: Inclusion 5 – looking north from the edge (April 12, 2021)



Photo 16: Looking along the edge of Jeanne d'Arc Boulevard N at the Coniferous and Deciduous Trees (July 28, 2020)

Inclusion 6 – Cultural Meadow

This area was situated between the trees and Jeanne d'Arc Boulevard. It was dominated by meadow habitat with pockets of sumac thicket. The woody layer also included young (up to 3 m tall) green ash. The primary species encountered were: late goldenrod, grass, cow vetch, wild carrot, reed canary grass, buttercup, common sow thistle, burdock, Virginia creeper, strawberry and Canada thistle.



Photo 17: Cultural Meadow along Jeanne d'Arc Boulevard (July 28, 2020)

Inclusion 7 – Deciduous Woodland/Cultural Thicket

Situated on the northeast corner of the fill was a small areas of regenerating deciduous trees and of shrubs growing on fill. The upper layer was 1-6 m tall (50% cover) and included eastern cottonwood, staghorn sumac, Manitoba maple and green ash. The ground layer (90% cover) contained reed canary grass, Canada goldenrod, cow vetch, wild carrot, bird's-foot trefoil, common ragweed and grasses.



Photo 18: Deciduous Forest/Thicket on NE corner of fill (July 28, 2020)

Headwater Feature Wetland – Inclusions 8 and 9

Along the east side of the fill, where the headwater feature is located, there were pockets of wetland habitat isolated from the PSW by the upland reed canary grass community and the deciduous woodland/thicket. These small areas consisted common reed (an invasive species) over fill (Community 8) and another of cattails and purple loosestrife (also an invasive species) (Community 9). These two communities were noted to have surface water (<10-15 cm) year round. Some of the water had the gas look associated with ground water seepage however, the location (elevation, placement on clay fill) makes this uncertain. On a side note, iron staining was noted along Trim Road ditch next to the rock fill in Phase 1. There was no overwintering habitat for turtles.



Photo 19: Robust Emergent Dominated Wetland of the PSW (July 28, 2020)



Photo 20: Purple Loosestrife and Common Reed (*Phragmites*) dominated areas (May 21, 2020)

Wetland – Marsh and Community 10

The PSW Petrie Island Wetland is situated to the northwest of both phases. At the base of the fill, this community was dominated by the marsh consisting of robust emergents (cattails). In the adjacent lands further east, the wetland consisted of a narrow deciduous treed swamp (silver maple, green ash and black ash) with a tall shrub layer (speckled alder, green ash and red osier).



Photo 21: Looking east from edge of headwater feature on neighbour's property at the narrow swamp (to left of line) (April 29, 2020)