Township of Hornepayne

Environmental Screening Assessment for Expansion of a Landfill Site

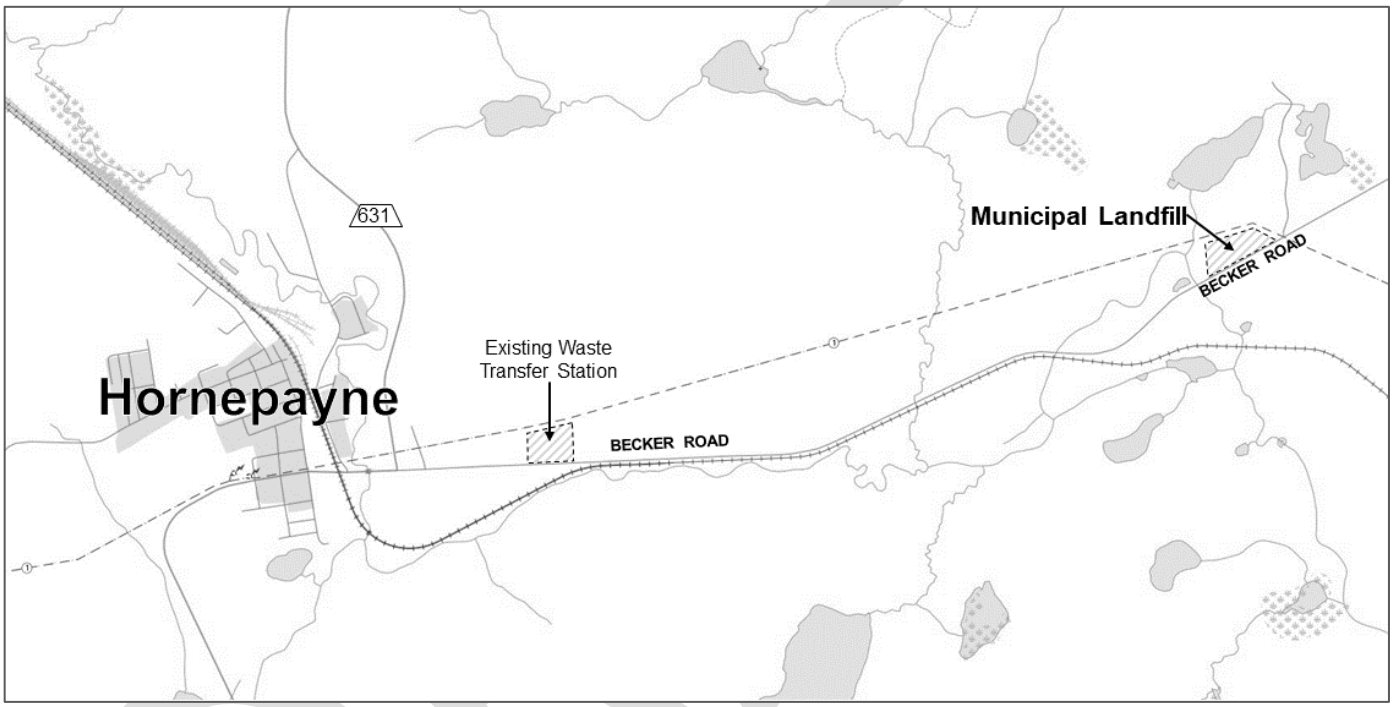
Draft Report

October 28, 2023

Executive Summary

Overview

The Township of Hornepayne has commenced an Environmental Screening Process (ESP) in accordance with the Waste Management Projects Regulation (Ontario Regulation 101/07) of the *Environmental Assessment Act* (EAA) for an expansion of the municipal landfill located about 5 km east of Hornepayne (see figure below). This regulation is directed partially at small, rural waste disposal sites and select waste projects are deemed exempt from Part II of the EAA if the environmental screening process is completed. The ESP is intended to determine the feasibility of a capacity expansion at the Municipal Landfill as a long-term (25-year) solution that will best meet the needs of the municipality with respect to the management of municipal solid waste generated within its boundaries.



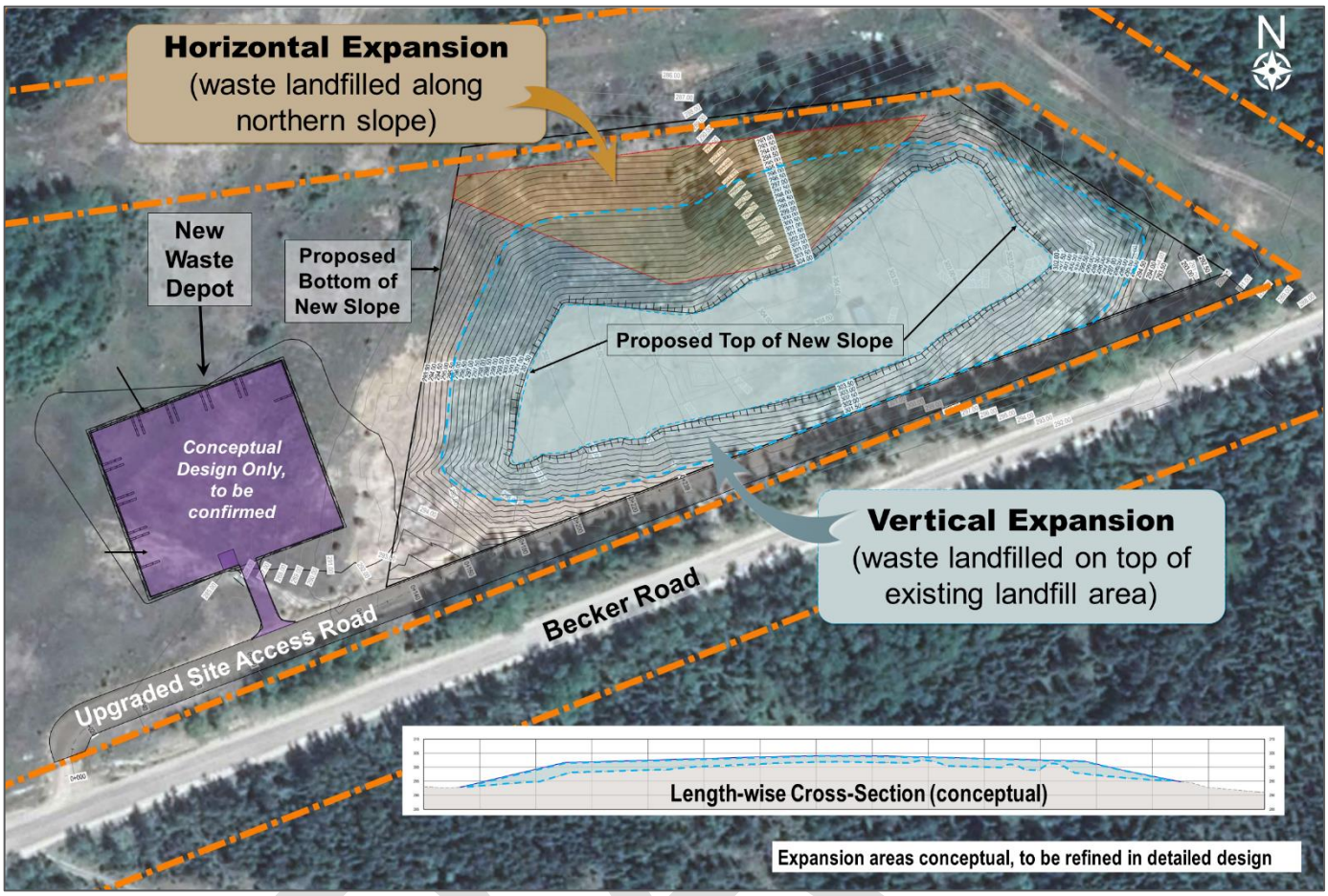
Location of Hornepayne Municipal Landfill

The Project

The Municipality of Hornepayne's municipal landfill was constructed in 2001, with a capacity for about 39,000 m^3 of landfill waste. In 2021, the Township's Long-Range Waste Management Plan conducted a landfill capacity assessment that determined the landfill had approximately 6,000 m^3 of disposal capacity remaining. Based on an average disposal rate of about 1,900 m^3 per year, it was estimated that the landfill site would reach its capacity by around 2025.

Preliminary design for the landfill expansion was initiated in 2022, and it was determined that the landfill could be expanded by about 59,000 m^3, which would provide secure disposal capacity for the Municipality for about 30 years. The total capacity of the landfill would increase from 39,000 m^3 to approximately 98,000 m^3.

The proposed expansion of the landfill will not require any additional property. The additional waste disposal capacity would be achieved by expanding the landfill horizontally to the north and vertically upward. In addition to the expansion, the municipal waste depot would be relocated to the landfill property and situated to the west of the landfill area. The following figure depicts a conceptual design for the expansion.



Landfill Expansion Concept

Potential Environmental Impacts

Through the Environmental Screening Process, the potential for the project to result in adverse environmental effects was assessed. As there will be minimal changes to the landfill footprint and types of waste received, and because of the distance between the site and nearest residents, it was concluded in the Screening Criteria Checklist that the Project could have potential environmental effects only on Surface and Groundwater, Air and Noise, Natural Environment, and Socio-Economic. A Natural Heritage Investigation was undertaken to evaluate the potential effects on the Natural Environment, while existing monitoring and Township reports were used to evaluate the remaining potential impacts.

The results of the evaluation of potential effects determine that the net negative effects due to the proposed expansion were low:

- The proposed expansion is not expected to have an impact on surface and groundwater, as the landfill's existing monitoring system indicated minimal impact of the existing site, and the proposed expansion will not increase the rate of waste disposed and therefore is not anticipated to increase the rate of leachate generated.
- As the proposed expansion is not expected to change the rate of waste disposed on site, the levels of air and noise emissions is not expected to significantly change. Further, the closest resident is about 1,600 m away, and as such would not be impacted by site odours or noise.
- While there is some potential for the Eastern Whip-poor-will (a threatened bird species) to inhabit the trees located within the area proposed for the northward expansion, this will be confirmed by field

investigations during detailed design. The remaining area of the expansion is disturbed and deemed unlikely to provide habitat for species at risk.

- An airport is situated approximately 4 km southwest of the landfill site. The municipal landfill site has been in operation since 2001 and is not known to have posed a threat to incoming or departing flights at the airport. While the landfill expansion will increase the site's overall disposal capacity, the disposal rate is not expected to significantly change. Therefore, this landfill expansion is not likely to generate hazards for the airport.

A review of the advantages and disadvantages of the project show that there is a net positive effect of the project for the community, such as:

- The project will provide the Municipality with a long-term disposal capacity for the next 30 years that is safe, secure, and cost-effective.
- The project will have minimal impacts to the natural environment, including to local flora and fauna.
- The project is not expected to have any impacts on the socio-economic environment, including any impacts to the public from nuisances generated on-site or incompatibility with adjacent land uses.
- The expansion will provide this capacity without the anticipated environmental, social, and economic impacts that would normally be associated with establishing a new landfill.

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1 Project Description

1.1 Introduction

The Township of Hornepayne has commenced an Environmental Screening Process (ESP) in accordance with the Waste Management Projects Regulation (Ontario Regulation 101/07) of the *Environmental Assessment Act* (EAA) for an expansion of the municipal landfill located about 5 km east of Hornepayne (see Figure 1). This regulation is directed partially at small, rural waste disposal sites and select waste projects are deemed exempt from Part II of the EAA if the environmental screening process is completed. The ESP is intended to determine the feasibility of a capacity expansion at the Municipal Landfill as a long-term (25-year) solution that will best meet the needs of the municipality with respect to the management of municipal solid waste generated within its boundaries.

This Environmental Screening Report documents the results of the ESP.

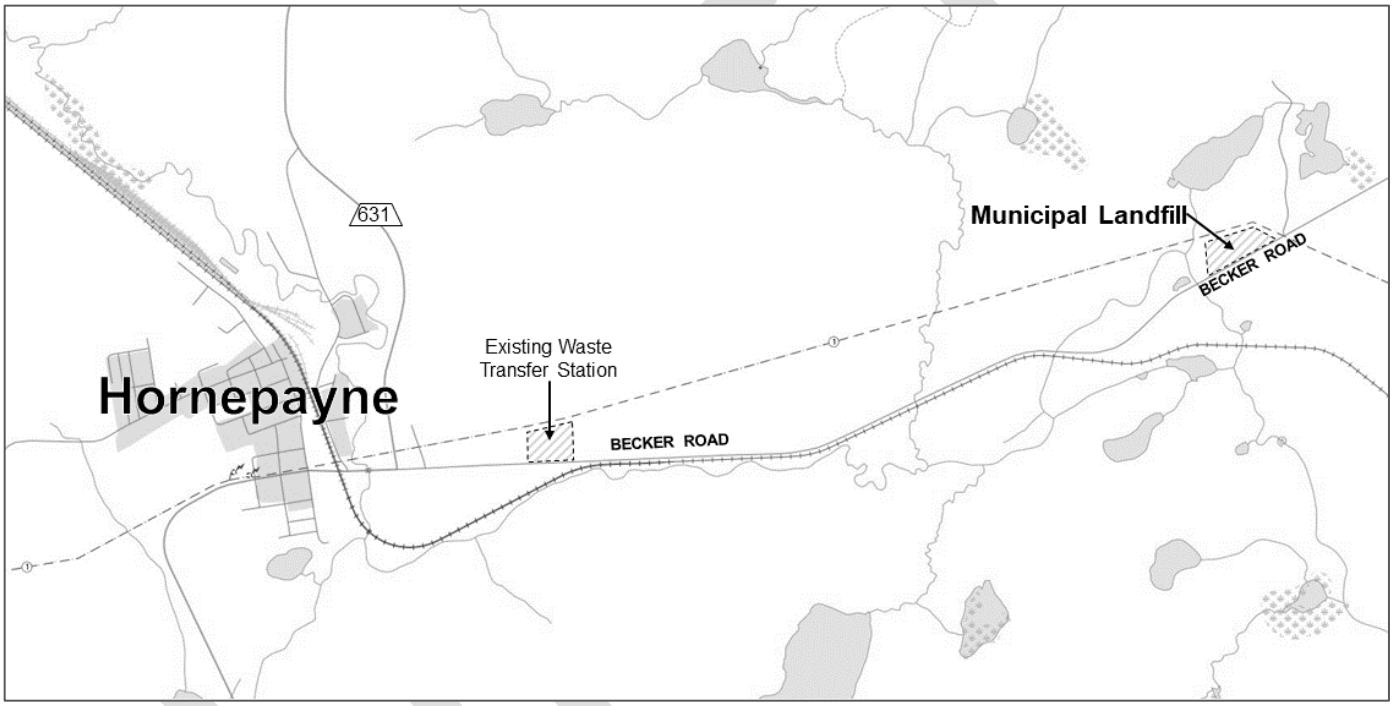

Figure 1: Location of Hornepayne Municipal Landfill

1.2 Problem, Purpose and Opportunity

The Municipality of Hornepayne's municipal landfill was constructed in 2001, with a capacity for about 39,000 m^3 of landfill waste[1]. In 2021, the Township initiated the development of a Long-Range Waste Management Plan for the diversion and disposal of the Township's waste. The process included a landfill capacity assessment, which determined that in 2021 the landfill had approximately 6,000 m^3 of disposal capacity remaining (Figure 2). Based on an average disposal rate of about 1,900 m^3 per year, it was estimated that the landfill site would reach its capacity by around 2025.

[1] This includes both garbage plus landfill cover. Landfill cover is material such as soil that is used to cover the waste placed in the landfill. Landfill cover is needed to contain odours, discourage pests, reduce blown litter, and reduce water infiltration.

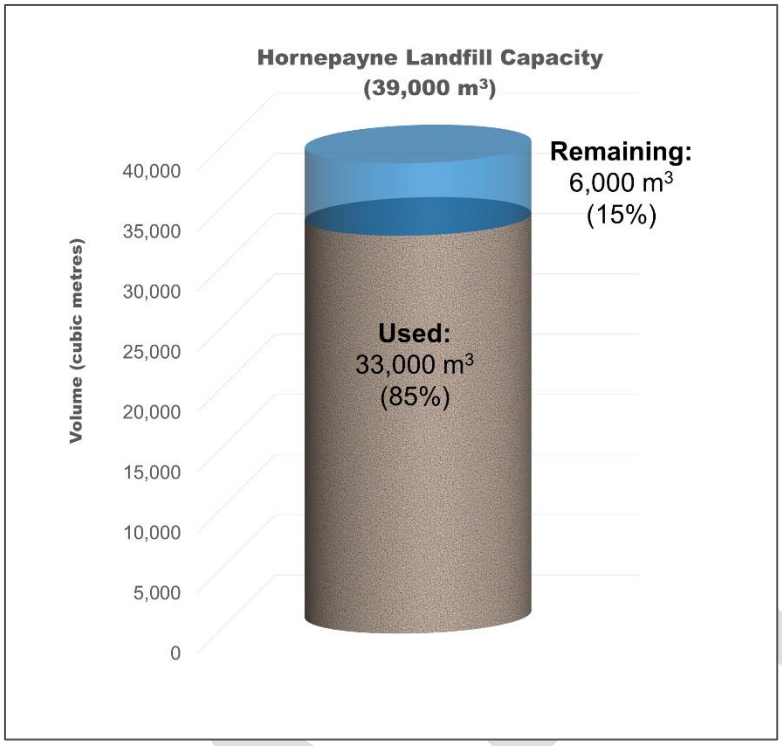

Figure 2: Estimated Landill Disposal Capacity Used and Remaining (2021)

A goal of the Long-Range Waste Management Plan was to secure at least 25 years of future disposal capacity for the Municipality (i.e., a 25-year planning horizon). A capacity assessment was completed that determined the Municipality would require an additional 47,500 m^3 of disposal capacity to meet this goal.

In 2022, a Solid Waste Management Strategy was completed that recommended the following initiatives to meet the Municipality's disposal and waste diversion goals:

- Expansion of the existing landfill and relocation of the waste transfer station to the landfill site.
- Implementation of household organics collection and composting.
- Clear bag garbage collection.

Preliminary design for the landfill expansion was initiated, and it was determined that the landfill could be expanded by about 59,000 m^3, which would secure the required Municipality's disposal capacity beyond the 25-year planning horizon. This led to the initiation of the ESP.

Based on the above, the Problem and Opportunity Identification Statement for this project includes the following:

- The Problem:
  - The Township only has approximately 6,000 m^3 of disposal capacity left in its landfill site.
  - The Township needs at least 47,500 m^3 of additional disposal capacity over the next 25 years.
- The Opportunity
  - Undertaking a landfill expansion provides an opportunity to complete additional works to optimize the Township's waste management programs. This will help to increase waste diversion and improve the cost-effectiveness of waste operations.
  - Preliminary design indicates that the existing landfill site can provide enough disposal capacity for beyond the planning horizon.

- The Project
  - Expand the Township's existing landfill site to provide disposal capacity for the Township to go beyond its 25-year planning horizon.
  - Build a new Waste Transfer Station / Drop-off site at the existing landfill site.

2 Description of Project

The Township is proposing to expand the capacity of the landfill site under the Environmental Screening Process legislated under Ontario Regulation 101/07 of the EAA. The proposed expansion will increase the disposal capacity by approximately 59,000 m^3, increasing the total capacity of landfill from 39,000 m^3 to approximately 98,000 m^3. At the current average annual fill rate of 1,900 m^3 (including daily cover), this would add approximately 30 years to the remaining service life of the landfill.

The proposed expansion of the landfill will not require any additional property. The additional waste disposal capacity will be achieved by expanding the landfill horizontally to the north and vertically upward. Figure 3 depicts a conceptual design for the expansion.

In addition to the expansion, the municipal waste depot would be relocated to the landfill property and situated to the west of the landfill area.

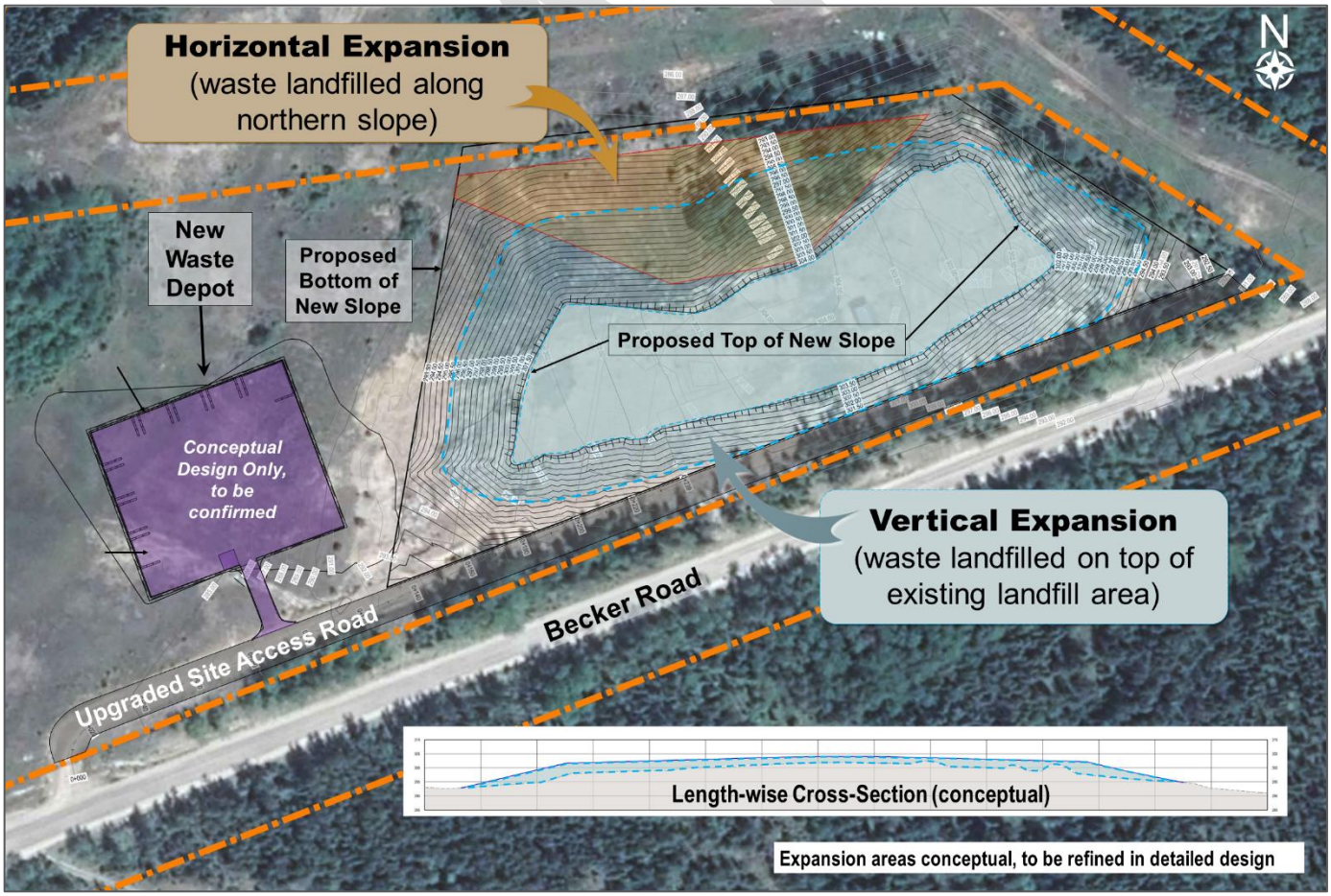

Figure 3: Landfill Expansion Concept

3 Physical Setting

3.1 Location of Landfill

The Township of Hornepayne operates a natural attenuation municipal solid waste disposal site, located approximately 5 km east of Hornepayne and on the north side of the Becker Road. The site began operation circa 2001 in general accordance with the design and operations plan outlined in Section 4 of the report entitled *Township of Hornepayne Small Site Hydrogeological Risk Assessment and Operating Plan*, prepared by Wardrop Engineering Inc. dated June 2001[2] (see Appendix A). As described in that report, the disposal footprint approved for the site consisted of 10 disposal trenches that Wardrop (2001) estimated would provide for a combined infill capacity of 39,000 m^3 (presumed to include the infilled waste plus interim and daily cover). Figure 4 depicts the site layout and trench locations as presented by Wardrop (2001).

The ten trenches sit within an approximately 3.1 hectare operational area on a much larger property owned by the Township. The site generally follows the existing grade, although it is understood there was some modification of the original topography as part of ongoing operations consisting of some cut in the east portion of the site and fill on the west portion of the operational area. Figure 5 depicts the location of the landfill site and property.

3.2 Natural Environment

3.2.1 Wetlands and Surface Water

The landfill property is flanked to the west and east by unevaluated wetlands (Figure 6). The eastern wetland is associated with a long stretch of treed area, indicating this is a swamp ecosite. The western wetlands immediately adjacent to the property are part of the Deadwater Creek riparian corridor, with forested swamp beyond these areas further west.

Deadwater Creek is located approximately 200 m west of the landfill site and is a tributary of the Jackfish River. The Jackfish River is located to the south of the landfill site, approximately 600 m downstream from the landfill. The Jackfish River eventually discharges into the Shekak River.

3.2.2 Woodlands

Extensive areas of woodland and treed swamps are present outside of the landfill property and extend across much of the broader regional landscape. While there are no mapped woodlands within the landfill property, some wooded areas are present on the western end of the landfill property, as well as a small woodlot situated directly north of the existing landfill area. This woodlot is not anticipated to be considered significant. A former aggregate pit area is located on the property west of the landfill area.

3.2.3 Significant Wildlife Habitat

A Preliminary Significant Wildlife Habitat (SWH) Assessment was undertaken as part of this screening process (see Appendix B). The types of potential areas of SWH at the landfill site include:

- Seasonal Concentration Areas for Wildlife Species:
  - Reptile Hibernaculum: burrows, rock crevices, or other natural locations have the potential to be present below the frost line.

[2] Wardrop Engineering Inc. Small Site Hydrogeological Risk Assessment and Operating Plan Proposed Waste Disposal Site. Prepared for the Township of Hornepayne. June 2001.

  - Colonially-nesting Bird Breeding Habitat (Tree/Shrub): may be present associated with treed swamps on the outer edges of the study area, which may extend to include part of the constrained buffer areas on the western half of the landfill property.
- Specialized Habitat for Wildlife:
  - Waterfowl Nesting Area: shorelines of open aquatic features on the western edge of the study area may provide suitable habitat, which may extend to include part of the constrained buffer areas on the western half of the landfill property.
  - Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat: treed shorelines of open aquatic features on the western edge of the study area may provide suitable habitat, which may extend to include part of the constrained buffer areas on the western half of the landfill property.
  - Turtle Nesting Areas: shorelines of open aquatic features on the western edge of the study area may provide suitable habitat, which may extend to include part of the constrained buffer areas on the western half of the landfill property.
  - Aquatic Feeding Habitat: treed shorelines of open aquatic features on the western edge of the study area may provide suitable habitat, which may extend to include part of the constrained buffer areas on the western half of the landfill property.

The assessment included a review of potential Species at Risk (SAR) that may be in the study area. SAR include species that are either listed as endangered or threatened under the *Endangered Species Act* (ESA). The assessment found that there were five species ranked threatened or endangered under the ESA with moderate or higher potential for presence within the study area. These species are afforded formal protection under the Act and include:

- Bank Swallows (threatened) are a bird species that require vertical or near-vertical sandy/silty banks for nesting. These nesting sites need to be near a foraging site, which would consist of both terrestrial and aquatic habitats, including wetlands, open water, riparian woodlands, grasslands, and shrublands. Bank Swallows also require night roosting habitat, which consists of large wetlands or shrub thickets in or near water. There is a moderate probability that Bank Swallow nesting/foraging/night roosting habitat all exist within the study area if loose aggregate storage areas are present.
- Eastern Whip-poor-will (threatened) is a bird species that requires a mix of open and forested areas such as savannahs, open woodland, or opening in more mature forests. It utilizes the open areas for foraging and the forested areas for roosting and nesting. This species nests on the ground where it is able to blend in with the forest floor and remain undetected by predators.
- Little Brown Myotis (endangered) and Northern Myotis (endangered) are mammals that use similar wooded habitat to roost in. Both species roost within tree cavities and under loose exfoliating bark near water, which is used to forage for aquatic insects. Little Brown Myotis and Northern Myotis will also use cool dark places in buildings and structures to roost as well.
- The Lake Sturgeon (endangered; Great Lakes-Upper St. Lawrence population) is a fish species that lives almost exclusively in freshwater lakes and rivers with soft bottoms of mud, sand, or gravel, spawning in shallow, fast-moving water. This fish has the potential to be present in Deadwater Creek, which runs just outside the western boundary of the landfill property and is connected to Jackfish River (see Figure 7).

3.2.4 Geology and Hydrogeology

The following description of the landfill site's geology and hydrogeology is based on the *Hornepayne Waste Disposal Site 2016-2018 Triennial Groundwater and Surface Water Monitoring Report*, prepared by Wood Environment & Infrastructure Solutions for the Township[3]:

- The topography and surficial geology surrounding the community of Hornepayne is the result of several glaciations. Most of the surrounding area has moderate topographical relief, due to it being overridden and depressed by glacial ice and then buried beneath lacustrine deposits consisting of sand, gravel and silty sands[4].
- Generally, the subsurface soil conditions at the landfill site generally consist of interlayered sand, sand and gravel and silty sand. The sandy clay layer is situated at a depth of about 1.8 to 4.6 meters below ground surface (mbgs), and a clayey sand layer is situated at a depth of about 6.10 to 9.75 mbgs.
- The groundwater generally flows to the north and west, toward a low-lying area near Deadwater Creek and in the general direction of the immediate topographical downward slopes.
- The report notes an assumption that that the local unconfined groundwater aquifer is hydrogeologically connected to various surrounding water bodies, in particular Deadwater Creek and the low-lying area to the west and north of the landfill site.

3.3 Built and Economic Environment

3.3.1 Roads

The community of Hornepayne is serviced by provincial Highway 631, which runs north/south through the middle of the Township. The landfill is situated on Becker Road, which is an unpaved rural road extending eastward from the Township's urban area.

3.3.2 Waste Depot

In addition to the landfill site, the Becker Road Transfer Station was opened circa 2003 and serves mainly as a drop off location for the curbside waste and other waste generated by the community, that do not have curbside collection. The facility is located approximately 1 km east of the urban area. The site includes segregated bins for waste and is open 4 days a week to the public and business. The waste is transported from the transfer station to the landfill. The waste depot is depicted in Figure 8.

3.3.3 Mining

Mineral mining is a strong economic resource for the Municipality. The Township's Official Plan notes that the entire Township has a moderately high (79 out of 100) MMPET index[5]. This is due in part to presences of pegmatites, which is a potential component for rechargeable batteries[6]. The area around the landfill site, however, is not available for mining, as Notice W-P-11/00 withdraws the area from prospecting or staking out (Figure 9).

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[3] Wood Environment & Infrastructure Solutions. 2016-2018 Triennial Groundwater and Surface Water Monitoring Report: Hornepayne Waste Disposal Site. Prepared for the Township of Hornepayne. March 29, 2019.

[4] A lacustrine deposit is a sedimentary rock formation that has formed in the bottom of an ancient lakes. This is similar to a glaciolacustrine deposit, which is caused by sediment deposited into lakes that have come from glaciers.

[5] The Metallic Mineral Potential Estimation Tool (MMPET) is a Government of Ontario geospatial tool that estimates the mineral potential of an area using a coarse geographic scale.

[6] J.L. Richards & Associates Limited. Township of Hornepayne Official Plan. Prepared for The Township of Hornepayne. December 8, 2021.

3.3.4 Airport

The Hornepayne Municipal Airport (YHN) is located to the south and east of the Township's urban area, approximately 4.4 km from the landfill (see Figure 10). According to the Township's Official Plan, the airport is used mainly by the Province (Ministries of Northern Development, Natural Resources and Forestry, and Health), private corporations, and private pilots. The Official Plan notes that the airport is to be maintained and its long-term operation and economic role be protected in acknowledgement of its importance to the economic well-being of the community and to provide air ambulance services.

3.3.5 Railway

A CN rail line runs through the Township. Hornepayne is a divisional point on the railway where two rail subdivisions join with each other. An industrial rail spur outside of the Township supports the local lumber mill and other resource development in the area. Hornepayne is also a stop of the TransCanada rail route.

3.3.6 Power Transmission Corridor

A power transmission line right of way, owned by Hydro One, is situated along the landfill property's northern and eastern border (see Figure 5).

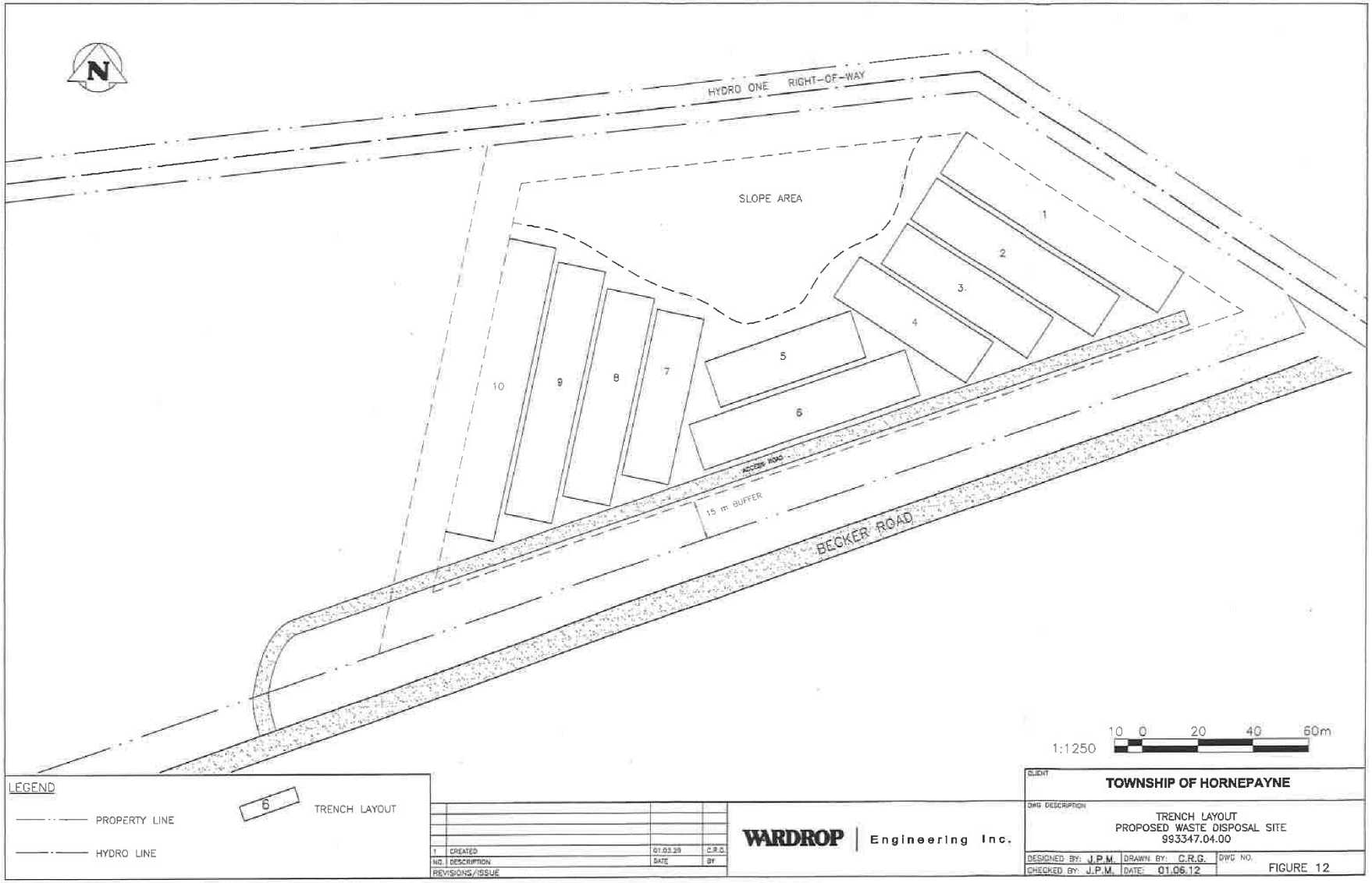

Figure 4: Original Trench Landfill Layout (Wardrop 2001)

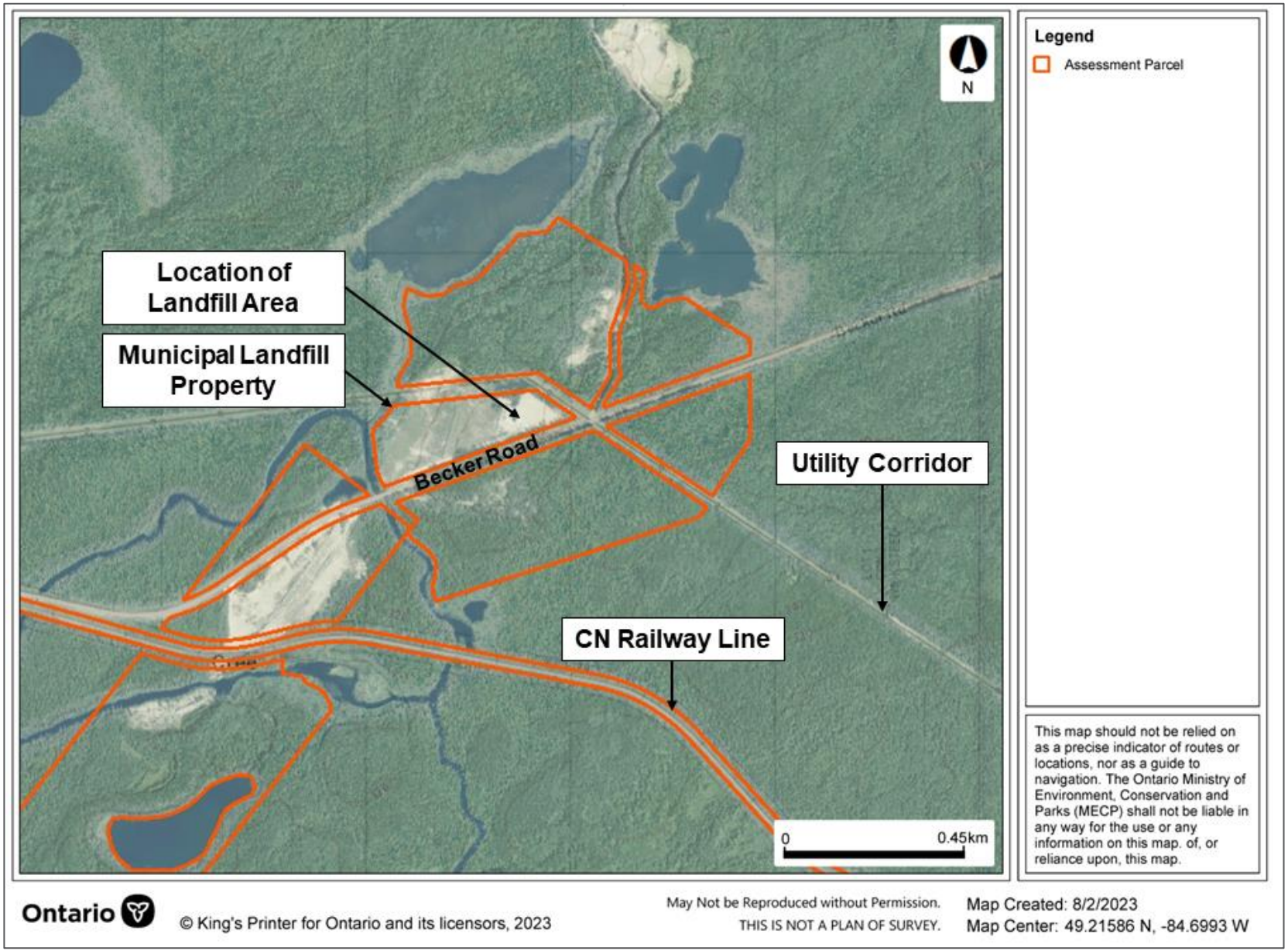

Figure 5: Municipal Landfill Property Parcel

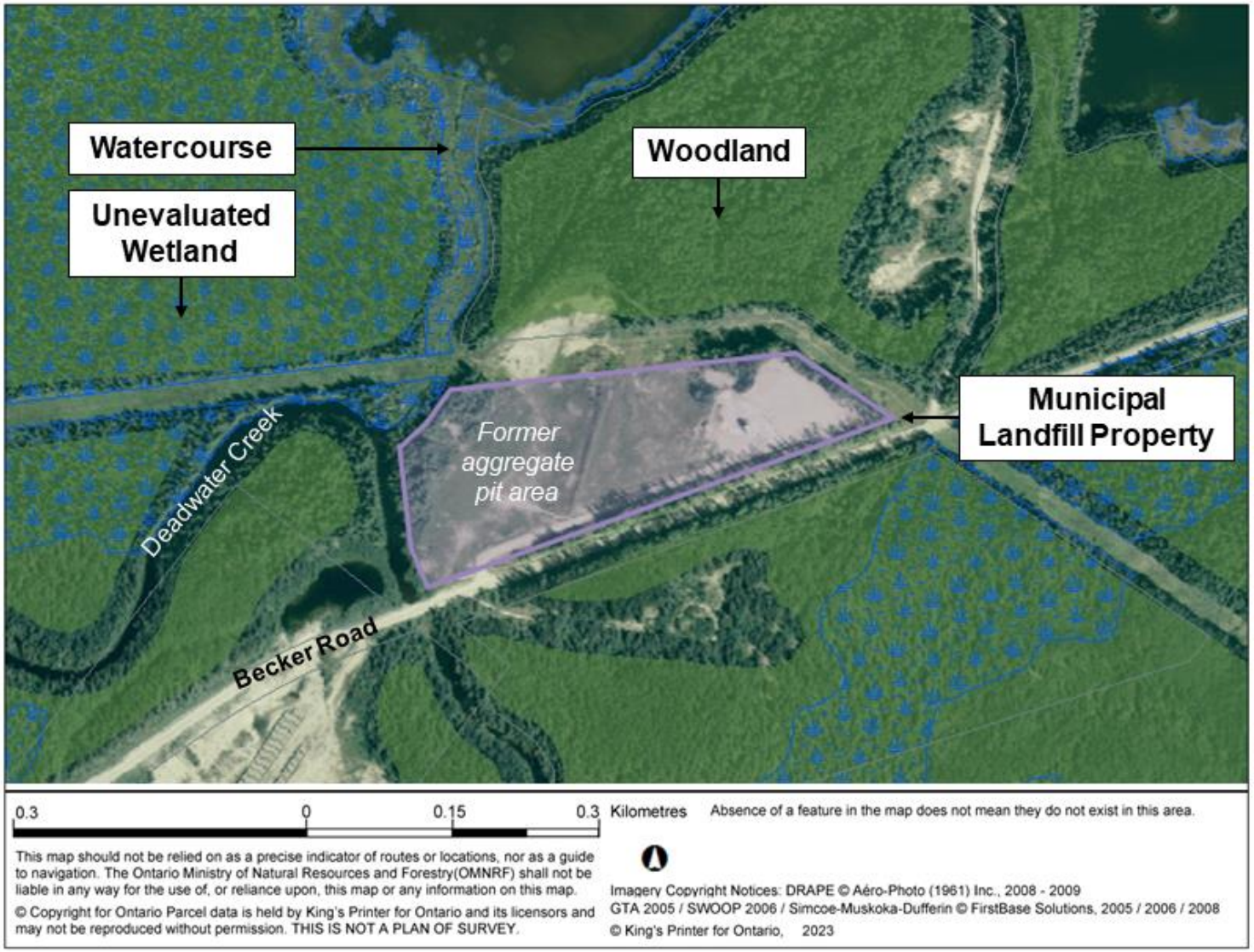

Figure 6: Natural Features

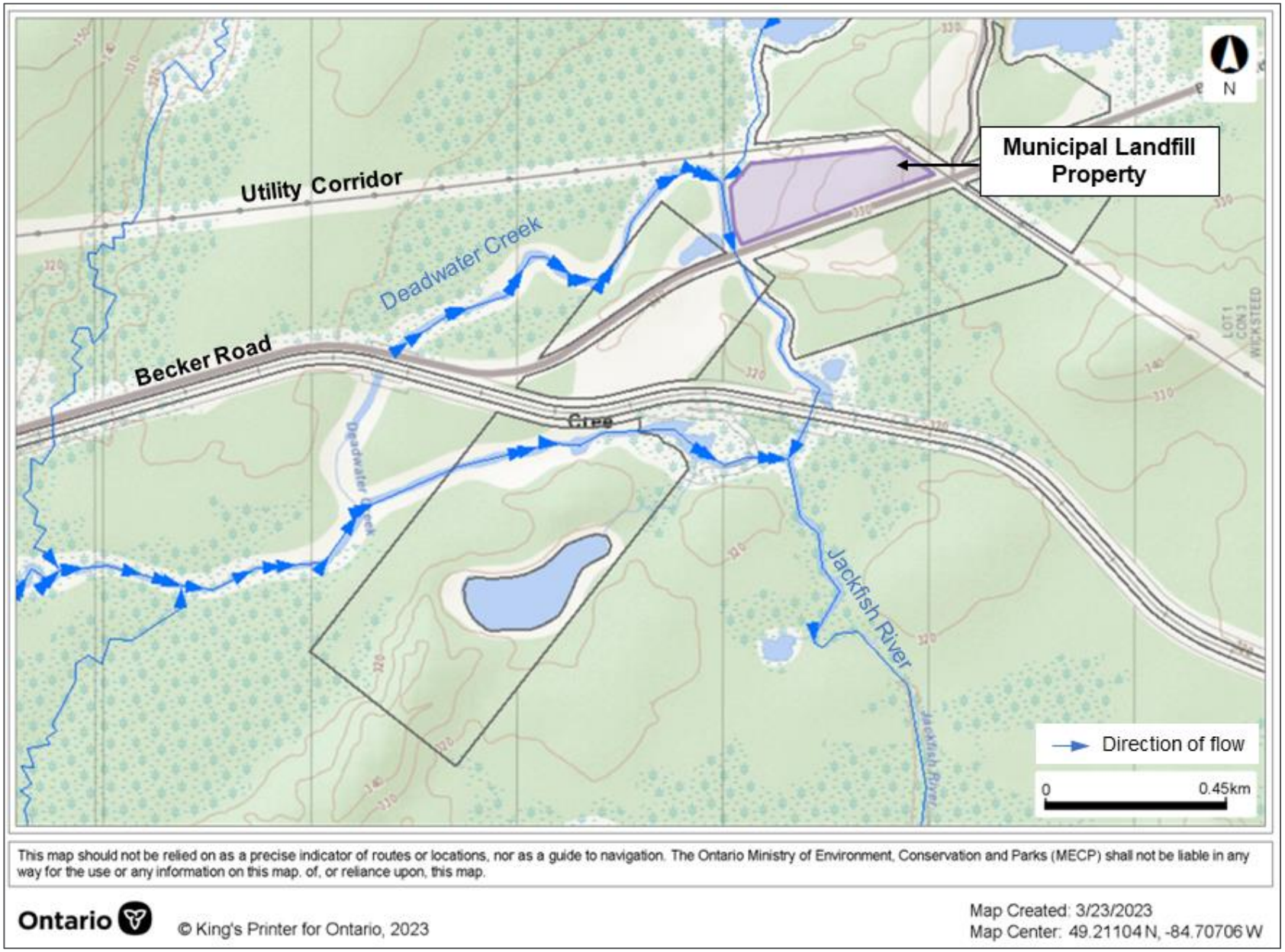

Figure 7: Watercourses near Landfill Property

Figure 8: Hornepayne Waste Depot

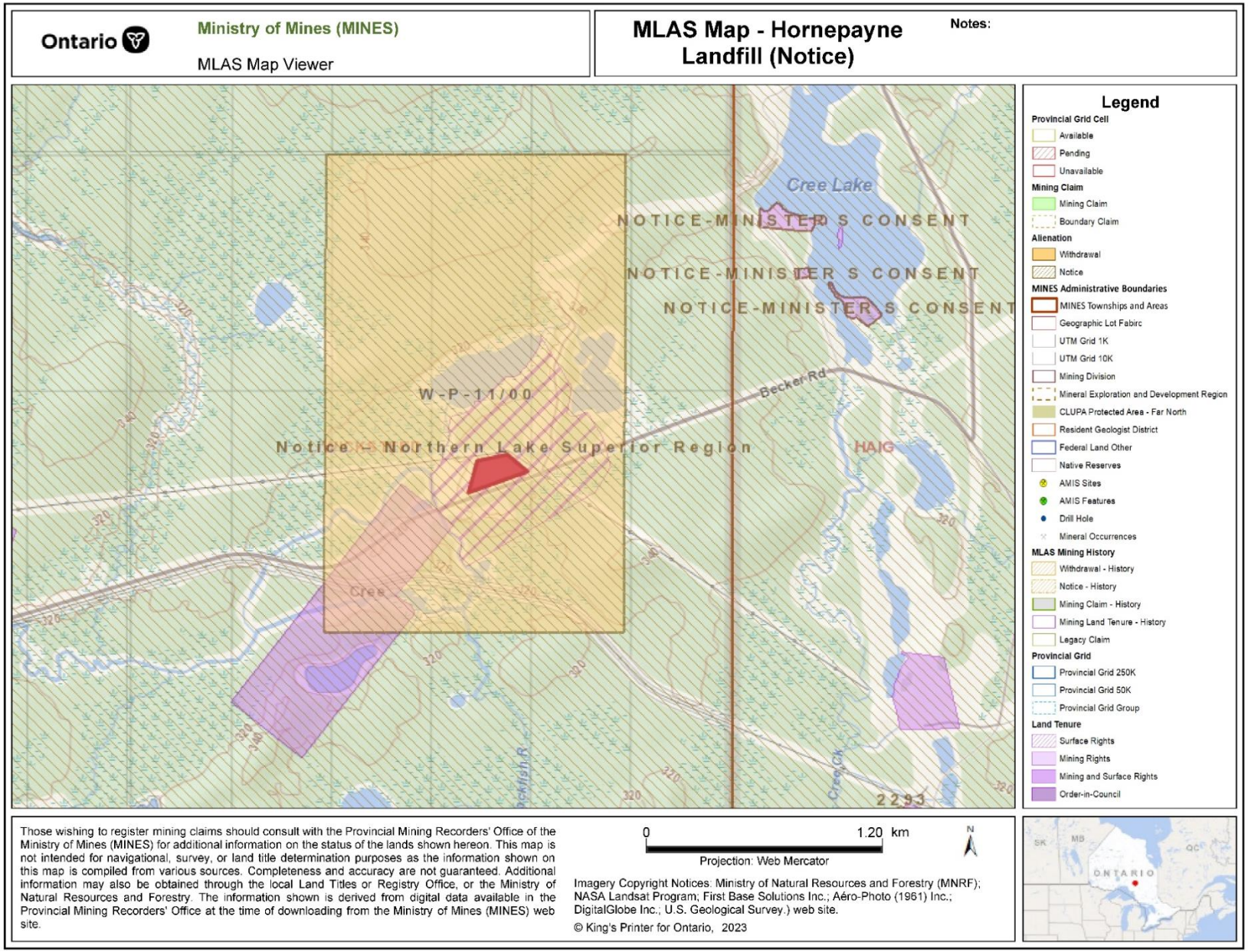

Figure 9: Notice W-P-11/00 Area

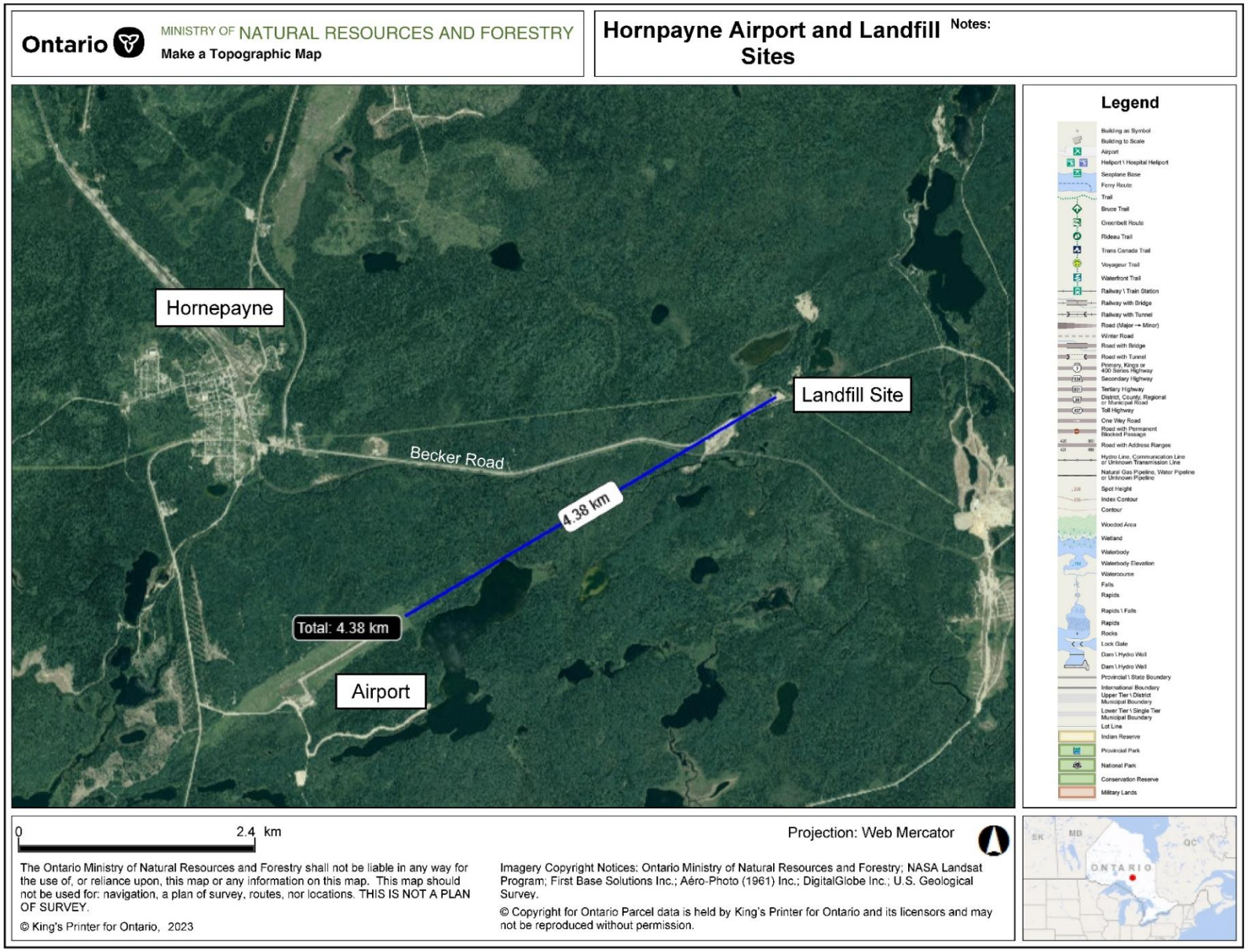

Figure 10: Hornepayne Airport and Landfill Site

4 Environmental Screening Process - Screening Criteria Checklist

Projects that are subject to the Ministry's Environmental Screening Process for Waste management projects must begin with a screening that considers whether a project might have potential negative effects. The screening criteria are presented in the form of a checklist with the option of a "Yes" or "No" response (excluding if mitigation measures are applied). This is to ensure that both the potential impact and mitigation plans are open to discussion and review.

Each criterion is based on a question prefaced with the phrase "might the project…". The checklist with results is provided in Table 1. The potential effects identified by the checklist and the proposed mitigation measures are discussed in Section 5.

Table 1: Environmental Screening Checklist and Results

Criterion *Might the Project…*		Yes	No	Additional Information
1. Surface and Ground Water				
1.1	cause negative effects on surface water quality, quantities, or flow?	Y		Surface water quality could potentially be impacted by rainwater that is contaminated through contact with solid waste deposited within the landfill.
1.2	cause negative effects on ground water quality, quantity, or movement?	Y		Ground water quality could potentially be impacted by contamination if it comes in contact with the landfill site's leachate plume, or if rainwater sheet flow collects contaminants from the landfill site or new waste transfer site location and then perchlorates into the soil.
1.3	cause significant sedimentation or soil erosion or shoreline or riverbank erosion on or off site?		N	Significant sedimentation or erosion is unlikely due to implementation of best practice design and operation features. Impacts to shoreline or riverbank erosion are also unlikely as the project is not near a shoreline or riverbank. The closest watercourse is Deadwater Creek, which is located more than 120 m away from the landfill area.
1.4	cause negative effects on surface on ground water from accidental spills or releases (e.g., leachate) to the environment?	Y		Surface and ground water quality could potentially be impacted by accidental spills or releases to the environment.
2. Land				
2.1	Cause negative effects on residential, commercial, institutional, or other sensitive land uses within 500 metres from the site boundary?		N	There are no residential, commercial, institutional, or other sensitive land uses within 500 metres from the site boundary. There is a resource extraction operation whose property is located approximately 260 m from the landfill area. However, this is not a sensitive land use. Other than the landfill site, the only other non-natural land uses include: a hydropower corridor that runs along the north and east limits of the landfill property; Becker Road, which runs along the southern limit of the landfill property; and a CN Railway line that is approximately 450 m south of the landfill site.

Criterion *Might the Project…*		Yes	No	Additional Information
2.2	not be consistent with the Provincial Policy Statement, provincial land use or resource management plans?		N	The proposed expansion is situated within an existing landfill site and would be consistent with the Provincial Policy Statement, provincial land use or resource management plans. The Nagagami Forest 2021-2031 Forest Management Plan identifies the landfill property as patent land, and no planned harvest or harvest road corridors are in conflict with the expansion. Hornepayne is located within the Porcupine Mining Division. It is situated in proximity to a mining operation. However, the landfill site falls under Withdrawal Order Number W-P-11/00 [Wicksteed Township][7].
2.3	be inconsistent with municipal land use policies, plans and zoning bylaws (including municipal setbacks)?		N	The proposed expansion is situated within an existing landfill site. The existing landfill site is zoned MD, Disposal Industrial. The zoning by-law states that no landfill site shall be established within 300 m of any waterbody. While portions of the expansion and transfer station fall within 300 m of Deadwater Creek and a tributary, this location is already an established landfill site.
2.4	use lands not zoned as industrial, heavy industrial or waste disposal?		N	The site is zoned MD, Disposal Industrial.
2.5	use hazard lands or unstable lands subject to erosion?		N	The project is taking place on the existing landfill site. Neither hazard lands or nor unstable lands subject to erosion have been identified on the site.
2.6	cause negative effects related to the remediation of contaminated land?		N	There are no contaminated lands planned for remediation that are located in proximity to the landfill site.
3. Air and Noise				
3.1	cause negative effects on air quality due to emissions (for parameters such as temperature, thermal treatment exhaust flue gas volume, nitrogen dioxide, sulphur dioxide, residual oxygen, opacity, hydrogen chloride, suspended particulates, or other contaminants)?	Y		Negative effects on air quality may occur due to greenhouse gases emissions from landfilled waste, emissions from heavy vehicles used in operations, dust, and odour.
3.2	cause negative effects from emission of greenhouse gases (e.g., carbon dioxide, carbon monoxide, methane)?	Y		Negative effects on air quality may occur due to greenhouse gases emissions from landfilled waste and use of heavy vehicles.
3.3	cause negative effects from the emission of dust or odour?	Y		Negative effects on air quality may occur due to odours from landfilled waste and dust generated by landfill operations.
3.4	cause negative effects from emission of noise?		N	Noise from operation of heavy machinery may occur during working hours. However, the nearest sensitive receptor in the order of 5 km away.
3.5	cause light pollution from trucks or other operational activities at the site?		N	Nighttime operations are not anticipated.

[7] A withdrawal order means an order under the Ontario *Mining Act* to withdraw from prospecting, registration, and from sale or lease, any lands, mining rights or surface rights that are the property of the Crown.

	Criterion *Might the Project…*	Yes	No	Additional Information
4. Natural Environment				
4.1	cause negative effects on rare (vulnerable), threatened or endangered species of flora or fauna or their habitat?	Y		Negative effects on rare (vulnerable), threatened or endangered species of flora or fauna or their habitat could potentially be impacted if found within the landfill expansion area.
4.2	cause negative effects on protected natural areas such as, ANSIs, ESAs or other significant natural areas?		N	No designated or protected natural areas are located within the study area.
4.3	cause negative effects on designated wetlands?		N	No designated wetlands are within the study area.
4.4	cause negative effects on wildlife habitat, populations, corridors or movement?		N	While some trees on the landfill site would be impacted by the expansion, the area is small (less than 2,000 m^2, or 0.2 ha) and considerably smaller than the 0.5 to 2.0 ha threshold for a significant woodland. The expansion area is also surrounded by disturbance on all sides (i.e., the active landfill and the hydropower corridor).
4.5	cause negative effects on fish or their habitat, spawning, movement or environmental conditions (e.g., water temperature turbidity, etc.)?	Y		The expansion has the potential to create turbidity if there is an uncontrolled release of sediment during construction. Based on the distance from the watercourse to the landfill site, it is unlikely that such an impact could occur during typical landfill or operations or operation of the waste transfer station.
4.6	cause negative effects on locally important or valued ecosystems or vegetation?		N	No locally important or valued ecosystems or vegetation are located within the landfill site, which is a primarily disturbed area. For example, the area where the waste transfer station is to be located is a formal aggregate pit area.
4.7	increase bird hazards within the area that could impact surrounding land uses (e.g., airports)?		N	There are no surrounding land uses in the area that could be impacted by increased bird hazards. While there is an airport approximately 4.4 km to the southwest of the landfill site, the landfill expansion will not increase the rate of landfilling and therefore is unlikely to increase the bird hazard that may or may not already exist.
5. Resources				
5.1	result in practices inconsistent with waste studies and/or waste diversion targets (e.g., result in final disposal of materials subject to diversion programs)?		N	The landfill expansion was the preferred disposal option of the Township's recently developed solid waste management strategy.
5.2	result in generation of energy that cannot be captured and utilized?		N	No energy generation is planned for this location.
5.3	be located a distance from required infrastructure (such as availability to customers, markets and other factors)?		N	The landfill expansion is taking place at the Township's existing landfill site, which is still in use.
5.4	cause negative effects on the use of Canada Land Inventory Class 1-3, specialty crop or locally significant agricultural lands?		N	There are no Canada Land Inventory Class 1-3 agricultural areas near the landfill site.

Criterion *Might the Project…*		Yes	No	Additional Information
5.5	cause negative effects on existing agricultural production?		N	There are no existing agricultural productions near the landfill site.
6. Socio-Economic				
6.1	cause negative effects on neighborhood or community character?		N	The nearest community (Hornepayne) is approximately 5 km west of the landfill site.
6.2	result in aesthetics impacts (e.g., visual and litter impacts)?		N	The expansion is taking place at the Township's existing landfill site. The nearest community (Hornepayne) is approximately 5 km west of the landfill site.
6.3	cause negative effects on local businesses, institutions or public facilities?		N	No negative effects to local businesses, institutions or public facilities are expected.
6.4	cause negative effects on recreation, cottaging or tourism?		N	No negative effects on recreation, cottaging or tourism are expected.
6.5	cause negative effects related to increases in the demands on community services and infrastructure?		N	No increases in the demands on community services and infrastructure are expected.
6.6	cause negative effects on the economic base of a municipality or community?		N	The expansion is not expected to have a negative effect on the economic base of a municipality or community.
6.7	cause negative effects on local employment and labour supply?		N	The proposed expansion is not expected to disrupt local employment and labour supply.
6.8	cause negative related to traffic?		N	No traffic impacts are expected from the proposed landfill expansion.
6.9	be located within 8km of and aerodrome/airport reference point?	Y		The expansion is taking place at the Township's existing landfill site. The existing landfill site is approximately 4 km northeast east of the Hornepayne Municipal Airport (YHN). According to the Township's website, the facility is unstaffed but available for charters and is mainly used by the Ministry of Northern Development, Mines, Natural Resources and Forestry (MNR), the Ministry of Health, Corporations and private pilots.
6.10	interfere with flight paths due to the construction of facilities with height (i.e., stacks)?		N	The expansion does not include the construction of structures with significant height.
6.11	cause negative effects on public health and safety?		N	The expansion is taking place at the Township's existing landfill site, which is not known to have caused or be causing any negative effects on public health and safety. The landfill expansion will provide an opportunity to upgrade the landfill's existing infrastructure and operations, which should have the effect of improving public health and safety compared to existing.
7. Heritage and Culture				
7.1	cause negative effects on heritage buildings, structure or sites, archaeological sites or areas of archaeological importance, or cultural heritage landscapes?		N	There are no heritage buildings, archaeological sites or structures or landscapes of cultural significance in proximity to the site. As an existing landfill site and formal aggregate pit site, the area is extensively disturbed.
7.2	cause negative effects on scenic or aesthetically pleasing landscapes or views?		N	The proposed expansion is taking place on an existing landfill site.

5 Environmental Effects Assessment

5.1 Surface and Groundwater

5.1.1 Assessment

5.1.1.1 Surface Water and Groundwater Quality, Quantities or Flow

Deadwater Creek is located approximately 200 m from the waste disposal site, there are four groundwater monitoring stations and one surface water monitoring station located between them. Figure 11 depicts the locations of the monitoring stations, the active waste disposal site, and the locations of the proposed areas for the landfill expansion and new waste depot.

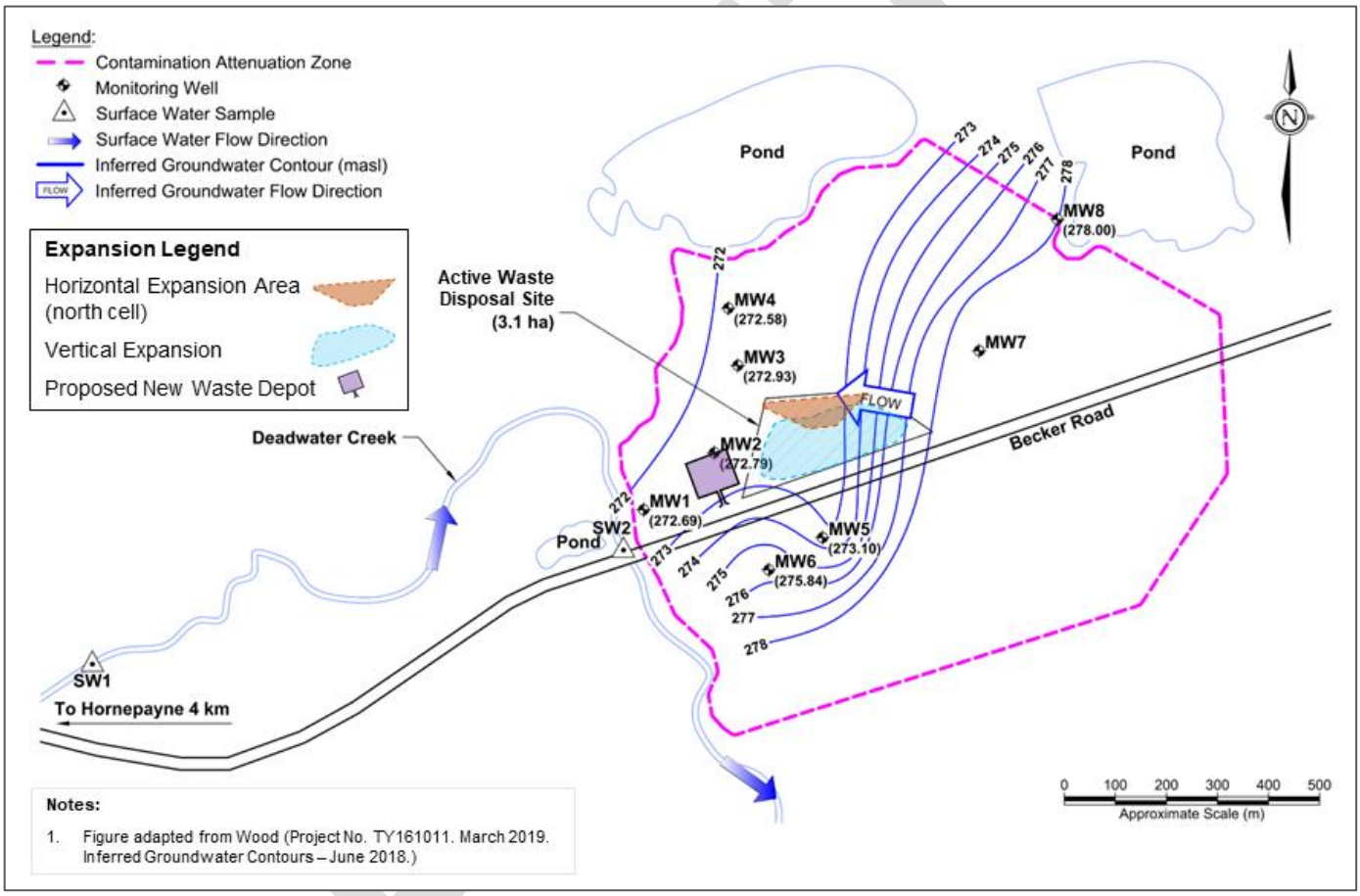

Figure 11: Hornepayne Landfill Water Monitoring Stations and Proposed Expansion Areas

The Municipality operates a surface water and groundwater monitoring program as per the requirements of the landfill's Environmental Compliance Approval. This includes collecting and analyzing samples from the water monitoring stations three times a year (spring, summer and fall) and submitting annual Trigger and Compliance Water Monitoring Reports and Triennial Complete Reports to the Ministry.

The water monitoring programs include both Surface Water and Groundwater Trigger Mechanisms. These include trigger parameters that, if exceeded in specified water monitoring locations, will initiate remedial or contingency actions.

The 2016-2018 Triennial Groundwater and Surface Water Monitoring Report, prepared for the Township by Wood Environment & Infrastructure Solutions, included analysis of surface and groundwater monitoring data for the site from 2016 to 2018 and trend analysis using the site's data back to 2006. The report concluded that:

- The 2016-2018 monitoring record indicated that there was no significant groundwater quality impact occurring downgradient of the landfill site. Any parameters found to be in exceedance of the Ontario Drinking water standards (i.e., iron and manganese) were considered to be non-health related parameters and are aesthetic objectives.
- There were some marginal impacts identified due to the landfill site in the three downgradient monitoring wells (i.e., MW-1, MW-2 and MW-3) in the form of exceedances of the Guideline B-7 maximum concentrations for alkalinity and TDS. However, the report concludes that the groundwater quality impacts are interpreted to be attenuated within acceptable concentrations prior to Deadwater Creek.
- No impact from the landfill site was observed in the surface water station data situated along Deadwater Creek.
- The review of the trigger mechanisms indicated that the trigger monitoring locations for groundwater and surface water are within the compliance criteria for the trigger parameters outline in the ECA.
- The Hornepayne Waste Disposal Site is operating as designed, as a natural attenuation-type facility[8].

The proposed landfill expansion is not expected to increase the risk of an accidental spill or release occurring or its anticipated impact on the environment.

5.1.2 Impact Management Measures and Monitoring

The landfill expansion is not expected to increase the rate in which leachate or other possible surface or groundwater contaminates are generated. To help ensure this, the site's operations and maintenance procedures will be updated to ensure the appropriate landfill management practices are used to minimize the infiltration and unmanaged runoff of precipitation into or from the active landfill area.

The site's existing surface and groundwater monitoring program will be reviewed as part of the detailed design and as required, updated to accommodate any new or expanded waste management activities or areas on the waste management site.

5.1.3 Net Effects

The continued application of applicable landfill management practices and active surface and groundwater monitoring will help to ensure there are no adverse impacts from the landfill expansion on surface water and groundwater quality, quantities or flow.

5.2 Air and Noise

5.2.1 Assessment

Air and Greenhouse Gas Emissions

The decomposition of solid waste can create volatile gases such as methane, which is also a greenhouse gas. In sufficient volumes, these types of gases can create a potential hazard. However, due to the small size of the landfill site, there are insufficient volumes of decomposing waste to generate hazardous levels of gases. Similarly, odours are generally limited to the landfill area and are not known to migrate offsite.

[8] Wood Environment & Infrastructure Solutions. 2016-2018 Triennial Groundwater and Surface Water Monitoring Report: Hornepayne Waste Disposal Site. Prepared for The Township of Hornepayne. March 29, 2019.

As waste disposal rates and site operations are expected to remain similar to existing conditions after the landfill expansion is implemented, no significant change to air emissions originating from the site is expected.

Noise and Dust

Noise and dust are two common nuisances that may originate from landfill operations, primarily due to landfill operation equipment and traffic from residents self-hauling their waste to the landfill site. Due to the relatively nominal waste volumes requiring disposal at the Township's landfill site, frequent operation of the heavy equipment is not required to manage the waste received.

As waste disposal rates and site operations are expected to remain similar to existing conditions after the landfill expansion is implemented, no significant change to air emissions originating from the site is expected. While there may be some additional noise and dust generated by vehicles dropping off waste at the new waste depot, this is expected to be minimal and would be offset by a reduction of same at the current waste depot site, which would no longer be in operation. Further, the closest sensitive receptors (residences on Cree Lake) are about 1,600 metres from the landfill site.

5.2.2 Impact Management Measures and Monitoring

The site's existing operations and maintenance manual will be reviewed as part of detailed design and, as required, updated to accommodate any new or expanded waste management activities or areas on the waste management site and the monitoring program.

5.2.3 Net Effects

The net effect of the landfill expansion and opening of the new waste depot would have little to no impact on air and noise emissions from the landfill.

5.3 Natural Environment

5.3.1 Assessment

Rare (Vulnerable), Threatened or Endangered Species of Flora or Fauna

The bulk of the landfill expansion area is previously and continuously disturbed land. Based on the natural heritage review, there is one species that has moderate potential to be within the proposed expansion areas. The Eastern Whip-poor-will is a threatened bird species that requires a mix of open and forested areas such as savannahs, open woodland, or openings in more mature forests. Open areas are used for foraging while it uses forested areas for roosting and nesting. This species nests on the ground where it is able to blend in with the forest floor and remain undetected by predators. There is moderate potential for Whip-poor-will habitat within the study area, which could include the wooded stand at the northern portion of the landfill area.

The natural heritage review identified four other afforded protection under the ESA that have moderate potential to be within review's study area, which included the landfill property and any adjacent land within 120 m of the landfill property. However, it is not expected that these species would be within the proposed expansion areas due to lack of habitat. These species include the following:

- Bank Swallows are a threatened bird species that require vertical or near-vertical sandy/silty banks for nesting. These nesting sites need to be near a foraging site, which would consist of both terrestrial and aquatic habitats, including wetlands, open water, riparian woodlands, grasslands, and shrublands. Bank Swallows also require night roosting habitat, which consists of large wetlands or shrub thickets in or near water. While there is a moderate probability that Bank Swallow nesting/foraging/night roosting habitat all exist within the study area if loose aggregate storage areas are present, this is unlikely to be the case within the proposed landfill expansion area due to lack of permanent aggregate storage.

- Little Brown Myotis (endangered) and Northern Myotis (endangered) each use similar wooded habitat for roosting. For instance, both species roost within tree cavities and under loose exfoliating bark near water, which is used to forage for aquatic insects). They also will use cool dark places in buildings/structures to roost as well. While there is a moderate probability that the Little Brown Myotis and Northern Myotis habitat is within 120 m of the landfill property, this type of habitat is not present in the landfill expansion areas.
- The Lake Sturgeon is an endangered fish species. The Great Lakes-Upper St. Lawrence population of the Lake Sturgeon live almost exclusively in freshwater lakes and rivers with soft bottoms of mud, sand, or gravel. They spawn in shallow, fast-moving water; however, when not spawning they can usually be found at depths of 5 to 20 m. While there is potential for the Lake Sturgeon to be in the watercourses within 120 m of the landfill property, the watercourses themselves do not cross the property itself or the proposed expansion areas.

Locally Important or Valued Ecosystems or Vegetation

The review confirmed that none of the following ecosystem or vegetation classifications are within the expansion areas or the landfill property:

- ANSI;
- Provincially significant evaluated wetlands;
- Woodlands; or
- Conservation reserves.

While the landfill does include some trees on the property, they are not of sufficient area to be considered a woodland. Woodlands do exist within 120 m of the landfill property; however, these are separated from the landfill property by either the hydro utility corridor, Becker Road, or Deadwater Creak and would not be impacted by the landfill expansion.

The natural heritage review indicates that the landfill property is flanked to the west and east by unevaluated wetlands. The eastern wetland is situated south of Becker Road. It is associated with a long stretch of treed area, indicating that this is a swamp ecosite. The western wetlands immediately adjacent to the property are part of the Deadwater Creek riparian corridor. There is forested swamp beyond these areas further west. Although within 120 m of the landfill property, the unevaluated wetland to the west of the landfill is not anticipated to be impacted as no landfill expansion is anticipated within this buffer area.

The Township's Official Plan notes the following significant wildlife habitat is located within the Township: Moose Aquatic Feeding Areas; Moose Wintering Areas; and Stick Nests. The Nagagami Forest 2021-2031 Forest Management Plan Bridging Operations map (Ontario Basemap number: 66545) provides information on these and other areas of concern within the Township. Figure 12 provides an extract of this map for the area surrounding the landfill site, and none of these areas are indicated.

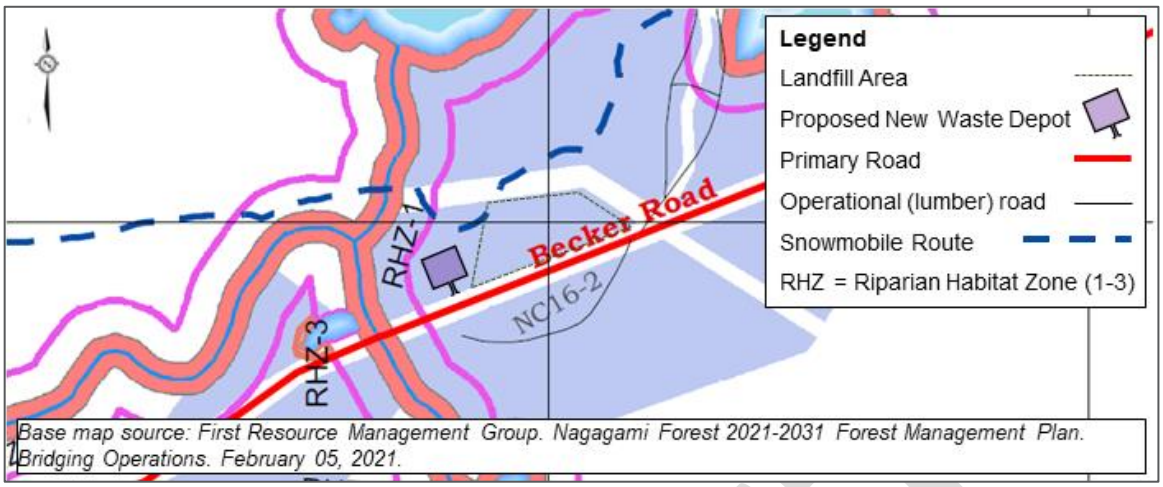

Figure 12: Nagagami Forest Management Plan (2021-2031) Bridging Operations Map Extract

5.3.2 Impact Management Measures and Monitoring

Given that the land identified for the landfill expansion is previously and continuously disturbed, no significant impacts to habitat for rare or endangered species are anticipated. However, a field investigation will be conducted during the detailed design stage to determine that these species are not present in the areas where work is to be completed.

5.3.3 Net Effects

The net effects to the natural environment are expected to be low to minimal from the proposed expansion.

5.4 Socio-Economic

5.4.1 Assessment

Local Airport

The screening criteria asks whether the project might be located within 8 km of an aerodrome or airport reference point. As noted in Section 4, Hornepayne has a small airport that is located approximately 4 km southwest of the landfill site. The municipal landfill site has been in operation since 2001 and is not known to have posed a threat to incoming or departing flights at the airport. This is likely due to the relatively low rate of disposal and small active face at the landfill site. While the landfill expansion will increase the site's overall disposal capacity, the disposal rate is not expected to significantly change. Therefore, this landfill expansion is not likely to generate hazards for the airport.

5.4.2 Impact Management Measures and Monitoring

The site's standard operation and maintenance procedures will continue to apply accepted landfill practices to minimize potential hazards to local aviation.

5.4.3 Net Effects

The proposed landfill expansion will have minimal net effects on the socio-economic environment.

5.5 Summary and Significance of Net Environmental Effects

Table 2 summarizes the potential adverse effects, mitigation strategies and net effects from the proposed landfill expansion.

Table 2: Summary of Net Effects

Criterion *Might the Project…*		Potential Adverse Effect	Mitigation Strategy	Anticipated Net effect
1. Surface and Ground Water				
1.1	cause negative effects on surface water quality, quantities or flow?	Surface water quality could potentially be impacted by rainwater that is contaminated through contact with solid waste deposited within the landfill.	• Continued application of accepted landfill operation practices (daily and final cover, waste compaction, surface sloping, perimeter drainage channels) • Establish a contingency plan that includes leachate monitoring, capture and treatment and passive treatment corridors.	• No anticipated net adverse effects. • Practices and drainage will ensure surface run-off does not come into contact with solid waste.
1.2	cause negative effects on ground water quality, quantity, or movement?	Ground water quality could potentially be impacted by contamination if it comes in contact with the landfill site's leachate plume, or if rainwater sheet flow collects contaminants from the landfill site or new waste transfer site location and then perchlorates into the soil.	• Continued application of accepted landfill operation practices (daily and final cover, waste compaction, surface sloping, perimeter drainage channels) • Establish a contingency plan that includes leachate monitoring, capture and treatment and passive treatment corridors.	• No anticipated net adverse effects. • Practices and drainage will ensure surface run-off does not come into contact with solid waste.
1.3	cause significant sedimentation or soil erosion or shoreline or riverbank erosion on or off site?	Significant sedimentation or erosion is unlikely due to implementation of best practice design and operation features. Impacts to shoreline or riverbank erosion are also unlikely as the project is not near a shoreline or riverbank. The closest watercourse is Deadwater Creek, which is located more than 120 m away from the landfill area.	n/a	n/a

Criterion *Might the Project…*		Potential Adverse Effect	Mitigation Strategy	Anticipated Net effect
1.4	cause negative effects on surface on ground water from accidental spills or releases (e.g., leachate) to the environment?	Surface and ground water quality could potentially be impacted by accidental spills or releases to the environment.	• Continued application of accepted landfill operation practices (daily and final cover, waste compaction, surface sloping, perimeter drainage channels). • As per the ECA, spills will be immediately reported to the Ministry's Spills Action Centre and recorded in the log book, including the action taken for clean-up, correction and prevention of future occurrences.	• No anticipated net adverse effects. • Practices and drainage will ensure accidental spills and releases do not extend past the landfill site's property limits.
	2. Land			
2.1	cause negative effects on residential, commercial, institutional or other sensitive land uses within 500 metres from the site boundary?	There are no residential, commercial, institutional or other sensitive land uses within 500 metres from the site boundary. There is a resource extraction operation whose property is located approximately 260 m from the landfill area. However, this is not a sensitive land use. Other than the landfill site, the only other non-natural land uses include: a hydropower corridor that runs along the north and east limits of the landfill property; Becker Road, which runs along the southern limit of the landfill property; and a CN Railway line that is approximately 450 m south of the landfill site.	n/a	n/a

Criterion *Might the Project…*		Potential Adverse Effect	Mitigation Strategy	Anticipated Net effect
2.2	not be consistent with the Provincial Policy Statement, provincial land use or resource management plans?	The proposed expansion is situated within an existing landfill site and would be consistent with the Provincial Policy Statement, provincial land use or resource management plans. The Nagagami Forest 2021-2031 Forest Management Plan identifies the landfill property as patent land, and no planned harvest or harvest road corridors are in conflict with the expansion. Hornepayne is located within the Porcupine Mining Division. It is situated in proximity to a mining operation. However, the landfill site falls under Withdrawal Order Number W-P-11/00 [Wicksteed Township][9].	n/a	n/a
2.3	be inconsistent with municipal land use policies, plans and zoning bylaws (including municipal setbacks)?	The proposed expansion is situated within an existing landfill site. The existing landfill site is zoned MD, Disposal Industrial. The zoning by-law states that no landfill site shall be established within 300 m of any waterbody. While portions of the expansion and transfer station fall within 300 m of Deadwater Creek and a tributary, this location is already an established landfill site.	n/a	n/a

[9] A withdrawal order means an order under the Ontario *Mining Act* to withdraw from prospecting, registration, and from sale or lease, any lands, mining rights or surface rights that are the property of the Crown.

Criterion *Might the Project…*		Potential Adverse Effect	Mitigation Strategy	Anticipated Net effect
2.4	use lands not zoned as industrial, heavy industrial or waste disposal?	The site is zoned MD, Disposal Industrial.	n/a	n/a
2.5	use hazard lands or unstable lands subject to erosion?	The project is taking place on the existing landfill site. Neither hazard lands or nor unstable lands subject to erosion have been identified on the site.	n/a	n/a
2.6	cause negative effects related to the remediation of contaminated land?	There are no contaminated lands planned for remediation that are located in proximity to the landfill site.	n/a	n/a
	3. Air and Noise			
3.1	cause negative effects on air quality due to emissions?	Negative effects on air quality may occur due to greenhouse gases emissions from landfilled waste, emissions from heavy vehicles used in operations, dust, and odour.	• Continued application of accepted landfill operation practices (daily and final cover, waste compaction, surface sloping, perimeter drainage channels)	Minimal anticipated net adverse effect.
3.2	cause negative effects from emission of greenhouse gases?	Negative effects on air quality may occur due to greenhouse gases emissions from landfilled waste and use of heavy vehicles.	• Continued application of accepted landfill operation practices (daily and final cover, waste compaction, surface sloping, perimeter drainage channels)	Minimal anticipated net adverse effect.
3.3	cause negative effects from the emission of dust or odour?	Negative effects on air quality may occur due to odours from landfilled waste and dust generated by landfill operations.	• Continued application of accepted landfill operation practices (daily and final cover, waste compaction, surface sloping, perimeter drainage channels) • Impacts unlikely to extend past boundaries of landfill property.	No anticipated net adverse effects.

Criterion *Might the Project…*		Potential Adverse Effect	Mitigation Strategy	Anticipated Net effect
3.4	cause negative effects from emission of noise?	Noise from operation of heavy machinery may occur during working hours. However, the nearest sensitive receptor is about 1,600m away.	n/a	n/a
3.5	cause light pollution from trucks or other operational activities at the site?	Nighttime operations are not anticipated.	n/a	n/a
	4. Natural Environment			
4.1	cause negative effects on rare (vulnerable), threatened or endangered species of flora or fauna or their habitat?	Negative effects on rare (vulnerable), threatened or endangered species of flora or fauna or their habitat could potentially be impacted if found within the landfill expansion area.	• Install fence that is coincident with erosion and sediment controls to limit the extent of construction and prevent accidental encroachment of construction machinery and equipment into undisturbed areas and to serve as a barrier to exclude wildlife from the work area to the extent possible.	• Minimal anticipated net adverse effect.
4.2	cause negative effects on protected natural areas such as, ANSIs, ESAs or other significant natural areas?	No designated or protected natural areas are located within the study area.	n/a	n/a
4.3	cause negative effects on designated wetlands?	No designated wetlands are within the study area.	n/a	n/a

Criterion *Might the Project…*		Potential Adverse Effect	Mitigation Strategy	Anticipated Net effect
4.4	cause negative effects on wildlife habitat, populations, corridors or movement?	While some trees on the landfill site would be impacted by the expansion, the area is small (less than 2,000 m^2, or 0.2 ha) and considerably smaller than the 0.5 to 2.0 ha threshold for a significant woodland. The expansion area is also surrounded by disturbance on all sides (i.e., the active landfill and the hydropower corridor).	n/a	n/a
4.5	cause negative effects on fish or their habitat, spawning, movement or environmental conditions (e.g., water temperature turbidity, etc.)?	The expansion has the potential to create turbidity if there is an uncontrolled release of sediment during construction. Based on the distance from the watercourse to the landfill site, it is unlikely that such an impact could occur during typical landfill or operations or operation of the waste transfer station.	• Install fence that is coincident with erosion and sediment controls to limit the extent of construction and prevent accidental encroachment of construction machinery and equipment into undisturbed areas	• Minimal anticipated net adverse effect.
4.6	cause negative effects on locally important or valued ecosystems or vegetation?	No locally important or valued ecosystems or vegetation are located within the landfill site, which is a primarily disturbed area. For example, the area where the waste transfer station is to be located is a formal aggregate pit area.	n/a	n/a

Criterion *Might the Project…*		Potential Adverse Effect	Mitigation Strategy	Anticipated Net effect
4.7	increase bird hazards within the area that could impact surrounding land uses (e.g., airports)?	There are no surrounding land uses in the area that could be impacted by increased bird hazards. While there is an airport approximately 4.4 km to the southwest of the landfill site, the landfill expansion will not increase the rate of landfilling and therefore is unlikely to increase the bird hazard that may or may not already exist.	n/a	n/a
	5. Resources			
5.1	result in practices inconsistent with waste studies and/or waste diversion targets?	The landfill expansion was the preferred disposal option of the Township's recently developed solid waste management strategy.	n/a	n/a
5.2	result in generation of energy that cannot be captured and utilized?	No energy generation is planned for this location.	n/a	n/a
5.3	be located a distance from required infrastructure?	The landfill expansion is taking place at the Township's existing landfill site, which is still in use.	n/a	n/a
5.4	cause negative effects on the use of Canada Land Inventory Class 1-3, specialty crop or locally significant agricultural lands?	There are no Canada Land Inventory Class 1-3 agricultural areas near the landfill site.	n/a	n/a
5.5	cause negative effects on existing agricultural production?	There are no existing agricultural productions near the landfill site.	n/a	n/a

Criterion *Might the Project…*		Potential Adverse Effect	Mitigation Strategy	Anticipated Net effect
	6. Socio-Economic			
6.1	cause negative effects on neighborhood or community character?	The nearest community (Hornepayne) is approximately 5 km west of the landfill site.	n/a	n/a
6.2	result in aesthetics impacts (e.g., visual and litter impacts)?	The expansion is taking place at the Township's existing landfill site. The nearest community (Hornepayne) is approximately 5 km west of the landfill site.	n/a	n/a
6.3	cause negative effects on local businesses, institutions or public facilities?	No negative effects to local businesses, institutions or public facilities are expected.	n/a	n/a
6.4	cause negative effects on recreation, cottaging or tourism?	No negative effects on recreation, cottaging or tourism are expected.	n/a	n/a
6.5	cause negative effects related to increases in the demands on community services and infrastructure?	No increases in the demands on community services and infrastructure are expected.	n/a	n/a
6.6	cause negative effects on the economic base of a municipality or community?	The expansion is not expected to have a negative effect on the economic base of a municipality or community.	n/a	n/a
6.7	cause negative effects on local employment and labour supply?	The proposed expansion is not expected to disrupt local employment and labour supply.	n/a	n/a
6.8	cause negative related to traffic?	No traffic impacts are expected from the proposed landfill expansion.	n/a	n/a

Criterion *Might the Project…*		Potential Adverse Effect	Mitigation Strategy	Anticipated Net effect
6.9	be located within 8km of and aerodrome/airport reference point?	The expansion is taking place at the Township's existing landfill site. The existing landfill site is approximately 4 km northeast east of the Hornepayne Municipal Airport (YHN). According to the Township's website, the facility is unstaffed but available for charters and is mainly used by the Ministry of Northern Development, Mines, Natural Resources and Forestry (MNR), the Ministry of Health, Corporations and private pilots. The landfill expansion will not increase the rate of landfilling at the site; therefore, it is unlikely to increase the bird hazard that may or may not already exist.	• Continued application of accepted landfill operation practices (daily and final cover, waste compaction, surface sloping, perimeter drainage channels) to minimize bird hazards.	• No impact anticipated.
6.10	interfere with flight paths due to the construction of facilities with height (i.e., stacks)?	The expansion does not include the construction of structures with significant height.	n/a	n/a
6.11	cause negative effects on public health and safety?	The expansion is taking place at the Township's existing landfill site, which is not known to have caused or be causing any negative effects on public health and safety. The landfill expansion will provide an opportunity to upgrade the landfill's existing infrastructure and operations, which should have the effect of improving public health and safety compared to existing.	n/a	n/a

Criterion *Might the Project…*		Potential Adverse Effect	Mitigation Strategy	Anticipated Net effect
	7. Heritage and Culture			
7.1	cause negative effects on heritage buildings, structure or sites, archaeological sites or areas of archaeological importance, or cultural heritage landscapes?	There are no heritage buildings, archaeological sites or structures or landscapes of cultural significance in proximity to the site. As an existing landfill site and formal aggregate pit site, the area is extensively disturbed.	n/a	n/a
7.2	cause negative effects on scenic or aesthetically pleasing landscapes or views?	The proposed expansion is taking place on an existing landfill site.	n/a	n/a

6 Summary of Commitments to Mitigation and Monitoring

Mitigation measures to be included for vegetation removal and breeding birds and bats and will include:

- Protection fencing along the edge of disturbance to protect remaining vegetation from silt and sediment inputs;
- Seed areas with native seed mix on all areas disturbed to stabilize soils;
- Minimize footprint to include only areas required for the expansion of the landfill and for access;
- Any vegetation removal (including dead standing trees) may be influenced by conditions set by the Migratory Birds Convention Act (MBCA) including, but not limited to, timing restrictions during breeding season for tree pruning or removal during construction activities. The breeding bird season for Zone C5 is April 20 to August 30.
- Construction activities planned during the breeding season should only be completed after a qualified avian biologist has completed a bird nesting survey to ensure no impacts to breeding birds to maintain compliance with the MBCA;
- Given the length of time over which landfill expansion will take place, any removal of cavity trees should be restricted to occur outside of the April 1 to August 31 time period to protect any bat species that may use the tree for roosting purposes;
- Appropriate setbacks should be applied to watercourses and retained woodlands in order to maintain the character and quality of the natural areas providing habitat;
- Setbacks from natural features should be clearly demarcated with the installation of silt fencing along the disturbance limit. No construction activities are to occur outside of these fences , nor the piling of construction materials. Silt fencing can present a hazard to wildlife (in particular snakes) if in poor condition. Condition of fencing should be regularly monitored by operations staff to ensure it is in good repair and installed correctly; and
- Appropriate sedimentation controls should be applied and maintained in working order around construction areas in order to prevent sediment from entering the nearby watercourse. Sediment controls should remain in place until those areas are stable against erosion.

7 Consultation and Engagement

7.1 Consultation Activities and Events

7.1.1 Notice of Commencement and Public Open House #1

On April 4, 2023, a Notice of Commencement of an Environmental Screening and a Public Open House was distributed to the general public and placed on the Township's website. A copy of the notice is provided in Appendix C. An open house was held on April 25, 2023 and is discussed further below.

On April 30, 2023, the MECP provided an updated list of Indigenous communities to include in the consultation. The notice was distributed to these communities on June 12, 2023. The Indigenous Community consultation is discussed further below.

7.1.2 Public Open House # 1

The Public Open House for this project was held on April 25, 2023 at the Royal Canadian Legion on 48 Sixth Avenue in Hornepayne. The open house provided an opportunity for the interested members of the community to learn

more about the project, the details of the proposed expansion, and to ask questions of the project team. Display boards were prepared that provided information about the project, including:

- Background on the project;
- An overview of the Environmental Screening Process;
- Identification of the project's problem, opportunity and purpose;
- A review of the Screening Criteria checklist and its results;
- Review of the natural heritage study's results;
- A description of the proposed landfill expansion; and
- Project next steps.

A copy of the display boards is provided in Appendix D.

Eighteen people attended the open house, and six comment sheets were submitted. A redacted copy of the sign-in sheet and the comment sheets are provided in Appendix D. In general, the meeting attendees were in favour of the proposed expansion. The main concern raised was that of the safety of those who need to drive further along Beckers Road to use the drop-off depot if it is relocated to the landfill site. The safety concern arises from the general condition of Beckers Road and the speed of trucks along that route (Beckers Road is an unpaved road, and the Hornepayne Lumber processing facility is located approximately 3 km further east from the landfill site). A summary of the comments received is provided in Table 3.

Table 3: Summary of Open House Comments

Comment	Proposed Resolution
• Safety of having to drive further along Becker Road to reach the relocated depot at the landfill site, due to condition of the road and careless truck drivers that drive too fast. • Hopes that Becker Road would be well maintained to ensure safety. • Speed limit has been lowered on Beckers Road, so hopes that there is more police presence to monitor speed of trucks.	• As Beckers Road is a provincial road, the municipality will communicate with the Province to ensure the road is adequately maintained. • Issues with reckless driving of trucks along Beckers Road should be communicated to the police and the Municipality.

Comment	Proposed Resolution
• Moving the depot to the landfill site will be great for the Town. • Concern raised over the number of hauling trucks using Beckers Road and the amount of town traffic that would now be coming to the landfill site to use the depot, in addition to the traffic generated by mill and co-generation staff and CN employees. • Currently, there are about 30 to 60 vehicles going to the landfill per day. Concern that this combined traffic could lead to accidents and broken windshields. • Recommendation to increase the number of garbage bags limit from 4 to 6 or 8, as the Municipality does not have recycling collection. This would reduce the number of vehicles that are required to take their material to the landfill. • Concern raised over lack of washroom facilities for staff at the site, which currently only has an outhouse with no washing facilities and is usable just in the summer. • Recommend a larger share shack to help keep more material out of the landfill. It is used and very popular.	• Garbage limits may be reviewed with the development of the next collection contract and once Blue Box transition has occurred.
• This is long overdue and the existing transfer station [i.e., waste depot] was never a good idea.	Acknowledged
• This is a practical and cost-efficient method to address landfill capacity. • Current transfer station location is unnecessary and makes sense to have it at the landfill site. • Relieved that solution does not include creation of a new landfill site. Good information [at open house], easy to read and understand.	Acknowledged
• Glad to see the obvious is finally being done. • Does not make sense to have a separate dumping station [i.e., the existing waste depot] so close to the landfill site. Expanding the existing landfill site will be more economical and will free-up staff for other tasks.	Acknowledged

7.2 Indigenous Community Consultation

As noted previously, on April 30, 2023, the MECP provided to the Municipality a list of Indigenous communities to include in the consultation for this Environmental Screening. These communities included:

- Netmizaaggamig Nishnaabeg[10];
- Biigtigong Nishnaabeg;
- Michipicoten First Nation;
- Batchewana First Nation;
- Garden River First Nation;
- Métis Nation of Ontario – Region 2;
- Red Sky Métis Independent Nation; and
- Brunswick House First Nation.

A letter with a copy of the notice and a consultation form was sent out to these organizations on June 9, 2023. The letters noted that the Township of Hornepayne has commenced an Environmental Screening Process for the landfill expansion, that a PIC had occurred, and that the meeting information could be sent to them if they wished. They were also invited to complete and send back the Project Consultation Form to indicate their community's areas of interest and designated contact information, or to indicate if their community has no interest in this project. The letters and notice were sent by mail and e-mail, typically to more than one contact at the community. No response was received. Appendix E presents a copy of the letters sent and community contacts.

A draft copy of the Environmental Screening Report will be issued to the following agencies for their review and comment:

- Ontario Ministry of the Environment, Conservation and Parks[11];
- Ontario Ministry of Natural Resources and Forestry;
- Ontario Ministry of Mines;
- Ontario Ministry of Northern Development.

8 Overall Advantages and Disadvantages of the Project

The overall advantages and disadvantages of this project are based on the net effects described in Section 6. Generally, the positive net environmental effects are the advantages of the project, while the negative net environmental effects are the disadvantages. In general:

- The project will provide the Municipality with a long-term disposal capacity for the next 30 years that is safe, secure, and cost-effective.
- The project will have minimal impacts to the natural environment, including to local flora and fauna.
- The project is not expected to have any impacts on the socio-economic environment, including any impacts to the public from nuisances generated on-site or incompatibility with adjacent land uses.
- The expansion will provide this capacity without the anticipated environmental, social and economic impacts that would normally be associated with establishing a new landfill.

[10] The Netmizaaggamig Nishnaabeg, also known as the Pic Mobert First Nation, had been reached out to during the development of the Municipality's long term waste management plan.
[11] Including the Ministry's Northern Region EA notification email address (eanotification.nregion@ontario.ca).

9 Approval Requirements

Increasing the disposal capacity of the landfill site will require an amendment to its existing ECA. Once the Environmental Screening Process is complete, then the Municipality will initiate the ECA amendment process by preparing and submitting an application to the MECP to amend the landfill site ECA.

10 Next Steps

Publishing of the Notice of Completion will mark the beginning of the 60-calendar day review period. During this time, agencies, stakeholder organizations, Indigenous Communities and other interested parties can review and provide comment on the Environmental Screening Report.

If outstanding environmental concerns are identified, then individuals can submit a Part II Order request within the 60-day review period to the Director of the MECP to have the Project elevated to an individual environmental assessment. The MECP will review any Part II Order requests to determine if they have merit and warrant elevation.

If no Part II Order requests are received within the 60-day review period, or if a Part II Order request is resolved or withdrawn, a Statement of Completion form (per Schedule II of the Guide to Environmental Assessment Requirements for Waste Management Project) will be submitted to the MECP.

The Municipality will then continue with detailed design of the landfill expansion, and complete and submit to the MECP an application to amend the landfill's existing ECA.

Appendix A:
Township of Hornepayne Small Site Hydrogeological Risk Assessment and Operating Plan

P. O. BOX 370
68 FRONT STREET
HORNEPAYNE, ONTARIO
P0M 1Z0

TOWNSHIP OF HORNEPAYNE

TELEPHONE 807-868-2020
FAX No. 1-807-868-2787

June 11th, 2001

Ministry of the Environment
Approvals Branch
250 Davisville Avenue
3rd Floor
Toronto, Ontario
M4S 1H2

Dear Sirs:

Please find enclosed our Application for Approval of a Waste Disposal Site for the Township of Hornepayne. All supporting documentation has been prepared by Wardrop Engineering Inc. on behalf of the municipality. I ask that if you have any questions regarding our application please direct them to Mr. Jim Mucklow at Wardrop Engineering at 1-807-868-5453.

Enclosed please find our cheque in the amount of $6200.00 to cover the cost of the application.

Trusting all is in order.

Yours truly,

Susan Smith

Susan Smith
Clerk
Township of Hornepayne

SS/
Encl.

WARDROP | Engineering Inc.

Transit

063989

To	Director of Approvals Branch Ministry of the Environment 250 Davisville Avenue, 3rd Floor Toronto, ON M4S 1H2	**From**	Mr. J.P. Mucklow, MESc., P.Eng. Ph 807-345-5453 Fax 807-345-8708
Date	June 14, 2001	**Reason**	For your approval
Proj. No.	993347-04-00	**Copy to**	District Manager, MOE Thunder Bay District Mr. Ed Bil, MOE Senior Environmental Officer Mr. Mark Puumala, MOE Regional Hydrogeologist Township of Hornepayne

RECEIVED
JUN 19 2001

Proj. Name Application for Approval of a Waste Disposal Site

Quantity	Drawing/Ref. No.	Description
1		Letter from Township of Hornepayne dated June 11, 2001
1		Application for Approval of a Waste Disposal Site with attachments: Resolution from Township of Hornepayne,Township of Hornepayne Act, Documentation of Public Consultation (Hornepayne First Nation, Donohue Inc., Canadian National Railway, Hydro One, Minutes of Public Meeting, Copies of Meeting Notifications), Cheque for $6200
2	993347-04-00	Report: *Small Site Hydrogeological Risk Assessment and Operating Plan, Proposed Waste Disposal Site*

Remarks

Sincerely

WARDROP ENGINEERING INC.

J.P. (Jim) Mucklow, M.E.Sc., P.Eng.
Senior Hydrogeologist
Environmental Services

725 Hewitson Street
Thunder Bay, Ontario P7B 6B5
Canada
Phone: 807-345-5453
Fax: 807-345-8708
E-mail: thunderbay@wardrop.com
Internet: www.wardrop.com

WARDROP

Report to:

TOWNSHIP OF HORNEPAYNE

Small Site Hydrogeological Risk Assessment and Operating Plan Proposed Waste Disposal Site

~~ALLSCO3 250~~

The name for excellence, worldwide

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approval

6672-57 HTDH

Report to:

TOWNSHIP OF HORNEPAYNE

Small Site Hydrogeological Risk Assessment and Operating Plan Proposed Waste Disposal Site

~~AL WC 003 250~~

Third Party Disclaimer

Report to:

TOWNSHIP OF HORNEPAYNE

SMALL SITE HYDROGEOLOGICAL RISK ASSESSMENT AND OPERATING PLAN PROPOSED WASTE DISPOSAL SITE

JUNE 2001

Prepared by _____
J.P. Mucklow, MESc., P.Eng.

Reviewed by _____
L.J. Hoey, CEI

Authorized by _____
L.J. Hoey, CEI

WARDROP | Engineering Inc.

993347-04-00

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FIGURES

APPENDICES

1.0 INTRODUCTION

Wardrop Engineering Inc. was retained by the Township of Hornepayne to undertake a Small Site Hydrogeological Risk Assessment (SSHRA) of a proposed municipal solid waste disposal site located in Hornepayne, Ontario. The SSHRA process is described in a Ministry of the Environment (MOE) document by the same name. This document accompanies an Application for Certificate of Approval for a Waste Disposal Site, a copy of which is provided in Appendix A.

As shown on the Key Plan, Figure 1, the proposed waste disposal site is located about 5 kilometres east of the Hornepayne public works garage, on the north side of Becker Road. It is mainly in Lot 3 with a corner extending into Lot 2, Concession III, in the Township of Hornepayne (geographical township of Wicksteed), as shown on the Location Plan, Figure 2.

Wardrop previously conducted a preliminary investigation of the proposed waste disposal site comprised of hand-augured boreholes on June 8, 1999 to evaluate soil quality and characteristics. On the same day, immediately following the field work, the results of this preliminary investigation were discussed at a site meeting with Mr. Ed Bil of the Ministry of Environment (MOE) Sault Ste. Marie District Office and Mr. Robert Dumoulin of the Township of Hornepayne. During the site meeting it was agreed that the proposed site has many positive attributes, including

- favourable soil conditions;
- source for daily cover materials;
- ready access (close to existing road); and
- reasonable proximity to the community.

The meeting participants agreed that further assessment of the site was warranted. As a result, the Township of Hornepayne authorized Wardrop to complete the SSHRA.

2.0 FIELD INVESTIGATION

2.1 OBJECTIVES

The objectives of the required SSHRA were based on the MOE's *Small Site Hydrogeological Risk Assessment* criteria, as follows:

- Completion of the initial screening of the proposed new landfill site;
- Assessment of topography and physiography of the site and area, and the likely direction of ground water flow;
- Completion of a subsurface soil investigation to at least 1 metre below the anticipated depth of refuse burial trenches in the proposed new landfill site;
- Evaluation of the site stratigraphy and completion of grain size analysis on representative horizons in the proposed fill area, and
- Estimation of the hydraulic conductivity of representative horizons and calculation of the required attenuation zone.

2.2 SITE INVESTIGATION

The site investigation involved excavating test pits in selected locations and to depths sufficient to permit hydrogeological evaluation of the site suitability for waste disposal.

Eleven test pits (TP) were excavated on October 26 and October 27, 1999 at the locations indicated on Figure 3 to assess the subsurface soils and collect representative samples. Excavating was conducted using a John Deere rubber tired backhoe owned and operated by the Township of Hornepayne under the full time supervision of Wardrop personnel.

Samples representative of the subsurface soils encountered were collected and logged during excavation. Soils were described in terms of composition, colour, structure, consistency or density, relative moisture content and noticeable inclusions. Depths to the water table, where encountered, were also recorded.

Test pits were located approximately using an aerial photograph. Elevations were initially surveyed using a level relative to a local temporary benchmark (a nail in the top of a 50 millimetre square wooden stake driven into the ground approximately 25 metres southwest of TP2), assigned an arbitrary elevation. D. Urso Surveying

subsequently surveyed most of the test pits relative to a geodetic benchmark while establishing the site topography shown on Figure 3.

2.3 ANALYSIS

The texture of selected representative soil samples was analyzed generating grain size distributions. Hydraulic conductivities were estimated using the method of Hazen based on these grain size distributions.

The Wawa District Office of the Ministry of Natural Resources (MNR) was contacted for information regarding surface water usage and values in the vicinity of the proposed waste disposal site.

3.0 HYDROGEOLOGICAL SETTING

3.1 REGIONAL GEOLOGY

Based on Ontario Geological Survey (OGS) Map 5085 and Ontario Department of Lands and Forests Map S365, the surficial geology consists of sand and gravel esker deposits flanked by sandy silt glaciolacustrine soils. A portion of OGS Map 5085 is presented as Figure 4.

OGS Map 2543 characterizes the regional bedrock geology as paragneisses and migmatite (high-grade meta-sedimentary rock). The commonly rolling to hummocky subcropping topography, which typifies this type of bedrock, can influence ground water flow within the overburden.

A review of the MOE's computer database for water well records indicated no ground water users within 1 kilometre of the site.

3.2 SITE TOPOGRAPHY

The proposed disposal area is located on a hill that slopes all directions. The highest point in the proposed landfill area is about 27 metres above the level of the Jackfish River located about 200 metres west of the site.

A power line forms the northern and eastern boundary, a former gravel pit forms the western boundary, and Becker Road forms the southern boundary of the proposed waste disposal site.

An aerial photograph of the area is shown on Figure 5.

3.3 SUBSURFACE CONDITIONS

Test pit (TP) logs provided in Appendix B describe the detailed subsurface conditions observed. The following sections summarize the subsurface conditions.

3.3.1 SUBSURFACE SOIL CONDITIONS

Interlayered granular soils, dominated by sand, comprise the upper soils in all test pits but TP2. Grain size distributions, provided in Appendix C, indicate variable

gradations ranging from silty sand to poorly graded sand with trace to a little gravel or silt. On the east side of the proposed waste disposal site, sand and gravel to sandy gravel was encountered below surficial sands. Many test pits were terminated in these sandy layers.

Sandy silt till was encountered in several test pits, either between granular layers or at the bottom of the test pit. A grain size distribution of a sample of this material from TP6 indicates a well graded material typical of glacial till. Locally, the till contained cobbles and boulders.

In TP2, two metres of surficial silty sand and gravel till was encountered at surface underlain by sandy silt till.

Bedrock was not encountered in these test pits.

A geological cross section of the site is shown on Figure 6.

3.3.2 Ground Water Conditions

Ground water was encountered in five test pits as follows (measurements in metres).

Test Pit	Depth	Elevation
TP1	2.0	271.85
TP2	1.8	275.43*
TP3	2.5	272.49
TP6	3.0	281.83*
TP7	1.8	276.65*

Water seepage noted in the test pits marked with an asterisk (*) was minor and may be the result of perched water on relatively low permeability layers (silty or till). In addition, sloughing of side slopes in TP7 due to water seepage prevented measurement of the depth of the apparent water table.

3.4 Hydrogeological Assessment

The site slopes toward the Jackfish River, approximately 200 metres west of the proposed landfill area. Although ground water was encountered and measured in a few test pits, the number of measurements is insufficient to interpret the direction of flow and the gradient. Based on the general topography of the site and the nearby location of the river and ponds (north and northeast of the site), ground water is expected to be flowing in a radial pattern (*i.e.*, away from the crest of the hill). Local flow directions may vary in response variable hydraulic conductivities and variable subcropping surfaces of low permeability material (such as till or bedrock).

The hydraulic conductivity of the shallow water bearing zone beneath the proposed waste disposal area is estimated to be 10^{-5} to 10^{-6} centimetres per second (cm/s) based on the grain size distribution for a sample of the sandy silt till from TP6. The predominance of sand, commonly fine grained and containing silt, allows leachate migration at a rate that natural processes can attenuate its strength to acceptable levels prior to leaving the property limits.

3.5 Surface Water Uses

In a facsimile dated February 1, 2000, Mr. Joel Cooper of the MNR indicated that the Jackfish River is a known spawning area for walleye and brook trout and that there are no known trapper cabins, cottages, homes, beaches or other values shown on the MNR maps for the vicinity of the site. He further indicated that the Jackfish River discharges to Larkin Lake where a tourist lodge and commercial wild rice beds are located. Larkin Lake is about 12 kilometres downstream from the point in the river closest to the proposed waste disposal site.

Further to Wardrop's request for clarification of the reach of the Jackfish River considered to be valuable for spawning, on February 8, 2000, Mr. Shawn Fortin of the MNR faxed a map on which the sensitive spawning area is considered to be. As indicated on Figure 1, the sensitive area begins about 400 metres downstream of the closest point of the river to the proposed waste disposal site and extends downstream to the confluence of the Jackfish River with Cree Creek. We understand; however, that detailed site investigations have not been carried out in the river to determine the specific spawning beds.

4.0 DEVELOPMENT AND OPERATION

This section describes the regulatory requirements and proposed plan for the development and operation of the waste disposal site. The plan design utilizes the features of the site to facilitate site operation, closure and post closure care while minimizing the potential for adverse impacts.

4.1 REGULATORY STANDARDS

The new waste disposal site is governed by Section 11 of O.Reg. 347 (R.R.O. 1990, Reg. 347, amended to O.Reg. 558/00) made under Part V of the Environmental Protection Act (R.S.O. 1990, c. E.19). Section 11 states the following:

The following are prescribed as standards for the location, maintenance and operation of a landfilling site:

1. *Access roads and on-site roads shall be provided so that vehicles hauling waste to and on the site may travel readily on any day under all normal weather conditions.*

2. *Access to the site shall be limited to such times as an attendant is on duty and the site shall be restricted to use by persons authorized to deposit waste in the fill area.*

3. *Drainage passing over or through the site shall not adversely affect adjoining property and natural drainage shall not be obstructed.*

4. *Drainage that may cause pollution shall not, without adequate treatment, be discharged into watercourses.*

5. *Waste shall be placed sufficiently above or isolated from the maximum water table at the site in such manner that impairment of ground water in aquifers is prevented and sufficiently distant from sources of potable water supplies so as to prevent contamination of the water, unless adequate provision is made for the collection and treatment of leachate.*

6. *Where necessary to isolate a landfilling site and effectively prevent the egress of contaminants, adequate measures to prevent water pollution shall be taken by the construction of berms and dykes of low permeability.*

7. *Where there is a possibility of water pollution resulting from the operation of a landfilling site, samples shall be taken and tests made by the owner of the site to measure the extent of egress of contaminants and, if necessary, measures shall be taken for the collection and treatment of contaminants and for the prevention of water pollution.*

8. *The site shall be located a reasonable distance from any cemetery.*

9. *Adequate and proper equipment shall be provided for the compaction of waste into cells and the covering of the cells with cover material.*

10. *Where climatic conditions may prevent the use of the site at all times, provisions shall be made for another waste disposal site which can be used during such periods.*

11. *Where required for accurate determination of input of all wastes by weight, scales shall be provided at the site or shall be readily available for use.*

12. *All waste disposal operations at the site shall be adequately and continually supervised.*

13. *Waste shall be deposited in an orderly manner in the fill area, compacted adequately and covered by cover material by a proper landfilling operation.*

14. *Procedures shall be established for the control of rodents or other animals and insects at the site.*

15. *Procedures shall be established, signs posted, and safeguards maintained for the prevention of accidents at the site.*

16. *The waste disposal area shall be enclosed to prevent entry by unauthorized persons and access to the property shall be by roadway closed by a gate capable of being locked.*

17. *A green belt or neutral zone shall be provided around the site and the site shall be adequately screened from public view.*

18. *Whenever any part of a fill area has reached its limit of fill, a final cover of cover material shall be placed on the completed fill and such cover shall be inspected at regular intervals over the next ensuing period of two years and where necessary action shall be taken to maintain the integrity and continuity of the cover materials.*

19. *Scavenging shall not be permitted.*

The following sections describe the design considerations incorporated to address the requirements of O.Reg. 347.

4.2 Community Served and Waste Streams

The waste disposal site will be municipally owned by the Township of Hornepayne and serve the citizens of the Township. The 1996 census population of Hornepayne was 1480 (Statistics Canada).

Waste streams to be accepted for disposal will be exclusively solid non-hazardous wastes. These wastes will include municipal curbside-collected domestic and commercial wastes. Some construction and industrial wastes generated locally will also be accepted.

4.3 Location and Site Boundaries

The proposed waste disposal site is approximately 5 kilometres east of the community on the north side of Becker Road. The nearest cemetery is located on the eastern outskirts of the community on the south side of Becker Road, approximately 4.5 kilometres west of the proposed waste disposal site.

The features of the site are shown on Figure 7, including forested areas, nearby water bodies, roads and utility corridors. The land disposition based on Ministry of Northern Development and Mines Map G-1400 is shown on Figure 8.

4.4 Site Capacity and Anticipated Life Span

The proposed waste disposal area covers an area of approximately 3.1 hectares and has been designed for a waste capacity of approximately 39,000 cubic metres. Based on an annual refuse volume of 2,223 cubic metres (D.S. Urso Surveying Ltd., 1995, *Township of Hornepayne Landfill Capacity Study*), the site should accommodate about 18 years of waste disposal.

This life span could be dramatically increased through the use of waste compaction prior to placement. This compaction would be in addition to the normal compaction provided during trench placement. Considerable void space exists in waste that can be utilized for waste by compaction.

The life span can also be increased by effective separation of recyclable and compostable materials.

4.5 SITE ACCESS

The waste disposal site will operate on a year round basis. Access will be restricted to times when the township's attendant is on duty. Scavenging will not be permitted.

A locked gate will be maintained between operating hours. Operating hours will be set by the Township, subject to general limitations of 7:00 am to 7:00 p.m. local time. Public access to the site will be limited to daylight hours within these time limitations.

Notwithstanding the foregoing, public access to the site will be minimized by the utilization of the existing concrete trench for refuse collection, currently at the existing waste disposal site, as the public access waste transfer area. The existing waste transfer facility offers the advantage of closer proximity to the community, which reduces the potential for indiscriminant waste disposal that can occur when public, accustomed to easy access, find the additional distance inconvenient. This will also allow the Township to have greater control on refuse management at the new waste disposal site.

To minimize access to the site from other locations along the perimeter, a stand of coniferous trees will be maintained and/or grown in the buffer zone. If unauthorized access becomes problematic, a fence could be establish to secure the site, where appropriate. However, the maintenance of the waste transfer facility closer to the community should minimize the likelihood of unauthorized access.

4.6 PROPOSED BUFFER ZONE

The buffer area will be a minimum 15 metre wide strip of land encircling the waste disposal area, as shown on Figures 3 and 9. This buffer is sufficiently wide to accommodate monitoring, maintenance and environmental control activities.

A stand of coniferous trees will be maintained (or established, where necessary) for a green belt surrounding the site. These trees will provide a visual screen and help minimize wind borne litter from leaving the site.

4.7 SITE GRADING PLAN

Currently the proposed waste disposal area is a hill with some slopes too steep to operate a waste disposal site on. Prior to waste placement commencing, the steeper slopes will be regraded by cutting and placing excess fill on lower slopes. The average completed grade of the disposal areas will be about 10 percent. Figure 9 shows the proposed grading plan and Figures 10 and 11 show cross sections through the site illustrating the regrading.

The approximate volume of soil that will be cut from the east side of the site is 40000 cubic metres and the approximate volume of soil that will be placed as fill, primarily on the west and northwest portions of the site is 20000 cubic metres. The excess soil will be used to rehabilitate the adjacent former aggregate pit, as required by an MNR condition of land acquisition. Soil in excess of requirements for rehabilitation will be stockpiled for use as final cover at the existing waste disposal site once this new site becomes active.

4.8 Waste Disposal Method

Waste will be deposited in trenches excavated into the graded land surface. Trenches will vary in length and orientation to accommodate the sloping topography, as shown on Figure 12. The lengths of the trenches will range from approximately 60 to 120 metres. Filling is proposed to commence in the easternmost trench, farthest from Jackfish River and progress westward.

Trenches will be excavated as necessary, but generally no more than about a year in advance of filling. The Township will either use township excavation equipment available from the works department or contract the excavation work out, as it sees fit.

As shown on Figure 13, the trenches are proposed to be 3 metres below grade at the lowest side. The base of these trenches will be well above the water table. The trenches are proposed to be 18 metres wide at the top with sides sloping 2 horizontal to 1 vertical (2H:1V).

Filling will progress to 1 metre above grade. The upper side slopes of the waste fill will be 1H:1V. The top cover will be sloped at least 3% laterally.

4.9 Waste Placement

Each trench will be excavated, filled, and covered progressively to minimize leachate generation and nuisance animal issues. Excavated soil will be stockpiled nearby for use as cover material.

Township or contract staff will supervise placement of waste in the disposal trenches, compaction of the material and placement interim cover.

4.10 COVER MATERIALS

Daily cover will be placed on wastes in the trenches to minimize odours and litter generation and to minimize wildlife access. The daily cover will consist of soil materials excavated from the trenches. Typically, 0.15 metres of daily cover will be applied.

Final cover will be placed on each trench as it is completed. This cover is proposed to consist of soil materials excavated from the trenches placed and compacted to a minimum of 0.6 metres thick.

4.11 ROADS AND INFRASTRUCTURE

One access road is proposed to enter the southwestern corner area of the site and run along the south side of the waste disposal area to provide access to the disposal trenches. Temporary access roads will be established beside trenches to provide access to the filling area as it progresses.

Scales are not considered to be required. Fees for disposal can be set at the discretion of the Township on a volume basis.

A utility shed or shelter may be erected near the entrance to the waste disposal site to store equipment and or provide shelter for site staff, if required. It is envisioned that the shed would be removed toward the completion of the site filling to accommodate proposed disposal trenches.

Signs will be posted at the entrance to the site and in any shelter describing site procedures and accident prevention safeguards.

4.12 DRAINAGE PLAN

Drainage from the waste disposal area will not impact adjoining properties since the attenuation zone required for ground water leachate will be owned by the Township. Since waste will be deposited in trenches and the native soils are reasonably permeable, no waste affected runoff will be generated that could affect the rights-of-way, road allowances or water courses within the attenuation zone.

Since the soils are relatively permeable, ground water accumulation in the trenches should be minimal. If significant accumulations occur following heavy runoff periods, it can be pumped and discharged elsewhere on site. The grading of the site should minimize surface accumulations.

4.13 Environmental Impact

The water table at this site is well below the base of the proposed trenches; therefore, leachate generation, which results from water contact, will be minimal. In areas where trenches terminate in low permeability soils, such as the glacial till, water may collect (since perched conditions were noted in some locations). Some pumping of water from the trenches at these locations may be required in order to prevent contact with the waste during filling. This water can be re-infiltrated on other areas of the waste disposal site.

Due to the small volumes of wastes to be disposed, the elevation of the wastes above the water table, the elevation of the site above the surrounding land, the relatively porous nature of the soils permitting soil gas movement, the potential for generation of significant landfill gas volumes is low. No structures or facilities at risk for methane gas build up are located in the vicinity of the site. As a result, no landfill gas control is considered necessary.

Noise impact due to the landfill is considered to be negligible. The road is used for logging trucks and commuting of sawmill workers to the Haavaldsrud Lumber Company operation farther east along Becker Road. In addition, waste transport truck already use this road to access the existing waste disposal site (to be closed) between Hornepayne and the proposed site.

Visual impact on nearby properties is also considered to be negligible since no land development, other than aggregate extraction operations exists in the vicinity of the site.

Litter control will be carried out on a periodic basis using municipal staff or summer employees. Application of daily cover and the tree screening should minimize the quantity of wind borne litter.

4.14 Attenuation Zone

The MOE document *Small Site Hydrogeological Risk Assessment* provides two calculation methods to size the attenuation zone for soils with hydraulic conductivities less than 10^{-4} cm/s:

- If the flow direction can be reasonably inferred from the site topography, the width of the attenuation zone should be 6 times the maximum fill length parallel to the inferred flow direction and one fill length in all other directions. If possible, the maximum fill length should not exceed 150 metres and the attenuation zone width should not exceed 500 metres.

- If the site is located in a setting with radial ground water flow or multiple flow directions (such as on a hill or ridge top), the attenuation zone width should be 3 times the fill length on all sides.

- Where surface water bodies or private land falls within the attenuation zones recommended above, the MOE Regional staff will consider smaller attenuation zones and will likely require the establishment of a ground water quality monitoring program.

The proposed site is located on a hill top and is considered to fall under the second situation; therefore, the attenuation zone width should be 3 times the length of fill. We note, however, that this SSHRA attenuation zone model was based on source chloride concentrations of 1000 to 1500 mg/L being diluted by precipitation to meet Reasonable Use objectives (generally in the range of 125 to 150 mg/L).

Recently, Messrs. J. Gehrels and M. Puumala, both MOE Northwest Region hydrogeologists, completed a study of numerous small landfills in northern Ontario in which relationships between landfill characteristics and source levels of chloride were assessed for the purposes of designing attenuation landfills. Their research indicated the strongest correlation between total waste volume and chloride concentration (Gehrels and Puumala, 2000, *Ground Water Monitoring and Remediation*, v.20, no.3, p169-176). Based on the 40,000 cubic metre preliminary design volume of waste and using the relationship they developed, the design source concentration would be 502 mg/L, or about half of the design source concentration used to develop the SSHRA attenuation zone requirements. As a result, the SSHRA recommendation for the attenuation zone width is considered to be 2 to 3 times greater than necessary.

An attenuation zone at least 300 metres wide is proposed for all directions, except where water bodies occur within 300 metres of the disposal area. In directions where water bodies occur within the 300 metres, all of the lands between the disposal area and the water bodies, save for a 20 metre buffer required by the MNR, will be designated as the attenuation zone. The proposed waste disposal area will be at least 200 metres from the nearest water body, the isolated loop of the Jackfish River (also referred to on published maps as Deadwater Creek) and a small creek, on the west side. The proposed attenuation zone, shown on Figure 14, comprises an area of 59.8 hectares.

Based on consultations with the MOE regarding this proposed configuration, monitoring of ground water quality will be a condition of approval. Therefore, monitoring wells will have to be established between the landfill and the river. The proposed monitoring program is discussed in the following Section 4.15.

4.15 MONITORING

4.15.1 *MONITORING PROGRAM*

Ground water monitoring wells will be established around the waste disposal site, to monitor water quality and potential leachate effects. Prior to the establishment of the ground water monitoring well network, we propose to install standpipes in test pits excavated at locations surrounding the waste disposal site. These will be used to measure water levels to assess the ground water flow regime. Based on the results, a monitoring program will be developed in downgradient area(s) of the attenuation zone, consisting of monitoring wells installed using a drilling rig and surface water monitoring stations.

We envision that approximately five monitoring wells and two surface water sampling stations in the Jackfish River will become part of the routine monitoring program. The proposed monitoring network will be reviewed with the MOE prior to establishment.

In accordance with requirements of the MOE's Northern Region, monitoring will be carried out three times annually for the first two years of operation in order to establish baseline hydrogeochemistry. The parameters proposed to be monitored are consistent with Schedule 5 of O.Reg. 232 and include:

> pH, conductance, dissolved organic carbon, total dissolved solids, total Kjeldahl nitrogen, alkalinity, major anions (chloride, sulphate, nitrate, nitrite), major cations (calcium, magnesium, potassium, sodium), ammonia, phenols, metals (arsenic, barium, boron, cadmium, chromium, copper, iron, lead, manganese, mercury, phosphorus, zinc)

One sample from a monitoring well located at the closest downgradient location will be analyzed annually for volatile organic compounds (VOC). Surface water samples will also be analyzed for chemical and biochemical oxygen demand. In addition, field measurements of temperature, pH and electrical conductivity will be taken.

Following the initial two years of monitoring, the program will be reviewed with the intent to reduce this exhaustive list of parameters to a set of key indicators, and to reduce the frequency of monitoring. Recommendations will be made to the MOE for its concurrence.

The results of this monitoring will be summarized and discussed in a report prepared by a qualified hydrogeologist or engineer specialized in contaminant hydrogeology.

4.15.2 SAMPLING PROTOCOLS

Each monitoring well will be equipped with a dedicated Waterra sampling system comprising a foot valve connected to surface by polyethylene tubing. The Waterra system will be used to both purge standing water from the wells prior to sampling and to obtain the samples themselves.

Prior to purging, static water levels in the monitoring wells will be measured using an electric water level meter relative to the top of the well casing. Following water level measurement, the dedicated Waterra system will be used to purge a volume equivalent to at least three well bore volumes of ground water from the well. If the well purges dry prior to this volume being removed, it will be purged again after a period of recovery until dry a second time to remove water which may have drained from the screen sand pack, or until the three well bore volumes has been removed. While purging, the ground water will be physically assessed for evidence of leachate impact, such as colour or odour, and noted.

Samples will be collected from each well following completion of purging or sufficient period of recovery. Sample aliquots for analyses susceptible to bias due to suspended solids or particulate matter will be filtered using in-line filters. These aliquots include metals, as a minimum, all preserved samples, preferably, and potentially all aliquots, if practical, except VOC. The laboratory will be requested to precharge sampling bottles with appropriate preservatives, which are likely to be sulphuric acid for DOC, ammonia, total Kjeldahl nitrogen and phenols and nitric acid for metals.

Following sampling, the containers will be carefully packed to prevent breakage during shipment to the laboratory in chilled coolers. The cooler shipment should be couriered over night under chain of custody to the analytical laboratory on the day of or following sample completion.

4.16 CONTINGENCY PLANS

The potential for fires starting spontaneously at this site is considered to be small; however, fires set deliberately by unauthorized people could occur. Township fire fighting equipment is available to fight these fires and Jackfish River provides a reasonably close source of water for this purpose. Because the waste disposal site is isolated from the surrounding forest by Becker Road, the former gravel pit and Jackfish River, and the Hydro One transmission corridor, fires should be able to be contained to the waste disposal site with reasonable response time. Fire extinguishers will be available on all Township vehicles and equipment and the equipment shed on site for extinguishing of small fires.

If adverse impact is predicted at the monitoring wells located closest to Jackfish River, a baseline study of the potentially impacted ecosystem will be conducted. This study can be used to compare future ecosystem conditions to assess the impact of leachate on the river. The triggers for this study will be based on predicted exceedances of Provincial Water Quality Objectives criteria due to leachate impact.

If impacts are predicted to be adverse at the attenuation zone boundaries, the Township may consider land acquisition to extend the attenuation zone. Other options may include placing less permeable cover materials to minimize leachate production, installation of a pumping network to intercept leachate impacted ground water for treatment or recirculation, or early closure of the site in accordance with the closure plan.

Adverse impacts will be based on the predicted exceedance of Guideline B-7 (Reasonable Use) criteria at the property boundaries. Since no background hydrogeochemistry is currently available, the criteria cannot be calculated. These criteria will be calculated and reported in the first monitoring report and recalculated in subsequent reports.

If an individual result or set of results appear to be unexpectedly high, the cause for this will be reviewed and possible causes evaluated and corrected, as appropriate. Sampling and analytical procedures that will be useful in such assessments will include field quality control samples (blanks and replicates), analytical quality checks (ion balance and integrity reviews) and field parameter measurements.

4.17 CLOSURE PLAN

Considerable excess soil will be generated during excavation of the disposal trenches. As it is generated it will be utilized as cover material on the completed areas of the site. Superfluous soils will be placed in the former aggregate pit on the west side of the waste disposal site.

The ultimate objective will be to return the hlll to an aesthetically acceptable state. In order to achieve this goal, the top cover over the trenches will be graded smoothly to mimic the starting grade. The final site contours will be approximately 1.5 to 2 metres above the graded contours shown on Figure 9.

Organic matter or soil will be worked into the largely mineral final cover soils from the trench excavations. Large quantities of organic matter should be available from the nearby Haavaldsrud sawmill operation's bark waste or from other sources to be identified in the area. A seed mixture consisting largely of grasses (timothy and fescues) will be worked in with the organic matter to foster vegetative growth.

The site will be inspected regularly for at least two years following complete closure to assess cover integrity and vegetative growth. Where required, repairs will be completed. Inspections will take place, at a minimum, following the spring melt and heavy precipitation episodes. Once a good vegetative cover has been established, inspections will take place on an annual basis in early summer.

Monitoring of ground water and surface water will continue on an annual basis following closure for a minimum of two years. The analytes will be consistent with the program at the time of closure. At this point the indicator list of parameters is considered to be the likely program in place at that time.

The site will be allowed to revert to a natural state under natural succession. Currently, no plans exist for other usage of the site.

The integrity of the final cover will be inspected from time to time during the operating life of the site and for at least 2 years following completion of waste placement. In particular, inspections will be made following the spring thaw and heavy rainfall events. Restoration of the cover will be carried out as required.

5.0 PUBLIC CONSULTATION

The public and groups with a potential interest in the project or subject lands were consulted by various means over the course of the project. Copies of correspondence and public notices and letters are provided in Appendix D.

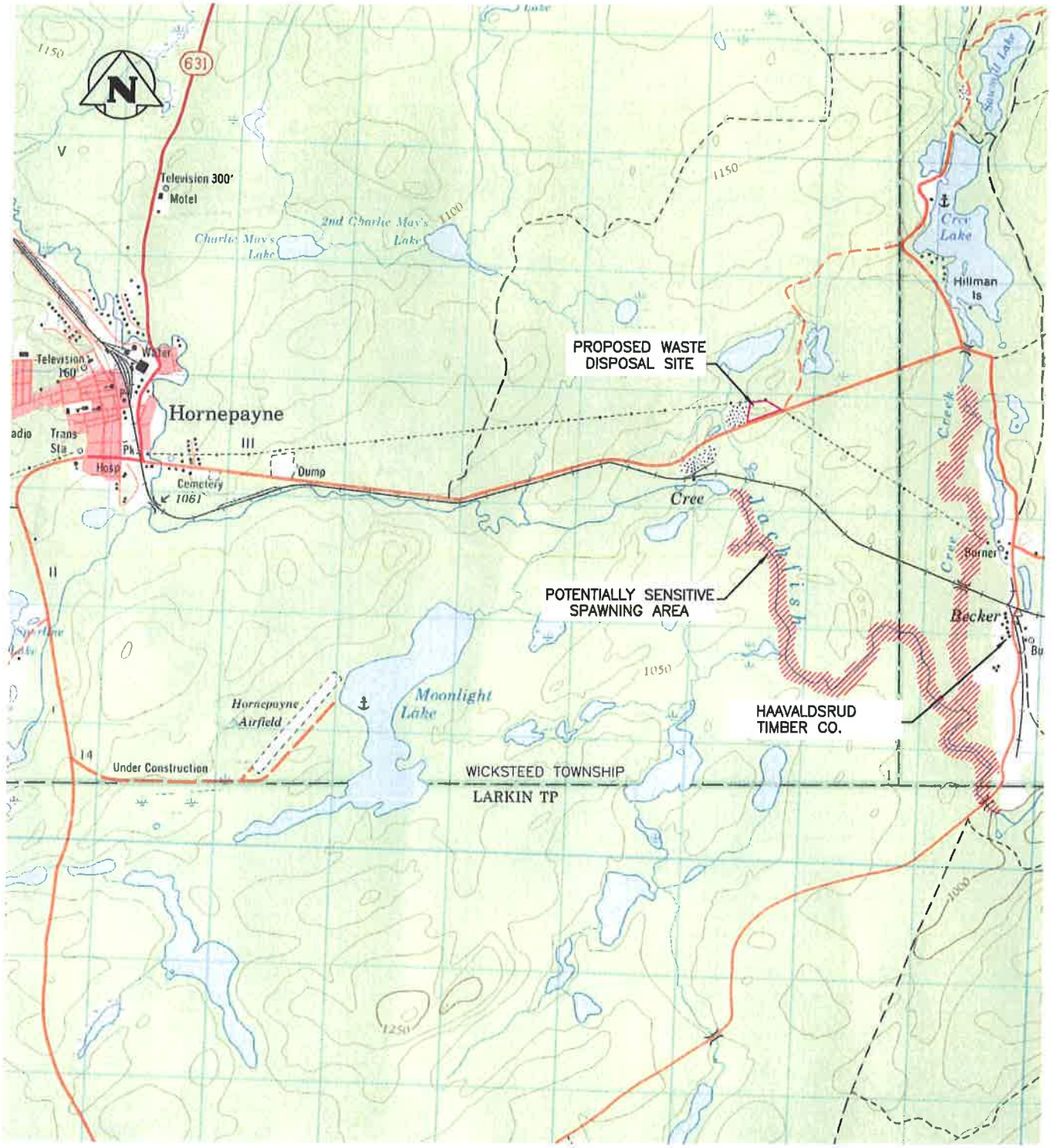
The Hornepayne First Nation was consulted regarding the proposed land usage for waste disposal. The First Nation issued a Band Council Resolution (No. 7, dated June 14, 2000), indicating that the First Nation has been consulted and has no objection to the proposed waste disposal site.

The MNR consulted with the Sustainable Forest Licence Holder (Donohue Inc.) for the Nagagami Forest with regard to the development. The MNR indicated in a letter dated January 16, 2001 that no objection was raised.

Canadian National Railways was consulted by letter regarding usage of its Ballast Pit area on the east side of Jackfish River for the attenuation zone. CN indicated in a letter dated August 15, 2000 that it had no concerns.

Hydro One was consulted regarding its 44kV transmission line and land use permit along the north and east sides of the proposed disposal area. Hydro One subsequently met with the township roads superintendent on site and identified areas of potential concern in the adjacent former aggregate pit which were to be addressed in the rehabilitation of the pit.

An open house was held at the Hornepayne municipal offices on May 3, 2001 to present the proposal and answer questions. This open house was publicized by placement of newspaper ads in the local The Bear News weekly paper and a mailout to all residents and businesses of the Township and the Hornepayne First Nation. No concerns were identified at the open house.



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1:50000

CONSIDERED POTENTIALLY SENSITIVE FOR SPAWNING

REFERENCE: EMR 1979 HORNEPAYNE 42F/2

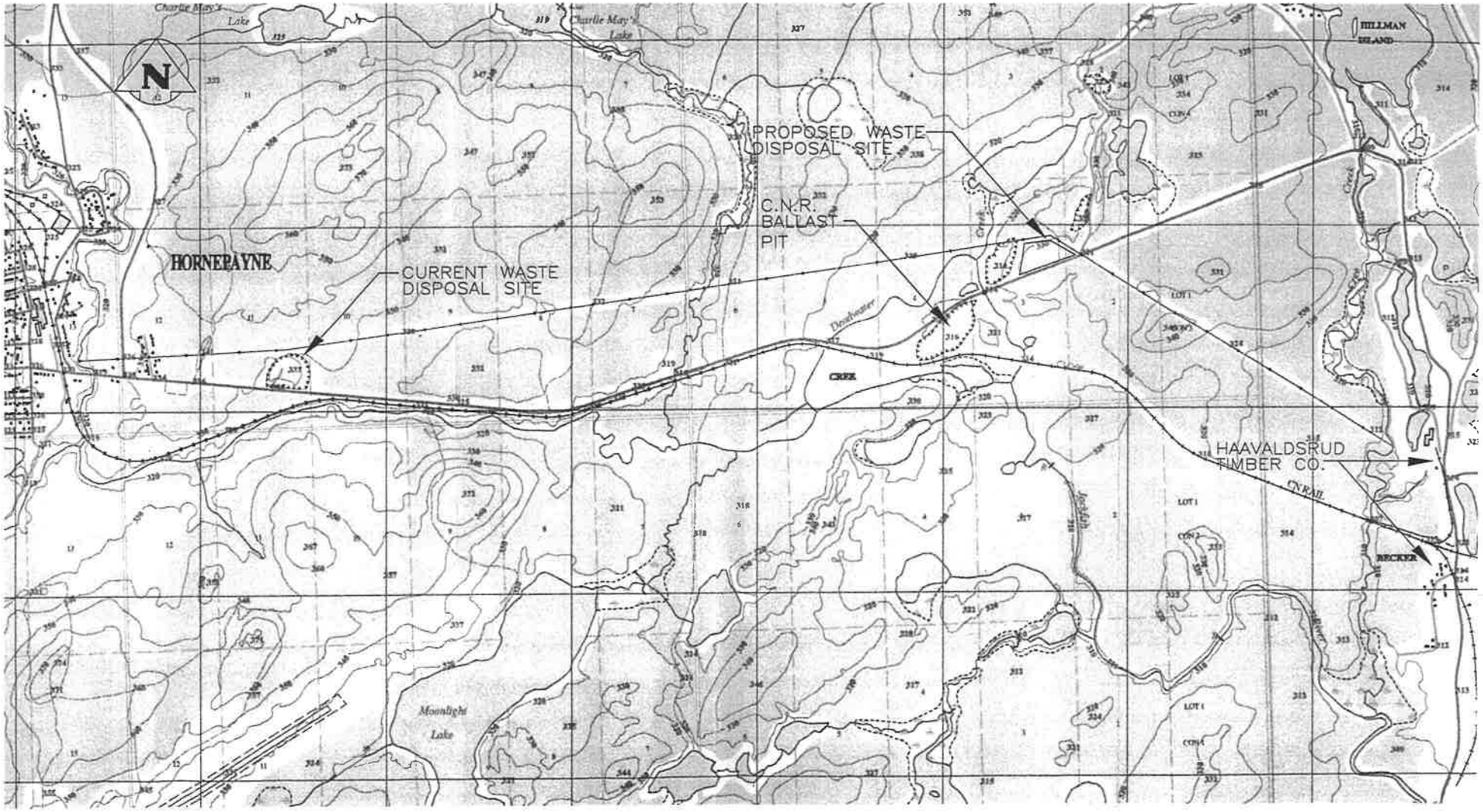
WARDROP | Engineering Inc.

CLIENT: **TOWNSHIP OF HORNEPAYNE**

DWG DESCRIPTION:

KEY PLAN
PROPOSED WASTE DISPOSAL SITE
993347.04.00

DESIGNED BY: J.P.M.	DRAWN BY: N.R.M.	DWG NO.
CHECKED BY: J.P.M.	DATE: 01.06.12	FIGURE 1



200 0 250 500 750 1000m

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SOURCE: REPRODUCED FROM MINISTRY OF NATURAL RESOURCES MAP-20 16 6600 54500 PUBLISHED 1999

NO.	DESCRIPTION	DATE	BY
1	CREATED	01.05.01	CRG

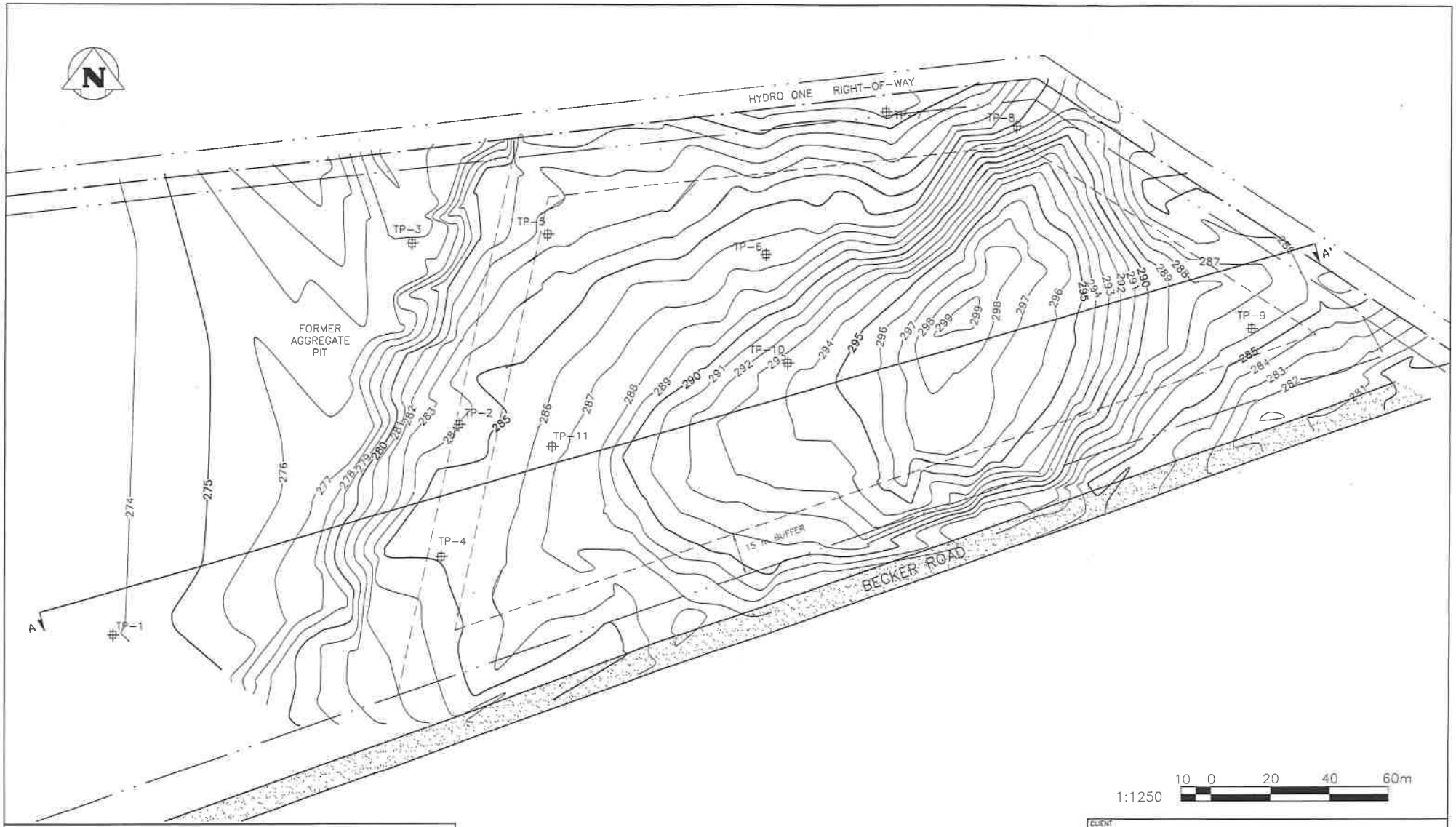
REVISIONS/ISSUE

WARDROP | Engineering Inc.

CLIENT: **TOWNSHIP OF HORNEPAYNE**

DWG DESCRIPTION: LOCATION PLAN
PROPOSED WASTE DISPOSAL SITE
993347.04.00

DESIGNED BY: J.P.M.	DRAWN BY: C.R.G.	DWG NO.
CHECKED BY: J.P.M.	DATE: 01.06.12	FIGURE 2



LEGEND

PROPERTY LINE

HYDRO LINE

TP-2 TEST PIT LOCATION

267 / 249 EXISTING CONTOURS (DATA FROM D.S. URSO SURVEYING LIMITED)

NO.	DESCRIPTION	DATE	BY
1	CREATED	01.03.29	C.R.G.

REVISIONS/ISSUE

WARDROP | Engineering Inc.

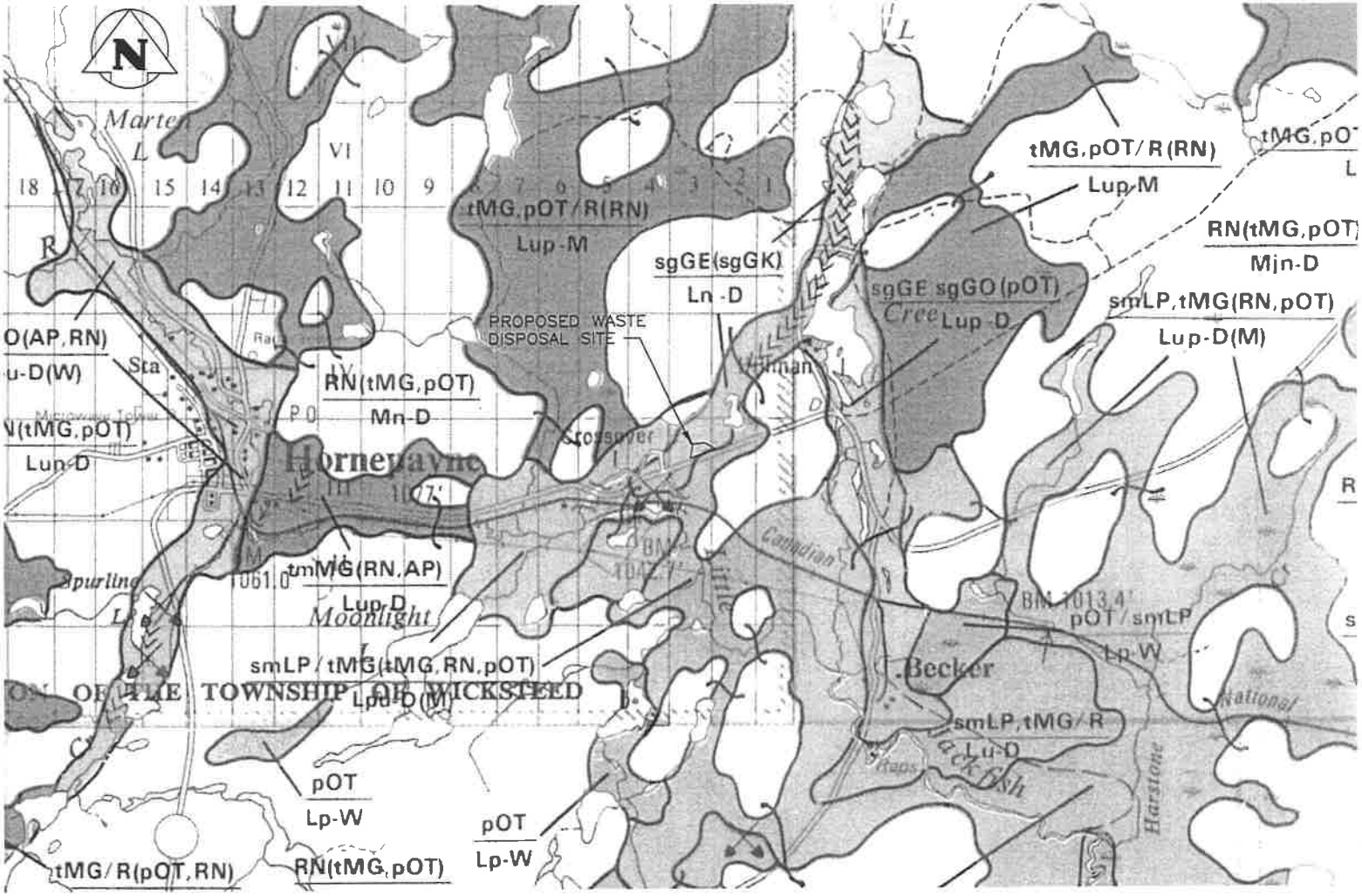
CLIENT: TOWNSHIP OF HORNEPAYNE

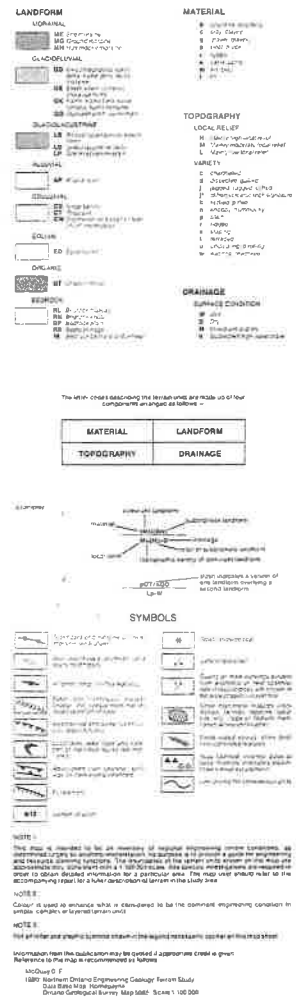
DWG DESCRIPTION: SITE PLAN
PROPOSED WASTE DISPOSAL SITE
993347.04.00

DESIGNED BY: J.P.M. | DRAWN BY: C.R.G. | DWG NO.

CHECKED BY: J.P.M. | DATE: 01.06.12

FIGURE 3





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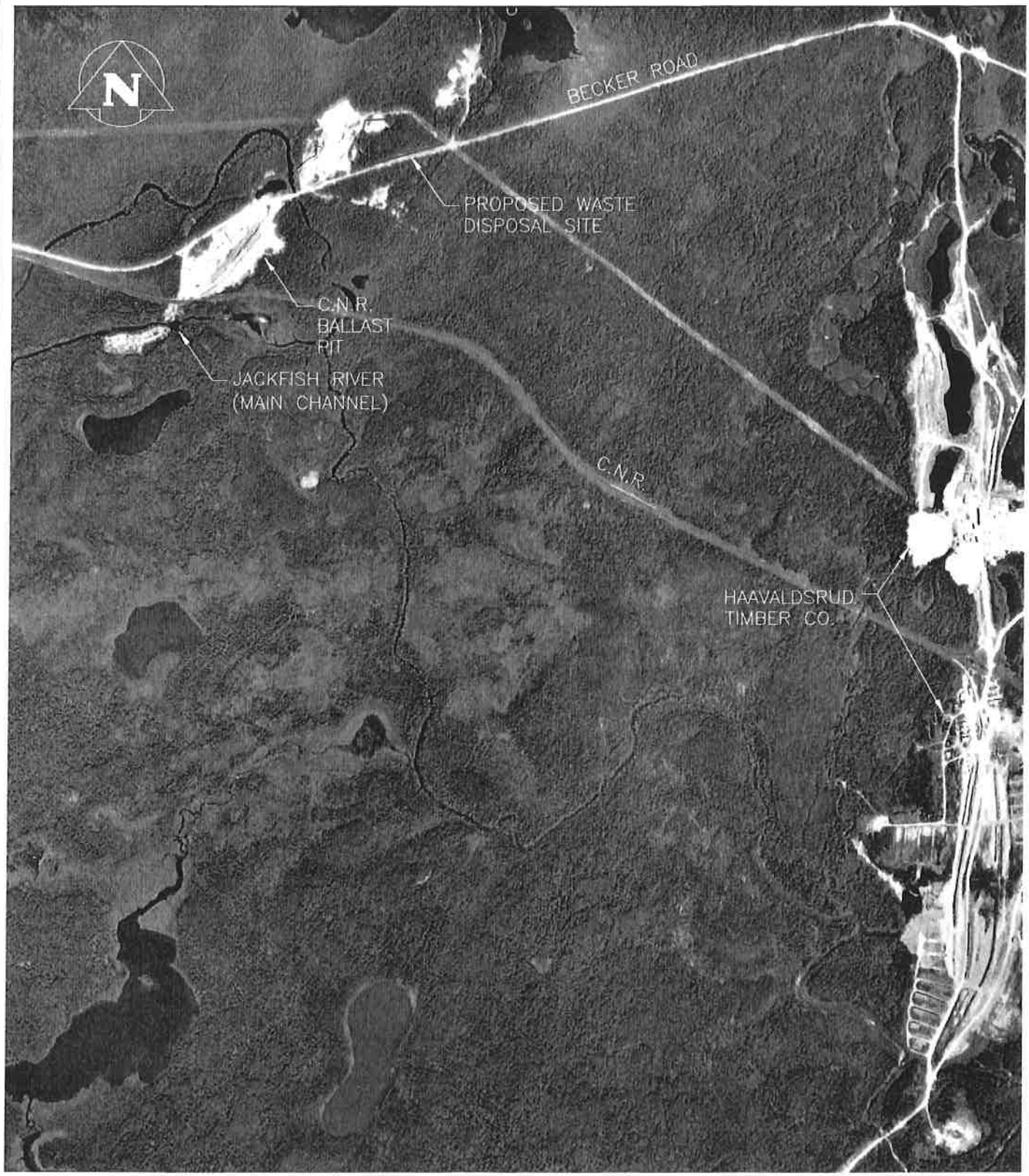
NO.	DESCRIPTION	DATE	BY
1	CREATED	01.05.01	CRG
REVISIONS/ISSUE			

WARDROP | Engineering Inc.

CLIENT: **TOWNSHIP OF HORNEPAYNE**

DWG DESCRIPTION: GEOLOGICAL TERRAIN
PROPOSED WASTE DISPOSAL SITE
993347.04.00

DESIGNED BY: J.P.M.	DRAWN BY: C.R.G.	DWG NO. FIGURE 4
CHECKED BY: J.P.M.	DATE: 01.06.12	



1:15000

300 0m 200 400 600m

CLIENT

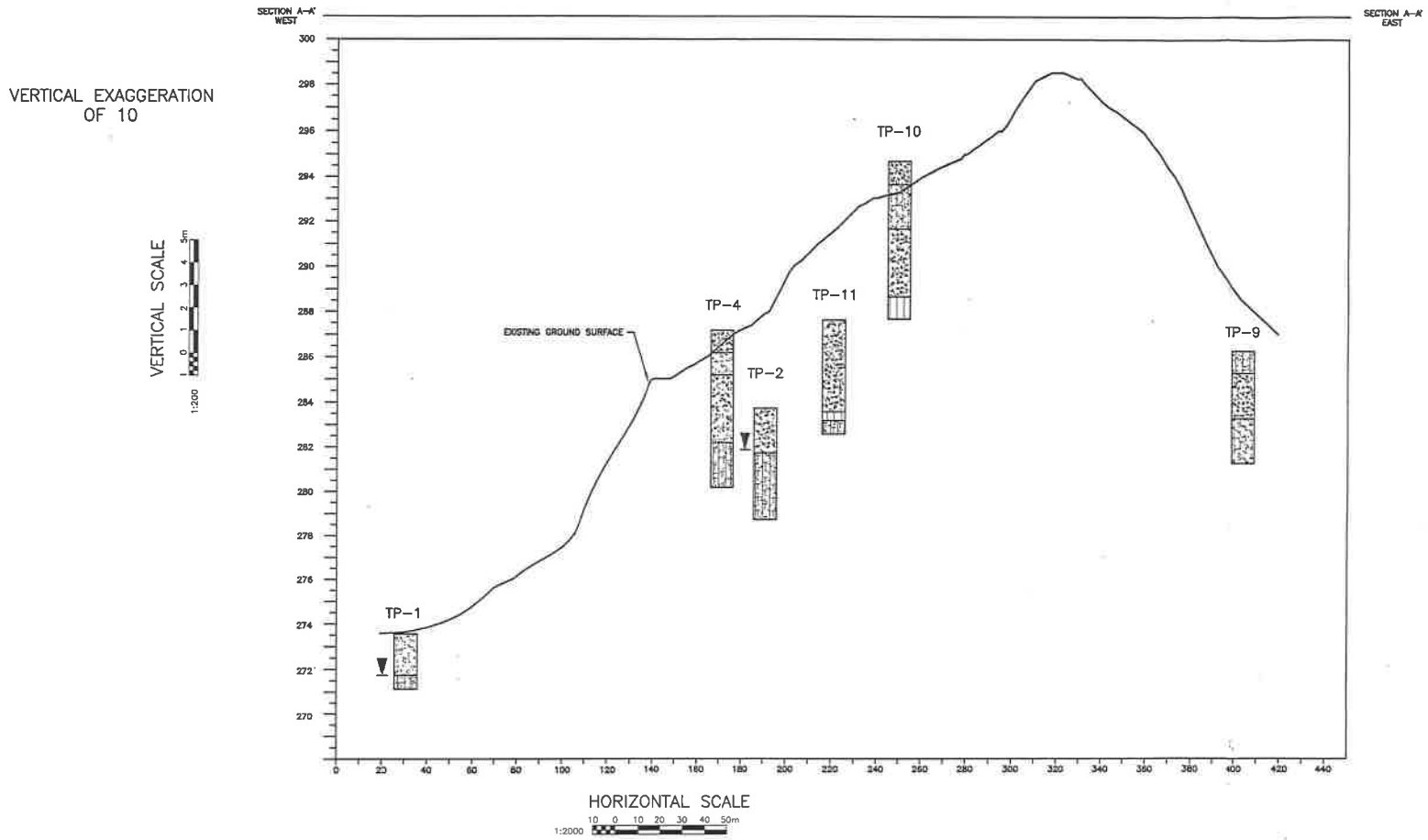
TOWNSHIP OF HORNEPAYNE

WARDROP | Engineering Inc.

DWG DESCRIPTION

AERIAL PHOTOGRAPH
HORNEPAYNE LANDFILL SITE
993347.04.00

DESIGNED BY: J.P.M.	DRAWN BY: C.R.G.	DWG NO. FIGURE 5
CHECKED BY: J.P.M.	DATE: 01.06.12	



LEGEND

- STATIC WATER LEVEL
- SAND
- SAND AND GRAVEL
- SANDY SILT
- SANDY SILT TILL
- SILT
- SILTY SAND

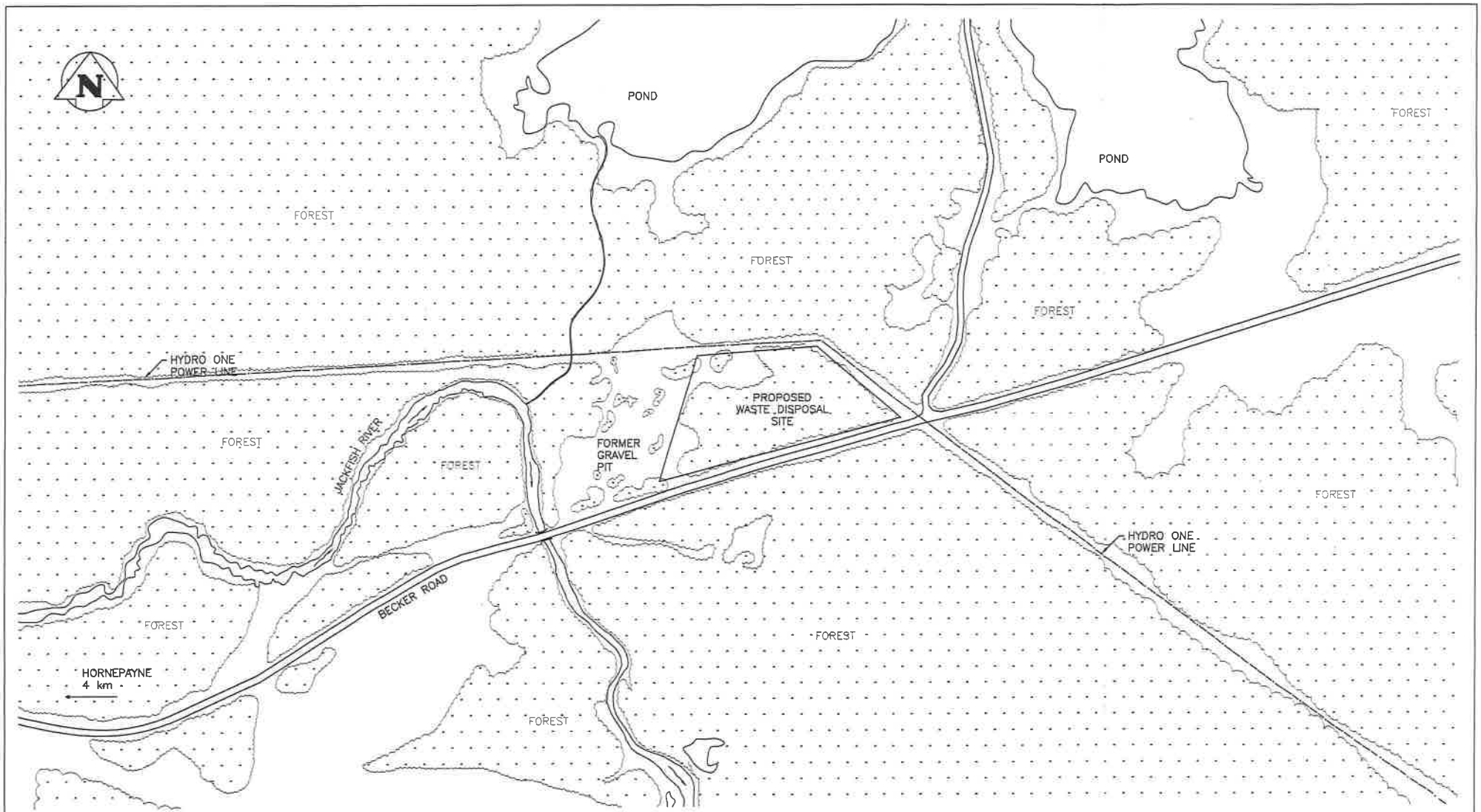
NO.	DESCRIPTION	DATE	BY
REVISIONS/ISSUE			

WARDROP | Engineering Inc.

CLIENT: **TOWNSHIP OF HORNEPAYNE**

DWG DESCRIPTION: HYDROGEOLOGICAL CROSS SECTION A–A'
PROPOSED WASTE DISPOSAL SITE
993347.04.00

DESIGNED BY: J.P.M.	DRAWN BY: C.R.G.	DWG NO.
CHECKED BY: J.P.M.	DATE: 01.06.12	FIGURE 6



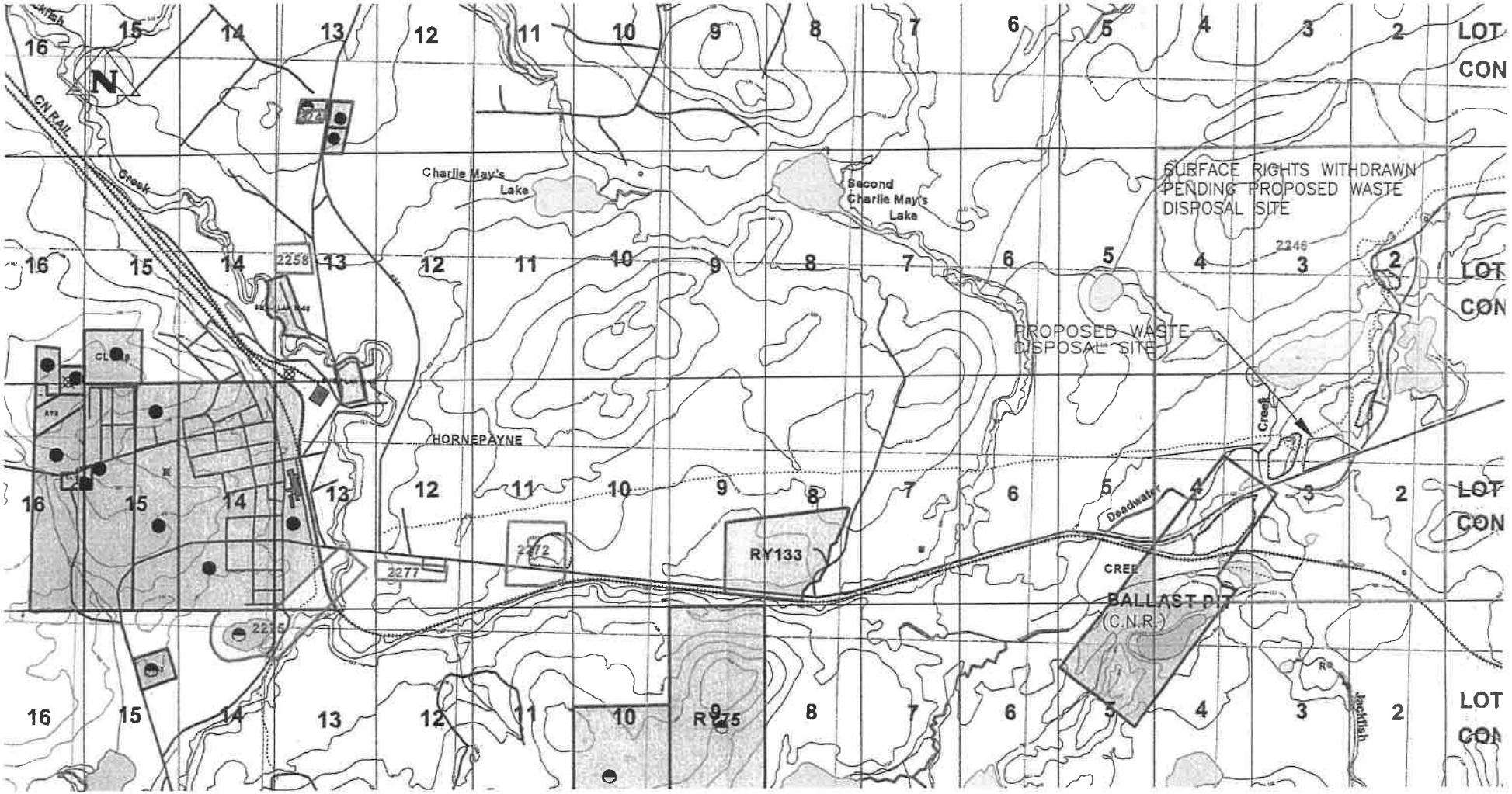
NO.	DESCRIPTION	DATE	BY
1	CREATED	01.05.01	CRG
REVISIONS/ISSUE			

WARDROP | Engineering Inc.

CLIENT: **TOWNSHIP OF HORNEPAYNE**

DWG DESCRIPTION: SURFACE FEATURES
PROPOSED WASTE DISPOSAL SITE
993347.04.00

DESIGNED BY: J.P.M. | DRAWN BY: C.R.G. | DWG NO. FIGURE 7
CHECKED BY: J.P.M. | DATE: 01.06.12



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REFERENCE:
MINING LAND TENURE MAP, PLAN G-1400,
WICKSTEED TOWNSHIP, ISSUED APRIL 30, 2001.

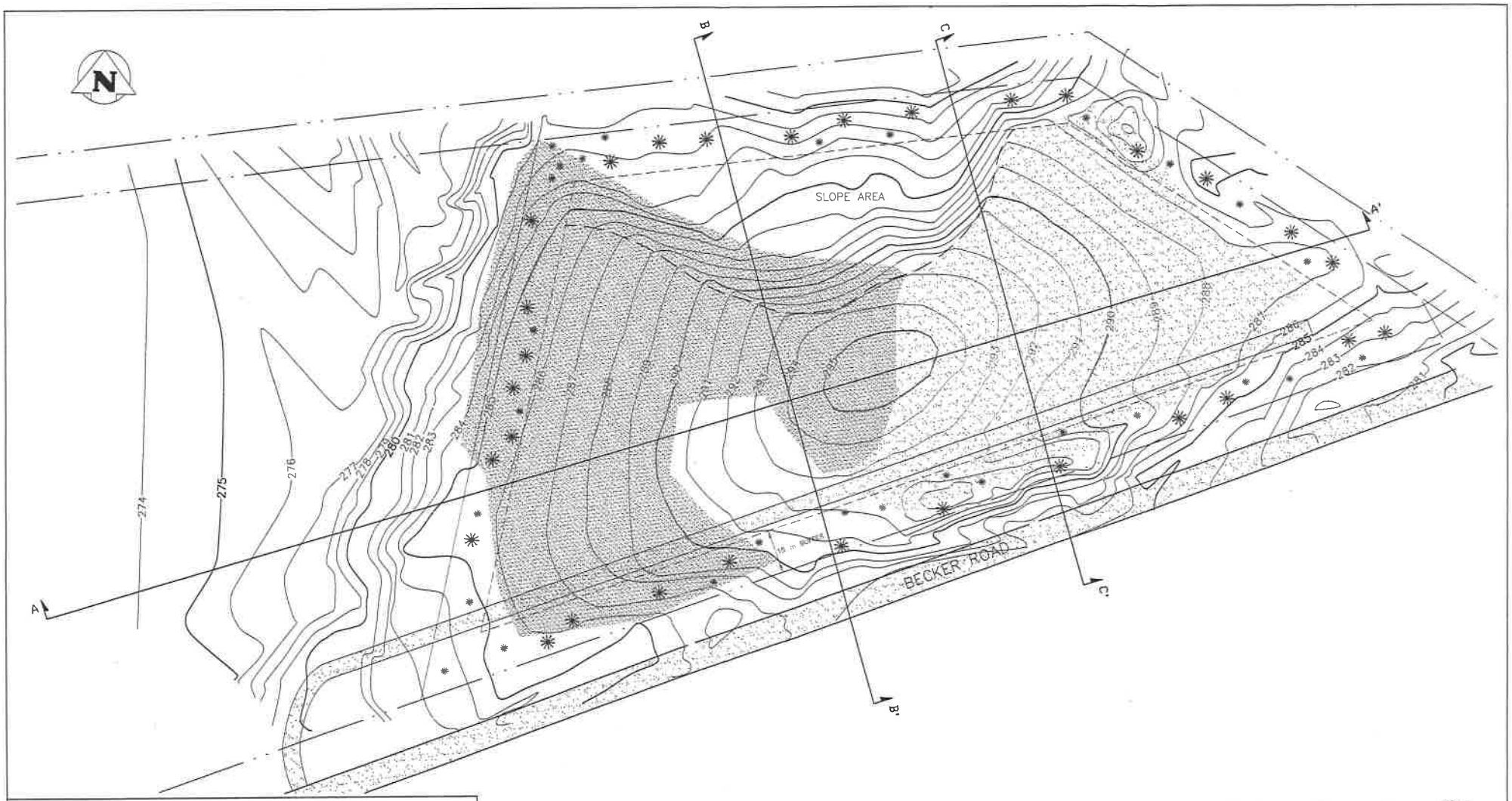
NO.	DESCRIPTION	DATE	BY
1	CREATED	01.05.01	CRG
REVISIONS/ISSUE			

WARDROP | Engineering Inc.

CLIENT: TOWNSHIP OF HORNEPAYNE

DWG DESCRIPTION: LAND DISPOSITION
PROPOSED WASTE DISPOSAL SITE
993347.04.00

DESIGNED BY: J.P.M.	DRAWN BY: C.R.G.	DWG NO.
CHECKED BY: J.P.M.	DATE: 01.06.12	FIGURE 8



LEGEND

- PROPERTY LINE
- SLOPE AREA
- CUT
- EXISTING CONTOURS (DATA FROM D. URSO SURVEYING LIMITED)
- PROPOSED CONTOURS
- FILL

1:1250

10 0 20 40 60m

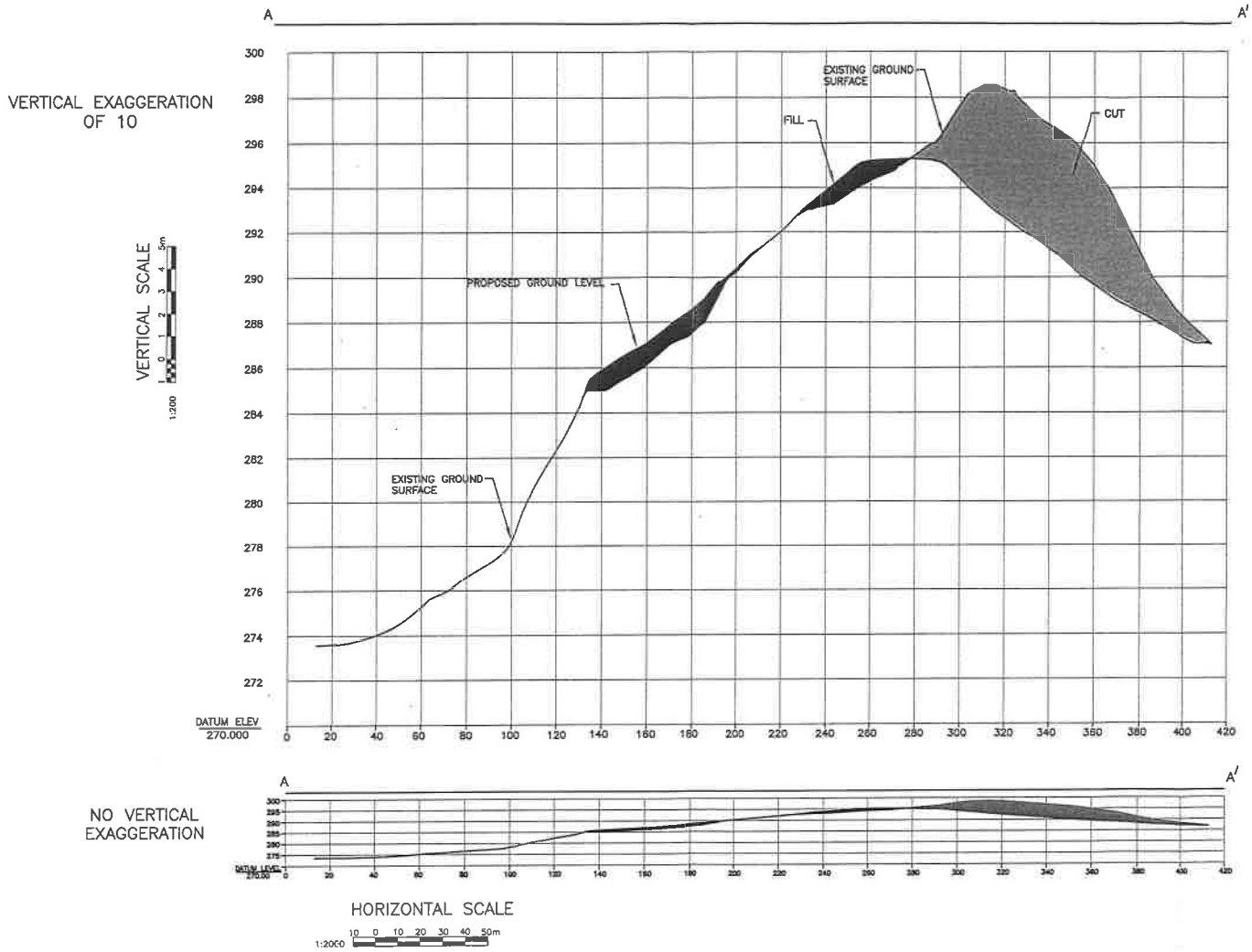
NO.	REVISIONS/ISSUE	DATE	BY
1	CREATED	01.03.29	C.R.G.

WARDROP | Engineering Inc.

CLIENT: **TOWNSHIP OF HORNEPAYNE**

DWG DESCRIPTION:
PROPOSED GRADING PLAN
PROPOSED WASTE DISPOSAL SITE
993347.04.00

DESIGNED BY: J.P.M. | DRAWN BY: C.R.G. | DWG NO.
CHECKED BY: J.P.M. | DATE: 01.06.12 | FIGURE 9



LEGEND

FILL

CUT

NO.	DESCRIPTION	DATE	BY
1	CREATED	01.05.29	CRG

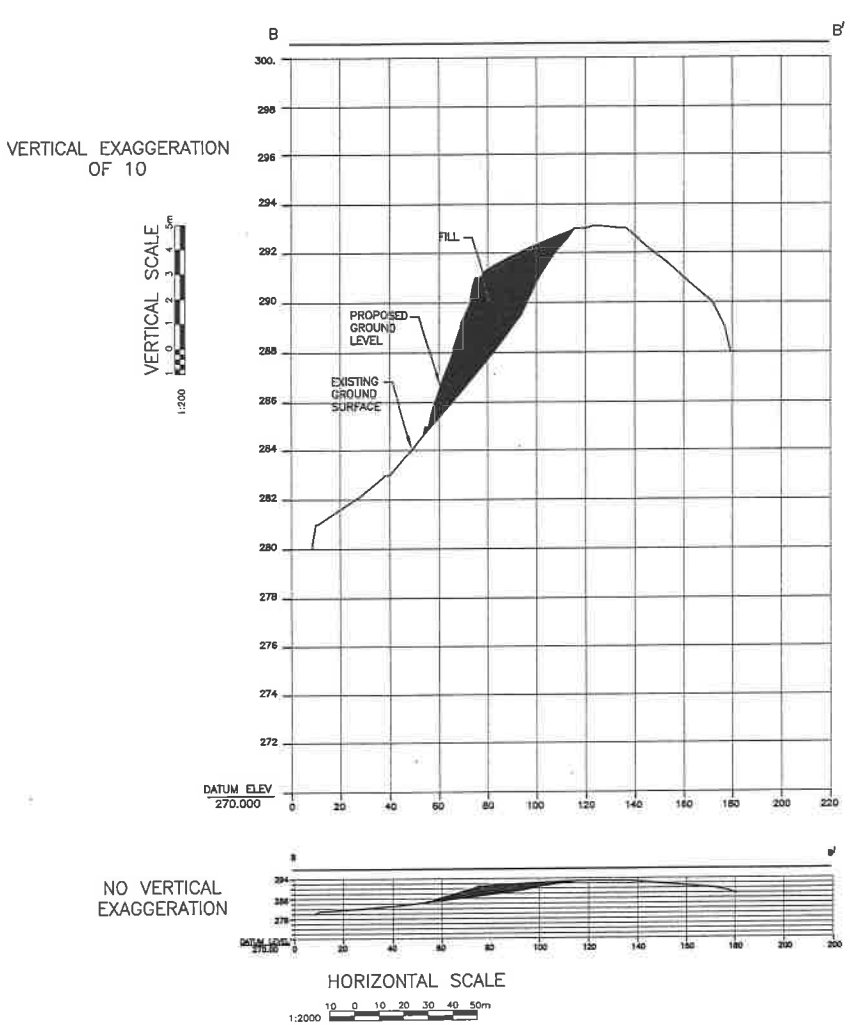
REVISIONS/ISSUE

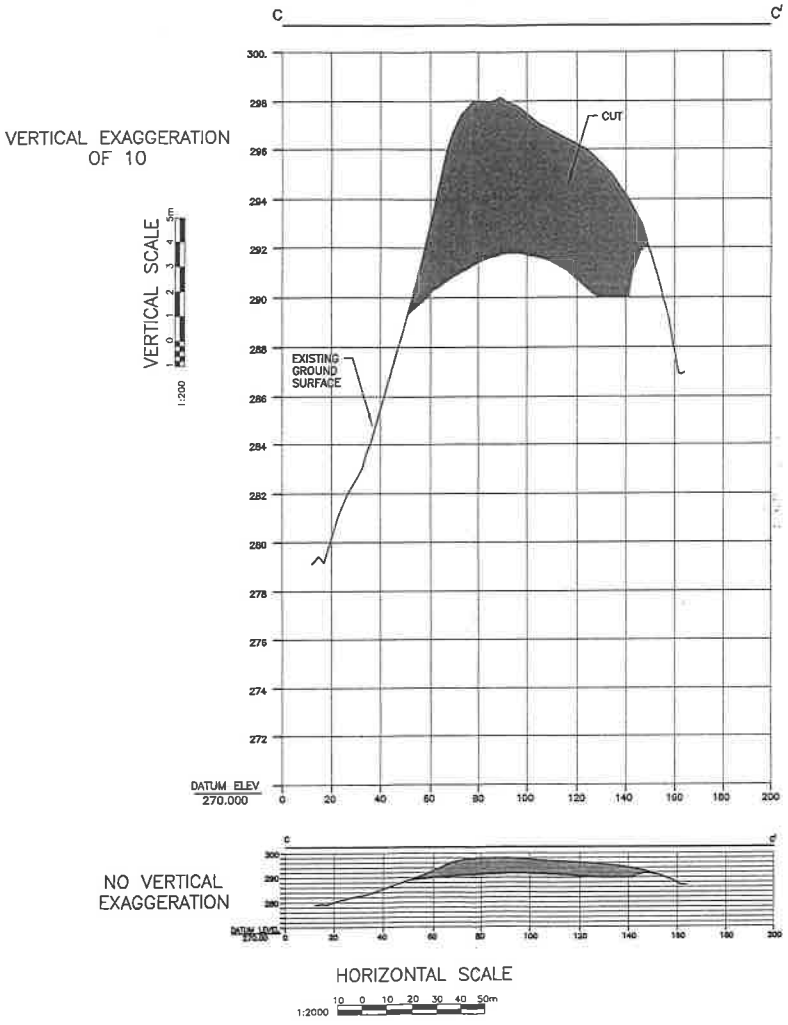
WARDROP | Engineering Inc.

CLIENT: **TOWNSHIP OF HORNEPAYNE**

DWG DESCRIPTION: REGRADED CROSS-SECTION
PROPOSED WASTE DISPOSAL SITE
993347.04.00

DESIGNED BY: J.L.M.	DRAWN BY: C.R.G.	DWG. NO.
CHECKED BY: J.L.M.	DATE: 01.06.12	FIGURE 10





LEGEND

FILL

CUT

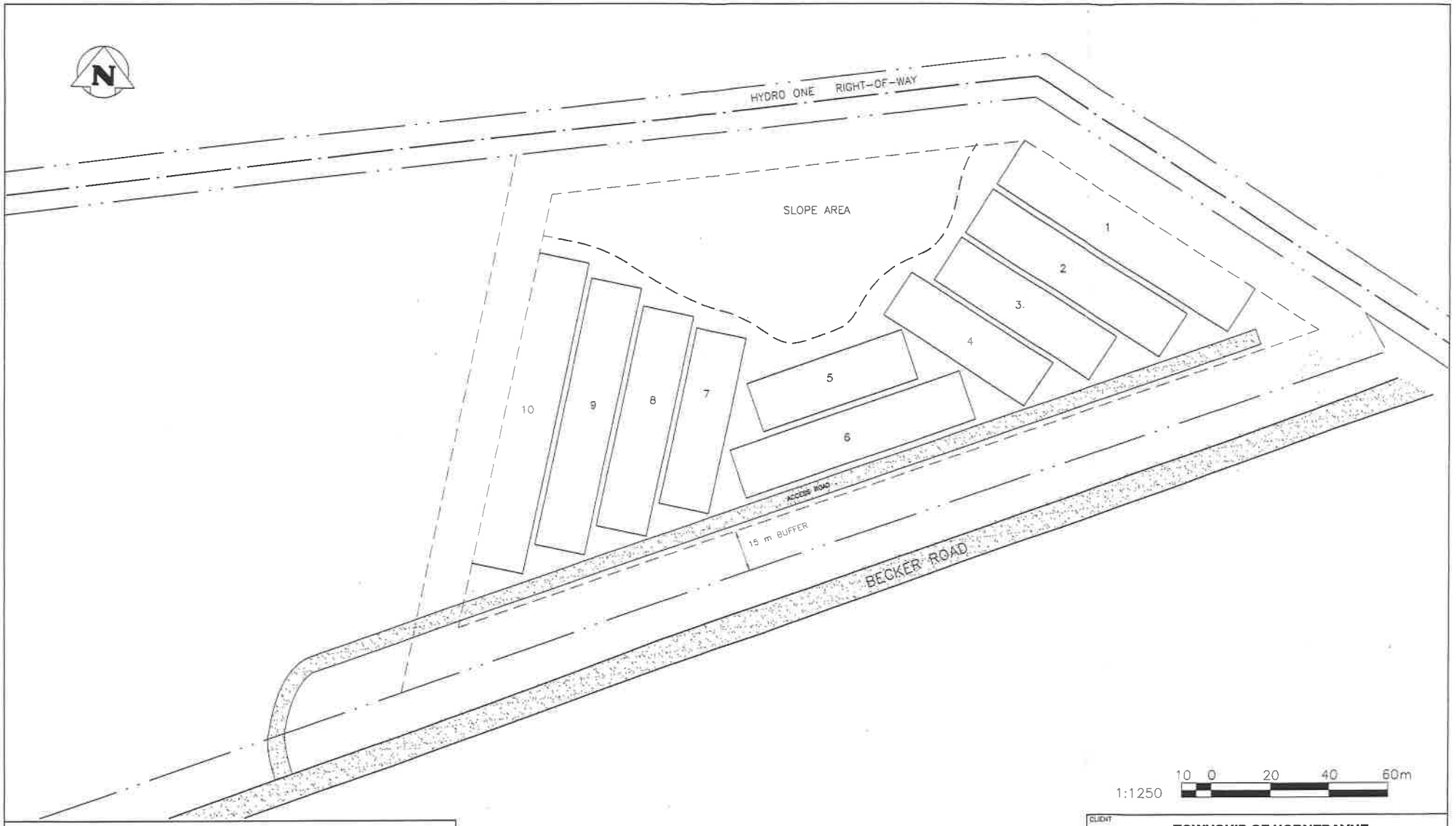
NO.	DESCRIPTION	DATE	BY
1	CREATED	01.05.23	CRG
REVISIONS/ISSUE			

WARDROP | Engineering Inc.

CLIENT: **TOWNSHIP OF HORNEPAYNE**

DWG DESCRIPTION: REGRADED CROSS-SECTION
PROPOSED WASTE DISPOSAL SITE
993347.04.00

DESIGNED BY: J.L.M	DRAWN BY: C.R.G.	DWG NO.
CHECKED BY: J.L.M.	DATE: 01.06.12	FIGURE 11



LEGEND

PROPERTY LINE

HYDRO LINE

6 TRENCH LAYOUT

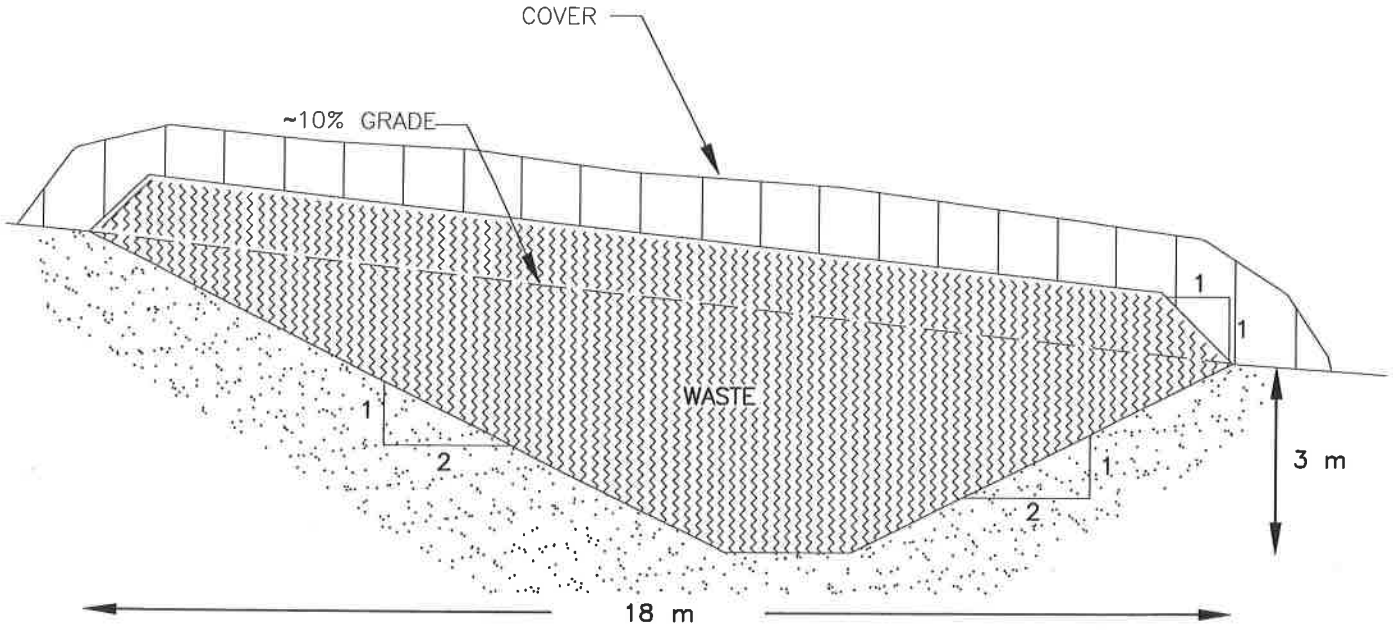
NO.	REVISIONS/ISSUE	DATE	BY
1	CREATED	01.03.29	C.R.G.

WARDROP | Engineering Inc.

CLIENT: **TOWNSHIP OF HORNEPAYNE**

DWG DESCRIPTION:
TRENCH LAYOUT
PROPOSED WASTE DISPOSAL SITE
993347.04.00

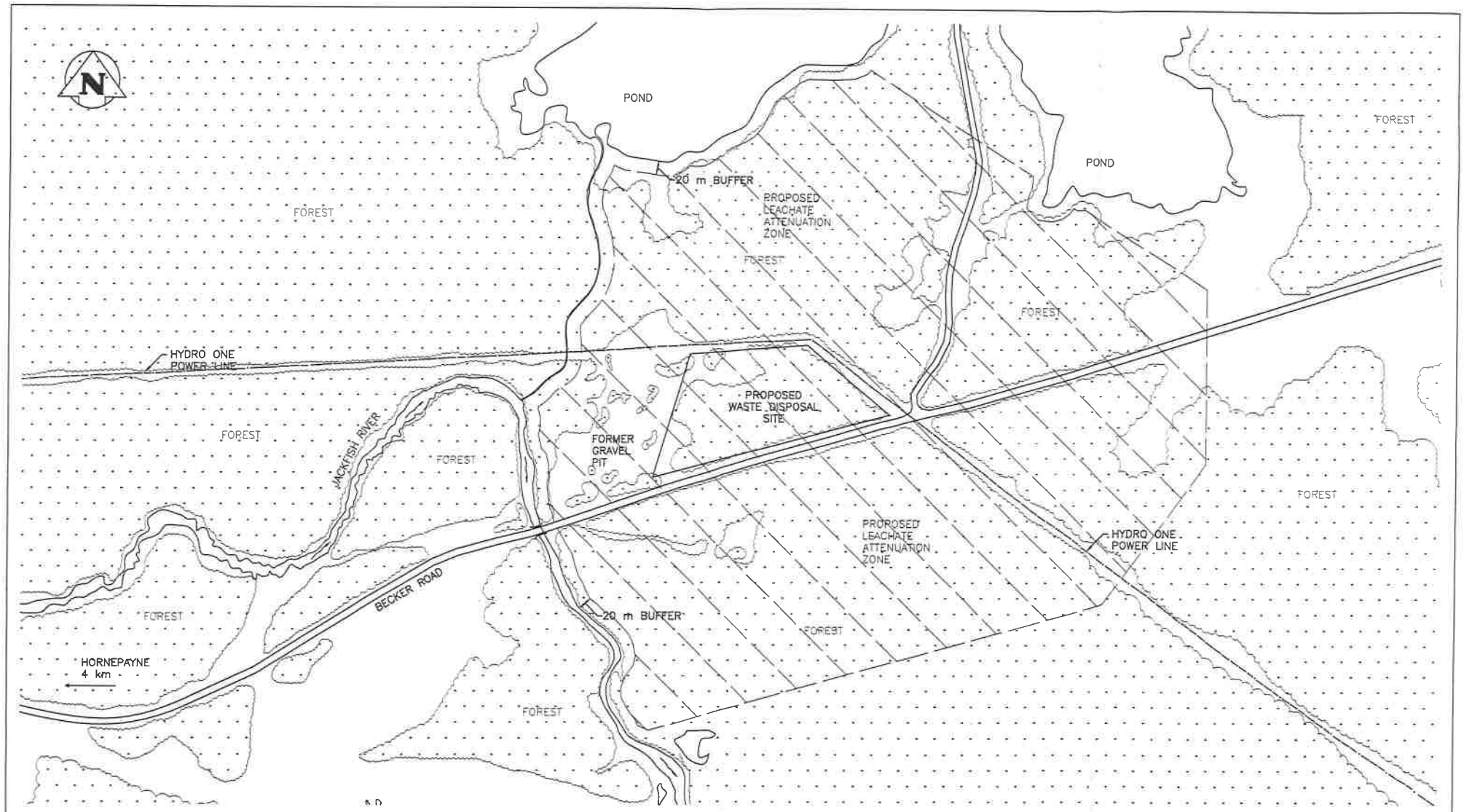
DESIGNED BY: J.P.M. | DRAWN BY: C.R.G. | DWG NO.
CHECKED BY: J.P.M. | DATE: 01.06.12 | FIGURE 12



NOTE:
THIS DRAWING IS NOT TO SCALE.

WARDROP | Engineering Inc.

CLIENT	**TOWNSHIP OF HORNEPAYNE**
DWG DESCRIPTION	TYPICAL TRENCH CROSS-SECTION PROPOSED WASTE DISPOSAL SITE 993347.04.00
DESIGNED BY: J.P.M. / DRAWN BY: C.R.G. / DWG NO.	FIGURE 13
CHECKED BY: J.P.M. / DATE: 01.06.12	



LEGEND

EXISTING FOREST

LEACHATE ATTENUATION ZONE

POWER LINES

NO.	DESCRIPTION	DATE	BY
1	CREATED	01.05.01	DRG
REVISIONS/ISSUE			

WARDROP | Engineering Inc.

CLIENT: **TOWNSHIP OF HORNEPAYNE**

DWG DESCRIPTION: ATTENUATION ZONE
PROPOSED WASTE DISPOSAL SITE
993347.04.00

DESIGNED BY: J.P.M. | DRAWN BY: N.R.M. | DWG NO.
CHECKED BY: J.P.M. | DATE: 01.06.12

FIGURE 14

Appendix B:
Natural Environment Existing Conditions Desktop Review

Version 0.1
July 29, 2022 Matrix 31427-514

John Smith
EXP SERVICES INC.
1595 Clarke Blvd.
Brampton, ON L6T 4V1

Subject: Hornepayne Landfill Expansion, Natural Environment Existing Conditions Desktop Review

Dear John Smith:

1 INTRODUCTION

The Township of Hornepayne (the Township) has initiated an evaluation to expand the existing landfill on the eastern end of the Township. EXP Services Inc. (EXP) retained Matrix Solutions Inc. (Matrix) to conduct a natural environment investigation study to support the Township's landfill site expansion evaluation.

The natural environment investigation is being completed in two phases. Phase 1 consists of a desktop background review to characterize the existing natural environment and to identify natural environmental constraints. Information collected as part of Phase 1 will aid in the evaluation of alternatives for the landfill expansion. Phase 2 will consist of field investigations within the footprint of the preferred alternative to conduct an impact analysis for the natural environment. The field investigations will confirm the findings found in the background review and accurately delineate any natural heritage constraints.

To date, Matrix has carried out Phase 1 and we have summarized our findings of the natural environment within the study area in this memo.

1.1 Study Area

The Town's landfill is located on part of Lot 4, Concession III, approximately 4.7 km east of the Urban Area of the Township as defined on Schedule A of the Township of Hornepayne Zoning By-Law (Township of Hornepayne 2021a). The landfill site is located on the north side of Becker Road, approximately 1.8 km southwest of Cree Lake (Figure 1). The study area for the desktop review consists of the landfill property, existing active cells, proposed expansion area, and any adjacent land within 120 m of the landfill property (Figure 1).

1.2 Objectives

This report is a summary of ecological constraints based on background review, known distribution of species within the province, and existing natural lands within the study area. Subsequent sections discuss policy context, screening methodology, background findings, screening results, and assessment of potential ecological constraints within proposed expansion areas.

2 LEGISLATIVE AND REGULATORY FRAMEWORK

The purpose of this section is to identify environmental policy requirements related to the study area to ensure that the development design and the landfill expansion conforms with applicable legislation, regulations, and policies. Table 1 provides an overview of key federal, provincial, and local government environmental legislation, policies, and regulations that are directly applicable/relevant to the study area.

TABLE 1 Legislative and Regulatory Summary

Acts and Regulations	Summary of Contents
Federal Acts and Regulations	
Species at Risk Act (SARA; 2002)	Incorporates a number of prohibitions to protect individuals of listed threatened, endangered, or extirpated species at risk (SAR), as designated by COSEWIC. Per Section 34, Section 58, and Section 61, these prohibitions apply to aquatic species and migratory birds protected by the MBCA on all lands and any other listed wildlife species when on federal lands or any lands if recommended by the Minister of the Environment to the Governor in Council. **Applicability to Project:** While SARA applies to species on federal land, it also applies to SAR migratory birds under the MBCA listed on Schedule 1 where critical habitat has been identified and fish, anywhere they occur. Therefore, SARA only applies to SAR migratory birds, fish, and mussels for this project. Any impacts to these species protected under SARA may require further consultation. However, should the migratory bird species also be listed under the ESA and provides equal or greater protection, the ESA take precedence.
Fisheries Act (1985, revised in 2019)	The *Fisheries Act* outlines the framework for the management and regulation of fisheries and the conservation and protection of fish and fish habitat within the fishing zones of Canada, all waters in the territorial sea of Canada, and all internal waters of Canada. The most recent revision to the *Fisheries Act* restricts activities that cause "death of fish, other than by fishing" as well as the "harmful alteration, disruption, or destruction of fish habitat" (Government of Canada 2019) and the release of substances that are known or suspected to be deleterious to fish or fish habitat. **Applicability to Project**: The study area crosses Deadwater Creek, which is a permanent watercourse and is anticipated to represent direct fish habitat. If any project works are anticipated to impact the watercourse, the *Fisheries Act* will apply to this project. A Fisheries and Oceans Canada (DFO) request for review will be required for activities that have potential to harm, disrupt, or cause the destruction of fish habitat, as well as cause death to fish. Any activities impacting watercourses with known SAR will also require a request for review from DFO.
Migratory Birds Convention Act (MBCA; 1994)	General prohibitions protect migratory birds, their nests, and eggs, and prohibit the deposit of harmful substances in waters and areas frequented by them. **Applicability to Project:** The MBCA applies to all lands in Canada. Any tree removals would need to be completed outside of the breeding bird season for Zone C5 (April 20 to August 30) to avoid disturbing active nests of migratory birds protected under the MBCA.

Acts and Regulations	Summary of Contents
Provincial Acts and Regulations	
Provincial Policy Statement (PPS; MMAH 2020)	The PPS provides policy direction on provincial matters of interest related to land use planning and development. It sets the policy framework for regulating development and use of land and is issued under the authority of Section 3 of the *Planning Act*. Section 2.1 of the PPS outlines policies that provide legislative protection for the natural environment. These policies include the exclusion of development and site alteration within PSWs, habitat of endangered or threatened species, fish habitat, as well as within SWH, significant woodlands, significant valleylands, ANSIs or adjacent lands "*…unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions*" (MMAH 2020). The *Natural Heritage Reference Manual* was developed to provide technical guidance for implementing the natural heritage policies of the PPS. **Applicability to Project:** A number of natural heritage features are found (or potentially found) within the study area, including fish habitat, candidate significant wildlife habitat, and potential habitat for endangered and threatened species.
Endangered Species Act (ESA; 2007)	Provides for the conservation and protection of species in Ontario classified under the ESA. Species listed as endangered or threatened are afforded legal protection from harm and harassment under the ESA. The ESA also prohibits damage or destruction of habitat of endangered or threatened species. Habitat protection for a species can be general or subject to the specific provisions of a habitat regulation as set out in O. Reg. 832/21 under the ESA. General habitat protection is provided to all threatened and endangered species. Species-specific habitat protection is only afforded to those species for which a habitat regulation has been prepared and passed into law as a regulation of the ESA. **Applicability to Project**: The ESA applies to all SAR species within provincial lands protected under the ESA. Any impacts to these species or habitats protected under the ESA would require a permit. The study area may contain habitat for SAR species.
Municipal Acts and Regulations	
Township of Hornepayne Official Plan (Township of Hornepayne 2021b)	Long-range community planning document used to guide development in the Township of Hornepayne. The intent of the plan, in relation to the natural environment, is to preserve and protect existing natural areas and restore the natural environment wherever possible. This goal of protection and restoration applies to wetlands, forests, and woodlots, habitat of endangered and threatened species, SAR, wildlife habitat, fish habitat, and areas of natural and scientific interest (life science and earth science). **Applicability to Project:** The study area is located within the Township of Hornepayne, and the planning and assessment process should be in alignment with the overall planning directive set forth at the municipal level.

3 STUDY APPROACH AND METHODOLOGY

3.1 Background Review

Background information relating to the study area was obtained through a review of multiple databases, reports, and guidance documents. Table 2 summarizes the sources and corresponding information review.

TABLE 2 Secondary Source Information Reviewed

Source	Information Reviewed
Ministry of Northern Development, Mines, Natural Resources and Forestry (NDMNRF 2022)	• species at risk (SAR) records • natural heritage features data layers from Land Information Ontario and the Natural Heritage Information Centre database
Ministry of the Environment, Conservation, and Parks (MECP)	• SAR records
Fisheries and Oceans Canada (DFO 2022)	• aquatic SAR maps
Species at Risk in Ontario List (MNRF 2022)	• referenced range maps for SAR species not included in other atlases
Ontario Reptile and Amphibian Atlas (Ontario Nature 2022)	• species records for the site
Ontario Breeding Bird Atlas (OBBA 2001)	• records of bird species in vicinity of study area
Ontario Butterfly Atlas (TEA 2022)	• records of insects and butterfly species in vicinity of study area
Global Biodiversity Information Facility Database Query (GBIF 2022) • Ornithology Collection Passiformes – Royal Ontario Museum • Canadian Museum of Nature Bird Collection, Great Backyard Bird Count • Royal Ontario Museum: Entomology • Canadian Museum of Nature Herbarium • iNaturalist (iNaturalist Network 2022) • eBird (eBird 2022)	• plant and animal observations in vicinity of study area
Bat Conservation International (Bat Conservation International 2021)	• referenced range maps in species profiles for the four listed bat species that occur in Ontario
Township of Hornepayne Official Plan (Township of Hornepayne 2021b)	• applicable policies and schedules

3.2 Agency Consultation

Matrix contacted the Ministry of the Environment, Conservation and Parks (MECP) on July 27, 2022, to request available information on species at risk (SAR) records. Any input provided by MECP will be incorporated into subsequent versions of the SAR and species of conservation concern (SCC) screening discussed in Section 3.3.

Matrix contacted the Ministry of Mines, Northern Development, and Natural Resources and Forestry (NDMNRF) on July 27, 2022, to request available natural heritage information and relevant records. Any input provided by NDMNRF will be incorporated into subsequent versions of the natural heritage screening discussed in this report.

3.3 Screening for Species at Risk

The background review identified SAR that could occur within the study area. All SAR identified were screened to determine the likelihood of occurrence and whether suitable habitat is present.

SAR are defined in this report to include the following provincial and federal designations:

- *Endangered Species Act* (ESA; provincial): all provincially designated species that are listed as extirpated, endangered, or threatened on the SARO list and protected under the ESA; species listed as Special Concern are considered a SCC, as they are not protected under the ESA but habitats that support them may be supported as significant wildlife habitat (SWH) under the PPS.

- *Species at Risk Act* (SARA; federal): only applies to fish and migratory birds protected under the *Migratory Bird Convention Act* (MBCA), anywhere they occur (e.g., includes non-federal land), that are designated as extirpated, endangered, and/or threatened under the SARA. All other species are only protected if special provisions or executive orders are made.

Based on the background review, lists of SAR and SCC that have the potential to be within the study area has been compiled (Table 3 and Table 4). To determine if suitable habitat for SAR or SCC is available within the study area, the preferred habitat requirements for reported SAR were compared to vegetation communities, aquatic habitats, and niche habitats identified during the background review. The results of the SAR and SCC habitat screenings are provided in Appendix B.

TABLE 3 Potential Species at Risk with Moderate or higher Potential Presence within the Study Area

Common Name	Scientific Name	*Endangered Species Act* Designation	*Species at Risk Act* Designation
Birds			
Bank Swallow[2,3]	*Riparia riparia*	Threatened	Threatened
Eastern Whip-poor-will[1,2]	*Antrostomus vociferus*	Threatened	Threatened
Fish			
Lake Sturgeon[1]	*Acipenser fulvescens*	Endangered	Not currently on Schedule 1 but under consideration for status change to Threatened
Mammals			
Little Brown Myotis[4]	*Myotis lucifugus*	Endangered	Endangered
Northern Myotis[4]	*Myotis septentrionalis*	Endangered	Endangered

Sources of data:
1 NDMNRF 2022
2 GBIF 2022
3 OBBA 2001
4 Bat Conservation International 2021

TABLE 4 Potential Species of Conservation Concern with Moderate or Higher Potential Presence within the Study Area

Common Name	Scientific Name	*Endangered Species Act* Designation	*Species at Risk Act* Designation
Birds			
Bald Eagle[2,3]	*Haliaeetus leucocephalus*	Special Concern	-
Canada Warbler[1,2]	*Cardellina canadensis*	Special Concern	Threatened
Common Nighthawk[2,3]	*Chordeiles minor*	Special Concern	Threatened
Evening Grosbeak[1,3]	*Coccothraustes vespertinus*	Special Concern	Special Concern
Horned Grebe (Western population)[1]	*Podiceps auritus*	Special Concern	Special Concern
Rusty Blackbird[1,2]	*Euphagus carolinus*	Special Concern	Special Concern
Olive-sided Flycatcher[3]	*Contopus cooperi*	Special Concern	Threatened

Sources of data:
1 NDMNRF 2022
2 GBIF 2022
3 OBBA 2001

4 RESULTS

4.1 Natural Heritage Features

4.1.1 Wetlands

A review of the NHIC database indicates that the landfill property is flanked to the west and east by unevaluated wetlands (Figure 2). The eastern wetland is associated with a long stretch of treed area, indicating this is a swamp ecosite. The western wetlands immediately adjacent to the property are part of the Deadwater Creek riparian corridor, with forested swamp beyond these areas further west. Although within 120 m of the landfill property, the unevaluated wetland to the west of the landfill is not anticipated to be impacted as no landfill expansion is anticipated within this buffer area. The active landfill is already within the 120 m buffer of the eastern treed swamp areas, but the proposed expansion lands are anticipated to fall beyond the 120 m buffer.

As per the Provincial Policy Statement (PPS), no development or site alteration may occur within a wetland (MMAH 2020). A buffer should be established where no development should occur to avoid any negative impacts. Because the wetland is currently unevaluated, a conservative buffer of 120 m should be placed around the wetland unit. If landfill expansion is proposed within this 120 m wetland buffer than an environmental impact study (EIS) may need to be conducted to evaluate whether the wetland buffer can be adjusted without any negative impacts to its form and function. Correspondence with The Township of Hornepayne should be sought to establish whether EIS requirements have been met or will be necessary for the expansion of the landfill due to the proximity of the existing landfill area with unevaluated wetlands to the east. The Township Official Plan only notes constraints and EIS requirements for Provincially Significant Wetlands, not unevaluated wetlands (Township of Hornepayne 2021b).

4.1.2 Woodlands

The identification of significant woodlands is the responsibility of local and/or regional planning authorities based on criteria provided by the NDMNRF (see definitions section of the PPS [MMAH 2020]). However, the NDMNRF have to date not provided such criteria. Some guidance on significant woodlands is provided in the Natural Heritage Reference Manual (NHRM; MNR 2010):

"Woodlands should be considered significant if a portion of the woodland is located within a specified distance (e.g., 30 m) of a significant natural feature and the entire woodlot meets the minimum threshold (e.g., 0.5 to 20 ha, depending on circumstance). "

Extensive areas of woodland and treed swamps are present within the study area and extend across much of the regional landscape. Though woodlands are present adjacent to the landfill property, there are no mapped woodlands within the property. A larger wooded section bounded by thicket (approximately 0.8 ha) is present on the western end of the landfill property, but there are no anticipated impacts to this section of the property. Additionally, a small woodlot is present within the anticipated expansion area, but this woodlot is not anticipated to be considered significant.

4.2 Candidate Significant Wildlife Habitat Assessment

The PPS states that identification of SWH is the responsibility of local and/or regional planning authorities. The assessment of which areas are to be considered SWH is based on the existing conditions of the site. As this is a desktop assessment, current analysis of SWH candidacy has been completed through a high-level assessment of the Criteria Schedule and should be considered preliminary. Table 5 provides a list of potential SWH within the study area.

TABLE 5 Preliminary Significant Wildlife Habitat Assessment

Type of Significant Wildlife Habitat (SWH)	Meets Criteria for SWH According to Criteria Schedule for Ecoregion 5E*
Seasonal Concentration Areas for Wildlife Species	
Moose Late Winter Cover	**Potential:** May be present associated with woodlands on the outer edges of the study area, but none anticipated within the landfill property.
Waterfowl Stopover and Staging Areas (Terrestrial)	**Low potential:** open areas adjacent to active landfill should be considered if they experience sheet water during spring.
Waterfowl Stopover and Staging Areas (Aquatic)	**Potential:** Open aquatic features on the western edge of the study area may provide suitable habitat, but none anticipated within the landfill property.
Shorebird Migratory Stopover Area	**Potential:** Shorelines of open aquatic features on the western edge of the study area may provide suitable habitat, which may extend to include part of the constrained buffer areas on the western half of the landfill property.
Bat Hibernacula	**No:** To be confirmed with NDMNRF, but no suitable habitat anticipated to be present within the study area.
Bat Maternity Colonies	**Potential:** May be present associated with woodlands on the outer edges of the study area, but none anticipated within the landfill property.
Turtle Wintering Areas	**Potential:** Open aquatic features on the western edge of the study area may provide suitable habitat, but none anticipated within the landfill property.

Type of Significant Wildlife Habitat (SWH)	Meets Criteria for SWH According to Criteria Schedule for Ecoregion 5E*
Reptile Hibernaculum	**Potential:** To be confirmed whether burrows, rock crevices, or other natural locations below the frost line are present.
Colonially-nesting Bird Breeding Habitat (Bank and Cliff)	**Potential:** To be confirmed whether exposed soil banks, steep slopes, or sand piles are present within the study area.
Colonially-nesting Bird Breeding Habitat (Tree/Shrub)	**Potential:** May be present associated with treed swamps on the outer edges of the study area, which may extend to include part of the constrained buffer areas on the western half of the landfill property.
Colonially-nesting Bird Breeding Habitat (Ground)	**No:** habitat absent.
Rare Vegetation Communities or Specialized Habitat for Wildlife	
Cliffs and Talus Slopes	**No:** habitat anticipated to be absent.
Rare Treed Type: Red and White Pine Stands	**Unlikely:** To be confirmed, but aerial interpretation does not suggest this habitat is present within the study area.
Rare Treed Type: Black Ash	**Unlikely:** To be confirmed, but aerial interpretation does not suggest this habitat is present within the study area.
Rare Treed Type: Elm	**Unlikely:** To be confirmed, but aerial interpretation does not suggest this habitat is present within the study area.
Rare Treed Type: Oak	**Unlikely:** To be confirmed, but aerial interpretation does not suggest this habitat is present within the study area.
Rare Treed Type: Red and Sugar Maple	**Unlikely:** To be confirmed, but aerial interpretation does not suggest this habitat is present within the study area.
Rare Treed Type: Yellow Birch	**Unlikely:** To be confirmed, but aerial interpretation does not suggest this habitat is present within the study area.
Rock Barren	**No:** habitat anticipated to be absent.
Sand Dunes	**No:** habitat anticipated to be absent.
Great Lakes Arctic-Alpine Shoreline Type	**No:** habitat absent.
Hardwood Swamps	**Potential:** May be present associated with treed swamps on the western edge of the study area.
Specialized Habitat for Wildlife	
Waterfowl Nesting Area	**Potential:** Shorelines of open aquatic features on the western edge of the study area may provide suitable habitat, which may extend to include part of the constrained buffer areas on the western half of the landfill property.
Bald Eagle and Osprey Nesting, Foraging, and Perching Habitat	**Potential:** Treed shorelines of open aquatic features on the western edge of the study area may provide suitable habitat, which may extend to include part of the constrained buffer areas on the western half of the landfill property.
Woodland Raptor Nesting Habitat	**High potential:** suitable habitat is anticipated to be present within woodlands in the study area. Records indicate that suitable species are present in the regional area for this habitat type.
Turtle Nesting Areas	**Potential:** Shorelines of open aquatic features on the western edge of the study area may provide suitable habitat, which may extend to include part of the constrained buffer areas on the western half of the landfill property.
Seeps and Springs	**Potential:** requires field verification.

Type of Significant Wildlife Habitat (SWH)	Meets Criteria for SWH According to Criteria Schedule for Ecoregion 5E*
Aquatic Feeding Habitat	**Potential:** Treed shorelines of open aquatic features on the western edge of the study area may provide suitable habitat, which may extend to include part of the constrained buffer areas on the western half of the landfill property.
Mineral Licks	**Potential:** requires field verification.
Denning Sites for Mink, Otter, Gray Wolf, Eastern Wolf, Canada Lynx, Marten, Fisher, Black Bear	**Potential:** May be present associated with woodlands on the outer edges of the study area.
Amphibian Breeding Habitat (Woodland)	**Potential:** suitable habitat could be present within ephemerally wet microhabitats in all treed ecosites.
Amphibian Breeding Habitat (Wetlands)	**Potential:** suitable habitat could be present within all wetland areas.
Mast-Producing Areas	**Potential:** Mast-producing vegetation may be present within treed areas.
Sharp-tailed Grouse Leks	**No:** habitat of suitable size is not present within the study area.
Habitat for Species of Conservation Concern (Not Including Endangered or Threatened Species)	
Marsh Bird Breeding Habitat	**Potential:** suitable habitat could be present within wetland areas.
Open Country Bird Breeding Habitat	**No:** habitat of suitable size is not present within the study area.
Shrub/Early Successional Bird Breeding Habitat	**No:** habitat of suitable size is not present within the study area.
Special Concern and Rare Wildlife Species	**Potential:** Bald Eagle, Canada Warbler, Common Nighthawk, Evening Grosbeak, Rusty Blackbird, Olive-sided Flycatcher assessed with moderate or higher potential presence within the study area.
Animal Movement Corridors	
Amphibian Movement Corridors	**High Potential:** unevaluated wetland areas form a network at the landscape scale to facilitate the movement of amphibians.
Cervid Movement Corridors	**Potential:** To be confirmed with NDMNRF, but suitable habitat may be present within the study area.
Furbearer Movement Corridors	**Potential:** suitable habitats could be present throughout study area.

* Refer to Ecoregion Schedule 3E for a more detailed description of each type of habitat.

Field investigations are required to document habitat characteristics present within the study area to further evaluate and/or determine the probability of occurrence of candidate SWH.

4.3 Fish Habitat

All open aquatic features within the study area are anticipated to represent direct fish habitat. NDMNRF and MECP correspondence has been sought for fisheries information associated with Deadwater Creek and other open aquatic features within the study area.

4.4 Species at Risk

SAR include species that are either listed as endangered or threatened under the ESA. A list of SAR known to occur within the vicinity of the study area was compiled from the background review and agency consultation (Table 3, Appendix B).

Five species ranked threatened or endangered under the ESA have been assessed with moderate or higher potential for presence within the study area. These species are afforded formal protection under the Act.

SCC are species ranked under the ESA as special concern or lower, but either listed as threatened or endangered under the SARA (Table 4, Appendix B). This includes aquatic species and migratory birds protected by the MBCA on all lands and any other listed wildlife species when on federal lands or any lands if recommended by the Minister of the Environment to the Governor in Council. These species are not afforded formal protection under the ESA, but habitats that support these species may be considered SWH under the PPS (MMAH 2020).

4.4.1 Bird Species

Barn Swallows (threatened) are known to nest on buildings and other anthropogenic structures. This species is attracted to open structures that include ledges where they can build their nests, which are often reused from year to year. Barn Swallow are usually found around farmlands or rural areas; cliffs, caves, and rock niches; and buildings or other man-made structures for nesting and prefer to forage in open habitats including farmland, lakeshore, riparian habitats, forest clearings, and parkland (Heagy et al. 2014). There is a low probability that Barn Swallow nesting habitat exists within the study area.

Bank Swallows (threatened) require vertical or near-vertical sandy/silty banks for nesting. These nesting sites need to be near a foraging site, which would consist of both terrestrial and aquatic habitats, including wetlands, open water, riparian woodlands, grasslands, and shrublands (Falconer et al. 2016). Bank Swallows also require night roosting habitat, which consists of large wetlands or shrub thickets in or near water. There is a moderate probability that Bank Swallow nesting/foraging/night roosting habitat all exist within the study area if loose aggregate storage areas are present.

Eastern Whip-poor-will (threatened) require a mix of open and forested areas such as savannahs, open woodland, or opening in more mature forests. It utilizes the open areas for foraging and the forested areas for roosting and nesting. This species nests on the ground where it is able to blend in with the forest floor and remain undetected by predators (MECP 2021). There is moderate potential for Whip-poor-will habitat within the study area.

4.4.2 Fish Species

Lake Sturgeon (endangered; Great Lakes-Upper St. Lawrence population) live almost exclusively in freshwater lakes and rivers with soft bottoms of mud, sand, or gravel. They spawn in shallow, fast-moving water, but when not spawning, can usually be found at depths of 5 to 20 m (MECP 2019). Fisheries information has been requested for water bodies within proximity of the study area to conform whether this species may be present.

4.4.3 Mammal Species

Little Brown Myotis (endangered) and Northern Myotis (endangered) use similar wooded habitat to roost in. Both species roost within tree cavities and under loose exfoliating bark near water. Access to water to forage for aquatic insects (MNRF 2017). Little Brown Myotis and Northern Myotis will use cool dark places in buildings/structures to roost as well. There is a moderate probability that Little Brown Myotis and Northern Myotis habitat is within the study area.

Tri-colored Bat (endangered) establish roosts within live and dead foliage, within or below the canopy. Oak trees are preferred but, if not available, this species will also use Maple trees. Foraging occurs over water, within gaps in the forest, or along riparian corridors for insects. Tri-colored Bat rarely roost in buildings and heavily rely on treed areas (MNRF 2017). There is low probability for suitable oak- or Maple-dominated woodlands in the study area to support this species.

Eastern Small-footed Myotis (endangered) will roost in a variety of habitat types, including buildings, rock outcrops, caves, or hollow trees. This species overwinters in caves and abandoned mines, with only 12 known overwintering sites (Humphrey 2017). There is a low probability of this species being present within the study area.

4.4.4 Summary

Based on habitat requirements of the eight species that are afforded protection under the ESA, three species are considered to have a low probability of occurrence (Barn Swallow, Eastern Small-footed Myotis, and Tri-colored Bat) because there is limited or no habitat available for them. The remaining five species that are afforded protection have a moderate or higher probability to occur within the study area.

Field investigations area required to document habitat characteristics present within the study area to further evaluate and/or determine SAR probability of occurrence.

5 ENVIRONMENTAL CONSTRAINTS

Natural heritage constraints associated with the study area were identified using information obtained through a review of background resources and will need to be confirmed through field investigations. Constraints were evaluated using the policy framework described in Section 2 and the identification of significant natural heritage features in Section 3.

Physical constraints generally represent watercourses, valleylands, hazard lands, and utility corridors, or rights-of-way or easements. Natural heritage constraints generally represent significant features or functions that limit development of the land due to the hazard they present and/or their ecological significance or sensitivities.

The identification of constraints requires consideration of the individual constraining feature or function, as well as consideration of any applicable policies and/or regulations. In some cases, additional lands may be constrained to satisfy regulatory requirements for setbacks or thresholds.

The findings of the constraint analysis are presented in the following subsections and depicted on Figure 3. The constraints analysis will be updated once a field investigation has occurred, and more detailed information is known about the site.

High-constraint Areas

A high constraint is assigned to areas that support a high level of ecological functions and are integral to the natural heritage system. These constraints generally require protection and minimal management and are typically regulated and protected by provincial, municipal, and regional policies. Development or site alteration within these constraints is either not allowed or highly discouraged. Within the proposed landfill expansion study area, a high-constraint designation has been applied to wetlands (including the

conservative 120 m recommended set-back) and waterbodies. The high constraint designation should also be applied to confirmed SAR habitat and confirmed SWH. SAR habitat and SWH field verification is discussed in Section 6.

Moderate-constraint Areas

A moderate constraint is assigned to areas that support a moderate ecological value and contribute to the function of the natural heritage system at the local landscape scale. Such features typically exhibit a moderate set of ecological functions (habitat, water quality improvement, linkages, etc.) that are commonly impaired due to past and ongoing anthropogenic disturbances. Within the proposed landfill expansion study area, a moderate constraint designation has been applied to areas adjacent to high-constraints features, as well as non-swamp mapped woodland areas.

Typically, SAR habitat (confirmed) and SWH (confirmed) would also be considered a high constraint; however, without field investigations confirming their potential occurrence or location of their habitat, they are currently designated as candidate and can not be mapped at this time. At this time SAR habitat (candidate or confirmed) and SWH (candidate or confirmed) are mapped as a moderate constraint until field investigations can be completed.

Low-constraint Areas

A low constraint is assigned to areas that support basic ecological functions and do not significantly contribute to the natural heritage system. These features typically have been heavily degraded by past or ongoing land uses and/or activities and would require intensive management to restore and enhance them to a natural state. Development and site alteration can occur in these areas without mitigation and/or compensation. Within the Town landfill expansion study area, a low-constraint designation has been applied to areas supporting non-natural vegetation communities and are actively used as part of the existing landfill.

Constraint Level to Be Determined

A portion of the active landfill has been identified as having constraint level to be determined. This designation has been used for existing landfill or otherwise disturbed lands that are within 120 m of mapped wetlands on the eastern end of the study area. According to the constraint definitions used in this study, lands within 120 m to adjacent wetlands would be considered highly constrained. Active landfill areas are not generally considered to be highly constrained, but additional correspondence should be sought with the Township of Hornepayne, MECP, and NDMNRF to establish whether proposed works may be impacted by proximity to mapped wetlands.

6 RECOMMENDED FIELD STUDIES

Based on the results of the background review, it is recommended that field investigations take place to collect detailed data and further evaluate the potential ecological constraints within the study area. Table 6 summarizes the recommended field surveys and rationale to conduct them during subsequent field visits.

TABLE 6 Recommended Field Investigations

Survey	Rationale
Ecological Land Classification/ Botanical Inventory	To confirm vegetation communities, confirm presence of rare or SAR species, and further evaluate candidate SWH. A vascular plant list should be created to determine quality of the communities.
Wetland Boundary Staking	To fully understand the extent of the wetland boundary within the study area. May not be required if expansion is not proposed within the 120 m wetland buffer.
Amphibian Habitat Survey	To confirm SWH for amphibian breeding in woodland and wetlands. Focus should be on wetland areas and any identified pooling areas. Only incidental surveys and general habitat assessments are recommended during a single site visit. The presence of amphibian habitat will be documented, and incidental observations will be noted during field activities.
Avian Habitat Survey	To provide additional information on the presence or absence of SAR birds utilizing the study area. Only incidental surveys and general habitat assessments are feasible for a single site visit. The potential for species presence will be based on habitat suitability and observation of nest and presence of nesting colonies and direct observations.
Bat Maternity Roost Habitat Assessment (Leaf-on)	To confirm any maternity roost habitat within the study area. Bat surveys will be focused to the tree clearing area(s) that are required for the landfill expansion. Bat habitat surveys will be undertaken in accordance with the Ministry of Natural Resources and Forestry Guelph District's Survey Protocol for Species at Risk Bats within Treed Habitats (MNRF 2017). Snag density surveys will also be undertaken for each Ecological Land Classification ecosite within these areas. This information will be collected to determine the quality of potential bat habitat that exists within the site.
Bat Acoustic Survey	If bat maternity roost habitat is found, acoustic surveys may be required to confirm the roost habitat is utilized by SAR species and would be protected under the *Endangered Species Act*. No allowance has been provided for bat acoustic surveys, as it is assumed that bat habitat surveys will be used to delineate bat habitat potential and that there is enough flexibility regarding in the landfill site configuration to avoid areas of higher sensitivity in terms of bat habitat potential.
Wildlife and Wildlife Habitat	During all site visits, Matrix will record incidental species observations and assess presence/potential presence of suitable habitat for wildlife or other sensitive/key wildlife habitats.

7 CLOSURE

We trust that this report suits your present requirements. If you have any questions or comments, please contact the undersigned at 226.332.4392.

Yours truly,

MATRIX SOLUTIONS INC.

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PD/eh
Attachments

VERSION CONTROL

Version	Date	Issue Type	Filename	Description
V0.1	29-Jul-2022	Draft	35220-514 LR 2022-07-29 draft V0.1.docx	Issued to client for review

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Easting (m)

667000 667200 667400 667600 667800

Northing (m)

5454400 5454200 5454000 5453800 5453600

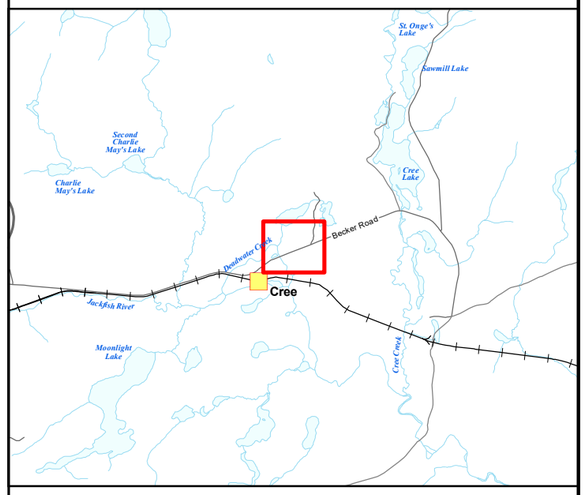
Deadwater Creek

Becker Road

bing

N

- Study Area
- Landfill Property Limit
- Existing Landfill Extent
- Proposed Expansion Area
- Water Body
- Watercourse
- Road
- Railway
- Community



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1:3,500 metres
25 0 25 50
NAD 1983 UTM Zone 16N

Matrix Solutions Inc.
ENVIRONMENT & ENGINEERING

exp Services Inc.
Hornepayne Landfill Study Area

Study Area

Date:	Project:	Submitter:	Reviewer:
July 2022	35220	P. De Carvalho	A. Fausto

Figure 1

I:\EXP\Services\35220\Figures\ArcPublish\EA\2022\Report\Figure-1-Study_Area.mxd - Tabloid_L - 27-Jul-22, 12:39 PM - sylam - TID005

DRAFT

Easting (m)

667000 667200 667400 667600 667800

Northing (m)

5454400 5454200 5454000 5453800 5453600

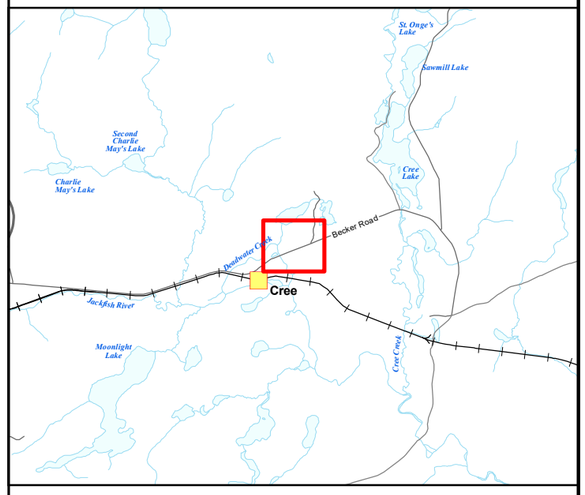
N

Deadwater Creek

Becker Road

bing

- Study Area
- Landfill Property Limit
- Existing Landfill Extent
- Proposed Expansion Area
- Unevaluated Wetland
- Woodland
- Water Body
- Watercourse
- Road
- Railway
- Community



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1:3,500 metres

25 0 25 50

NAD 1983 UTM Zone 16N

Matrix Solutions Inc.
ENVIRONMENT & ENGINEERING

exp Services Inc.
Hornepayne Landfill Study Area

Ecological Characterization

Date:	Project:	Submitter:	Reviewer:
July 2022	35220	P. De Carvalho	A. Fausto

Figure 2

I:\EXPServices\35220\FiguresAndTables\EA\2022\Report\Figure-2-Ecological_Characterization.mxd - Tabbed_L - 27-Jul-22, 12:51 PM - sylam - TID05

DRAFT

Easting (m)

667000 667200 667400 667600 667800

Northing (m)

5454400 5454200 5454000 5453800 5453600

N

Deadwater Creek

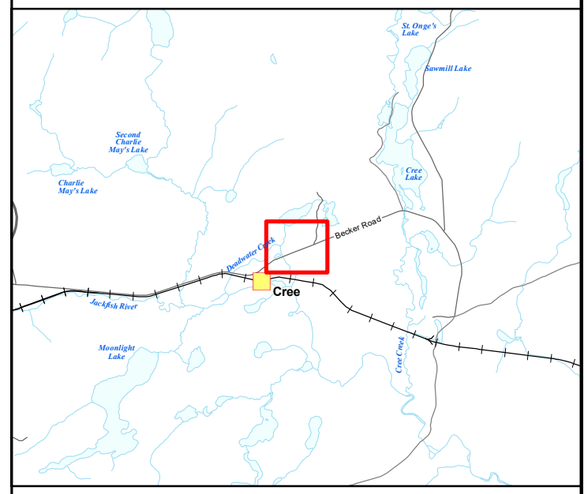
Becker Road

bing

- Study Area
- Landfill Property Limit
- Existing Landfill Extent
- Proposed Expansion Area
- Water Body
- Watercourse
- Road
- Railway
- Community

Constraint

- High
- Moderate
- Low
- To Be Determined



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1:3,500 metres

25 0 25 50

NAD 1983 UTM Zone 16N

Matrix Solutions Inc.
ENVIRONMENT & ENGINEERING

exp Services Inc.
Hornepayne Landfill Study Area

Constraints Map

Date:	Project:	Submitter:	Reviewer:
July 2022	35220	P. De Carvalho	A. Fausto

Figure 3

I:\EXP\Services\35220\Figures\And Tables\EA\2022\Report\Figure-3-Constraints_Map.mxd - Tablo\od_L - 27-Jul-22, 12:57 PM - syam - TID005

APPENDIX A

Species List Results

https://www.gisapplication.lrc.gov.on.ca/mamnh/Index.html?site=MNR_NHLUPS_NaturalHeritage&viewer=NaturalHeritage&locale=en-US

Instruction

1. Click on the Map Layers tab and check off NHIC 1 Km Grid, Wetland, and Woodland.
2. Zoom into your site.
3. Under the Find Information tab, click NHIC Report.
4. Draw a rectangle over the 1 km square of interest.
5. Copy and paste results here for autofilling in the tables.

Square: No square
Date of Search: June 29/2022

NHIC Data

Notes: wetlands and woodlands appear in close proximity to the landfill site

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https://geohub.lio.gov.on.ca/

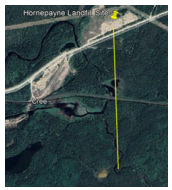
Watercourses
Aquatic Resource Area Survey Point: https://geohub.lio.gov.on.ca/datasets/aquatic-resource-area-survey-point/explore?location=50.926000%2C-84.745000%2C4.50
Aquatic Resource Area Line Segment: https://geohub.lio.gov.on.ca/datasets/aquatic-resource-area-line-segment/explore?location=49.291899%2C-84.834657%2C4.68
Aquatic Resource Area Polygon Segment: https://geohub.lio.gov.on.ca/datasets/aquatic-resource-area-polygon-segment/explore?location=46.592948%2C-84.759569%2C3.49

1. For watercourse data check each of the above links, zoom to the study area and click locations in blue to pull up information.
2. Copy and paste all information corresponding to relevant point/line/polygon (watercourse name, thermal regime, species list, etc.).
3. Determine the distance of each point/line/polygon by opening GoogleEarth and using the Ruler tool.
4. Screenshot the point/line segment/polygon and paste it next to the corresponding information. Create a markup in paint if necessary.

Additional Info:
Wetlands https://geohub.lio.gov.on.ca/datasets/mnrf::wetlands/explore?location=49.275000%2C-84.498000%2C4.90
Wooded Area https://geohub.lio.gov.on.ca/datasets/wooded-area/explore?location=50.926000%2C-84.745000%2C4.74

Date of Search: June 29/2022

Line 1 Jackfish River
Distance from Study Area: 1.08 km



OGF_ID	121255644
ARA_IDENT	WA-0061-XXA
WATERBODY_LID	
CORPORATE_WATERBODY_NAME	
OFFICIAL_WATERBODY_NAME	
WATERBODY_ALIAS_NAME1	
WATERBODY_ALIAS_NAME2	
FISHERIES_MANAGEMENT_ZONE_ID	7
FISH_SPECIES_SUMMARY	
CONDUCTIVITY	
SECCHI_DEPTH	
COMMENTS	
GEOMETRY_UPDATE_DATETIME	19-Feb-18
EFFECTIVE_DATETIME	14-Feb-18
OBJECTID	116761
OFFICIAL_NAME_LABEL	Jackfish River
ARA_SUMMARY_ID	91593221
WATERBODY_TYPE	Stream or River
WATERBODY_TYPE_COMBINATION	
THERMAL_REGIME	Cold
THERMAL_REGIME_REASON	
SURFACE_AREA	
MAXIMUM_DEPTH	
MEAN_DEPTH	
MORPHOEDAPHIC_INDEX	
AT_DEVELOPMENT_CAPACITY_IND	
AT_DEVELOPMENT_CAPACITY_REASON	
COLDWATER_REHAB_POTENTIAL_IND	
SPLIT_FEATURE_IND	
SPATIAL_VERIFICATION_FLG	Verified
SHAPE.LEN	0

Point 1 none

Polygon 1: Cree Creek
Distance from Study Area: 0.73 km

OGF_ID	121264336
ARA_SUMMARY_ID	91561363
ARA_IDENT	WA-1203-XXA
WATERBODY_TYPE	Stream or River
WATERBODY_TYPE_COMBINATION	
WATERBODY_LID	16-4688-64521
CORPORATE_WATERBODY_NAME	Cree Creek
OFFICIAL_WATERBODY_NAME	Cree Creek
WATERBODY_ALIAS_NAME1	
WATERBODY_ALIAS_NAME2	
FISHERIES_MANAGEMENT_ZONE_ID	7
THERMAL_REGIME	Cold
THERMAL_REGIME_REASON	
FISH_SPECIES_SUMMARY	
SURFACE_AREA	
MAXIMUM_DEPTH	
MEAN_DEPTH	
SECCHI_DEPTH	
CONDUCTIVITY	
MORPHOEDAPHIC_INDEX	
AT_DEVELOPMENT_CAPACITY_IND	
AT_DEVELOPMENT_CAPACITY_REASON	
COLDWATER_REHAB_POTENTIAL_IND	
SPLIT_FEATURE_IND	
SPATIAL_VERIFICATION_FLG	Verified
EFFECTIVE_DATETIME	14-Feb-18
OBJECTID	43758
SHAPE.AREA	0
SHAPE.LEN	0

Zoom to

Polygon 2: Cree Lake
Distance from Study Area: 1.92 km

OGF_ID	121264886
ARA_SUMMARY_ID	91592782
ARA_IDENT	WA-6307-HA
WATERBODY_TYPE	Stream or River
WATERBODY_TYPE_COMBINATION	
WATERBODY_LID	16-4693-64553
CORPORATE_WATERBODY_NAME	Cree L
OFFICIAL_WATERBODY_NAME	Cree Lake
WATERBODY_ALIAS_NAME1	
WATERBODY_ALIAS_NAME2	
FISHERIES_MANAGEMENT_ZONE_ID	7
THERMAL_REGIME	Cool
THERMAL_REGIME_REASON	Fish Species Present
FISH_SPECIES_SUMMARY	Cisco Lake Whitefish Northern Pike Burbot Shiner Walleye White Sucker Yellow Perch
SURFACE_AREA	59.9
MAXIMUM_DEPTH	7.6
MEAN_DEPTH	2
SECCHI_DEPTH	2.3
CONDUCTIVITY	113
MORPHOEDAPHIC_INDEX	61.2
AT_DEVELOPMENT_CAPACITY_IND	
AT_DEVELOPMENT_CAPACITY_REASON	
COLDWATER_REHAB_POTENTIAL_IND	
SPLIT_FEATURE_IND	
SPATIAL_VERIFICATION_FLG	Verified
EFFECTIVE_DATETIME	14-Feb-18
OBJECTID	43989
SHAPE.AREA	0
SHAPE.LEN	0

Zoom to

Wetlands: no clickable wetlands

Woodlands: nothing

Butterflies: https://www.ontarioinsects.org/atlas/
Moths: https://www.ontarioinsects.org/moth/index.html

Instructions

1. Zoom in to the appropriate square and click on it.
2. Click on the Species List for "this area".
3. Copy and paste the species here for autofilling the insect table.
4. Repeat for the moth table.

Butterflies

Square: 16FV65
Date of search: 29-Jun-22

Moths

Square: No square for this database
Date of search: 2022-06-29

Number of rows of data displayed below: 18.

Species #	Common Name	Scientific Name	# of Records	Earliest in Yr (adults)	Latest in Yr (adults)	Earliest Yr	Latest Yr
7	Dreamy Duskywing	Erynnis icelus	1	27-Jul	27-Jul	1969	1969
25	European Skipper	Thymelicus lineola	2	09-Jul	26-Jul	1968	2020
27	Common Branded Skipper	Hesperia comma	1	27-Jul	27-Jul	1978	1978
33	Long Dash Skipper	Polites mystic	1	27-Jul	27-Jul	1978	1978
69	Clouded Sulphur	Colias philodice	1	26-Jul	26-Jul	1968	1968
70	Orange Sulphur	Colias eurytheme	1	26-Jul	26-Jul	1968	1968
73	Pink-edged Sulphur	Colias interior	2	26-Jul	27-Jul	1968	1978
86	Dorcas Copper	Lycaena dorcas	1	27-Jul	27-Jul	1978	1978
108	Western Tailed Blue	Cupido amyntula	1	24-Jun	24-Jun	2018	2018
109	Northern Azure	Celastrina lucia	1	14-Jun	14-Jun	1928	1928
120	Aphrodite Fritillary	Speyeria aphrodite	1	26-Jul	26-Jul	1968	1968
122	Atlantis Fritillary	Speyeria atlantis	3	26-Jul	26-Jul	1968	1978
133	Northern Crescent	Phyciodes cocyta	3	07-Jul	27-Jul	1969	1978
141	Gray Comma	Polygonia progne	2	24-Jun	07-Jul	1969	2018
143	Mourning Cloak	Nymphalis antiopa	1			1954	1954
146	Painted Lady	Vanessa cardui	1	26-Jul	26-Jul	1968	1968
149	White Admiral	Limenitis arthemis arthemis	2	26-Jul	27-Jul	1968	1978
158	Common Ringlet	Coenonympha tullia	1	27-Jul	27-Jul	1978	1978

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kingdom	class	species
Animalia	Actinopterygii	Notropis hudsonius
Animalia	Amphibia	Lithobates sylvaticus
Animalia	Amphibia	Lithobates pipiens
Animalia	Aves	Zonotrichia leucophrys
Animalia	Aves	Setophaga palmarum
Animalia	Aves	Cathartes aura
Animalia	Aves	Regulus satrapa
Animalia	Aves	Haemorhous purpureus
Animalia	Aves	Stercorarius parasiticus
Animalia	Aves	Charadrius vociferus
Animalia	Aves	Perisoreus canadensis
Animalia	Aves	Bubo virginianus
Animalia	Aves	Bonasa umbellus
Animalia	Aves	Larus argentatus
Animalia	Aves	Cygnus olor
Animalia	Aves	Falco sparverius
Animalia	Aves	Chondestes grammacus
Animalia	Aves	Setophaga ruticilla
Animalia	Aves	Spinus tristis
Animalia	Aves	Megaceryle alcyon
Animalia	Aves	Picoides arcticus
Animalia	Aves	Cygnus buccinator
Animalia	Aves	Bubo virginianus
Animalia	Aves	Corvus corax
Animalia	Aves	Geothlypis philadelphia
Animalia	Aves	Bombycilla cedrorum
Animalia	Aves	Chordeiles minor
Animalia	Aves	Melanitta perspicillata
Animalia	Aves	Cardinalis cardinalis
Animalia	Aves	Anas crecca
Animalia	Aves	Grus canadensis
Animalia	Aves	Sitta canadensis
Animalia	Aves	Setophaga cerulea
Animalia	Aves	Chaetura pelagica
Animalia	Aves	Corvus brachyrhynchos
Animalia	Aves	Tyrannus tyrannus
Animalia	Aves	Mergus merganser
Animalia	Aves	Ixobrychus exilis
Animalia	Aves	Perisoreus canadensis
Animalia	Aves	Sialia sialis
Animalia	Aves	Anas acuta
Animalia	Aves	Bonasa umbellus
Animalia	Aves	Lophodytes cucullatus
Animalia	Aves	Setophaga tigrina
Animalia	Aves	Eremophila alpestris
Animalia	Aves	Spinus pinus

kingdom	class	species
Animalia	Aves	
Animalia	Aves	Buteo platypterus
Animalia	Aves	Pipilo erythrophthalmus
Animalia	Aves	Cardellina canadensis
Animalia	Aves	Bucephala clangula
Animalia	Aves	Anas acuta
Animalia	Aves	Leiothlypis ruficapilla
Animalia	Aves	Tachycineta bicolor
Animalia	Aves	Branta canadensis
Animalia	Aves	Bubulcus ibis
Animalia	Aves	Gallinago delicata
Animalia	Aves	Colinus virginianus
Animalia	Aves	Molothrus ater
Animalia	Aves	Setophaga virens
Animalia	Aves	Asio otus
Animalia	Aves	Setophaga pinus
Animalia	Aves	Tyrannus verticalis
Animalia	Aves	Aix sponsa
Animalia	Aves	Xanthocephalus xanthocephalus
Animalia	Aves	Larus marinus
Animalia	Aves	Melanerpes erythrocephalus
Animalia	Aves	Haliaeetus leucocephalus
Animalia	Aves	Quiscalus quiscula
Animalia	Aves	Cardellina canadensis
Animalia	Aves	Buteo lineatus
Animalia	Aves	Certhia americana
Animalia	Aves	Megascops asio
Animalia	Aves	Sturnus vulgaris
Animalia	Aves	Empidonax flaviventris
Animalia	Aves	Pandion haliaetus
Animalia	Aves	Loxia leucoptera
Animalia	Aves	Bubulcus ibis
Animalia	Aves	Calcarius lapponicus
Animalia	Aves	Hesperiphona vespertina
Animalia	Aves	Dolichonyx oryzivorus
Animalia	Aves	Melospiza lincolnii
Animalia	Aves	Accipiter striatus
Animalia	Aves	Aegolius funereus
Animalia	Aves	Vireo olivaceus
Animalia	Aves	Zonotrichia querula
Animalia	Aves	Chroicocephalus philadelphia
Animalia	Aves	Buteo jamaicensis
Animalia	Aves	Meleagris gallopavo
Animalia	Aves	Acanthis flammea
Animalia	Aves	Vireo olivaceus
Animalia	Aves	Gallinago gallinago

kingdom	class	species
Animalia	Aves	Quiscalus quiscula
Animalia	Aves	Melospiza lincolnii
Animalia	Aves	Pluvialis dominica
Animalia	Aves	Colaptes auratus
Animalia	Aves	Sterna hirundo
Animalia	Aves	Passer domesticus
Animalia	Aves	Ardea alba
Animalia	Aves	Vireo flavifrons
Animalia	Aves	Melanitta fusca
Animalia	Aves	Rallus limicola
Animalia	Aves	Catharus ustulatus
Animalia	Aves	Chen caerulescens
Animalia	Aves	Zenaida macroura
Animalia	Aves	Leuconotopicus villosus
Animalia	Aves	Dryocopus pileatus
Animalia	Aves	Melospiza georgiana
Animalia	Aves	Setophaga castanea
Animalia	Aves	Chordeiles minor
Animalia	Aves	Lanius borealis
Animalia	Aves	Zenaida macroura
Animalia	Aves	Sphyrapicus varius
Animalia	Aves	Picoides dorsalis
Animalia	Aves	Empidonax minimus
Animalia	Aves	Bombycilla garrulus
Animalia	Aves	Seiurus aurocapilla
Animalia	Aves	Setophaga americana
Animalia	Aves	Accipiter striatus
Animalia	Aves	Euphagus carolinus
Animalia	Aves	Bucephala albeola
Animalia	Aves	Vireo philadelphicus
Animalia	Aves	Tringa flavipes
Animalia	Aves	Leiothlypis ruficapilla
Animalia	Aves	Piranga olivacea
Animalia	Aves	Melospiza melodia
Animalia	Aves	Cyanocitta cristata
Animalia	Aves	Larus delawarensis
Animalia	Aves	Plectrophenax nivalis
Animalia	Aves	Colaptes auratus
Animalia	Aves	Toxostoma rufum
Animalia	Aves	Anthus rubescens
Animalia	Aves	Strix varia
Animalia	Aves	Spinus tristis
Animalia	Aves	Setophaga coronata
Animalia	Aves	Falcipennis canadensis
Animalia	Aves	Circus cyaneus
Animalia	Aves	Bonasa umbellus

kingdom	class	species
Animalia	Aves	Buteo lagopus
Animalia	Aves	Loxia curvirostra
Animalia	Aves	Setophaga petechia
Animalia	Aves	Pheucticus ludovicianus
Animalia	Aves	Bucephala clangula
Animalia	Aves	Poecile atricapillus
Animalia	Aves	Bubo scandiacus
Animalia	Aves	Haemorhous purpureus
Animalia	Aves	Pinicola enucleator
Animalia	Aves	Zonotrichia albicollis
Animalia	Aves	Colinus virginianus
Animalia	Aves	Passerculus sandwichensis
Animalia	Aves	Spizelloides arborea
Animalia	Aves	Perdix perdix
Animalia	Aves	Mniotilta varia
Animalia	Aves	Setophaga pinus
Animalia	Aves	Anas platyrhynchos
Animalia	Aves	Passerella iliaca
Animalia	Aves	Falcipennis canadensis
Animalia	Aves	Gavia immer
Animalia	Aves	Catharus guttatus
Animalia	Aves	Tympanuchus cupido
Animalia	Aves	Acanthis flammea
Animalia	Aves	Dryobates pubescens
Animalia	Aves	Setophaga fusca
Animalia	Aves	Cardellina pusilla
Animalia	Aves	Hydroprogne caspia
Animalia	Aves	Parkesia noveboracensis
Animalia	Aves	Troglodytes hiemalis
Animalia	Aves	Agelaius phoeniceus
Animalia	Aves	Melanerpes erythrocephalus
Animalia	Aves	Aythya collaris
Animalia	Aves	Poecile hudsonicus
Animalia	Aves	Accipiter cooperii
Animalia	Aves	Chen caerulescens
Animalia	Aves	Lanius ludovicianus
Animalia	Aves	Troglodytes aedon
Animalia	Aves	Leiothlypis peregrina
Animalia	Aves	Ectopistes migratorius
Animalia	Aves	Rallus elegans
Animalia	Aves	Regulus calendula
Animalia	Aves	Dryocopus pileatus
Animalia	Aves	Catharus fuscescens
Animalia	Aves	Turdus migratorius
Animalia	Aves	Setophaga coronata
Animalia	Aves	Acanthis hornemanni

kingdom	class	species
Animalia	Aves	Branta canadensis
Animalia	Aves	Hirundo rustica
Animalia	Aves	Empidonax alnorum
Animalia	Aves	Setophaga magnolia
Animalia	Aves	Setophaga petechia
Animalia	Aves	Icterus galbula
Animalia	Aves	Spizella passerina
Animalia	Aves	Junco hyemalis
Animalia	Aves	Setophaga pensylvanica
Animalia	Aves	Molothrus ater
Animalia	Aves	Seiurus aurocapilla
Animalia	Aves	Anas discors
Animalia	Aves	Hylocichla mustelina
Animalia	Aves	Ardea herodias
Animalia	Aves	Scolopax minor
Animalia	Aves	Geothlypis trichas
Animalia	Aves	Tringa melanoleuca
Animalia	Aves	Aythya affinis
Animalia	Aves	Actitis macularius
Animalia	Aves	Vireo solitarius
Animalia	Aves	Botaurus lentiginosus
Animalia	Aves	Archilochus colubris
Animalia	Aves	Buteo lagopus
Animalia	Aves	Poecile atricapillus
Animalia	Aves	Buteo jamaicensis
Animalia	Aves	Icteria virens
Animalia	Aves	Falco sparverius
Animalia	Insecta	Plebejus saepiolus
Animalia	Insecta	Colias interior
Animalia	Insecta	Phanogomphus lividus
Animalia	Insecta	Aeshna interrupta
Animalia	Insecta	Colias philodice
Animalia	Insecta	Thymelicus lineola
Animalia	Insecta	Vanessa cardui
Animalia	Insecta	Erynnis icelus
Animalia	Insecta	Cordulegaster maculata
Animalia	Insecta	Cicindela repanda
Animalia	Insecta	Speyeria atlantis
Animalia	Insecta	Speyeria aphrodite
Animalia	Insecta	Limenitis arthemis
Animalia	Insecta	Pholisora catullus
Animalia	Insecta	Encarsia perniciosi
Animalia	Insecta	Trox unistriatus
Animalia	Insecta	Leucorrhinia hudsonica
Animalia	Insecta	Somatochlora minor
Animalia	Insecta	Phyciodes tharos

kingdom	class	species
Animalia	Insecta	Colias eurytheme
Animalia	Insecta	Polygonia progne
Animalia	Insecta	Aeshna canadensis
Animalia	Insecta	Phanogomphus spicatus
Animalia	Malacostraca	Faxonius virilis
Animalia	Mammalia	Lynx canadensis
Animalia	Mammalia	Castor canadensis
Animalia	Mammalia	Urocyon cinereoargenteus
Animalia	Mammalia	Glaucomys sabrinus
Animalia	Mammalia	Myodes gapperi
Animalia	Mammalia	Mephitis mephitis
Animalia	Mammalia	Vulpes vulpes
Animalia	Mammalia	Glaucomys volans
Animalia	Mammalia	Mustela vison
Animalia	Mammalia	Napaeozapus insignis
Animalia	Mammalia	Pekania pennanti
Animalia	Mammalia	Zapus hudsonius
Animalia	Mammalia	Ursus americanus
Animalia	Mammalia	Lepus americanus
Animalia	Mammalia	Odocoileus virginianus
Animalia	Mammalia	Sorex cinereus
Animalia	Mammalia	Myotis lucifugus
Animalia	Mammalia	Peromyscus leucopus
Animalia	Mammalia	Puma concolor
Animalia	Mammalia	Mus musculus
Animalia	Mammalia	Lasionycteris noctivagans
Animalia	Mammalia	Eptesicus fuscus
Animalia	Mammalia	
Animalia	Mammalia	Blarina brevicauda
Animalia	Mammalia	Ondatra zibethicus
Animalia	Mammalia	Procyon lotor
Animalia	Mammalia	
Animalia	Mammalia	Canis lupus
Animalia	Mammalia	Condylura cristata
Animalia	Mammalia	Tamias striatus
Animalia	Mammalia	Martes americana
Animalia	Mammalia	Canis lupus
Animalia	Mammalia	Didelphis virginiana
Animalia	Mammalia	Microtus pennsylvanicus
Animalia	Mammalia	Alces alces
Animalia	Mammalia	Lasiurus borealis
Animalia	Mammalia	Gulo gulo
Animalia	Mammalia	Canis latrans
Animalia	Mammalia	Sylvilagus floridanus
Animalia	Mammalia	Peromyscus maniculatus
Animalia	Mammalia	Tamiasciurus hudsonicus

kingdom	class	species
Animalia	Mammalia	Mustela frenata
Animalia	Mammalia	Aeorestes cinereus
Animalia	Mammalia	Sciurus carolinensis
Animalia	Ostracoda	Cyclocypris laevis
Animalia	Ostracoda	Candona ohioensis
Animalia	Ostracoda	Dolerocypris fasciata
Animalia	Ostracoda	
Animalia	Ostracoda	Candona elliptica
Animalia	Ostracoda	Physocypria pustulosa
Animalia	Ostracoda	Cypridopsis vidua
Animalia	Reptilia	Thamnophis sirtalis
Fungi	Agaricomycetes	Amanita vaginata
Fungi	Agaricomycetes	Cryptoporus volvatus
Fungi	Arthoniomycetes	Arthonia radiata
Fungi	Lecanoromycetes	Bryoria nadvornikiana
Fungi	Lecanoromycetes	Cladonia furcata
Fungi	Pezizomycetes	Microstoma protractum
incertae sedis		
Plantae	Bryopsida	Hylocomium splendens
Plantae	Bryopsida	Ptilium crista-castrensis
Plantae	Bryopsida	Thuidium recognitum
Plantae	Bryopsida	Pleurozium schreberi
Plantae	Liliopsida	
Plantae	Liliopsida	Goodyera tesselata
Plantae	Liliopsida	
Plantae	Liliopsida	Sisyrinchium montanum
Plantae	Liliopsida	Carex aurea
Plantae	Liliopsida	Carex capillaris
Plantae	Liliopsida	Carex flava
Plantae	Liliopsida	Lilium philadelphicum
Plantae	Liliopsida	Carex castanea
Plantae	Liliopsida	Streptopus lanceolatus
Plantae	Lycopodiopsida	Diphasiastrum complanatum
Plantae	Lycopodiopsida	Lycopodium clavatum
Plantae	Magnoliopsida	Dasiphora fruticosa
Plantae	Magnoliopsida	Diervilla lonicera
Plantae	Magnoliopsida	Packera aurea
Plantae	Magnoliopsida	Viola tricolor
Plantae	Magnoliopsida	Rubus pubescens
Plantae	Magnoliopsida	Rorippa palustris
Plantae	Magnoliopsida	Pyrus communis
Plantae	Magnoliopsida	Rosa acicularis
Plantae	Magnoliopsida	Viburnum edule
Plantae	Magnoliopsida	Vaccinium oxycoccos
Plantae	Magnoliopsida	Monotropa uniflora
Plantae	Magnoliopsida	Mitella nuda

kingdom	class	species
Plantae	Magnoliopsida	Kalmia polifolia
Plantae	Magnoliopsida	Lonicera hirsuta
Plantae	Magnoliopsida	Lonicera involucrata
Plantae	Magnoliopsida	Betula pumila
Plantae	Magnoliopsida	Vicia americana
Plantae	Magnoliopsida	Leucanthemum vulgare
Plantae	Magnoliopsida	
Plantae	Magnoliopsida	Prunella vulgaris
Plantae	Magnoliopsida	Lysimachia nummularia
Plantae	Magnoliopsida	Acer spicatum
Plantae	Magnoliopsida	Epigaea repens
Plantae	Magnoliopsida	Viola selkirkii
Plantae	Magnoliopsida	Viola renifolia
Plantae	Magnoliopsida	Echium vulgare
Plantae	Magnoliopsida	Leonurus cardiaca
Plantae	Magnoliopsida	Physocarpus opulifolius
Plantae	Magnoliopsida	Medicago lupulina
Plantae	Magnoliopsida	Populus balsamifera
Plantae	Magnoliopsida	Geocaulon lividum
Plantae	Magnoliopsida	Viola adunca
Plantae	Magnoliopsida	
Plantae	Magnoliopsida	Lonicera canadensis
Plantae	Magnoliopsida	Geum macrophyllum
Plantae	Magnoliopsida	Lonicera oblongifolia
Plantae	Magnoliopsida	Campanula rapunculoides
Plantae	Magnoliopsida	Lonicera villosa
Plantae	Magnoliopsida	Petasites frigidus
Plantae	Magnoliopsida	Parthenocissus vitacea
Plantae	Magnoliopsida	Ribes glandulosum
Plantae	Magnoliopsida	Ranunculus acris
Plantae	Magnoliopsida	Solanum lycopersicum
Plantae	Magnoliopsida	Eurybia macrophylla
Plantae	Magnoliopsida	Rorippa hispida
Plantae	Pinopsida	Larix laricina
Plantae	Polypodiopsida	Equisetum scirpoides

https://www.ontarioinsects.org/herp/index.html?Sort=1&area2=squaresCounties&records=all&myZoom=5&Lat=42.95&Long=-81.01

Instructions

1. In the "Species" drop down menu, check off "0. All species"
2. Zoom in to the square that covers your site and click on it.
3. Click on the link under Species List, for "this area".
4. Copy and paste the records here and use them to autofill the Reptile and Amphibians table.

Square: 16FV65
Date of search: June 29/2022

Species #	Common Name	# of Records	Earliest Yr_____	Latest Yr ____
12	Eastern Gartersnake	2	1975	1975
28	Green Frog	1	1975	1975
29	Mink Frog	3	1975	1975
30	Northern Leopard Frog	2	1975	1975
32	Spring Peeper	5	1975	1986
34	Wood Frog	2	1975	1975
35	American Toad	1	1975	1975

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https://www.dfo-mpo.gc.ca/species-especes/sara-lep/map-carte/index-eng.html

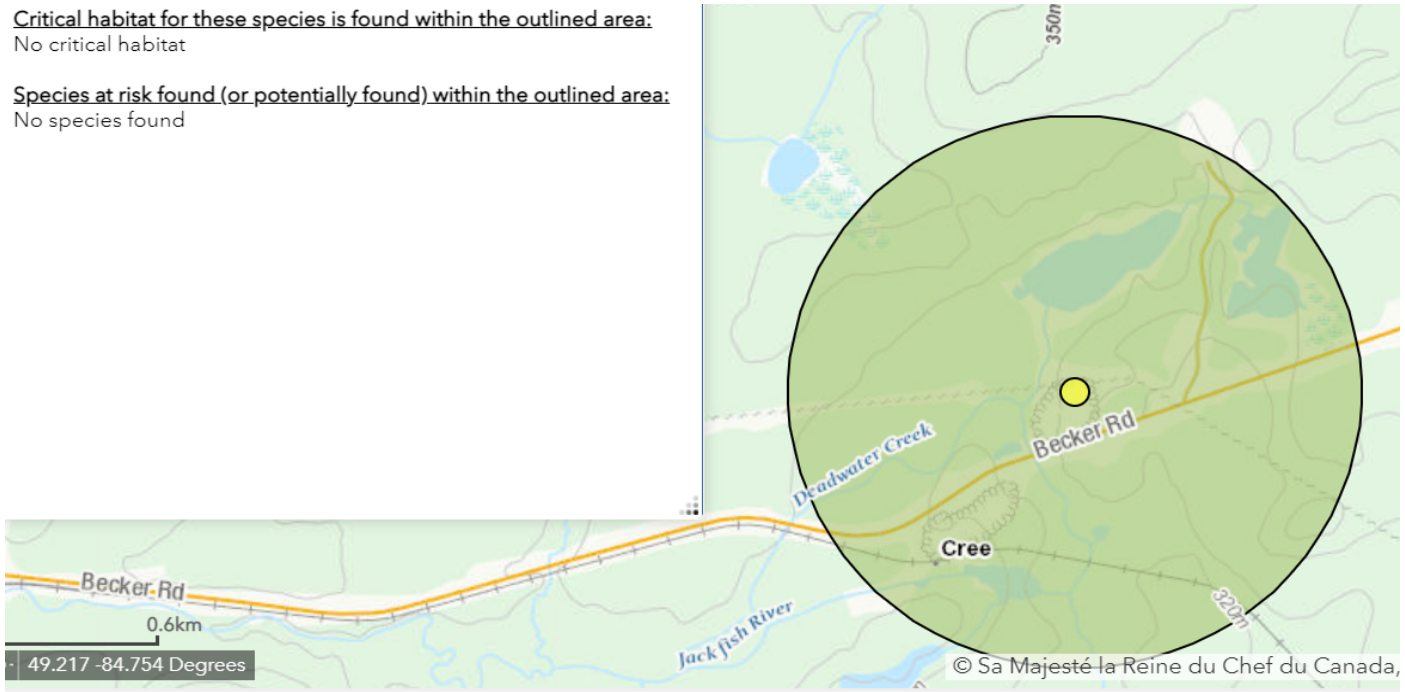
Instructions

1. Zoom into your site.
2. Click on the magnifying glass with the fish inside.
3. Click on the pencil within the 'Find Aquatic Species at Risk' popup.
4. Draw around the study area (a buffer will be applied automatically).
5. Screenshot your screen so others can refer back to the results if needed.
6. Paste the screenshot here with the date.

Date of Search: June 29/2022

Critical habitat for these species is found within the outlined area:
No critical habitat

Species at risk found (or potentially found) within the outlined area:
No species found



Canadian Important Bird Areas (ibacanada.org)

Instructions:

1. Click link above.
2. Zoom to study area on map.
3. Screenshot study area.
4. Copy relevant date to spreadsheet.

Searc: June 29/2022

No IBA area nearby

https://www.birdsontario.org/jsp/datasummaries.jsp

Instruction

1. Look up square number under Tools & Resources > Square Resources. The square number can also be derived from the NHIC code. 17PJ1543 becomes 17PJ14 (first and third number)
2. Type in the square code in all caps under option #5.
3. Click view.
4. Copy the table.
5. Highlight a row of 10 cells in this sheet and press paste.

Square: 16FV65
Date of search: June 29/2022

Species list for square 16FV65 (number of entries returned: 76)

Region	Square	Species	Breeding Evidence					Point Counts			
			Max BE	Categ	#Sq	Atlasser Name	#PC	%PC	Abun	#Sq	
37	16FV65	Common Goldeneye	FY	CONF		1 Fergus I Nicoll					
37	16FV65	Common Merganser	FY	CONF		1 Fergus I Nicoll					
37	16FV65	Ruffed Grouse	FY	CONF		1 Fergus I Nicoll					
37	16FV65	Common Loon	FY	CONF		1 Fergus I Nicoll	8	30.77	0.3077	1	
37	16FV65	Osprey	H	POSS		1 Fergus I Nicoll					
37	16FV65	Bald Eagle	P	PROB		1 Fergus I Nicoll					
37	16FV65	Northern Harrier	P	PROB		1 Fergus I Nicoll					
37	16FV65	Broad-winged Hawk	H	POSS		1 Fergus I Nicoll					
37	16FV65	Red-tailed Hawk	H	POSS		1 Fergus I Nicoll					
37	16FV65	American Kestrel	H	POSS		1 Fergus I Nicoll					
37	16FV65	Rock Pigeon	NY	CONF		1 Fergus I Nicoll					
37	16FV65	Spotted Sandpiper	P	PROB		1 Fergus I Nicoll					
37	16FV65	Common Snipe	S	POSS		1 Fergus I Nicoll					
37	16FV65	Bonaparte's Gull	H	POSS		1 Fergus I Nicoll					
37	16FV65	Herring Gull	H	POSS		1 Fergus I Nicoll					
37	16FV65	Mourning Dove	P	PROB		1 Fergus I Nicoll	1	3.85	0.0385	1	
37	16FV65	Great Horned Owl	H	POSS		1 Fergus I Nicoll					
37	16FV65	Northern Saw-whet Owl	H	POSS		1 Fergus I Nicoll					
37	16FV65	Common Nighthawk	H	POSS		1 Fergus I Nicoll					
37	16FV65	Belted Kingfisher	H	POSS		1 Geoff Carpentier					
37	16FV65	Hairy Woodpecker	S	POSS		1 Fergus I Nicoll	1	3.85	0.0385	1	
37	16FV65	Three-toed Woodpecker	NY	CONF		1 Fergus I Nicoll					
37	16FV65	Black-backed Woodpecker	S	POSS		1 Fergus I Nicoll					
37	16FV65	Northern Flicker	AE	CONF		1 Fergus I Nicoll	5	19.23	0.2308	1	
37	16FV65	Olive-sided Flycatcher	S	POSS		1 Fergus I Nicoll					
37	16FV65	Yellow-bellied Flycatcher	S	POSS		1 Fergus I Nicoll					
37	16FV65	Alder Flycatcher	FY	CONF		1 Fergus I Nicoll	13	50	0.6923	1	

Region	Square	Species	Breeding Evidence			Atlasser Name	#PC	Point Counts			
			Max BE	Categ	#Sq			%PC	Abun	#Sq	
	37 16FV65	Least Flycatcher	H	POSS		1		1	3.85	0.0385	1
	37 16FV65	Blue-headed Vireo	P	PROB		1	Fergus I Nicoll				
	37 16FV65	Philadelphia Vireo	H	POSS		1		1	3.85	0.0385	1
	37 16FV65	Red-eyed Vireo	S	POSS		1	Fergus I Nicoll	12	46.15	0.6154	1
	37 16FV65	Gray Jay	H	POSS		1	Fergus I Nicoll	1	3.85	0.0385	1
	37 16FV65	American Crow	H	POSS		1	2 atlassers				
	37 16FV65	Common Raven	FY	CONF		1	Fergus I Nicoll	1	3.85	0.0385	1
	37 16FV65	Tree Swallow	AE	CONF		1	Cindy Jahn-Cartwright				
	37 16FV65	Bank Swallow	H	POSS		1	Fergus I Nicoll				
	37 16FV65	Cliff Swallow	CF	CONF		1	Cindy Jahn-Cartwright				
	37 16FV65	Barn Swallow	NY	CONF		1	Fergus I Nicoll				
	37 16FV65	Black-capped Chickadee	H	POSS		1	Fergus I Nicoll				
	37 16FV65	Boreal Chickadee	H	POSS		1		1	3.85	0.0385	1
	37 16FV65	Red-breasted Nuthatch	H	POSS		1	Fergus I Nicoll	2	7.69	0.0769	1
	37 16FV65	Brown Creeper	S	POSS		1	Fergus I Nicoll				
	37 16FV65	Winter Wren	S	POSS		1	Fergus I Nicoll	7	26.92	0.2692	1
	37 16FV65	Golden-crowned Kinglet	S	POSS		1	2 atlassers				
	37 16FV65	Ruby-crowned Kinglet	A	PROB		1	Fergus I Nicoll	4	15.38	0.1923	1
	37 16FV65	Swainson's Thrush	S	POSS		1	Fergus I Nicoll	2	7.69	0.0769	1
	37 16FV65	Hermit Thrush	P	PROB		1	Fergus I Nicoll	22	84.62	1.2692	1
	37 16FV65	American Robin	S	POSS		1	Fergus I Nicoll	7	26.92	0.3846	1
	37 16FV65	European Starling	CF	CONF		1	Fergus I Nicoll				
	37 16FV65	Cedar Waxwing	H	POSS		1	2 atlassers	2	7.69	0.1154	1
	37 16FV65	Nashville Warbler	S	POSS		1	2 atlassers	5	19.23	0.1923	1
	37 16FV65	Yellow Warbler	S	POSS		1	3 atlassers				
	37 16FV65	Chestnut-sided Warbler	S	POSS		1	Fergus I Nicoll	1	3.85	0.0385	1
	37 16FV65	Magnolia Warbler	S	POSS		1	Fergus I Nicoll	10	38.46	0.4231	1
	37 16FV65	Yellow-rumped Warbler	NE	CONF		1	Fergus I Nicoll	9	34.62	0.3846	1
	37 16FV65	Palm Warbler	NY	CONF		1	Fergus I Nicoll	7	26.92	0.3846	1
	37 16FV65	Bay-breasted Warbler	S	POSS		1	Fergus I Nicoll				
	37 16FV65	Black-and-white Warbler	S	POSS		1	Fergus I Nicoll	1	3.85	0.0385	1
	37 16FV65	Ovenbird	S	POSS		1	Geoff Carpentier				
	37 16FV65	Mourning Warbler	S	POSS		1	Fergus I Nicoll	4	15.38	0.2308	1
	37 16FV65	Common Yellowthroat	CF	CONF		1	Fergus I Nicoll	10	38.46	0.4231	1
	37 16FV65	Wilson's Warbler	S	POSS		1	Fergus I Nicoll	5	19.23	0.1923	1
	37 16FV65	Chipping Sparrow	FY	CONF		1	Fergus I Nicoll	2	7.69	0.0769	1
	37 16FV65	Savannah Sparrow	A	PROB		1	Geoff Carpentier				
	37 16FV65	Song Sparrow	A	PROB		1	Fergus I Nicoll	1	3.85	0.0385	1

Region	Square	Species	Breeding Evidence			Atlasser Name	#PC	Point Counts			
			Max BE	Categ	#Sq			%PC	Abun	#Sq	
	37 16FV65	Lincoln's Sparrow	FY	CONF		1 Fergus I Nicoll		12	46.15	0.6154	1
	37 16FV65	Swamp Sparrow	A	PROB		1 Fergus I Nicoll					
	37 16FV65	White-throated Sparrow	FY	CONF		1 Fergus I Nicoll		25	96.15	3.5769	1
	37 16FV65	Dark-eyed Junco	P	PROB		1 Fergus I Nicoll		7	26.92	0.3462	1
	37 16FV65	Red-winged Blackbird	S	POSS		1 Cindy Jahn-Cartwright					
	37 16FV65	Common Grackle	S	POSS		1 Fergus I Nicoll		1	3.85	0.0385	1
	37 16FV65	Purple Finch	S	POSS		1 Fergus I Nicoll		2	7.69	0.0769	1
	37 16FV65	White-winged Crossbill	S	POSS		1 Geoff Carpentier					
	37 16FV65	Pine Siskin	S	POSS		1 Fergus I Nicoll		1	3.85	0.0385	1
	37 16FV65	American Goldfinch	S	POSS		1 Fergus I Nicoll		2	7.69	0.0769	1
	37 16FV65	Evening Grosbeak	H	POSS		1		1	3.85	0.0769	1

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Species		Conservation Rank					Source					
Scientific Name	Common Name	Provincial (S-RANK)	Provincial (ESA)	National (COSEWIC)	National (SARA)	Regional (Peel)	NHIC	OBBA	GBIF	Known/anticipated distributions	Breeding Bird	Matrix Field Observations
Accipitridae	**Hawks, Kites, Eagles & Allies**											
Accipiter cooperii	Cooper's Hawk	S4				Level 3 Forest			x			
Accipiter striatus	Sharp-shinned Hawk	S5				Level 2 Forest			x			
Buteo jamaicensis	Red-tailed Hawk	S5						x	x			
Buteo lagopus	Rough-legged Hawk	S1B/S4N							x			
Buteo lineatus	Red-shouldered Hawk	S4B			SC	Level 1 Forest			x			
Buteo platypterus	Broad-winged Hawk	S5B				Level 2 Forest		x	x			
Circus cyaneus	Northern Harrier	S4B						x	x			
Haliaeetus leucocephalus	Bald Eagle	S2N/S4B	SC					x	x			
Alaudidae	**Larks**											
Eremophila alpestris	Horned Lark	S5B				Level 3 Open Country			x			
Alcedinidae	**Kingfishers**											
Megaceryle alcyon	Belted Kingfisher	S4B/S5B						x	x			
Apodidae	**Swifts**											
Chaetura pelagica	Chimney Swift	S4B/S4N	THR	THR	THR				x			
Anatidae	**Ducks, Geese & Swans**											
Aix sponsa	Wood Duck	S5				Level 4 Forest			x			
Anas acuta	Northern Pintail	S5							x			
Anas crecca	Green-winged Teal	S4							x			
Anas discors	Blue-winged Teal	S4				Level 3 Marsh			x			
Anas platyrhynchos	Mallard	S5							x			
Branta canadensis	Canada Goose	S5							x			
Bucephala albeola	Bufflehead	S4							x			
Bucephala clangula	Common Goldeneye	S5						x	x			
Chen caerulescens	Snow Goose	S5B							x			
Cygnus buccinator	Trumpeter Swan	S4							x			
Cygnus olor	Mute Swan	SNA							x			
Lophodytes cucullatus	Hooded Merganser	S5B, S5N				Level 4 Forest			x			
Melanitta fusca	White-winged Scoter	S4B/S4N							x			
Melanitta perspicillata	Surf Scoter	S4B/S4N							x			
Aythya affinis	Lesser Scaup	S4							x			
Aythya collaris	Ring-necked Duck	S5							x			
Mergus merganser	Common Merganser	S5B,S5N						x	x			
Ardeidae	**Herons and Bitterns**											
Ardea alba	Great Egret	S2B							x			
Ardea herodias	Great Blue Heron	S4							x			
Botaurus lentiginosus	American Bittern	S4B				Level 1 Marsh			x			
Bubulcus ibis	Cattle Egret	SNA							x			
Ixobrychus exilis	Least Bittern	S4B	THR	THR	THR	Level 1 Marsh			x			
Bombycillidae	**Waxwings**											
Bombycilla cedrorum	Cedar Waxwing	S5B						x	x			
Bombycilla garrulus	Bohemian Waxwing	SNA							x			
Calcariidae	**Longspurs & Snow Buntings**											
Calcarius lapponicus	Lapland Longspur	S3B							x			
Plectrophenax nivalis	Snow Bunting	SNA							x			
Caprimulgidae	**Nightjars**											
Chordeiles minor	Common Nighthawk	S4B	SC	SC	THR	Level 1 Open Country		x	x			
Antrostomus vociferus	Eastern Whip-poor-will	S4B	THR	THR	THR					x		
Cardinalidae	**Cardinals, Grosbeaks & Allies**											
Cardinalis cardinalis	Northern Cardinal	S5							x			
Pheucticus ludovicianus	Rose-breasted Grosbeak	S4B							x			
Piranga olivacea	Scarlet Tanager	S4B				Level 2 Forest			x			
Cathartidae	**Vultures**											
Cathartes aura	Turkey Vulture	S5B				Level 3 Forest			x			
Certhiidae	**Creepers**											
Certhia americana	Brown Creeper	S5B				Level 2 Forest		x	x			
Charadriidae	**Plovers**											
Charadrius vociferus	Killdeer	S5B/S5N							x			
Pluvialis dominica	American Golden-Plover	S2B,S4N							x			
Columbidae	**Pigeons & Doves**											
Ectopistes migratorius	Passenger Pigeon	SX		EXP					x			
Zenaida macroura	Mourning Dove	S5						x	x			

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Species		Conservation Rank					Source					
Scientific Name	Common Name	Provincial (S-RANK)	Provincial (ESA)	National (COSEWIC)	National (SARA)	Regional (Peel)	NHIC	OBBA	GBIF	Known/anticipated distributions	Breeding Bird	Matrix Field Observations
Corvidae	**Crows & Jays**											
Corvus brachyrhynchos	American Crow	S5B/S4N						x	x			
Corvus corax	Common Raven	S5						x	x			
Perisoreus canadensis	Gray Jay	S5						x	x			
Emberizidae	**New World Sparrows & Allies**											
Chondestes grammacus	Lark Sparrow	SHB							x			
Junco hyemalis	Dark-eyed Junco	S5B						x	x			
Melospiza georgiana	Swamp Sparrow	S5B				Level 2 Marsh		x	x			
Melospiza lincolnii	Lincoln's Sparrow	S5B						x	x			
Melospiza melodia	Song Sparrow	S5B/S4N						x	x			
Passerculus sandwichensis	Savannah Sparrow	S4B				Level 1 Open Country		x	x			
Passerella iliaca	Fox Sparrow	S4B							x			
Pipilo erythrophthalmus	Eastern Towhee	S4B				Level 2 Forest			x			
Spizella passerina	Chipping Sparrow	S5B/S4N						x	x			
Zonotrichia albicollis	White-throated Sparrow	S5B						x	x			
Zonotrichia leucophrys	White-crowned Sparrow	S4B							x			
Zonotrichia querula	Harris's Sparrow	SNA		SC					x			
Falconidae	**Carcaras & Falcons**											
Falco sparverius	American Kestrel	S4				Level 2 Open Country		x	x			
Fringillidae	**Finches & Allies**											
Acanthis flammea	Common Redpoll	S4B							x			
Acanthis hornemanni	Hoary Redpoll	SNA							x			
Coccothraustes vespertinus	Evening Grosbeak	S4B	SC	SC	SC			x		x		
Haemorhous purpureus	Purple Finch	S4B				Level 2 Forest		x	x			
Loxia curvirostra	Red Crossbill	S4B				Level 4 Forest			x			
Loxia leucoptera	White-winged Crossbill	S5B						x	x			
Pinicola enucleator	Pine Grosbeak	S4B							x			
Spinus pinus	Pine Siskin	S4B						x	x			
Gaviidae	**Loons**											
Gavia immer	Common Loon	S5B,S5N				Level 3 Marsh		x	x			
Gruidae	**Cranes**											
Grus canadensis	Sandhill Crane	S5B							x			
Hirundinidae	**Swallows**											
Hirundo rustica	Barn Swallow	S4B	THR	THR	THR	Level 4 Open Country		x	x			
Tachycineta bicolor	Tree Swallow	S4B						x	x			
Icteridae	**New World Blackbird**											
Agelaius phoeniceus	Red-winged Blackbird	S4/S5						x	x			
Dolichonyx oryzivorus	Bobolink	S4B	THR	THR	THR	Level 2 Open Country			x			
Euphagus carolinus	Rusty Blackbird	S4B	SC	SC	SC				x	x		
Icterus galbula	Baltimore Oriole	S4B							x			
Molothrus ater	Brown-headed Cowbird	S4B							x			
Quiscalus quiscula	Common Grackle	S5B/S4N						x	x			
Xanthocephalus xanthocephalus	Yellow-headed Blackbird	S2B							x			
Laniidae	**Shrikes**											
Lanius ludovicianus	Loggerhead Shrike	S2B	END	END	END	Level 1 Open Country			x			
Laridae	**Gulls, Terns & Skimmers**											
Chlidonias niger	Black Tern	S3B	SC			Level 1 Marsh				x		
Chroicocephalus philadelphia	Bonaparte's Gull	S4B,S4N						x	x			
Hydroprogne caspia	Caspian Tern	S3B							x			
Larus argentatus	Herring Gull	S5B,S5N						x	x			
Larus delawarensis	Ring-billed Gull	S5B/S4N							x			
Larus marinus	Great Black-backed Gull	S2B							x			
Sterna hirundo	Common Tern	S4B				Level 4 Marsh			x			
Mimidae	**Mockingbirds, Thrashers & Allies**											
Toxostoma rufum	Brown Thrasher	S4B				Level 1 Open Country			x			
Motacillidae												
Anthus rubescens	American Pipit	S4							x			
Odontophoridae												
Colinus virginianus	Northern Bobwhite	S1	END	END	END	Level 1 Open Country			x			
Pandionidae	**Osprey**											
Pandion haliaetus	Osprey	S5B				Level 3 Marsh		x	x			
Paridae	**Chickadees and Titmice**											
Poecile atricapillus	Black-capped Chickadee	S5				Level 4 Forest		x	x			
Poecile hudsonicus	Boreal Chickadee	S5						x	x			

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Species		Conservation Rank					Source					
Scientific Name	Common Name	Provincial (S-RANK)	Provincial (ESA)	National (COSEWIC)	National (SARA)	Regional (Peel)	NHIC	OBBA	GBIF	Known/anticipated distributions	Breeding Bird	Matrix Field Observations
Parulidae	**Wood Warblers**											
Cardellina canadensis	Canada Warbler	S4B	SC	THR	SC	Level 1 Forest			x			
Cardellina pusilla	Wilson's Warbler	S4B						x	x			
Geothlypis philadelphia	Mourning Warbler	S4B				Level 2 Forest		x	x			
Mniotilta varia	Black-and-white Warbler	S5B				Level 3 Forest		x	x			
Parkesia noveboracensis	Northern Waterthrush	S5B				Level 2 Forest			x			
Seiurus aurocapilla	Ovenbird	S4B				Level 4 Forest		x	x			
Setophaga americana	Northern Parula	S4B							x			
Setophaga castanea	Bay-breasted Warbler	S5B						x	x			
Setophaga cerulea	Cerulean Warbler	S3B	THR	END	END	Level 1 Forest			x			
Setophaga coronata	Yellow Rumped Warbler	S5B							x			
Setophaga fusca	Blackburnian Warbler	S5B				Level 1 Forest			x			
Setophaga magnolia	Magnolia Warbler	S5B				Level 1 Forest		x	x			
Setophaga pensylvanica	Chestnut-sided warbler	S5B				Level 1 Forest		x	x			
Setophaga pinus	Pine Warbler	S5B				Level 2 Forest			x			
Setophaga ruticilla	American Redstart	S5B				Level 2 Forest			x			
Setophaga tigrina	Cape May Warbler	S5B							x			
Setophaga virens	Black-throated Green Warbler	S5B				Level 1 Forest			x			
Passeridae	**Sparrows**											
Passer domesticus	House Sparrow	SNA							x			
Phasianidae	**Patridges, Grouse, Turkeys**											
Meleagris gallopavo	Wild Turkey	S5							x			
Perdix perdix	Gray Partridge	SNA							x			
Falcipennis canadensis	Spruce Grouse	S5							x			
Bonasa umbellus	Ruffed Grouse	S4				Level 3 Forest		x	x			
Tympanuchus cupido	Greater Prairie-Chicken	SX	EXP	EXP	EXP				x			
Picidae	**Woodpeckers**											
Colaptes auratus	Northern Flicker	S4B						x	x			
Dryocopus pileatus	Pileated Woodpecker	S5				Level 2 Forest			x			
Leuconotopicus villosus	Hairy Woodpecker	S5						x	x			
Melanerpes erythrocephalus	Red-headed Woodpecker	S4B	END	END	END	Level 1 Forest			x			
Picoides arcticus	Black-backed Woodpecker	S4						x	x			
Picoides dorsalis	American Three-toed Woodpecker	S4							x			
Sphyrapicus varius	Yellow-bellied Sapsucker	S5B				Level 2 Forest			x			
Podicipedidae	**Grebes**											
Podiceps auritus	Horned Grebe	S1B,S4N	SC	SC						x		
Rallidae	**Railes, Gallinules & Coots**											
Rallus elegans	King Rail	S2B	END	END	END				x			
Rallus limicola	Virginia Rail	S5B				Level 1 Marsh			x			
Regulidae	**Kinglets**											
Regulus calendula	Ruby-crowned Kinglet	S4B				Level 4 Forest		x	x			
Regulus satrapa	Golden-crowned Kinglet	S5B				Level 2 Forest		x	x			
Scolopacidae	**Sandpipers, Phalaropes &Allies**											
Actitis macularius	Spotted Sandpiper	S5				Level 3 Open Country		x	x			
Gallinago delicata	Wilson's Snipe	S5B							x			
Gallinago gallinago	Common Snipe							x	x			
Scolopax minor	American Woodcock	S4B				Level 4 Forest			x			
Tringa flavipes	Lesser Yellowlegs	S4B,S4N							x			
Tringa melanoleuca	Greater Yellowlegs	S4B,S4N							x			
Sittidae	**Nutchatches**											
Sitta canadensis	Red-breasted Nuthatch	S5				Level 3 Forest		x	x			
Stercorariidae	**Skuas**											
Stercorarius parasiticus	Parasitic Jaeger	S2B							x			
Aegolius funereus	Boreal Owl	S4							x			
Asio otus	Long-eared Owl	S4				Level 1 Forest			x			
Bubo virginianus	Great Horned Owl	S5						x	x			
Megascops asio	Screech Owl	S4							x			
Strix varia	Barred Owl	S5				Level 1 Forest			x			
Sturnidae	**Starlings**											
Sturnus vulgaris	European Starling	SNA						x	x			
Trochillidae	**Hummingbirds**											
Archilochus colubris	Ruby-throated Hummingbird	S5B				Level 3 Forest			x			
Troglodytidae	**Wrens**											
Troglodytes aedon	House Wren	S5B							x			

Species		Conservation Rank					Source					
Scientific Name	Common Name	Provincial (S-RANK)	Provincial (ESA)	National (COSEWIC)	National (SARA)	Regional (Peel)	NHIC	OBBA	GBIF	Known/anticipated distributions	Breeding Bird	Matrix Field Observations
Troglodytes hiemalis	Winter Wren	S5B				Level 3 Forest		x	x			
Turdidae	**Thrushes**											
Catharus fuscescens	Veery	S4B				Level 3 Forest			x			
Catharus guttatus	Hermit Thrush	S5B						x	x			
Catharus ustulatus	Swainson's Thrush	S4B						x	x			
Hylocichla mustelina	Wood Thrush	S4B	SC	THR	THR	Level 4 Forest			x			
Sialia sialis	Eastern Bluebird	S5B				Level 1 Open Country			x			
Turdus migratorius	American Robin	S5B						x	x			
Tyrannidae	**Tyrant Flycatchers**											
Empidonax alnorum	Alder Flycatcher	S5B				Level 3 Forest		x	x			
Empidonax flaviventris	Yellow-bellied Flycatcher	S5B						x	x			
Empidonax minimus	Least Flycatcher	S4B						x	x			
Tyrannus tyrannus	Eastern Kingbird	S4B				Level 3 Open Country			x			
Tyrannus verticalis	Western Kingbird	S1B							x			
Vireonidae	**Vireos**											
Vireo olivaceus	Red-eyed Vireo	S5B						x	x			
Vireo solitarius	Blue-headed Vireo	S5B				Level 3 Forest		x	x			
Vireo flavifrons	Yellow-throated Vireo	S4B				Level 4 Forest			x			
Vireo philadelphicus	Philadelphia Vireo	S5B						x	x			
Columba livia	Rock Pigeon	SNA						x				
Spinus tritis	American Goldfinch	S5B/S4N				Level 3 Open Country		x				
Petrochelidon pyrrhonota	Cliff Swallow	S4B				Level 3 Open Country		x				
Riparia riparia	Bank Swallow	S4B	THR	THR	THR	Level 2 Open Country		x				
Geothylupis trichas	Common Yellowthroat	S5B						x				
Oreothlypis ruficapilla	Nashville Warbler	S5B				Level 1 Forest		x				
Setophaga petechai	Yellow Warbler	S5B						x				
Aegolius acadicus	Northern Saw-whet Owl	S4				Level 1 Forest		x				
Contopus cooperi	Olive-sided Flycatcher	S4B	SC	SC	THR			x				

TABLE A2 Reptile and Amphibian Species

	Species		Conservation Rank				Source			
	Scientific Name	Common Name	Provincial (S-RANK)	Provincial (ESA)	National (COSEWIC)	National (SARA)	NHIC	ORAA	GBIF	Matrix Observations
14	**Squamata**	**Snakes**								
37	*Thamnophis sirtalis sirtalis*	Eastern Gartersnake	S5					x		
56	**Anura**	**Frogs and Toads**								
58	*Anaxyrus americanus*	American Toad	S5					x		
61	*Lithobates clamitans*	Green Frog	S5					x		
63	*Lithobates pipiens*	Northern Leopard Frog	S5					x	x	
64	*Lithobates septentrionalis*	Mink Frog	S5					x		
65	*Lithobates sylvaticus*	Wood Frog	S5					x	x	
66	*Pseudacris crucifer*	Spring Peeper	S5					x		
	Total:						**0**	**7**	**2**	**0**

TABLE A3 Fish Species

Species Name		Conservation Rank					Source			
Scientific Name	Common Name	S-RANK	ESA	COSEWIC	SARA	Locally Significant	NHIC	GBIF	LIO	Matrix Observations
Cypriniformes										
Notropis hudsonius	Spottail Shiner	S5						x	x	
Catostomus commersonii	White Sucker	S5							x	
Esociformes										
Esox lucius	Northern Pike	S5							x	
Perciformes										
Perca flavescens	Yellow Perch	S5							x	
Sander vitreus vitreus	Walleye	S5							x	
Salmoniformes										
Coregonus artedi	Cisco	S5							x	
Coregonus clupeaformis	Lake Whitefish	S5							x	
TOTAL:							**0**	**1**	**7**	**0**

Table A4 Insect Species

Species Name		Conservation Ranking				Source			
Scientific Name	Common Name	S-RANK	ESA	COSEWIC	SARA	NHIC	Ontario Butterfly Atlas	GBIF	Matrix Field Observations
Coleoptera	**Beetles**								
Cicindela repanda	Tiger Beetle	S5						x	
Trox unistriatus	Scarab Beetle	SNR						x	
Lepidoptera	**Butterflies**								
Celastrina lucia	Northern Spring Azure	S5					x		
Coenonympha tullia	Common Ringlet	S5					x		
Colias eurytheme	Orange Sulphur	S5					x	x	
Colias interior	Pink-edged Sulphur	S5					x	x	
Colias philodice	Clouded Sulphur	S5					x	x	
Cupido amyntula	Western Tailed Blue	S4					x		
Erynnis icelus	Dreamy Duskywing	S5					x	x	
Hesperia comma	Common Branded Skipper	S4S5					x		
Limenitis arthemis arthemis	White Admiral	S5					x		
Lycaena dorcas	Dorcas Copper	S5					x		
Nymphalis antiopa	Mourning Cloak	S5					x		
Pholisora catullus	Common Sootywing	S4						x	
Phyciodes cocyta	Northern Crescent	S5					x		
Phyciodes tharos	Pearl Crescent	S4						x	
Plebejus saepiolus	Greenish Blue	S4						x	
Polites mystic	Long Dash Skipper	S5					x		
Polygonia progne	Gray Comma	S5					x	x	
Speyeria aphrodite	Aphrodite Fritillary	S5					x	x	
Speyeria atlantis	Atlantis Fritillary	S5					x	x	
Thymelicus lineola	European Skipper	SNA					x	x	
Vanessa cardui	Painted Lady	S5					x	x	
Odonata	**Damselflies and Dragonflies**								
Aeshna canadensis	Canada Darner	S5						x	
Cordulegaster maculata	Twin-spotted Spiketail	S4						x	
Leucorrhinia hudsonica	Hudsonian Whiteface	S5						x	
Phanogomphus lividus	Ashy Clubtail	S4						x	
Phanogomphus spicatus	Dusky Clubtail	S5						x	
Somatochlora minor	Ocellated Emerald	S4						x	

TABLE A5 Mollusc Species

Species		Conservation Rank				Source			
Scientific Name	Common Name	Provincial (S-RANK)	Provincial (ESA)	National (COSEWIC)	National (SARA)	NHIC	GBIF	LIO	Matrix Field Observations
TOTAL:						0	0	0	0

Table A6 Mammal Species

Species Name		Conservation Ranking				Source			
Scientific Name	Common Name	S-RANK	ESA	COSEWIC	SARA	NHIC	GBIF	Known/anticipated species distribution	Matrix Field Observations
Artiodactyla	**Deer and Bison**								
Odocoileus virginianus	White-tailed Deer	S5					x		
Carnivora	**Carnivores**								
Canis latrans	Coyote	S5					x		
Gulo gulo	Wolverine	S2S3	THR	SC	SC		x		
Lynx canadensis	Canada Lynx	S5					x		
Martes americana	American Marten	S5					x		
Mephitis mephitis	Striped Skunk	S5					x		
Mustela frenata	Long-tailed Weasel	S4					x		
Pekania pennanti	Fisher	S5					x		
Procyon lotor	Northern Raccoon	S5					x		
Puma concolor	Mountain Lion or Cougar	SU	END				x		
Urocyon cinereoargenteus	Gray Fox	S1	THR	THR	THR		x		
Ursus americanus	American Black Bear	S5					x		
Vulpes vulpes	Red Fox	S5					x		
Chiroptera	**Bats**								
Eptesicus fuscus	Big Brown Bat	S4					x		
Lasionycteris noctivagans	Silver-haired Bat	S4					x		
Lasiurus borealis	Red Bat	S4					x		
Myotis lucifugus	Little Brown Myotis	S4	END	END	END		x	x	
Didelphimorphia	**Oppossums**								
Didelphis virginiana	Virginia Opossum	S4					x		
Lagomorphia	**Rabbits and Hares**								
Sylvilagus floridanus	Eastern Cottontail	S5					x		
Lepus americanus	Snowshoe Hare	S5					x		
Rodentia	**Rodents**								
Castor canadensis	Beaver	S5					x		
Glaucomys sabrinus	Northern Flying Squirrel	S5					x		
Glaucomys volans	Southern Flying Squirrel	S4					x		
Microtus pennsylvanicus	Meadow Vole	S5					x		
Mus musculus	House Mouse	SNA					x		
Myodes gapperi	Southern Red-backed Vole	S5					x		
Napaeozapus insignis	Woodland Jumping Mouse	S5					x		
Ondatra zibethicus	Muskrat	S5					x		
Peromyscus leucopus	White-footed Mouse	S5					x		
Peromyscus maniculatus	Deer Mouse	S5					x		
Sciurus carolinensis	Grey Squirrel	S5					x		
Tamias striatus	Eastern Chipmunk	S5					x		

Scientific Name	Common Name	S-RANK	ESA	COSEWIC	SARA	NHIC	GBIF	Known/anticipated species distribution	Matrix Field Observations
Tamiasciurus hudsonicus	Red Squirrel	S5					x		
Zapus hudsonius	Meadow Jumping Mouse	S5					x		
Soricomorpha									
Blarina brevicauda	Northern Short-tailed Shrew	S5					x		
Condylura cristata	Star-nosed Mole	S5					x		
Sorex cinereus	Masked Shrew	S5					x		
Myotis leibii	Eastern Small-footed Myotis	S2/S3	END					x	
Myotis septentrionalis	Northern Myotis	S3	END	END	END			x	
Perimyotis subflavus	Tricolored Bat	S3	END	END	END			x	

COMMON NAME	BOTANICAL NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	INVASIVE SPECIES ONTARIO	PROVINCIAL RANK	ESA STATUS	COSEWIC STATUS (2016-08-19)	SARA STATUS (2016-08-19)	GLOBAL RANK	All Species	GBIF
FERNS & ALLIES	**PTERIDOPHYTES**										x	o
Horsetail Family	**Equisetaceae**										x	o
Dwarf Scouring-rush	*Equisetum scirpoides*	7	0			S5				G5	x	x
Clubmoss Family	**Lycopodiaceae**										x	o
Running Club-moss	*Lycopodium clavatum*	6	0			S5				G5	x	x
CONIFERS	**GYMNOSPERMS**										x	o
Pine Family	**Pinaceae**										x	o
Tamarack	*Larix laricina*	7	-3			S5				G5	x	x
DICOTS	**DICOTYLEDONS**										x	o
Maple Family	**Aceraceae**										x	o
Mountain Maple	*Acer spicatum*	6	3			S5				G5	x	x
Composite or Aster Family	**Asteraceae**										x	o
Large-leaved Aster	*Eurybia macrophylla*	5	5			S5				G5	x	x
Ox-eye Daisy	*Leucanthemum vulgare*		5	-1		SNA				GNR	x	x
Sweet Coltsfoot	*Petasites frigidus*	8	-3			S5				G5	x	x
Birch Family	**Betulaceae**										x	o
Swamp Birch	*Betula pumila*	9	-5			S5				G5	x	x
Borage Family	**Boraginaceae**										x	o
Viper's Bugloss	*Echium vulgare*		5	-2		SNA				GNR	x	x
Mustard Family	**Brassicaceae**										x	o
Marsh Yellow-cress	*Rorippa palustris*										x	x
Bellflower Family	**Lobelia**										x	o
Creeping Bellflower	*Campanula rapunculoides*		5	-2	4	SNA				GNR	x	x
Honeysuckle Family	**Caprifoliaceae**										x	o
Northern Bush Honeysuckle	*Diervilla lonicera*	5	5			S5				G5	x	x
American Fly Honeysuckle	*Lonicera canadensis*	6	3			S5				G5	x	x
Hairy Honeysuckle	*Lonicera hirsuta*	7	0			S5				G5	x	x
Bearberry Honeysuckle	*Lonicera involucrata*					S5				G5	x	x
Swamp Fly Honeysuckle	*Lonicera oblongifolia*	8	-5			S5				G5	x	x
Mountain Fly Honeysuckle	*Lonicera villosa*	10	-3			S5				G5	x	x
Squashberry	*Viburnum edule*					S5				G5	x	x
Heath Family	**Ericaceae**										x	o
Trailing Arbutus	*Epigaea repens*	9	5			S5				G5	x	x
Bog Laurel	*Kalmia polifolia*	10	-5			S5				G5	x	x
Small Cranberry	*Vaccinium oxycoccos*	10	-5			S5				G5	x	x
Pea Family	**Fabaceae**										x	o
Black Medick	*Medicago lupulina*		1	-1	4	SNA				GNR	x	x
American Vetch	*Vicia americana*	9	5			S5				G5	x	x
Currant Family	**Grossulariaceae**										x	o
Skunk Currant	*Ribes glandulosum*	6	-3			S5				G5	x	x
Mint Family	**Lamiaceae**										x	o

COMMON NAME	BOTANICAL NAME	COEFFICIENT OF CONSERVATISM	WETNESS INDEX	WEEDINESS INDEX	INVASIVE SPECIES ONTARIO	PROVINCIAL RANK	ESA STATUS	COSEWIC STATUS (2016-08-19)	SARA STATUS (2016-08-19)	GLOBAL RANK	All Species	GBIF
Common Motherwort	*Leonurus cardiaca*										x	x
Indian Pipe Family	**Monotropaceae**										x	o
Indian-pipe	*Monotropa uniflora*	6	3			S5				G5	x	x
Primrose Family	**Primulaceae**										x	o
Creeping Jenny	*Lysimachia nummularia*		-4	-3	2	SNA				GNR	x	x
Buttercup Family	**Ranunculaceae**										x	o
Tall Buttercup	*Ranunculus acris*		-2	-2		SNA				G5	x	x
Rose Family	**Rosaceae**										x	o
Large-leaved Avens	*Geum macrophyllum*	9	-4			S5				G5	x	x
Ninebark	*Physocarpus opulifolius*	5	-2			S5				G5	x	x
Shrubby Cinquefoil	*Dasiphora fruticosa*	9	-3			S5				G5	x	x
Common Pear	*Pyrus communis*		5	-1		SNA				G5	x	x
Prickly Rose	*Rosa acicularis*	7	3			S5				G5	x	x
Dwarf Red Blackberry	*Rubus pubescens*	4	-4			S5				G5	x	x
Willow Family	**Salicaceae**										x	o
Balsam Poplar	*Populus balsamifera*	4	-3			S5				G5	x	x
Sandalwood Family	**Santalaceae**										x	o
False Toadflax	*Geocaulon lividum*	9	-2			S5				G5	x	x
Saxifrage Family	**Saxifragaceae**										x	o
Naked Mitrewort	*Mitella nuda*	6	-3			S5				G5	x	x
Nightshade Family	**Solanaceae**										x	o
Tomato	*Solanum lycopersicum*		5	-1		SNA				GNR	x	x
Violet Family	**Violaceae**										x	o
Hooked-spur Violet	*Viola adunca*	8	1			S5?				G5	x	x
White Violet	*Viola renifolia*	7	-3			S5				G5	x	x
Selkirk's Violet	*Viola selkirkii*	8	5			S5				G5	x	x
Johnny Jump-up	*Viola tricolor*		5	-1		SNA				GNR	x	x
Grape Family	**Vitaceae**										x	o
Thicket-creeper	*Parthenocissus vitacea*	3	3			S5				G5	x	x
MONOCOTS	**MONOCOTYLEDONS**										x	o
Sedge Family	**Cyperaceae**										x	o
Golden-fruited Sedge	*Carex aurea*	4	-4			S5				G5	x	x
Hair-like Sedge	*Carex capillaris*	10	-3			S5				G5	x	x
Chestnut Sedge	*Carex castanea*	7	-4			S5				G5	x	x
Yellow Sedge	*Carex flava*	5	-5			S5				G5	x	x
Iris Family	**Iridaceae**										x	o
Strict Blue-eyed Grass	*Sisyrinchium montanum*		-1			S5				G5T4T5	x	x
Lily Family	**Liliaceae**										x	o
Wood Lily	*Lilium philadelphicum*	8	1			S5				G5	x	x
Rose Twisted-stalk	*Streptopus lanceolatus*	7	0			S5?				G5T5	x	x
Orchid Family	**Orchidaceae**										x	o
Checkered Rattlesnake-plantain	*Goodyera tesselata*	7	3			S4S5				G5	x	x

APPENDIX B

SAR and SCC Habitat Screening Results

TABLE B1 Species At Risk

Taxonomy	Species	ESA Status	SARA Status	COSEWIC Status	Preferred Habitat[1, 2]	Known Species Range[1, 2]	Source Identifying Species Record	Probability of Occurrence within Study Area	Conclusions/ Recommendations
Avian	Bank Swallow *Riparia riparia*	THR	THR Schedule 1	THR	- Requires vertical faces in sand or silt deposits; river and lake banks, active/inactive sand and gravel pits, road cuts, soil stockpiles. - Breeding sites are located close to aerial foraging areas such as grasslands, meadows, pastures, and cropland. - Large wetlands used for nocturnal roost sites during post-breeding, migration and wintering periods.	- Common across southern Ontario, especially along Lake Erie and Lake Ontario shorelines and the Saugeen River. - Sparse populations scattered across northern Ontario.	OBBA	Moderate for breeding habitats where loose aggregates are stored (sand and gravel). Moderate for roosting and foraging sites in adjacent wetland/swamp habitats.	Suitable nesting areas should be assessed for evidence of burrowing or other nesting activities within loose aggregate piles or exposed vertical faces of loose mineral soil within the study area. Adhere to all applicable avian nesting windows.
Avian	Barn Swallow *Hirundo rustica*	THR	THR Schedule 1	THR	- Cup-shaped mud nests are built on human-made structures such as open barns, under bridges, and in culverts. - Preferably constructed on rough-cut wood surfaces with right angles. - Foraging habitat includes grassy fields, pastures, cropland, lake and river shorelines, cottage areas and farmyards, islands, wetlands, and tundra. - **TPO, CUM1, MAM, MAS, OAO, SAS1, SAM1, and SAF1, adjacent to suitable nesting structures**.	- From southern Ontario north to Hudson Bay.	GBIF, OBBA	Low - Few anthropogenic nesting structures anticipated to be present.	Suitable nesting areas should be assessed for the presence of mud nests or other evidence of breeding activity within the study area. Adhere to all applicable avian nesting windows.
Mammals	Eastern Small-footed Myotis (Eastern Small-footed Bat) *Myotis leibii*	END	N/A	N/A	- Summer habitat includes rock outcrops, in buildings, under bridges, or in caves, mines or hollow trees. - Roosting locations are typically changed every night. - Winter hibernation occurs in caves or mines, typically drier and colder than sites selected by other bats.	- South of Georgian Bay to Lake Erie and east to the Pembroke area, the Bruce Peninsula, the Espanola area, and Lake Superior Provincial Park.	Known/anticipated species distribution	None - Suitable habitat is not anticipated to be present within the study area.	Breeding bird surveys should be conducted within the corridor to assess the composition of breeding avian species within the subject corridor. Adhere to all applicable avian nesting windows.
Avian	Eastern Whip-poor-will *Antrostomus vociferus*	THR	THR Schedule 1	THR	- Typically a mix of open and forested areas; savannahs, open woodlands, or openings in mature deciduous, coniferous and mixed forests (commonly pine and oak forests). - Foraging habitat may include shrubby pastures or wetlands with perches. - **TPS, TPW, CUW, FOD, FOC and FOM where open areas are present**.	- Southern Ontario to north side of Lake Superior.	Known/anticipated species distribution	Moderate within forested areas adjacent to landfill clearing, Low within cleared and active landfill areas.	If woodland or wetland areas are to be impacted, breeding bird surveys should be conducted within the study area to assess the composition of breeding avian species present. Adhere to all applicable avian nesting windows if vegetation removal is required.
Mammals	Little Brown Myotis (Little Brown Bat) *Myotis lucifugus*	END	END Schedule 1	END	- Large-diameter trees, attics, abandoned buildings, and barns often used for summer colonies. - Foraging occurs over water, along waterways, and forest edges, while open areas such as clearcuts or fields are typically avoided. - Hibernacula used in winter include mines and caves that are humid and remain above freezing.	- All across Ontario; concentrated in southern Ontario.	GBIF, known/anticipated species distribution	Moderate - This species may be present wherever suitable mature trees with snag habitat features are found.	An assessment of bat habitat trees is required if removal of mature trees is anticipated. If removal of suitable roosting trees is required, correspondence with MECP must be sought.
Mammals	Northern Myotis (Northern Long-eared Bat) *Myotis septentrionalis*	END	END Schedule 1	END	- Typically within the boreal forest, under loose bark or in the cavities of trees. - Foraging occurs over water, along waterways, and forest edges, while open areas such as clearcuts or fields are typically avoided. - Overwintering occurs in cold and humid sites such as caves or mines. - **FOC, FOM, FOD, SWC, SWM, and SWD where suitable roosting (i.e. cavity trees and trees with loose bark) habitat is available**.	- Forested areas in southern Ontario, to the north shore of Lake Superior and occasionally as far north as Moosonee, and west to Lake Nipigon.	Known/anticipated species distribution	Moderate - This species may be present wherever suitable mature trees with snag habitat features are found.	An assessment of bat habitat trees is required if removal of mature trees is anticipated. If removal of suitable roosting trees is required, correspondence with MECP must be sought.
Aquatics	Lake Sturgeon (Great Lakes-Upper St. Lawrence River populations) *Acipenser fulvescens*	END	No Status	THR	- Freshwater lakes and rivers with soft bottoms of mud, sand or gravel, typically between 5 - 20 m deep. - Spawning occurs in relatively shallow, fast-flowing water with gravel and boulders at the bottom or on open shoals with strong currents. - **OAO; large lakes/rivers > 20m deep with soft mud, sand, or gravel bottoms required**.	- Rivers of the Hudson Bay basin, Great Lakes basin, and major connecting waterways, including the St. Lawrence River.	Known/anticipated species distribution	Moderate within suitably-sized watercourses and waterbodies.	Mitigation measures to avoid indirect impacts to fish habitats within and adjacent to the study area.
Mammals	Tri-colored Bat *Perimyotis subflavus*	END	END Schedule 1	END	- Day roost and maternity colonies are formed in older forests with large-diameter trees, barns, or other structures. - Foraging occurs over water or along streams in a forest. - Winter hibernacula include caves and mines.	- Southern Ontario north to Sudbury.	Known/anticipated species distribution	Moderate - This species may be present wherever suitable mature oak and/or maple trees are found.	An assessment of bat habitat trees is required if removal of mature trees is anticipated. If removal of suitable roosting trees is required, correspondence with MECP must be sought.

TOTAL	**8**
Herpetofaunas	**0**
Avian	**3**
Aquatics	**1**
Invertebrates	**0**
Flora	**0**
Mammals	**4**

ESA Status	
END	**4**
THR	**4**
TOTAL SAR	**8**

TABLE B2 Species of Conservation Concern

Taxonomy	Species	ESA Status	SARA Status	COSEWIC Status	Preferred Habitat[1, 2]	Known Species Range[1, 2]	Source Identifying Species Record	Probability of Occurrence within Study Area	Conclusions/ Recommendations
Avian	Bald Eagle *Haliaeetus leucocephalus*	SC	No Status	Not at Risk	- Wide variety of habitats near major lakes or rivers. - Tall trees (ie, pine or poplar) typically used for nesting. - Diet consists of fish and dead animals (ie, white-tailed deer). - **FOC, FOM, FOD, SWC, SWM and SWD**.	- Can be found across Ontario, from US border north to Lake of the Woods.	GBIF, OBBA	Moderate in proximity to watercourses and larger bodies of water.	If woodland or wetland areas with tall perch trees are to be impacted, breeding bird surveys should be conducted to assess for the presence of large stick nests within the study area. Adhere to all applicable avian nesting windows if vegetation removal is required.
Avian	Canada Warbler *Cardellina canadensis*	SC	THR Schedule 1	THR	- Deciduous or coniferous forests with well-developed, dense shrub layer; commonly wet or in riparian areas. - May also include stands regenerating after natural disturbances (ie, logging). - **FOC3, FOC4, FOM6, FOM7, FOM8, FOD6, FOD7, FOD8, FOD9, SWC, SWM and SWD** .	- All of Ontario.	GBIF, NHIC	Moderate to high in suitable woodland or swamp areas.	If woodland or wetland areas are to be impacted, breeding bird surveys should be conducted within the study area to assess the composition of breeding avian species present. Adhere to all applicable avian nesting windows if vegetation removal is required.
Avian	Common Nighthawk *Chordeiles minor*	SC	THR Schedule 1	SC	- Open areas with little to no ground vegetation; logged or burned areas, rock barrens, peat bogs, lakeshores, dunes, beaches, and mine tailings. - Less commonly found in cultivated fields, orchards, mine tailings, and along gravel roads and railways. - Nesting habitat is typically open and vegetation free; may include grasslands, pastures, marshes, and riverbanks. - May also include mixed and coniferous forests. - **SD, BB, RB, CUM, BO, FOM, FOX and FOD with sparsely vegetated openings** .	- All of Ontario except for coastal regions of James Bay and Hudson Bay.	GBIF, OBBA	Moderate where suitable open nesting habitat is present.	If suitable open nesting habitat is present where impacts are anticipated, breeding bird surveys should be conducted within the study area to assess for presence of this species. Adhere to all applicable avian nesting windows if vegetation removal is required.
Avian	Evening Grosbeak *Coccothraustes vespertinus*	SC	SC Schedule 1	SC	- Open, mature mixed-wood forests dominated by fir, white spruce, and/or trembling aspen. - Attracted to ornamental trees and bird feeders. - **FOC and FOM**.	- Southern Ontario north to Lake Nipigon.	OBBA, Known/anticipated species distribution.	Moderate to high in suitable woodland areas.	If woodland or wetland areas are to be impacted, breeding bird surveys should be conducted within the study area to assess the composition of breeding avian species present. Adhere to all applicable avian nesting windows if vegetation removal is required.
Avian	Horned Grebe (Western population) *Podiceps auritus*	SC	SC Schedule 1	SC	- Small ponds, marshes, and shallow bays with open water and ample emergent vegetation. - Nests often built within a few metres of small semi-permanent or permanent ponds.	- Northwestern Ontario east to Lake Nipigon.	Known/anticipated species distribution.	Low - Suitable open-water wetland habitats are present in the regional landscape, but not abundant within the study area.	If woodland or wetland areas are to be impacted, breeding bird surveys should be conducted within the study area to assess the composition of breeding avian species present. Adhere to all applicable avian nesting windows if vegetation removal is required.
Avian	Rusty Blackbird *Euphagus carolinus*	SC	SC Schedule 1	SC	- Wet woodlands, swamps, pond edges. - Agricultural land is used for foraging. - Boreal forest is used for breeding; conifer-dominated forests adjacent to wetlands, peat bogs, sedge meadows, marshes, swamps, and beaver ponds.	- Breeding habitat spans Hudson Bay south to Orillia. - May be seen in southern Ontario during migration.	GBIF, Known/anticipated species distribution.	Moderate to high in suitable woodland areas.	If woodland or wetland areas are to be impacted, breeding bird surveys should be conducted within the study area to assess the composition of breeding avian species present. Adhere to all applicable avian nesting windows if vegetation removal is required.
Avian	Olive-sided Flycatcher *Contopus cooperi*	SC	THR Schedule 1	SC	- Coniferous or mixed forests containing white spruce, black spruce, jack pine, or balsam fir, and adjacent to wetlands. - Commonly found along natural forest edges and openings adjacent to rivers, swamps, burned forest, or logged areas. - Requires snags and tall trees for foraging perches. - **CUW, FOC, and FOM**.	- All of Ontario.	OBBA	Moderate to high in suitable woodland areas.	If woodland or wetland areas are to be impacted, breeding bird surveys should be conducted within the study area to assess the composition of breeding avian species present. Adhere to all applicable avian nesting windows if vegetation removal is required.

TOTAL	**7**
Herpetofaunas	**0**
Avian	**7**
Aquatics	**0**
Invertebrates	**0**
Flora	**0**
Mammals	**0**

ESA Status	
SC	**7**
No Status	**0**
EXP	**0**
TOTAL SCC	**7**

Glossary	
EXP	ESA - Extripated - a species that no longer exists in the wild in Ontario but still occurs elsewhere.
	SARA - Extripated - a wildlife species that no longer exists in the wild in Canada, but exists elsewhere in the wild.
END	ESA - Endangered - a species facing imminent extinction or extirpation in Ontario which is a candidate for regulation under Ontario's Endangered Species Act.
	SARA - Endangered - a wildlife species that is facing imminent extirpation or extinction.
THR	ESA - Threatened - a species that is at risk of becoming endangered in Ontario if limiting factors are not reversed.
	SARA - Threatened - a wildlife species that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
SC	ESA - Special Concern (formerly Vulnerable) - a species with characteristics that make it sensitive to human activities or natural events.
	SARA - Special Concern - a wildlife species that may become a threatened or an endangered species because of a combination of biological characteristics and identified threats.
OMNR	Ontario Ministry of Natural Resources
ESA	Endangered Species Act
SARA	Species at Risk Act (Federal)
Schedule 1	The official list of species that are classified as extirpated, endangered, threatened, and of special concern.
Schedule 2	Species listed in Schedule 2 are species that had been designated as endangered or threatened, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
Schedule 3	Species listed in Schedule 3 are species that had been designated as special concern, and have yet to be re-assessed by COSEWIC using revised criteria. Once these species have been re-assessed, they may be considered for inclusion in Schedule 1.
COSEWIC	Committee on the Stauts of Endangerd Wildlife in Canada - a committee of experts that assesses and designates which wild species are in some danger of disappearing from Canada.
Low Probability	A site lacking either sufficient size, geographic location, or required characteristics to be considered suitable habitat using aerial interpretation and field vists.
Moderate Probability	A site containing candidate habitat features using aerial interpretation, although evidence of the SAR itself was not found on site during a field vist.
High Probability	A site containing both candidate habitat using aerial interpretation as well as evidence of the SAR identified during a field visit.
References	
1	- Species at Risk . Ontario Ministry of Natural Resources. http://www.mnr.gov.on.ca/en/Business/Species/index.html. © Queens Printer For Ontario, 2013.
2	- Species at Risk Status Reports. Committed on the Status of Endangered Wildlife in Canada. Ottawa. http://www.sararegistry.gc.ca/search/advSearchResults_e.cfm?stype=doc&docID=18.
3	- Evans, Melissa, Elizabeth Gow, R. R. Roth, M. S. Johnson and T. J. Underwood. 2011. Wood Thrush (Hylocichla mustelina), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; doi:10.2173/bna.246
	Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/246
4	- McCarty, John P. 1996. Eastern Wood-Pewee (Contopus virens), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America Online: http://bna.birds.cornell.edu/bna/species/245doi:10.2173/bna.245

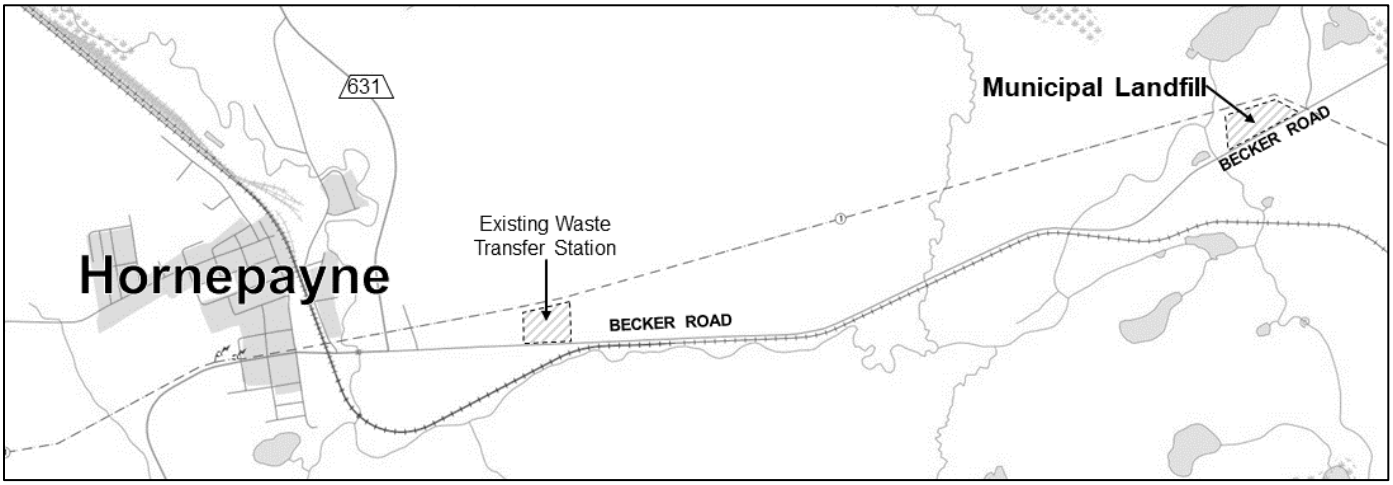
Appendix C:
Notice of Commencement of an Environmental Screening and a Public Open House

Notice of Commencement of an Environmental Screening and a Public Open House

Municipal Landfill, Township of Hornepayne

The Township of Hornepayne has commenced an Environmental Screening Process (ESP) in accordance with the Waste Management Projects Regulation (Ontario Regulation 101/07) of the *Environmental Assessment Act* (EAA) for an expansion of the municipal landfill located about 5 km east of Hornepayne (see map below). This regulation is directed partially at small, rural waste disposal sites and select waste projects are deemed exempt from Part II of the EAA if the environmental screening process is completed. The ESP is intended to determine the feasibility of a capacity expansion at the Municipal Landfill as a long-term (25-year) solution that will best meet the needs of the municipality with respect to the management of municipal solid waste generated within its boundaries. The results of the ESP will be documented in an Environmental Screening Report, which will be released for review and comment by the public, Indigenous communities, and agencies.

The Proposed Undertaking: The Municipal Landfill was built in 2001 and is located approximately 5 km east of the Township of Hornepayne, on part of Lots 2 & 3, Concession 3, Township of Hornepayne, District of Algoma. It currently has a disposal capacity of 39,000m^3, and it is expected to reach this capacity in 2025. Based on the findings of the Township's Long-Term Waste Management Strategy, the Township is looking to increase the disposal capacity of the landfill site by 59,000m^3, bringing the site's total disposal capacity to 98,000m^3. This would provide enough disposal capacity to meet the Town's needs for more than 25 years. The Township is also planning to relocate the existing waste transfer station to the landfill site.



Consultation and Public Open House: Stakeholder participation is an important part of the Township's consultation process. A Public Open House is planned to provide stakeholders the opportunity to learn more about the project and to provide comments and questions regarding the project. The drop-in style public open house session for the project is scheduled for:

Tuesday, April 25, 2023
6:00 pm to 8:00 pm
Royal Canadian Legion, 48 Sixth Ave, Hornepayne

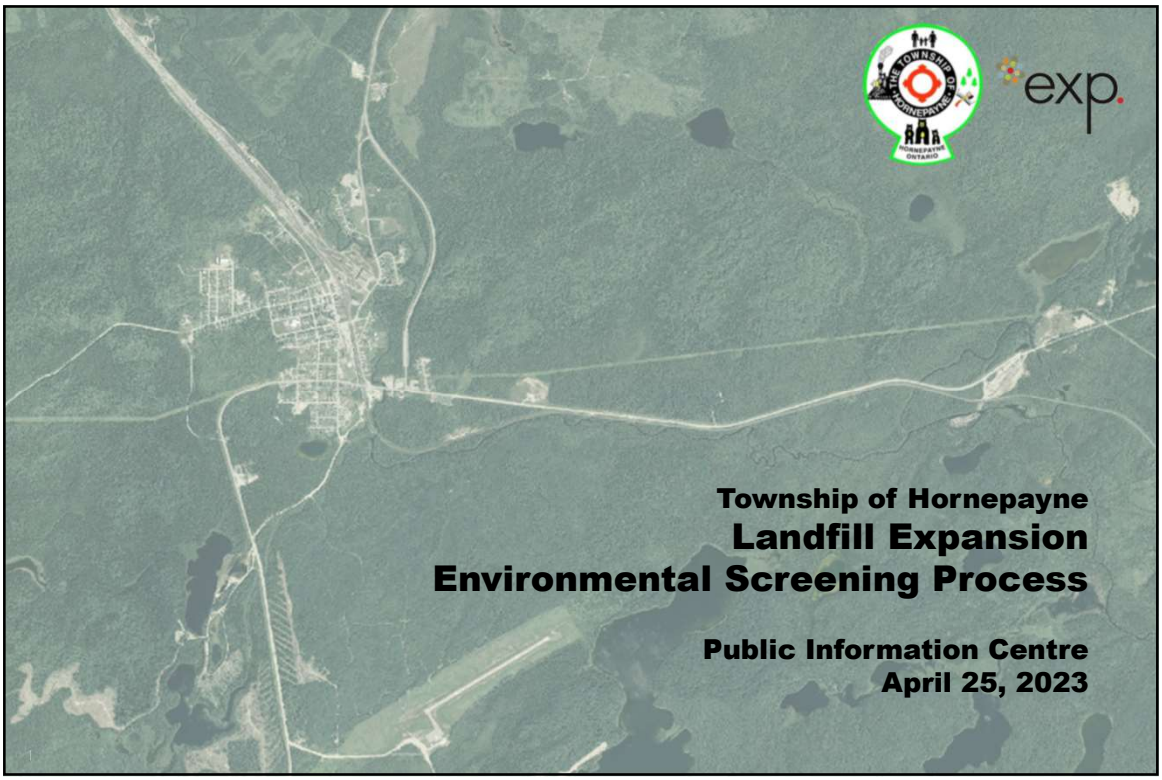
To learn more about the project, please visit https://www.townshipofhornepayne.ca/. Please contact the following project team members to submit questions or comments or to request being added to our project distribution list:

Public Works Manager
Township of Hornepayne
E-mail: pwmanager@hornepayne.ca
Tel: (807) 868-2020

John Smith, Project Consultant
exp Services Inc.
John.Smith@exp.com

Under the Freedom of Information and Protection of Privacy Act and the Environmental Assessment Act, unless otherwise stated in the submission, any personal information such as name, address, telephone number and property location included in a submission will become part of the public record files for this Project and will be released, if requested, to any person.

Appendix D:
Public Open House #1



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Welcome!

To view these display boards online, please visit:
https://www.townshipofhornepayne.ca/

- Please sign in and take a comment sheet.
- The purpose of this Open House is to:
  - Provide an update of the study to the public.
  - Present the preliminary design concept for the landfill expansion.
  - Seek your input and comments.
- If you have questions, our team members are available to discuss the project with you.
- Please drop off your comment sheets before you leave. You can also e-mail your comments to the project team members or mail your comment sheet to the municipal office by **Wednesday, May 10, 2023**.

John Smith, Project Consultant, **exp Services Inc.**
John.Smith@exp.com

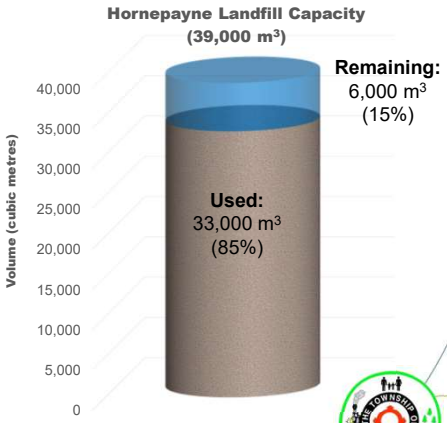
Public Works Manager, **Township of Hornepayne**
pwmanager@hornepayne.ca
Township of Hornepayne
68 Front St P.O. Box 370
Hornepayne, ON P0M 1Z0

2

2

Project Background (1)

- Hornepayne's landfill was constructed in 2001, with a capacity for 39,000 m^3 of landfill waste*.
- In 2021, it was determined that the landfill had about 6,000 m^3 of disposal capacity remaining.
- Hornepayne's annual disposal rate is about 1,900 m^3 per year (after compaction in the landfill).
- Based on current disposal rates, the landfill will reach capacity in 2025.
- The Township is planning for at least 25 years of disposal capacity (i.e., a 25-year planning horizon).
- To achieve this planning horizon, the Township will need an additional 47,500 m^3 of disposal capacity.



* This includes both garbage plus landfill cover. Landfill cover is material such as soil that is used to cover the waste placed in the landfill. Landfill cover is needed to contain odours, discourage pests, reduce blown litter, and reduce water infiltration.

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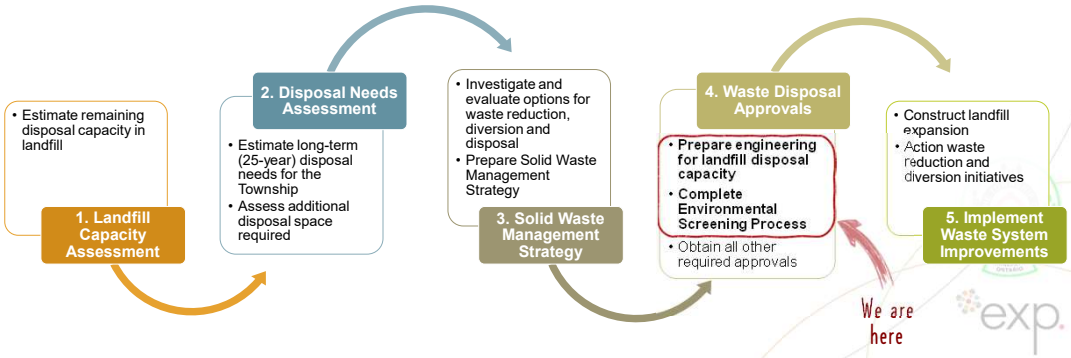
Project Background (2)

- In 2021, the Township began developing its Long-Range Waste Management Plan, which includes waste diversion and disposal.
- A landfill capacity assessment was completed that concluded the landfill had three or four years of disposal capacity remaining.
- A disposal needs assessment was then completed, which calculated the Township requires at least 47,500 m^3 of disposal capacity over the next 25 years.
- In 2022, a Solid Waste Management Strategy was completed that recommended:
  - Expansion of the existing landfill & relocation of the waste transfer station to the landfill site.
  - Implementation of household organics collection and composting.
  - Clear bag garbage collection.
- Preliminary design for the landfill expansion was initiated and determined the landfill could be expanded by about 59,000 m^3.
- The Environmental Screening Process is now underway.



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Environmental Screening Process (1)

- The Environmental Assessment process for solid waste management projects is legislated by the *Waste Management Projects Regulation (O.Reg.101/07)* under Ontario's *Environmental Assessment Act.*
- *O.Reg.101/07* identifies what type and size of waste management projects must go through an Individual Environmental Assessment process or an Environmental Screening Process.

The Hornepayne Landfill Expansion falls under the **Environmental Screening Process** because:

- The existing landfill site has a current capacity of less than 40,000 m^3.
- It is changing to become a landfill site that is not more than 100,000 m^3.
- The change would add 40,000 m^3 or more but not more than 100,000 m^3 to the total waste disposal volume.

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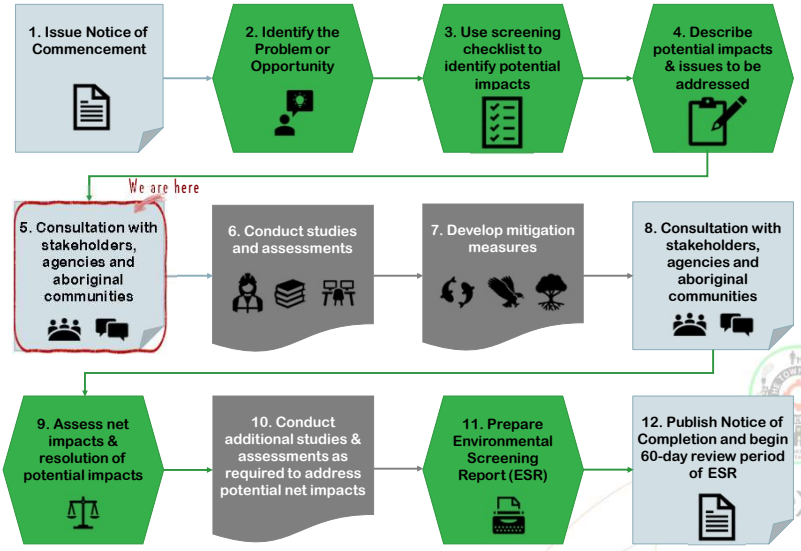
Environmental Screening Process (2)

- An overview of the Environmental Screening Process is illustrated (right).
- The steps have been categorized as:
  - Consultation.
  - Assessment.
  - Studies.
- If there is no approved request to elevate the project to an Individual EA, then the project may obtain any other required approvals and proceed.



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Problem and Opportunity Identification

The Problem

- The Township only has approximately 6,000 m^3 of disposal capacity left in its landfill site.
- The Township needs at least 47,500 m^3 of additional disposal capacity over the next 25 years.

The Opportunity

- Undertaking a landfill expansion provides an opportunity to complete additional works to optimize the Township's waste management programs. This will help to increase waste diversion and improve the cost-effectiveness of waste operations.
- Preliminary design indicates that the existing landfill site can provide enough disposal capacity for beyond the planning horizon.

The Project

- **Expand the Township's existing landfill site to provide enough disposal capacity for the Township to go beyond its 25-year planning horizon.**
- **Build a new Waste Transfer Station / Drop-off site at the existing landfill site.**

7

7

Screening Criteria Checklist & Results

- An environmental screening checklist is used to identify whether certain potential environmental effects may be expected.
- The checklist considers many different types of criteria.
- The results of the checklist help guide what studies are needed during the design and engineering to mitigate these potential effects.
- Key results and findings from the screening are summarized below, based on the categories of criteria considered.

Surface and Ground Water

- As with any landfill activity, there is the potential for negative effects on surface and ground water.
- The landfill expansion design will include mitigation measures to address these potential negative effects.

Socio-Economic

- No negative socio-economic effects are anticipated.
- No negative effects to the Municipality's local economy (e.g., businesses and institutions, recreation, tourism, etc) are expected.

Natural Environment

- There are some trees on the property that would be impacted by the expansion.
- There are no woodlands, designated wetlands or significant natural areas near the expansion area.

Municipal Resources & Infrastructure

- No negative effects on the Municipality's resources or infrastructure are expected.
- The landfill expansion is taking place at the existing landfill site.

Heritage and Culture

- There are no archaeological sites, heritage buildings, structures or landscapes of cultural significance near the site.

Land Uses

- Because the proposed expansion would take place on an existing landfill site, no negative effects to existing surrounding land uses are expected.
- The proposed expansion is not inconsistent to any municipal, provincial or federal land use policies.

Air and Noise

- Landfills can create odour and air quality impacts due to the release of greenhouse gases and use of heavy equipment.
- No receptors or uses sensitive to noise, dust and odours are located near the airport.

Aboriginal

- No negative effects on land, resources, traditional activities or other interests of Aboriginal communities is expected, as expansion is taking place on the existing landfill site.

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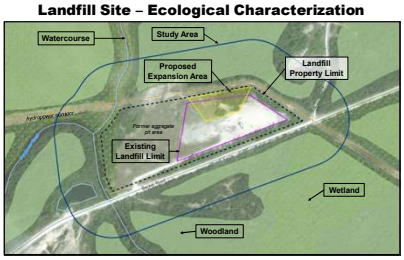
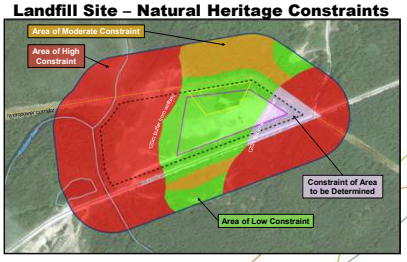
Natural Heritage Study

- A desktop review was undertaken to identify natural heritage (i.e., environmental) constraints at and around the landfill site.
- Key natural heritage features include wetlands west of the landfill, which are part of the Deadwater Creek riparian corridor. Wetlands are also located east of the landfill site but outside of the landfill property limits.
- Woodlands are located to the north and south of the landfill site, but they are beyond the hydropower corridor to the north and Becker Road to the south.
- Based on a 120m buffer from the wetlands, the proposed landfill expansion area does not extend into areas of high or moderate constraint. However, southeast corner of the existing landfill is located within the 120m buffer of the wetlands to the east.
- Natural Heritage review identified potential for Species at Risk and Species of Conservation Concern within the study area; however, these species would reside in the habitats situated outside of the landfill property (e.g., woodland and swamp areas, watercourses).
- Landfill site design would mitigate potential impacts to natural features beyond the landfill property.

Landfill Site – Ecological Characterization



Landfill Site – Natural Heritage Constraints



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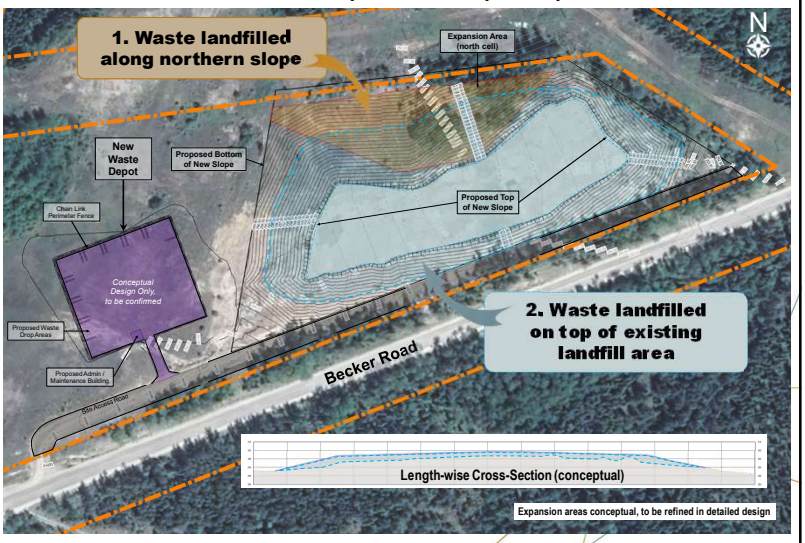
Landfill Site - Proposed Expansion

- Proposed expansion would add up to 59,000 m^3 to site's existing capacity.
- Added capacity would be completed in two parts:
  1. Expansion northward, using space along northern slope.
  2. Expansion upward, adding a layer of waste to top of existing landfill site.
- Proposed expansion would provide enough disposal capacity for about 30 years.
- Proposed expansion will also include relocation of waste depot to landfill site.

Landfill Site Waste Disposal Areas – Proposed Expansion



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Next Steps

1. **Review** comments from Public Open House.

REVIEW

2. **Update** the preliminary design concepts as required based on the feedback received.

UPDATE

3. **Complete** any additional required studies.

COMPLETE

4. **Develop** mitigation measures for potential impacts.

DEVELOP

5. Undertake additional **consultation** with stakeholders and agencies.

CONSULT

6. **Prepare and circulate** the Environmental Screening Report.

CIRCULATE

7. Provide **submission** for Ministry approval.

SUBMIT

11

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To view these display boards online, please visit:
https://www.townshipofhornepayne.ca/

We Want to Hear from You!

- Please take a comment sheet to fill in now or send in by **Wednesday, May 10, 2023.**
- To e-mail or mail us your comments:

John Smith, Project Consultant, **exp Services Inc.**
John.Smith@exp.com

Duane Gaudreau, Public Works Manager
Township of Hornepayne
pwmanager@hornepayne.ca
Township of Hornepayne
68 Front St P.O. Box 370
Hornepayne, ON P0M 1Z0

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Township of Hornepayne

Landfill Expansion Environmental Screening Process

Public Information Centre #1
Tuesday, April 25, 2023

SIGN-IN SHEET
(please print)

NAME	ADDRESS	E-MAIL (if you wish to receive further notices)

PRIVACY STATEMENT: Under the Freedom of Information and Protection of Privacy Act and the Environmental Assessment Act, unless otherwise stated in the submission, any personal information such as name, address, telephone number and property location included in a submission will become part of the public record files for this Project and will be released, if requested, to any person.

Township of Hornepayne

Landfill Expansion Environmental Screening Process

Public Information Centre #1
Tuesday, April 25, 2023

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(please print)

NAME	ADDRESS	E-MAIL (if you wish to receive further notices)
[redacted]		
[redacted]		
[redacted]		
[redacted]		
[redacted]		
[redacted]		
[redacted]		
[redacted]		

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COMMENT SHEET

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We appreciate and look forward to your feedback.

1. **Please share with us any other thoughts or comments about the Hornepayne Landfill expansion project that you may have.**

Once the first smaller landfill site is closed and residents will be required to drive out to the other expanded site, my concern would be in regards to the safety of driving further out on Becker Road. The condition of the road concerns me, as well as the number of careless truck drivers who tend to drive quite fast along Becker Road. I realize that there would be

Please use other side for additional space

Please provide your comment sheets to the project team before you leave or e-mail or mail us your comments by **Wednesday, May 10, 2023.**

John Smith, Project Consultant, **exp Services Inc.**
John.Smith@exp.com

Duane Gaudreau, Public Works Manager
Township of Hornepayne
pwmanager@hornepayne.ca
Township of Hornepayne
68 Front St P.O. Box 370
Hornepayne, ON P0M 1Z0

Specific regulations that would have to be followed as to where a landfill site could be located, but I would hope that Bieber Road would be well maintained to ensure safety. I also understand that the speed limit has been lowered along Bieber Road so I would hope that more police presence could be present to monitor the speed of the trucks. I also realize that police presence in our community is limited, so this may be difficult to provide. Not sure what the solution to my concern would be.

Contact Information (Optional)

Name:

Mailing

E-mail:

Telepho

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Love That moving to the Second Dump will be great for the Town, but I have a few comments or Suggestions.

I currently and for about the last 10 years work at the Landfill. my biggest concern is Traffic on that road. working there you can See Just how many Trucks (hauling) utilize the Same Rd. I truly worry about the amount of Town Traffic coming to the landfill. on average we get between (roughly ->

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30-60 vehicles at the landfill daily. add that to mill + co-gen worker's the truck's working, CN employees as well as people going to Cree that's alot. I worry for accidents as well as Broken windShields.

I also wonder ~~how~~ if we will have any kind of washroom facilities.

Currently we have an outhouse (last few years) which is fine in the Summer - but winter we have no alternative ~~to~~ but to use the great outdoors (no thanks at -40) or a pail we also have no ~~s~~ washing facilities, so we use bottled water and hand Sanatizer.

I would like to Suggest maybe raising the number of bag's allowed to be picked up by the garbage truck from 4 to 6 or possibly even 8. we have no recycling so we do tend to have more actual garbage then other towns with recycling. This would help reduce the # of vehicles on that road and possibly keep it much safer then it will be.

ALSO A Bigger Share Shack would help keep more Out of our Landfill. it is used ~~s~~ + over pop

Contact Information (Optional)

Name

Mailing

E-mail

Teleph

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IN MY OPINION THIS IS LONG OVERDUE.
I NEVER THOUGHT THE TRANSFER STATION WAS A GOOD IDEA.
BRAVO!! AND GOOD LUCK WITH THIS PROJECT..

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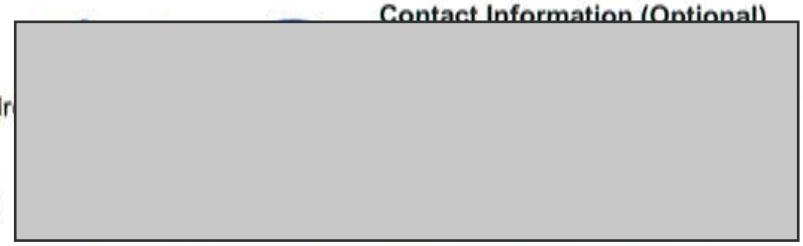

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I think this is a very practical & cost-efficient method to address the concern of the landfill decreasing capacity.
I believe the current tranfer station is ~~xxx~~ unnecessary, and it makes sense to have the transfer station & the active landfill at the same site.
I am relieved that EXP was able to provide a solution that doesn't include the creation of a new landfill which is

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the optimum action which will save the township & the taxpayers many dollars.

Also - very good information - easy to read & understand -

Contact Information (Optional)

Name:

Mailing address:

E-mail:

Telephone:

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We're really glad to see that the obvious is finally being done. It certainly doesn't make sense to have a dumping station so close to the landfill site. Expanding the existing landfill site will be more economical and will free-up staff for other tasks.

CP Browne

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1. **Please share with us any other thoughts or comments about the Hornepayne Landfill expansion project that you may have.**

Happy to see new site will be safer with extra road to it that is much safer to enter + exit..!
Bathroom please.
Bigger share shack would really work well

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Appendix E:
Indigenous Community Consultation

June 7, 2023

[Contact Name]
[Address]
[City, State Zip]

Re: **Hornepayne Landfill Expansion Project**
Notice of Project Commencement of an Environmental Screening

Dear [Contact Name]:

The Township of Hornepayne has commenced an Environmental Screening Process (ESP) in accordance with the Waste Management Projects Regulation (Ontario Regulation 101/07) of the Environmental Assessment Act (EAA) for an expansion of Hornepayne's municipal landfill, which is located about 5 km east of Hornepayne.

Please find attached a copy of the project's *Notice of Commencement of an Environmental Screening and a Public Open House*, which includes a map depicting the location of the municipal landfill.

The Public Open House was held on Tuesday, April 25, 2023. However, the Municipality was since advised by the Ministry of the Environment, Conservation and Parks (MECP) that your community may have an interest with this project. We invite your community to share with us any comments or concerns it may have.

For more information, or to request a copy of the Open House display boards, please contact the undersigned at john.smith@exp.com or the Township of Hornepayne's Public Works Manager at pwmanager@hornepayne.ca. Also attached to this letter is a Project Consultation Form that you may wish to complete and send back to indicate your community's area of interest and designated contact information, or to indicate if your community has no interest in this project. You may also put this information in an e-mail to the undersigned, if more convenient.

Sincerely,

John Smith
Director, Solid Waste, Central Ontario Infrastructure

cc: ABC

1595 Clark Blvd., Brampton, ON L6T 4V1 | CANADA
t: +1.905.793.9800 | exp.com

MECP Aboriginal Communities Consultation List for the Township of Hornpayne Landfill Expansion EA

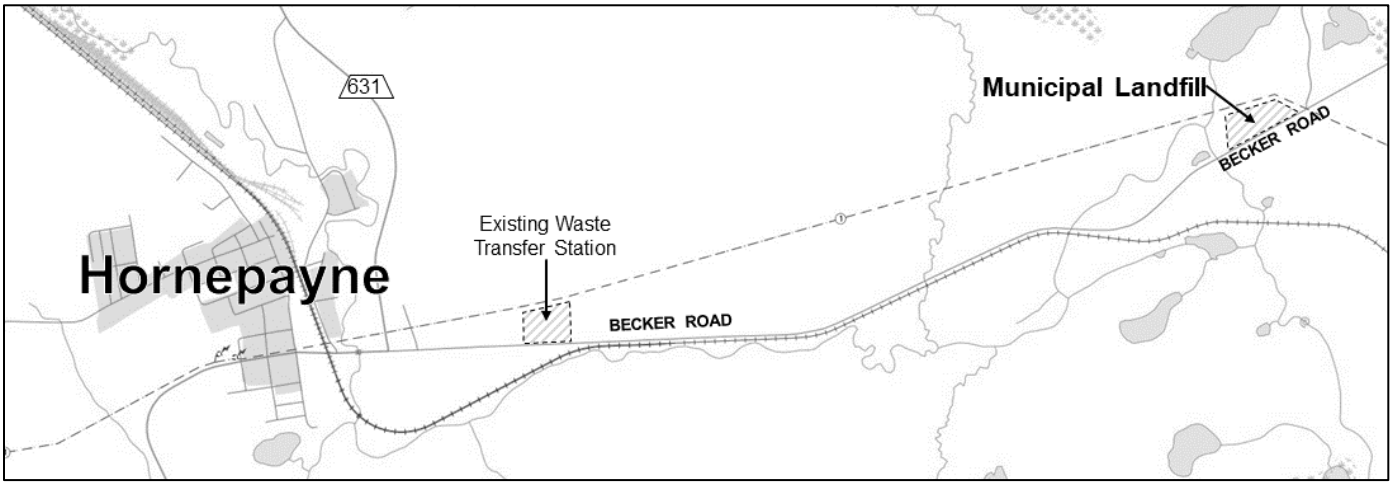
Netmizaaggamig Nishnaabeg
Biigtigong Nishnaabeg
Michipicoten First Nation
Batchewana First Nation
Garden River First Nation
Métis Nation of Ontario – Region 2
Red Sky Métis Independent Nation
Brunswick House First Nation

Notice of Commencement of an Environmental Screening and a Public Open House

Municipal Landfill, Township of Hornepayne

The Township of Hornepayne has commenced an Environmental Screening Process (ESP) in accordance with the Waste Management Projects Regulation (Ontario Regulation 101/07) of the *Environmental Assessment Act* (EAA) for an expansion of the municipal landfill located about 5 km east of Hornepayne (see map below). This regulation is directed partially at small, rural waste disposal sites and select waste projects are deemed exempt from Part II of the EAA if the environmental screening process is completed. The ESP is intended to determine the feasibility of a capacity expansion at the Municipal Landfill as a long-term (25-year) solution that will best meet the needs of the municipality with respect to the management of municipal solid waste generated within its boundaries. The results of the ESP will be documented in an Environmental Screening Report, which will be released for review and comment by the public, Indigenous communities, and agencies.

The Proposed Undertaking: The Municipal Landfill was built in 2001 and is located approximately 5 km east of the Township of Hornepayne, on part of Lots 2 & 3, Concession 3, Township of Hornepayne, District of Algoma. It currently has a disposal capacity of 39,000m^3, and it is expected to reach this capacity in 2025. Based on the findings of the Township's Long-Term Waste Management Strategy, the Township is looking to increase the disposal capacity of the landfill site by 59,000m^3, bringing the site's total disposal capacity to 98,000m^3. This would provide enough disposal capacity to meet the Town's needs for more than 25 years. The Township is also planning to relocate the existing waste transfer station to the landfill site.



Consultation and Public Open House: Stakeholder participation is an important part of the Township's consultation process. A Public Open House is planned to provide stakeholders the opportunity to learn more about the project and to provide comments and questions regarding the project. The drop-in style public open house session for the project is scheduled for:

Tuesday, April 25, 2023
6:00 pm to 8:00 pm
Royal Canadian Legion, 48 Sixth Ave, Hornepayne

To learn more about the project, please visit https://www.townshipofhornepayne.ca/. Please contact the following project team members to submit questions or comments or to request being added to our project distribution list:

Public Works Manager
Township of Hornepayne
E-mail: pwmanager@hornepayne.ca
Tel: (807) 868-2020

John Smith, Project Consultant
exp Services Inc.
John.Smith@exp.com

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Hornepayne Landfill Expansion
Environmental Screening Process

Consultation Form

Organization	
Contact Name:	
Title:	
Mailing address:	
E-mail Address:	
Phone/Fax:	

✔	**Please Check All Responses Below That Apply:**
	Our organization **does not** require any further involvement in this study
	Please keep us informed throughout the project
	Our organization's area of interest for this project includes (please indicate, if applicable):

Please email, mail or fax this form back to:

John.Smith@exp.com

John Smith
Consultant Project Manager
EXP Services
1595 Clark Boulevard, Brampton, ON, L6T 4V1

Fax: (905) 793-0641