

Environment



Waste Management of Canada Corporation

## **Public Open House #2 – Summary Report**

**Prepared by:**

AECOM

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**Project Number:**

60263757

**Date:**

December, 2012

## Statement of Qualifications and Limitations

The attached Report (the “Report”) has been prepared by AECOM Canada Ltd. (“Consultant”) for the benefit of the client (“Client”) in accordance with the agreement between Consultant and Client, including the scope of work detailed therein (the “Agreement”).

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- represents Consultant’s professional judgement in light of the Limitations and industry standards for the preparation of similar reports
- may be based on information provided to Consultant which has not been independently verified
- has not been updated since the date of issuance of the Report and its accuracy is limited to the time period and circumstances in which it was collected, processed, made or issued
- must be read as a whole and sections thereof should not be read out of such context
- was prepared for the specific purposes described in the Report and the Agreement
- in the case of subsurface, environmental or geotechnical conditions, may be based on limited testing and on the assumption that such conditions are uniform and not variable either geographically or over time

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# 1. Introduction

Waste Management of Canada Corporation (WM), owners and operators of the existing Richmond Landfill have initiated an Environmental Assessment (EA) seeking approval for a new landfill footprint at the proposed Beechwood Road Environmental Centre (BREC). The BREC would be an integrated waste management facility that would include the following components:

- Material Recycling Facility;
- Residential Diversion Facility;
- Landfill-Gas-to-Energy Facility;
- Construction and Demolition Material Facility;
- Organics Processing Facility;
- Electronic Waste Handling Facility; and,
- A new landfill footprint for disposal of residual waste materials.

Public and external agency consultation is a key component of EA's and as such, has been incorporated into this process. A Notice of Commencement for the EA of this project, inviting initial input, was issued on March 15, 2012; a first Public Open House for the EA was held on March 28, 2012; Workshop #1 took place on May 2, 2012; a Question and Answer (Q&A) Session was held on June 27, 2012; and the second Public Open House took place on November 13, 2012. This Report provides a summary of the events that took place at the second Public Open House, held November 13, 2012.

## 1.1 Objective of the Open House

The main objective of the Open House was to provide an opportunity for attendees to speak directly with WM staff members and technical consultants about the EA for a new landfill footprint at the BREC. Information presented included baseline conditions information collected to date, the proposed evaluation criteria and indicators, preliminary alternative landfill footprint options, the proposed evaluation methodology, and the proposed consultation for the EA.

Attendees were offered the opportunity to present their comments regarding the information directly to staff from WM and AECOM. This interaction allowed for an exchange of information that can be used to enhance the overall project.

## 1.2 Date, Time and Location of the Open House

The second Public Open House was held on Tuesday, November 13, 2012 at the Town of Greater Napanee Lion's Hall, 57 County Road 8, from 4:00 p.m. to 8:00 p.m. The Open House followed a drop-in format, with the information illustrated on a set of display panels arranged around the perimeter of the room. In addition, relevant reference materials, such as the approved Terms of Reference, were made available for public perusal at a reference table in the centre of the room. A brief presentation on the material presented at the Open House was delivered by WM at 7:00 pm following which attendees had an opportunity to ask questions. As mentioned above, Project Team members were available throughout the session to answer questions from attendees.

## 2. Notification of Second Public Open House

Notification of the Open House was provided through newspaper publications on November 1<sup>st</sup> in the *Napanee Beaver* and November 8<sup>th</sup> in the *Napanee Guide*.

Notification was also provided in the form of a Manager’s Letter distributed to neighbours in the vicinity of the proposed BREC facility residing on Beechwood Road, Tucker Lane, Johnson Side Road, Deseronto Road, Selby Road, Callaghan Side Road, and Kenelly Road on November 1<sup>st</sup>. The Manager’s letter was also sent via addressed mail to the Napanee Mayor and Council; the Deseronto Mayor and Council; and the Mohawks of the Bay of Quinte Chief and Council.

A copy of the newspaper notice and the Manager’s Letter are found in **Appendix A**.

## 3. Project Team Members in Attendance

The following project team members were in attendance at the Open House to answer questions:

MARCH 28, 2012 – TOWN OF GREATER NAPANEE FIRE HALL			
WM			Consulting Team
<ul style="list-style-type: none"> <li>• Tim Murphy</li> <li>• Linda Cooper</li> <li>• Randy Harris</li> </ul>	<ul style="list-style-type: none"> <li>• Wayne Jenken</li> <li>• Rick Semeniuk</li> <li>• Bill McDonough</li> </ul>	<ul style="list-style-type: none"> <li>• Remi Godin</li> <li>• Chris Prucha</li> <li>• Reid Cleland</li> </ul>	<b>AECOM</b> <ul style="list-style-type: none"> <li>• Blair Shoniker</li> <li>• Erika Brown</li> </ul>

## 4. Information Presented

Information presented at the Open House was in the form of display boards arranged around the room and organized to take the viewer through the current stage of the EA process. This information included:

- Outline of the BREC’s various components;
- Overview of waste diversion and waste disposal at the BREC;
- Outline of community uses at the BREC;
- Closure of the Richmond Landfill;
- List of WM’s community involvement in the Town of Greater Napanee;
- Details on the approved ToR and amendments;
- Flow chart of the EA process;
- Map of the Study Area;
- Outline of the environmental components to be addressed in the EA and the study areas for each;
- Summary of the preliminary Existing Conditions information collected for the following environmental components:
  - Atmospheric Environment – Air Quality;
  - Atmospheric Environment – Dust;
  - Atmospheric Environment – Odour;
  - Atmospheric Environment – Noise;
  - Geology & Hydrogeology;
  - Surface Water;
  - Natural Environment;

- Cultural & Built Heritage Resources;
- Archaeological Resources;
- Agriculture;
- Transportation;
- Land Use;
- Socio-Economic;
- Aboriginal; and
- Site Design & Operations;
- Discussion of Alternative Methods;
- Display of constraint mapping;
- Presentation of the three preliminary Alternative Landfill Footprint Options;
- Outline of the proposed Evaluation Methodology;
- List of Evaluation Criteria;
- Overview of consultation program; and
- Next steps in the EA.

A copy of the display panels is included in **Appendix B**.

Information was also presented in the form of a brief slide presentation delivered by WM, followed by a question and answer session. The presentation covered the following topics:

- EA process and where we currently are in the process;
- General Study Area for the EA and associated investigations;
- Outline of the environmental components to be addressed in the EA and the study areas for each;
- Discussion of Alternative Methods;
- Three preliminary Alternative Landfill Footprint Options;
- Evaluation Criteria and Evaluation Methodology; and
- Overview of the consultation program.

A copy of the presentation slides is included in **Appendix C**.

## 5. Attendance

A total of 9 individuals attended Open House #2. Those in attendance were local residents, landowners, business owners, municipal staff, and Public Advisory Committee (PAC) members. Two local Councillors also attended the Open House. Comments and concerns raised by attendees during the question and answer portion of the presentation included the following:

- Are any of the three alternative footprint options presented preferred by WM at this point?
- What is the annual tonnage proposed for the BREC?
- Will we know what kind of traffic to expect in relation to the proposed BREC?

Other comments and concerns raised by attendees throughout the evening related to the EA process, groundwater, traffic, consultation, timing, air, health, zoning, surface water, property values, employment, diversion and agriculture. Attendees were encouraged to provide written comments on the comment sheets provided. No comment forms were received.

With the exception of those that requested to be left off, all individuals and/or agency representatives who signed in with their contact information have been added to the project-specific contact database. This database will be used during the remaining phases of the study to contact/inform interested public and key stakeholders of study issues and events.

## 6. Summary of Comments Received

As of December 7, 2012, no comment sheets had been received. A copy of the comment sheet used at the open house is included in **Appendix D**.

## 7. Summary

The second Public Open House for the BREC EA was held on November 13, 2012 at the Town of Greater Napanee Lion's Hall. The second Open House was held to provide an overview of the baseline conditions information collected to date, identify the proposed evaluation criteria and indicators, introduce the preliminary alternative landfill footprint options, present the proposed evaluation methodology, and outline the proposed consultation program for the EA. The Open House provided an opportunity for the public and other stakeholders to discuss the proposed undertaking and their issues or concerns directly with WM and their consulting team. This feedback will be used throughout the preparation of the EA.

A total of 9 individuals attended Open House #2. The main issues raised were as follows:

- Alternative footprint options;
- Proposed annual tonnage; and
- Expected traffic conditions.

WM and the project team plan to review the issues and concerns raised and address them as appropriate as this project proceeds.

# Appendix A

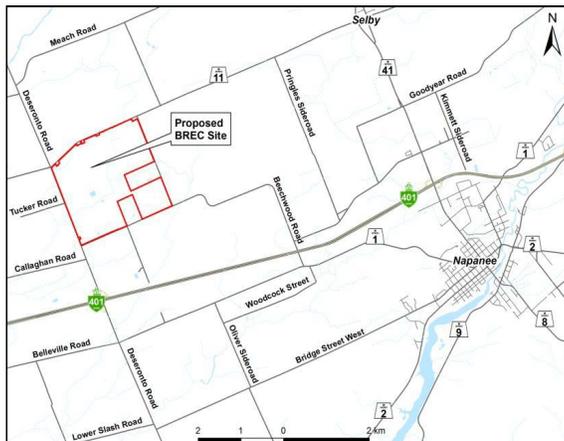
NOTIFICATION OF  
OPEN HOUSE #2



# Waste Management of Canada Corporation (WM) Environmental Assessment for a New Landfill Footprint at the Beechwood Road Environmental Centre (BREC)

## OPEN HOUSE #2 & WORKSHOP #2

WM is undertaking an Environmental Assessment (EA) for a new landfill footprint at the proposed Beechwood Road Environmental Centre (BREC). The BREC would be an integrated waste management facility that would include the following components:



- Material Recycling Facility
- Residential Diversion Facility
- Landfill-Gas-to-Energy Facility
- New Landfill Footprint
- Electronic Waste Handling Facility
- Organics Processing Facility
- Construction & Demolition Material Facility

The new landfill footprint is the only component of the BREC that requires EA approval under the *Environmental Assessment Act* (EAA). The EA will be conducted in accordance with the ToR, approved by the Minister of the Environment. The proposed location of the BREC and the new landfill footprint component is within the Town of Greater Napanee in the area shown on the map below. The purpose of the EA is to study the potential environmental effects (positive or negative) of the proposed

new landfill footprint on the environment. Key aspects of the EA process include: consultation with the public, Aboriginal communities and government agencies; consideration and evaluation of alternatives; and, assessment and management of potential environmental effects. Conducting an EA promotes good environmental planning before decisions are made about a proposal.

### Consultation

Members of the public, Aboriginal communities, government agencies, and other interested persons are encouraged to actively participate in the EA process.

### OPEN HOUSE #2

**Open House #2** will be held on **Tuesday, November 13<sup>th</sup>, 2012, 4 PM to 8 PM**, with a **presentation at 7 PM** at the **Napanee Lions Hall**, located at **57 County Road 8, Napanee**. The purpose of Open House #2 will be to provide baseline conditions information collected to date, present the proposed evaluation criteria and indicators, and introduce the preliminary alternative landfill footprint options. Open House #2 materials, including display boards and handouts will be available on the project website (<http://brec.wm.com>) for review on November 9<sup>th</sup>, 2012.

### WORKSHOP #2

**Workshop #2** is scheduled for **Tuesday, November 27<sup>th</sup>, 2012, 6 PM to 8 PM**, at the **Napanee Lions Hall**, located at **57 County Road 8, Napanee**. Workshop #2 will provide participants with an opportunity to comment on material presented in Open House #2, including baseline conditions information, evaluation criteria and indicators, and the preliminary alternative landfill footprint options. **To register, please contact Linda Cooper at (613) 388-1057 or [lcooper1@wm.com](mailto:lcooper1@wm.com) by November 26<sup>th</sup>, 2012.**

You are invited to submit your comments via the project website (<http://brec.wm.com>), mail, email or fax to the address/number published below. We will also receive your comments on our project information line at (613) 388-1057.

**Randy Harris**  
**Site Manager**  
Waste Management of Canada  
RR#6, 1271 Beechwood Road  
Napanee, Ontario, K7R 3L1  
Fax: (613) 388-2785  
E-mail: [rharris@wm.com](mailto:rharris@wm.com)

**Linda Cooper**  
**Community Relations Representative**  
Waste Management of Canada  
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Fax: (613) 388-2785  
E-mail: [lcooper1@wm.com](mailto:lcooper1@wm.com)

Please note that information related to this Study will be collected in accordance with the *Freedom of Information and Protection of Privacy Act*. With the exception of personal information, all comments received will become part of the public record and may be included in Study documentation prepared for public review.

***Get Involved....Have Your Say!***



# Manager's Letter

**November 1, 2012**

Dear Neighbours:

Starting in this week's Napanee papers, you will see a notice titled "Open House #2 and Workshop #2", concerning the proposed Beechwood Road Environmental Centre.

This notice provides the details on:

**Open House**

November 13, 2012  
Lions Hall  
4 p.m. to 8 p.m.  
Presentation at 7 p.m.

**Workshop**

November 27, 2012  
Lions Hall  
6 p.m. to 8 p.m.

A copy of the notice, with all details is on the reverse of this newsletter. We hope to see you there.

As always, if you have any questions or concerns, please don't hesitate to call.

Randy Harris Site Manager  
1271 Beechwood Rd  
Napanee, Ontario K7R 3L1

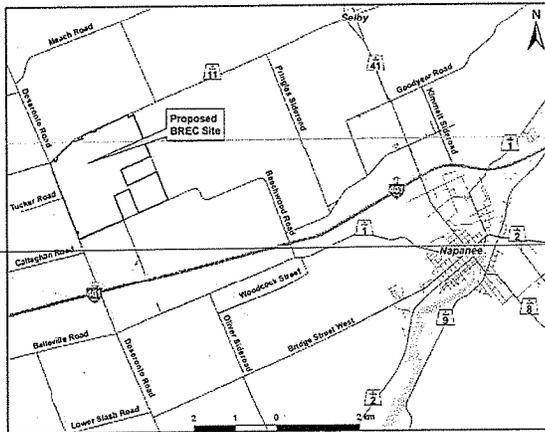
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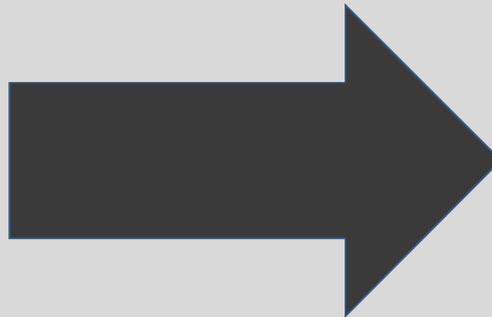
**Get Involved....Have Your Say!**

# Appendix B

OPEN HOUSE #2 BOARDS

Waste Management of Canada Corporation (WMCC) is pleased to welcome you to the second Open House for the *Beechwood Road Environmental Centre (BREC)* Environmental Assessment (EA) of a New Landfill Footprint

Please take a few moments to browse the display material and talk to our staff and consultants



BREC is an integrated waste management facility to serve generators primarily within the Town of Greater Napanee and the surrounding communities in Eastern Ontario.

The BREC will include:

- Material Recycling Facility;
- Construction and Demolition Material Facility;
- Residential Diversion Facility;
- Organics Processing Facility;
- Landfill Gas to Energy Facility;
- Electronic Waste Handling Facility; and
- Community Uses.

*Below is an artist's rendering of the proposed facility which may change throughout the consultation process.*



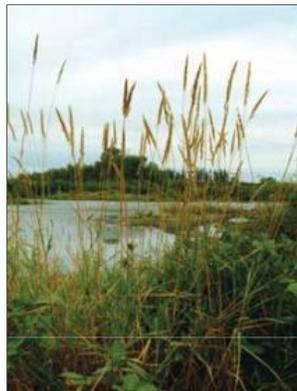
The BREC will include a number of industrial, commercial and residential waste diversion operations that will maximize the value of the resources received. The BREC may include the following facilities:

- **Material Recycling Facility** will sort and process paper, glass, plastics, metals and electronics. The facility will help divert thousands of tonnes of material from disposal, reducing the need for new resources to create products;
- **Construction and Demolition (C & D) Material Facility** will receive construction and demolition materials for re-use and recycling;
- **Residential Diversion Facility** will allow local residents to drop off household recyclables including scrap wood, tires, plastic, metal, paper, drywall, concrete, paints, and more;
- **Organics Processing Facility** will have the capacity to receive and process compostable waste from industrial, commercial and institutional sources;
- **Landfill Gas to Energy Facility** will collect landfill gas and convert it into green, renewable energy. Further, this same technology will be used at the old, closed landfill site to create enough energy to power a greenhouse that will be constructed for community use; and
- **Electronic Waste Handling Facility** to receive and handle waste electronic products.



The Beechwood Road Environmental Centre will include a new, state-of-the-art, environmentally engineered landfill that will receive materials that cannot be diverted towards re-use, recovery or recycling.

- The new landfill footprint is the undertaking that requires EA approval, and will be constructed using the latest technology and processes to ensure the highest available standards of safety and efficiency.
- The new landfill footprint is required for disposal of residual waste materials that cannot be recycled, reused or recovered.
- With a total capacity of 13 million m<sup>3</sup>, the new landfill footprint would deliver a key service to generators in the Town of Greater Napanee and surrounding areas of Eastern Ontario.
- This new engineered landfill footprint will include a liner system, leachate collection and monitoring system to continuously protect ground and surface water.
- The facility will be able to generate six megawatts of electricity, enough energy to power the equivalent of 6,000 homes for a year.



The proposed Beechwood Road Environmental Centre builds on our long standing commitment of being an engaged and responsible corporate citizen to create significant community and economic benefits.

- **Economic Development:** The BREC will create up to 75 new, green jobs in waste diversion, disposal and green energy facilities. Economic benefits will also extend to the larger community through community host agreements, as well as funds to support local projects. In addition, revenue opportunities will be created from waste diversion activities for local processors and downstream activities related to recycling and re-use.
- **Wildlife Habitat:** An on-site wildlife habitat centre has been opened to the public and will continue to serve as an education centre for the community. Our current landfill facility has received international recognition for its contribution to wildlife habitat conservation in the form of a Wildlife Habitat Council (WHC) certification in 2006.
- **Recreation:** WMCC's current landfill operation has extensive non-operational lands. Some space will be required to support the facility's operation, but other lands will be dedicated for community uses that could include sports fields, biking and hiking trails and a leash-free dog park.
- **Community Input:** The input of the community is an important part of determining the ultimate use of non-operational areas at the BREC. Residents and community leaders have told us that they value increasing the amount of available recreational and community lands, and we are responding by setting aside space surrounding our operations for dedicated community use.



The Richmond Landfill was closed on June 30, 2011 as it had reached its capacity. The closure plan, which was approved by the Ministry of the Environment (MOE), was implemented to ensure that the monitoring of groundwater and gas and leachate collection continued as required.

- The Richmond Landfill operated from 1954 until June 30, 2011. Site closure activities continued until August 31, 2011.
- The site was purchased in 1997 by WMCC and throughout the years underwent continuous improvement to ensure it met all applicable regulations, as well as our commitment to environmental protection and stewardship.
- On February 1, 2012 a Waste & Recyclable Drop Off Facility was opened at the Richmond Landfill site.
- This currently accepts electronics, household paints, metal, plastic, cardboard, glass and tires for recycling at no charge. Household and renovation waste are accepted for a disposal fee per load.



Responsible corporate citizenship is important to us and contributing to the health of our community will always play an important role in how Waste Management conducts business in the Town of Greater Napanee.

We provide employment for Greater Napanee residents and many of the company's employees and managers are part of this community; they live, work, and raise their families here.

Locally, we actively support various organizations as well as special events such as:

- Napanee Scarecrow Festival;
- Ducks Unlimited;
- Napanee Soccer Club;
- Canadian Cancer Society Relay for Life;
- Seniors Outreach Services Napanee Friday Bus; and
- Napanee Rod and Gun Club.



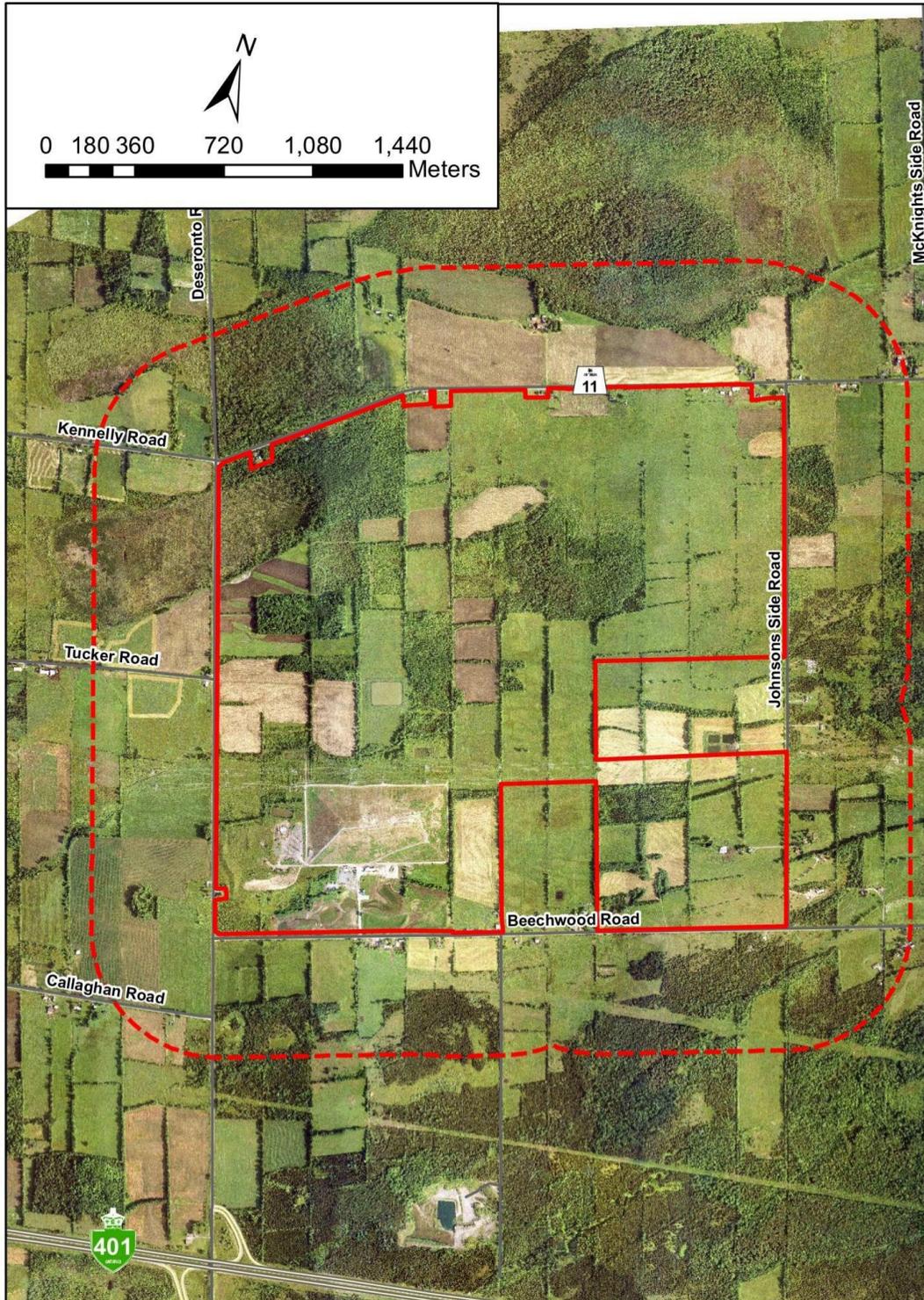
The Terms of Reference (ToR) for the EA for the proposed new landfill footprint at the BREC was approved by the Minister of the Environment on February 17, 2012, with amendments.

- The ToR provides a framework (or work plan) for conducting the EA studies and assessing the predicted impacts of the project.
- The EA will include the following steps:
  - **Step 1 – Overview of the Proposed Project**
    - Approved ToR, EA study Work Plans, proposed Consultation process.
  - **Step 2 – Establish new landfill footprint and leachate treatment options**
  - **Step 3 – Comparative evaluation of new landfill footprint and leachate treatment options**
    - Outline the existing conditions, apply the criteria/indicators against the new landfill footprint and leachate treatment options, comparatively evaluate the options.
  - **Step 4 – Detailed Impact Assessment of the preferred landfill footprint and leachate treatment option**
  - **Step 5 – EA Documentation and Submission to MOE**



Following ToR approval by the Minister of the Environment, the next step in the EA process involves conducting studies to confirm the existing environmental conditions in the study area, as well as finalizing the Alternative Methods of site optimization. From these studies, impacts on the environment for each Alternative can be assessed and compared in order to identify the Preferred Alternative Method of carrying out the Undertaking.





**LEGEND**

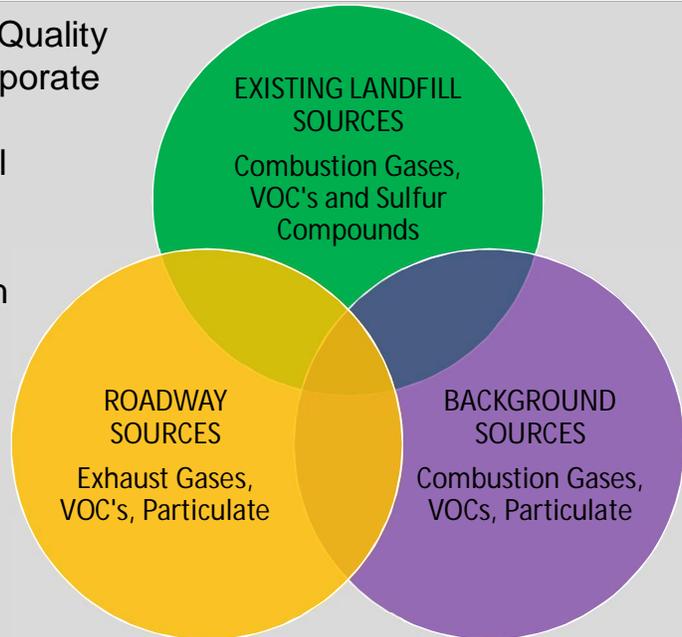
-  Property Boundary of Site Lands Owned/Optioned by Waste Management (The Site)
-  500 metre Site-Vicinity Study Area

- A preliminary description of the existing environment at the BREC was described in the approved ToR.
- The EA will address the following components of the environment that may be affected by the alternative methods of carrying out the undertaking:
  - Atmosphere;
  - Geology and Hydrogeology;
  - Surface Water;
  - Biology;
  - Cultural & Heritage Resources;
  - Archaeology;
  - Transportation;
  - Land Use;
  - Agriculture;
  - Socio-economic;
  - Aboriginal; and
  - Site Design & Operations.
- Data for the EA will be collected and analyzed for three study areas:
  - **On-Site** – the lands owned and/or optioned by WMCC for the proposed new landfill;
  - **Site Vicinity** – the lands in the vicinity of the Site extending about 500m in all directions; and
  - **Regional** – the lands within about 25km of the Site for the Socio-economic environment.
- During the EA, the project team will collect information and conduct studies (desktop and field) to describe the environmental components listed above that may be affected by the Undertaking. This will be done for each Alternative Method (alternative footprint) identified.

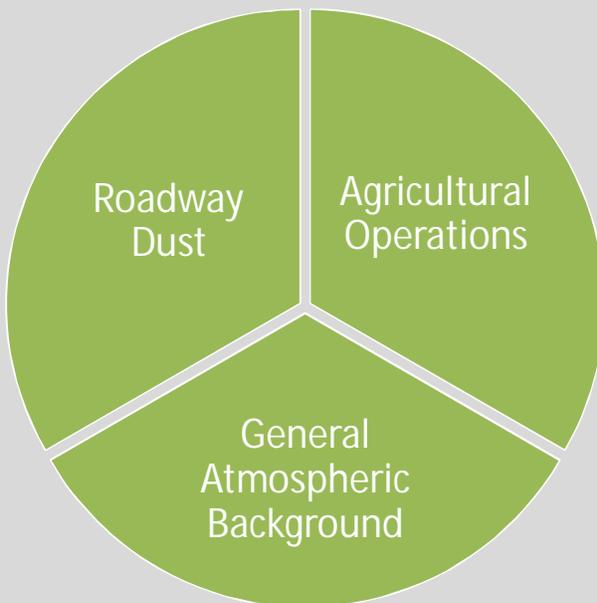


## Atmospheric Environment- Air Quality

- The baseline assessment for Air Quality from the existing landfill will incorporate the measured data from the area into the AERMOD numerical dispersion model
- The Roadway and Background sources will be evaluated through measurement data
- The most important component of the air quality studies are the Volatile Organic Compound (VOC) impacts since these are the critical components of landfill emissions



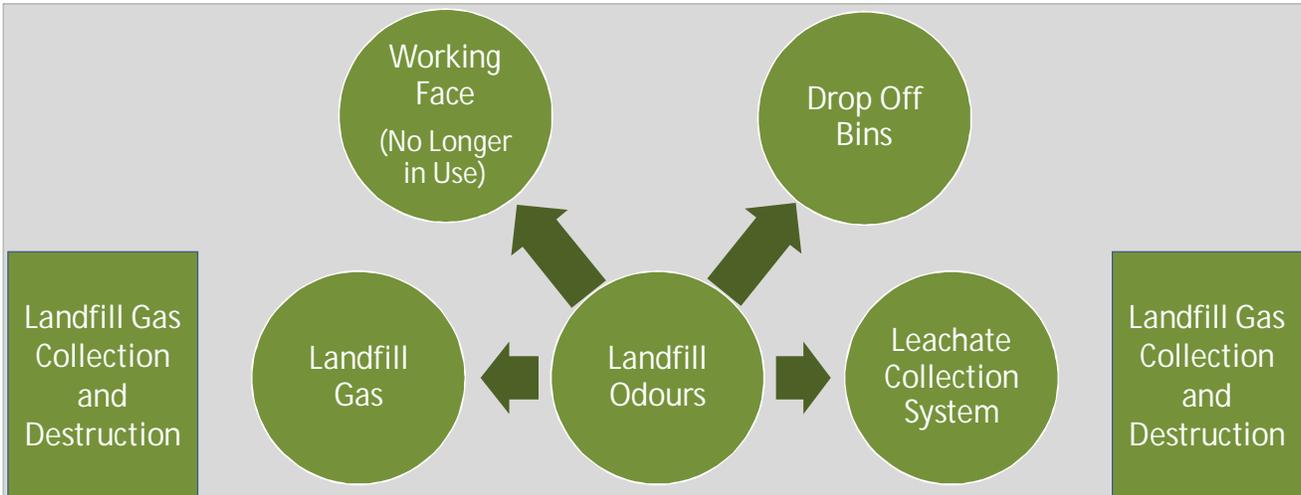
## Atmospheric Environment- Dust



- The baseline assessment for atmospheric dust will be based on previous measurements
- The baseline assessment will include some impact from the existing landfill
- The dust environment is fairly typical of Eastern Ontario



## Atmospheric Environment- Odour



- The baseline odour assessment for the new landfill will include an evaluation of the existing landfill after closure
- The odour sources (shown above) will be evaluated using a numerical atmospheric dispersion model that will incorporate 5 years of hourly meteorological data and thousands of modelled receptor points

## Atmospheric Environment- Noise

- The baseline assessment for noise will incorporate measured data, published data and traffic data from the area into the Cadna/A and ORACLE noise models
- The model will evaluate noise sources (such as gas collection and flaring system) from the existing site that will remain after the site is closed
- The predominant sources of noise in the area are the roadways around the site.



## Geology & Hydrogeology

### Regional Study Area

- Within the Napanee Plain - a flat to slightly undulating limestone plain dipping slightly southward, typically covered with a thin overburden veneer
- Topography interrupted in places by drumlins and major surface drainage features (e.g., Salmon River to the north, Napanee River to the south)
- Overburden geology generally consists of a thin mantle of glacial till (clayey /silty to sandy texture, approx. 1 to 2 m) overlying Paleozoic bedrock strata
- Isolated drumlins (e.g., Empey Hill) increase overburden thickness to approx. 15 to 20 m locally
- Thicker shallow (sand and gravel shoreline ridges) and deeper (silt and clay) Glacial Lake Iroquois glaciolacustrine deposit sequences in places
- Finer-grained silt and clay deposits generally less than 2 m thick, highly weathered, and laterally discontinuous
- Post-glacial organic deposits (e.g., from bogs/swamps) common throughout
- Bedrock of Middle Ordovician limestone of Simcoe Group, deposited as sediments in a marine environment (approx. 500 mil. years ago)
- Bedrock strata generally dip slightly to the south at 1 to 3 m/km, except where localized highs in the Precambrian basement have produced doming of the Paleozoic strata and anomalously high localized angles of dip
- Precambrian inlier present near the Salmon River (approx. 2.5 km north)
- Groundwater within overburden and bedrock, but occurrence/quality vary

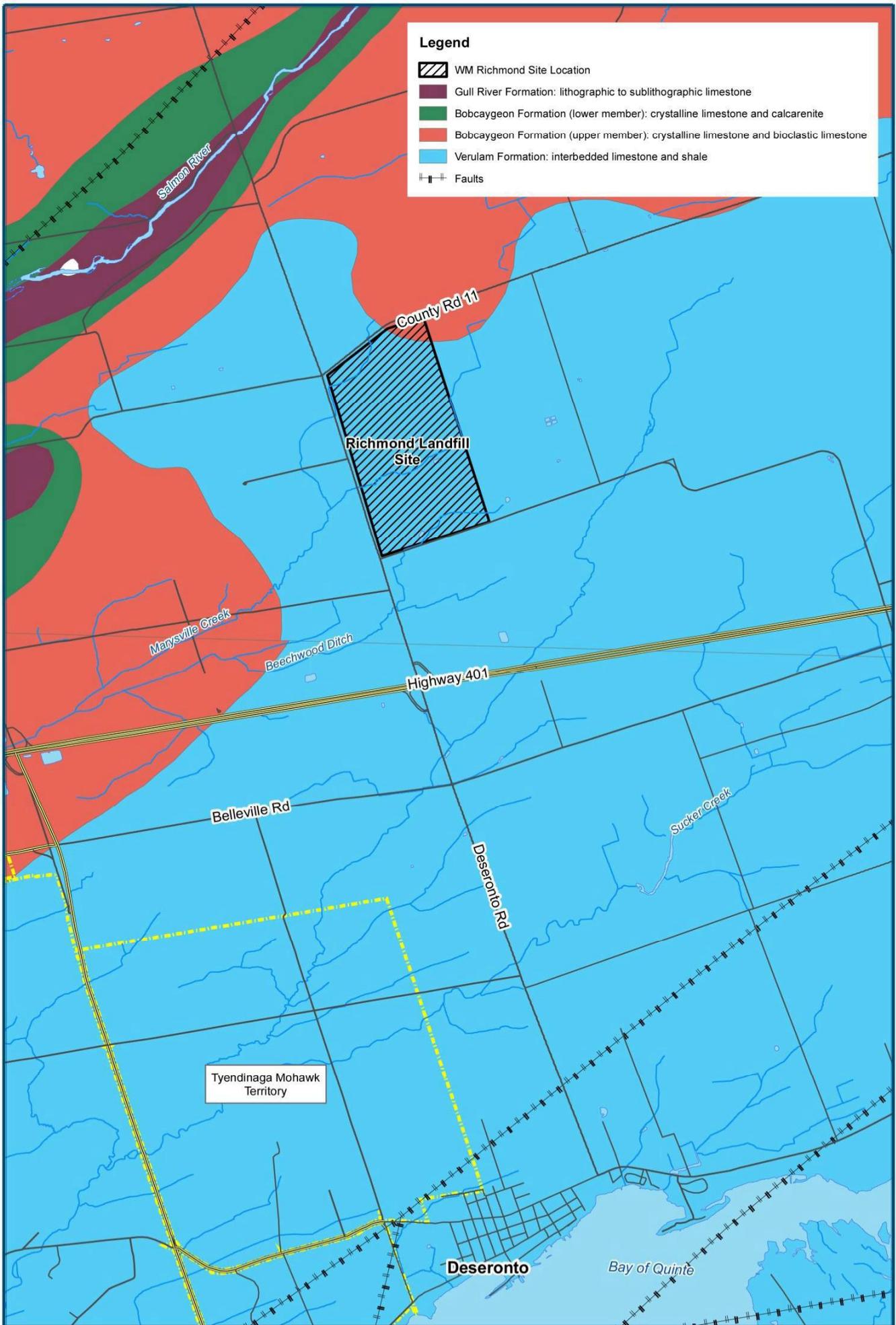


## Geology & Hydrogeology

### Regional Study Area (continued)

- Overburden aquifers limited to areas of greater overburden thickness and not continuous across the region; restricted to areas of glaciofluvial sands /gravels, beach ridge deposits, drumlins and thicker moraines
- Primary groundwater supply aquifer is Paleozoic limestone bedrock, with groundwater occurring in rock fractures
- Domestic well depth suggests groundwater quantity within bedrock is variable, but sufficient quantities for domestic supplies can generally be found in fracture zones that occur at depths between 6 and 40 m
- Water quality hard, with calcium and bicarbonate ions dominant
- Salty or sulfurous water quality can be common
- Groundwater flow direction is southward
- Local, shallow groundwater flow patterns influenced by topography: recharge in areas of high ground and discharge at topographic lows
- Regional groundwater recharge occurs in the bedrock aquifer in areas where bedrock is exposed at the surface or covered by a thin layer of permeable overburden
- Regional groundwater discharge into the Bay of Quinte/Lake Ontario
- Local groundwater flow directions in shallow flow zone strongly influenced by ground surface topography and drainage orientation
- Empey Hill creates a flow divide west of existing landfill with shallow groundwater being directed both to the north and south
- In the intermediate bedrock zone, groundwater generally flows to the west from the western edge of the existing landfill, to the south-southeast from the southern edge of the existing landfill, and to the southwest from the southwest corner of the existing landfill





**WASTE MANAGEMENT  
RICHMOND LANDFILL**



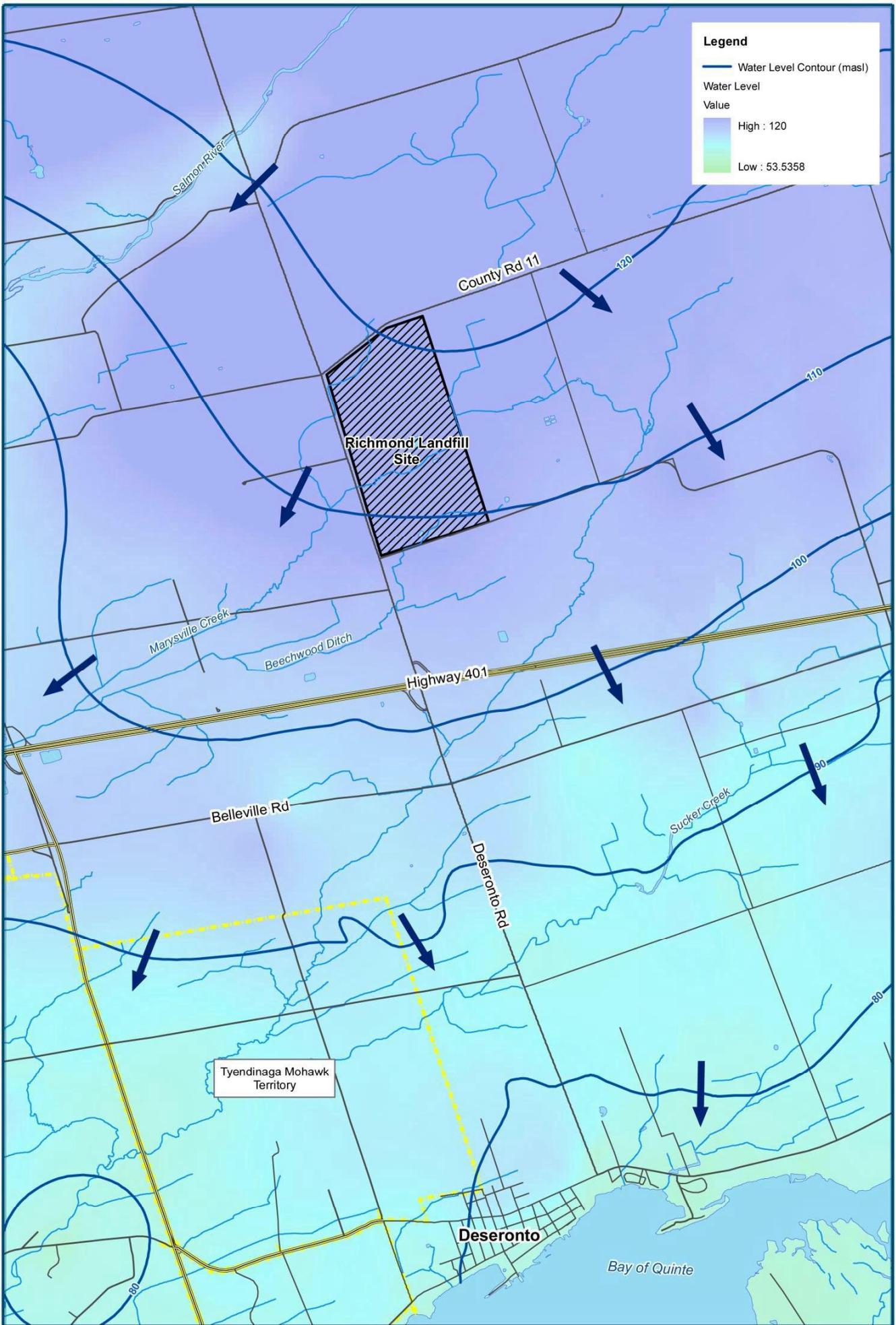
Project : K-85691-11  
Data Source: LIO, MNDM, WESA  
Date: September 3, 2009

Prepared by:  
WESA Geomatics

Units:  
UTM NAD 83 Zone 18  
Scale: 1:34 000



**Figure 3.1  
Regional Bedrock Geology**



**WASTE MANAGEMENT  
RICHMOND LANDFILL**

0.7 0.35 0 0.7 Kilometres

Project : K-B5691-11  
Data Source: LIO, MNDM, WESA, WWIS  
Date: September 3, 2009

Prepared by:  
WESA Geomatics

Units:  
UTM NAD 83 Zone 18  
Scale: 1:34 000

**WESA**  
A Better Environment For Business

**WM**  
WASTE MANAGEMENT

**Figure 4.1**  
Regional Groundwater Elevations and Generalized Flow Orientations

## Geology & Hydrogeology

### On-Site Study Area

- Marysville Creek is the dominant drainage feature
- Beechwood Ditch provides drainage south of the existing closed landfill
- Located between two normal faults: Salmon River & Napanee River faults
- Bedrock outcrop observations near Salmon River indicate the development of a jointing system, appearing to consist predominantly of two sets of joints oriented approx. 75° to one another: a primary joint system at 210° (parallel to the Salmon and Napanee River faults) and a secondary one at 285°
- Coring shows bedrock fracturing predominantly of bedding plane partings
- Many observed fractures infilled with calcite, indicating past water transport

### Existing Landfill

- Upper strata of bedrock consists of Verulam Formation (horizontally bedded, medium to coarse crystalline limestone; interbedded shale layers)
- A few metres thick and underlain by the Bobcaygeon Formation, that consists of horizontally bedded, crystalline limestone with interbedded shale in the upper part and interbedded calcarenite in the lower part
- Bobcaygeon Formation thickness varies from 11 to 15 m and is underlain by the Gull River Formation, which consists of horizontally bedded limestone with a thickness of approx. 75 m
- Active groundwater flow zone extends to depth of approx. 30 m below top of bedrock, and is composed of two zones:
  1. shallow groundwater zone (includes overburden and top 1 to 2 m of bedrock), and
  2. intermediate bedrock, extending to 30 m below top of bedrock
- Dominant fracture orientation in upper 30 m of bedrock is parallel to bedding (horizontal to sub-horizontal)
- Moderate amount of vertical to sub-vertical fractures provide hydraulic connections between various horizontal to sub-horizontal fractures



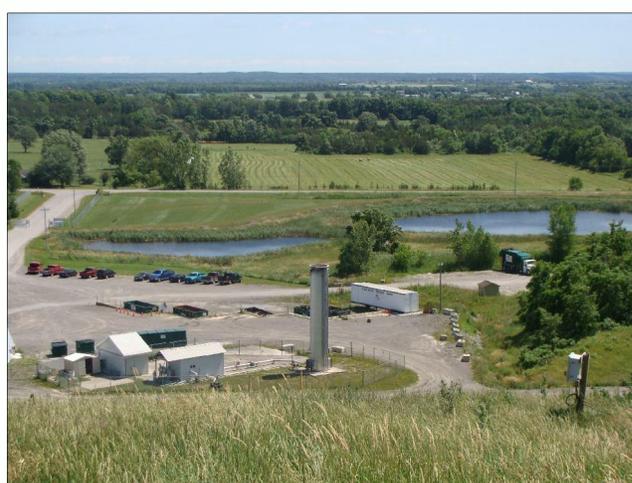
## Surface Water

- Surface water in the Study Area generally flows from northeast to southwest towards the Bay of Quinte
- The Study Area contains various watersheds, including: Marysville Creek, Sucker Creek and Salmon River
- The south and north branches of Marysville Creek are located within the On-Site Study Area
- Immediately adjacent to and upstream of County Road 10, Marysville Creek is an ephemeral (seasonal) watercourse, flowing only during spring freshet or after prolonged rains
- Marysville Creek has a poorly defined channel in some locations and has been channelized elsewhere to improve drainage
- No groundwater discharge locations to Marysville Creek have been identified other than an area immediately east of County Road 10
- Permanent flow of Marysville Creek appears to originate downstream or west of County Road 10
- The Beechwood Ditch receives drainage from the south eastern portion of the On-Site Study Area
- The Beechwood Ditch flows south across Beechwood Road and west across County Road 10 and joins Marysville Creek approx. 3 km west of County Road 10
- The Beechwood Ditch flows intermittently, in response to the spring freshet and substantial rainfalls
- The total catchment area of Marysville Creek at the Bay of Quinte is 5,480 ha and flow in Marysville Creek at County Road 10 (i.e., from the existing closed landfill area) represents contributions from less than 10% of the entire watershed



## Surface Water

- The Beechwood Ditch receives stormwater and surface water runoff from the area to the south of the existing closed landfill
- Two storm water management (SWM) ponds on the north side of the existing closed landfill drain into Marysville Creek and another SWM pond system drains into Beechwood Ditch to the south
- The SWM ponds are part of the existing closed landfill's On-Site SWM system, designed to treat runoff from the site before it reaches Marysville Creek and/or Beechwood Ditch
- Baseline water quality for Marysville Creek and Beechwood Ditch in the On-Site Study Area, determined through ongoing monitoring and sampling programs, indicates there is no evidence of impacts on the water quality in Marysville Creek or Beechwood Ditch resulting from the existing closed landfill
- Surface water quality in the On-Site Study Area is generally enriched with nutrients and trace metals, such as aluminum, zinc and iron
- Surface water quality does not differ between locations upstream and downstream of the existing closed landfill and suggests an influence of agriculture, the presence of soil particles and stagnant conditions



## Natural Environment

### Vegetation

- The On-Site Study Area contains various distinct meso-ecosites, including a Swamp Maple / Mineral Deciduous Swamp with Cattail-Sedge Inclusion within the northwestern corner and Sugar Maple Deciduous Forest and Green-Ash – Mixed Hardwood Woodland within the western and central areas
- Rest of On-Site Study Area is a mosaic of cultivated and abandoned fields, hedgerows, and woodlots of various succession stages
- On-Site Study Area soils are imperfectly drained, leading to the establishment of small patches of cattail marsh in places
- Approx. 250 plant species have been historically noted within the On-Site Study Area, including 4 species considered rare in the Lake Ontario Lowlands: troublesome sedge (*Carex molesta*), necklace sedge (*Carex projecta*), slammy hedge-hyssop (*Gratiola neglecta*), and swamp red-currant (*Ribes triste*)
- The Site-Vicinity Study Area is similar to the On-Site Study Area (i.e., woodlots, old field, and swamp within an agricultural landscape)

### Wetlands

- An unevaluated wetland, Maple Swamp, is located in the northwest corner of the On-Site Study Area
- An evaluated wetland, Hempfly Swamp (provincially significant), is located north of Selby Road within the Site-Vicinity Study Area
- These wetlands are approx. 200 m apart at the closest point, but are not hydrologically connected as they are within different watersheds



## Natural Environment

### Wildlife

- Numerous breeding bird species have been noted within the On-Site Study Area, including:
  - Forest interior species (e.g., white-breasted nuthatch (*Sitta carolinensis*), veery (*Catharus fuscescens*), wood thrush (*Hylocichla mustelina*), and northern waterthrush (*Seiuris noveboracensis*)
  - Marsh and wetland bird species (e.g., sora (*Porzana corolina*), common moorhen (*Gallinula chloropus*), and Wood Duck (*Aix sponsa*))
- Four significant bird species have been noted within the Site-Vicinity Study Area, including:
  - Provincially endangered loggerhead shrike (*Lanius ludovicianus*)
  - Locally significant northern mockingbird (*Mimus polyglottos*), clay-coloured sparrow (*Spizella pallida*), and eastern bluebird (*Sialia sialis*)
- Wildlife noted within the On-Site Study Area includes: 11 mammal species, three reptile species, and seven amphibian species
- Approx. 30 species of butterflies were identified within the On-Site Study Area, including the provincially significant Juniper Hairstreak (*Collophrys gryneus*)

### Fish and Fish Habitat

- Within the On-Site Study Area, Marysville Creek has an intermittent and poorly defined headwater channel, with a small area east of County Road 10 capable of supporting fish year-round
- Seven fish species were noted within the On-Site Study Area and five species were noted within the Site-Vicinity Study Area, with all being warmwater species and none identified as Species at Risk
- Approx. 17 benthic invertebrate species were noted within the Site-Vicinity Study Area



## Cultural & Built Heritage Resources

- The following seven built heritage features and two cultural landscape features within the On-Site and Site-Vicinity Study Areas were identified as having high heritage value (*see map for location of features*):

### On-Site

- **Cultural Landscape** Empey Hill (Martin) Pioneer Cemetery was designated a historic site by the Town of Greater Napanee

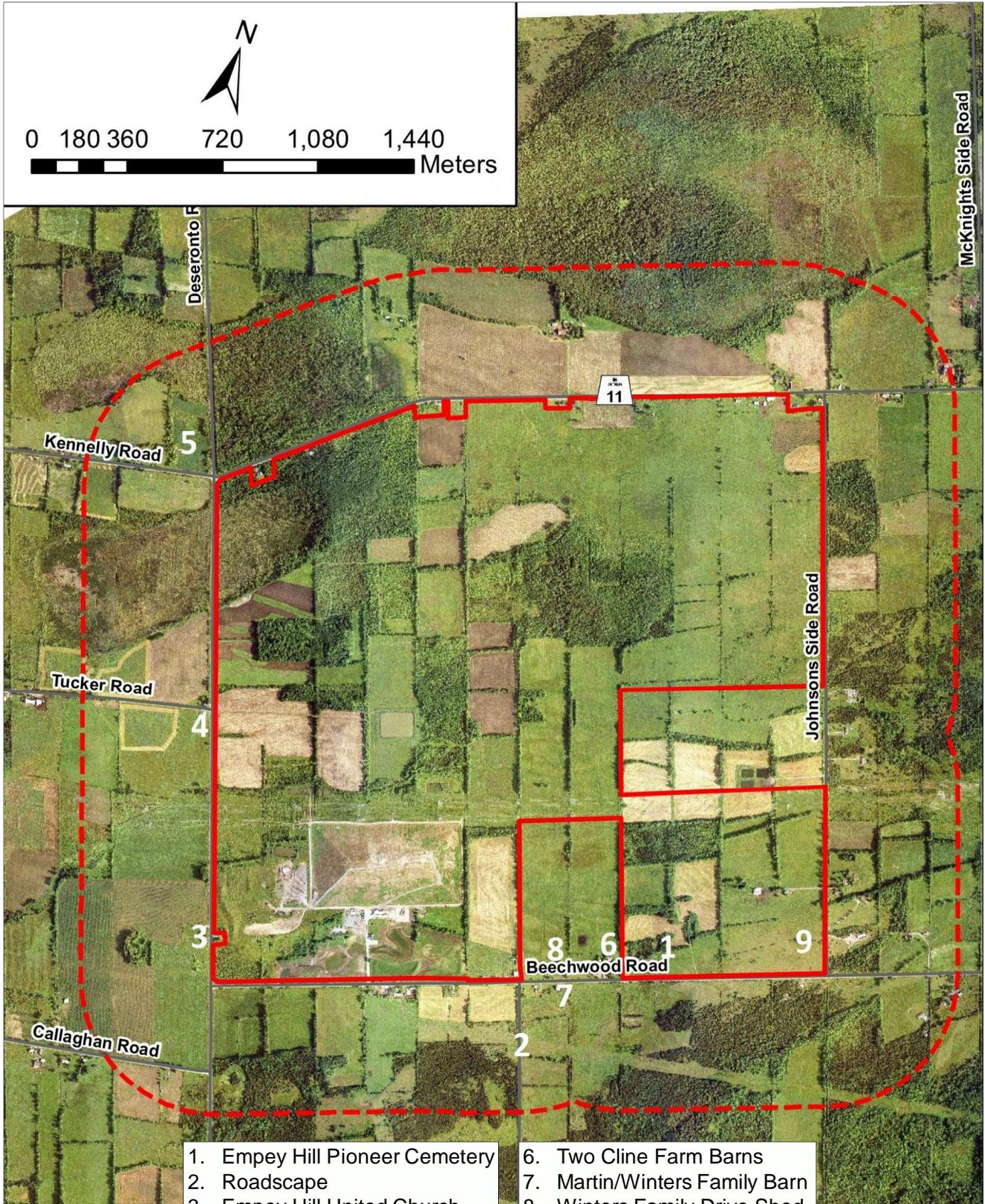
### Site-Vicinity

- **Cultural Landscape** “Roadscape” extending southward from Beechwood Road between Deseronto Road and Johnsons Side Road
- **Built Heritage Features** Empey Hill United Church of Canada (circa 1912), Tucker Family Barn (1900 to 1939), Abbot Family Barn (pre-1900), two Cline Farm Barns (1900 to 1939 and pre-1900), Martin/Winters Family Barn (pre-1900), and Winters Family Drive Shed (1900 to 1939)

## Archaeological Resources

- Stage 1 Archaeological Assessments indicated that there are no registered archaeological sites within the On-Site Study Area
- There is a residential/farm located within the eastern portion of the On-Site Study Area and an historic cemetery (designated under the Ontario Heritage Act) located in the southeast On-Site Study Area
- Five archaeological sites exist within 4 km of the On-Site Study Area
- Stage 1 Archaeological Assessments concluded that the On-Site Study Area exhibits archaeological potential due to elevated topography, soils, close proximity of a tertiary stream and associated wetland, presence of an historic cemetery and no longer extant 19<sup>th</sup>C church, Euro-Canadian settlement, and absence of development disturbance (in the east) and, therefore, a Stage 2 Archaeological Assessment was recommended
- A Stage 2 Archaeological Assessment of the western portion of the On-Site Study Area did not identify any archaeological sites



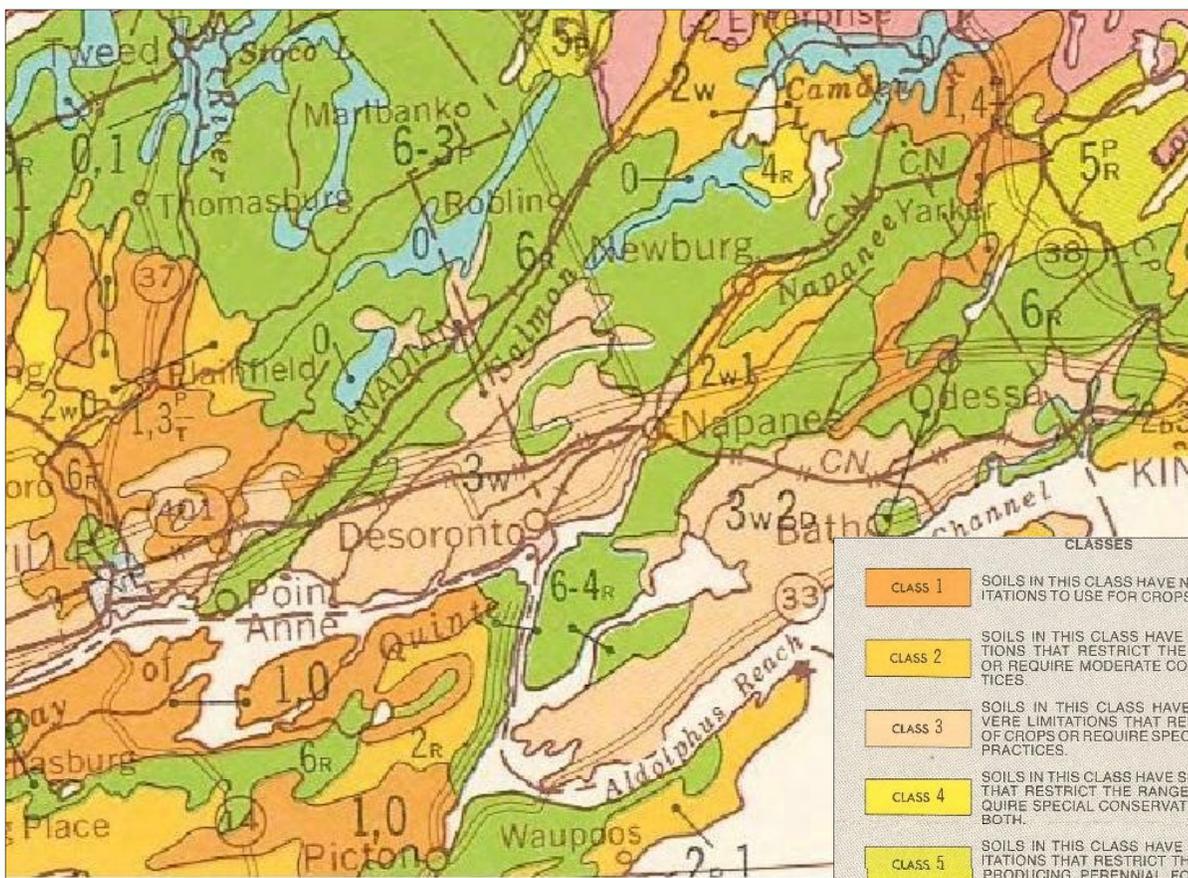


- 1. Empey Hill Pioneer Cemetery
- 2. Roadscape
- 3. Empey Hill United Church
- 4. Tucker Family Barn
- 5. Abbot Family Barn

- 6. Two Cline Farm Barns
- 7. Martin/Winters Family Barn
- 8. Winters Family Drive Shed
- 9. Probable location of Methodist Church

## Agriculture

- Soil classes within the On-Site Study Area include:
  - Predominantly Class 3 soil (moderately severe limitations)
  - Class 1 soils (no significant limitations) in a few locations
- Soil classes within the Site-Vicinity Study Area include:
  - Classes 1 and 3 exist to the north and west
  - Classes 4 and 6 (severe limitations and capable of producing only perennial forage crops, respectively) south and east
  - Areas of organic soils are mapped in the wetlands to the north and northwest
- Limitations on agriculture in the various classes are mainly due to stoniness or excess water, and occasionally due to bedrock near surface



Canada Land Inventory (CLI) Soil Survey

CLASSES	
CLASS 1	SOILS IN THIS CLASS HAVE NO SIGNIFICANT LIMITATIONS TO USE FOR CROPS.
CLASS 2	SOILS IN THIS CLASS HAVE MODERATE LIMITATIONS THAT RESTRICT THE RANGE OF CROPS OR REQUIRE MODERATE CONSERVATION PRACTICES.
CLASS 3	SOILS IN THIS CLASS HAVE MODERATELY SEVERE LIMITATIONS THAT RESTRICT THE RANGE OF CROPS OR REQUIRE SPECIAL CONSERVATION PRACTICES.
CLASS 4	SOILS IN THIS CLASS HAVE SEVERE LIMITATIONS THAT RESTRICT THE RANGE OF CROPS OR REQUIRE SPECIAL CONSERVATION PRACTICES, OR BOTH.
CLASS 5	SOILS IN THIS CLASS HAVE VERY SEVERE LIMITATIONS THAT RESTRICT THEIR CAPABILITY TO PRODUCING PERENNIAL FORAGE CROPS, BUT IMPROVEMENT PRACTICES ARE FEASIBLE.
CLASS 6	SOILS IN THIS CLASS ARE CAPABLE OF PRODUCING PERENNIAL CROPS ONLY, AND IMPROVEMENT PRACTICES ARE NOT FEASIBLE.
CLASS 7	SOILS IN THIS CLASS HAVE NO CAPABILITY FOR CROP USE OR PERMANENT PASTURE.
0	ORGANIC SOILS (not placed in capability classes).

## Transportation

### Air Traffic

- The existing closed landfill is located approx. 8 km from the Tyendinaga Mohawk Airport, which is operated as a training facility by the First Nations Technical Institute
- Between 2000 and 2010, there were eight reported incidents of bird strikes, five of which involved gulls

### Road Traffic

- Recent Average Annual Daily Traffic (AADT) data indicates the following for roads in proximity to the site:
  - 822 (10% trucks) for County Road 10, north of Highway 401
  - 1193 (8.5% trucks) for County Road 10, south of Highway 401
  - 613 (8.7% trucks) for Selby Road, immediately west of Selby

### Road Safety

- Existing road configurations and profiles within the Site-Vicinity Study Area are consistent with the posted speed limits, save for the vicinity of the intersection of County Road 10 and Beechwood Road

### Pavement Condition

- A half load restriction of five metric tonnes per axle is in place each year in the Spring on County Road 10 to minimize potential damage during thaw periods



## Land Use

### Existing Land Use

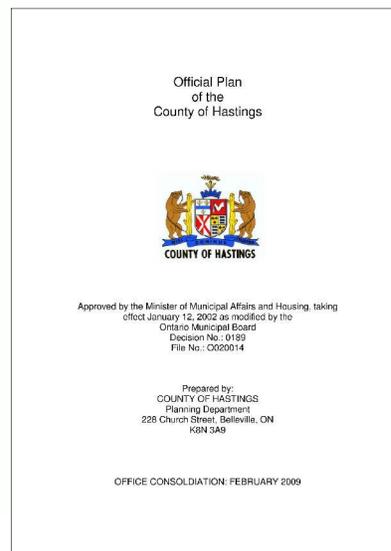
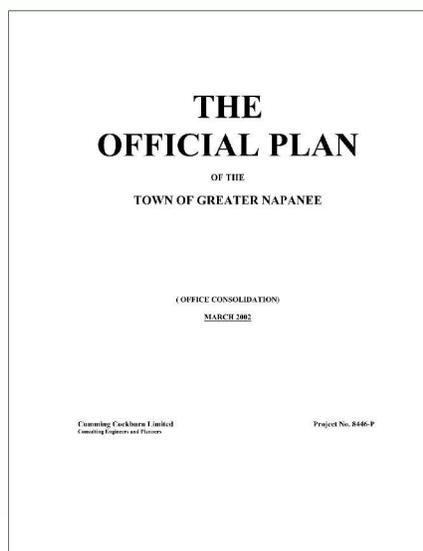
- Approx. 12 km northwest of the urban centre of the Town of Greater Napanee, which has a population of approx. 15,400
- Approx. 7 km north of the urban centre of the Town of Deseronto, which has a population of approx. 1,800
- Approx. 5 km east of the Hamlets of Marysville and Lonsdale, which have populations of approx. 500 or less
- Approx. 3.5 km northeast of the Tyendinaga Mohawk Territory, which has a population of approx. 2,100
- A variety of transportation and utility corridors surround and cross the On-Site and Site-Vicinity Study Areas, including Highway 401, County Roads 10 and 11, municipal roads, Lennox-Oshawa Hydro Corridor, and Trans Canada and Interprovincial Pipelines
- Development is typically linear in nature along roads and within 3 km of the existing closed landfill there are no urban clusters, including no registered plans of subdivision
- Proximate institutional land uses include Empey Hill United Church and the Empey Hill (Martin) Pioneer Cemetery
- Nearby commercial and/or industrial land uses and activities include four sewage sludge lagoons and an automotive repair and sales shop
- Other surrounding land uses are predominantly agricultural and rural in nature, including rural residences



## Land Use

### Official Plans

- Town of Greater Napanee adopted an amendment to their Official Plan (OP) on April 10, 2012, that has been submitted to the Ministry of Municipal Affairs and Housing for review and approval
- The proposed amendment to the OP generally designates the On-Site Study Area as follows:
  - Western portion as *Waste Management*
  - Eastern portion as *Agricultural*
  - Central portion as *Environmental Protection*
- The proposed amendment to the OP generally designates the Site-Vicinity Study Area as follows:
  - Southern areas as *Rural*
  - Eastern area as *Agricultural*
  - Northern area as *Environmental Protection, Agricultural and Rural*
- County of Hastings Official Plan, consolidated February, 2009 designates the western portion of the Site-Vicinity Study Area as *Environmental Protection, Agricultural, Rural, and Waste Management Assessment Area*

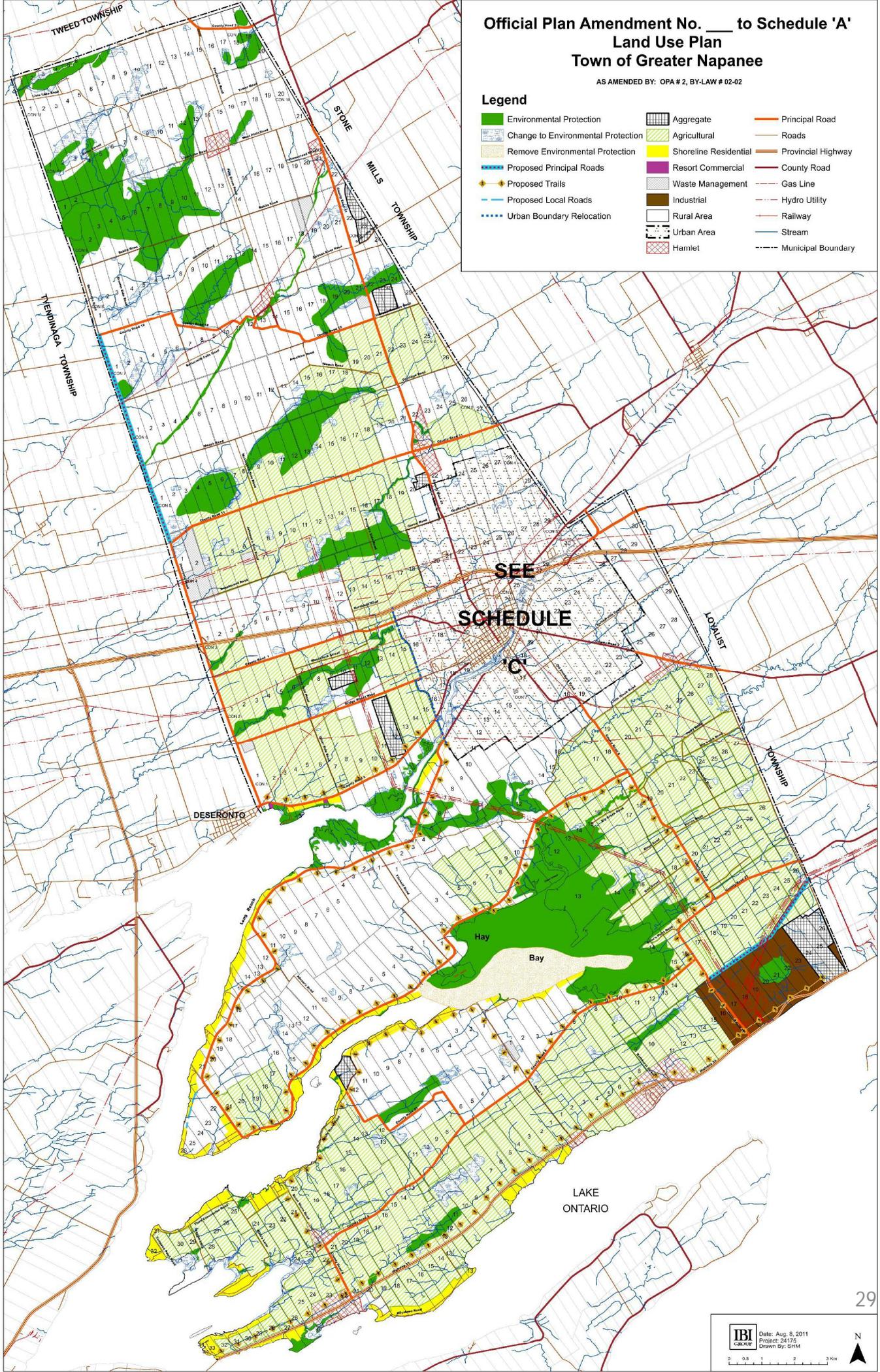


**Official Plan Amendment No. \_\_\_ to Schedule 'A'  
Land Use Plan  
Town of Greater Napanee**

AS AMENDED BY: OPA # 2, BY-LAW # 02-02

**Legend**

- |  |   |  |
|--|---|--|
|  Environmental Protection           |  Aggregate             |  Principal Road     |
|  Change to Environmental Protection |  Agricultural          |  Roads              |
|  Remove Environmental Protection    |  Shoreline Residential |  Provincial Highway |
|  Proposed Principal Roads           |  Resort Commercial     |  County Road        |
|  Proposed Trails                    |  Waste Management      |  Gas Line           |
|  Proposed Local Roads               |  Industrial            |  Hydro Utility      |
|  Urban Boundary Relocation          |  Rural Area            |  Railway            |
|  |  Urban Area            |  Stream             |
|  |  Hamlet                |  Municipal Boundary |



## Socio-Economic

### Economic

- 20 businesses and/or institutional uses within 3 km of the existing closed landfill, including:
  - Community institutional uses
  - Agricultural based commercial uses
  - Home-based businesses
  - Industrial uses
  - Commercial activities

### Social

- Rural agricultural community character with some commercial activity
- There are fewer than ten residences within the On-Site Study Area
- There are approx. 30 residences within the Site-Vicinity Study Area
- Two community facilities within 1 km of the On-Site Study Area:
  - Empey Hill United Church
  - Empey Hill (Martin) Pioneer Cemetery
- Community facilities within 3 km of the On-Site Study Area:
  - Napanee Rod and Gun Club
  - Kingsford Conservation Area/Tyendinaga Centennial Park
  - Kingsford Ball Park
  - Mount Pleasant Cemetery

### Visual

- Relatively flat within the Site-Vicinity Study Area, generally sloping upward to the north and northeast (less than 5%), with the exception of the valley near the Salmon River
- Existing closed landfill is the highest elevation above grade within the surrounding area (approx. 25 to 30 m higher than adjacent land)



## Aboriginal

- The Tyendinaga Mohawk Territory (Tyendinaga Indian Reserve 38) is located approx. 3.5 km from the existing closed landfill
- The Territory is approx. 7,200 ha and has a registered population of approx. 2,100, as of September, 2012
- In addition to housing and infrastructure facilities, the Territory has the following community and recreation facilities:
  - Band Administration Office, Tyendinaga Health Centre, Tyendinaga Police Service, Kahniothe Public Library, First Nations Air Service, Mohawk Recreation Complex, Tsitkerhododon Park, Double Diamond Ball Park, and Mohawk Community Centre and Lacrosse Box;
  - First Nation Technical Institute, Quinte Mohawk School, Red Cedars Shelter, and Child Care Centre; and
  - All Saints Church and Christ Church
- Other Aboriginal communities noted include:
  - Alderville First Nation
  - Curve Lake First Nation
  - Algonquins of Pikwakanagan First Nation
  - Hiawatha First Nation
  - Mississaugas of Scugog Island First Nation
  - Chippewas of Mnjikaning (Rama)
  - Wendat-Huron First Nation, and
  - Métis people (represented by the Métis Nation of Ontario)
- Aboriginal Affairs and Northern Development Canada (previously Indian and Northern Affairs Canada) noted in correspondence of March 31, 2010 that there are “no active land claims in the study area vicinity”



## Site Design & Operations

- The Richmond Landfill closed on June 30, 2011, at which time the approved capacity had been reached
- The site closure plan, which was approved by the MOE, is currently being – and will continue to be – implemented to ensure that monitoring of groundwater as well as gas and leachate collection continues, as required
- The existing closed landfill operated under Certificate of Approval No. A 371203, dated March 1988, as amended
- The existing landfill has height of approx. 165 m above sea level (ASL) (approx. 40 m above surrounding grade) and an area of 16.2 ha
- Existing landfill was constructed in five phases: Phase 1 is not lined; Phases 2 and 3 have a clay liner; and Phases 4 and 5 have a composite clay/geomembrane (plastic) liner
- Peripheral drains collect leachate from the lined portion and from Phase 1, which is then pumped into trucks for off-site treatment at the Napanee WPCP
- An original piped landfill gas (LFG) collection system was installed in 2001, and the total LFG collection system consists of 55 vertical wells and the toe-drain collector (12 manholes and 9 cleanouts) that discharge gas to a controlled high temperature enclosed flare
- The flare capacity is 1,200 standard cubic feet per minute at 50% methane and there is one fan blower, with provision for a second blower if required



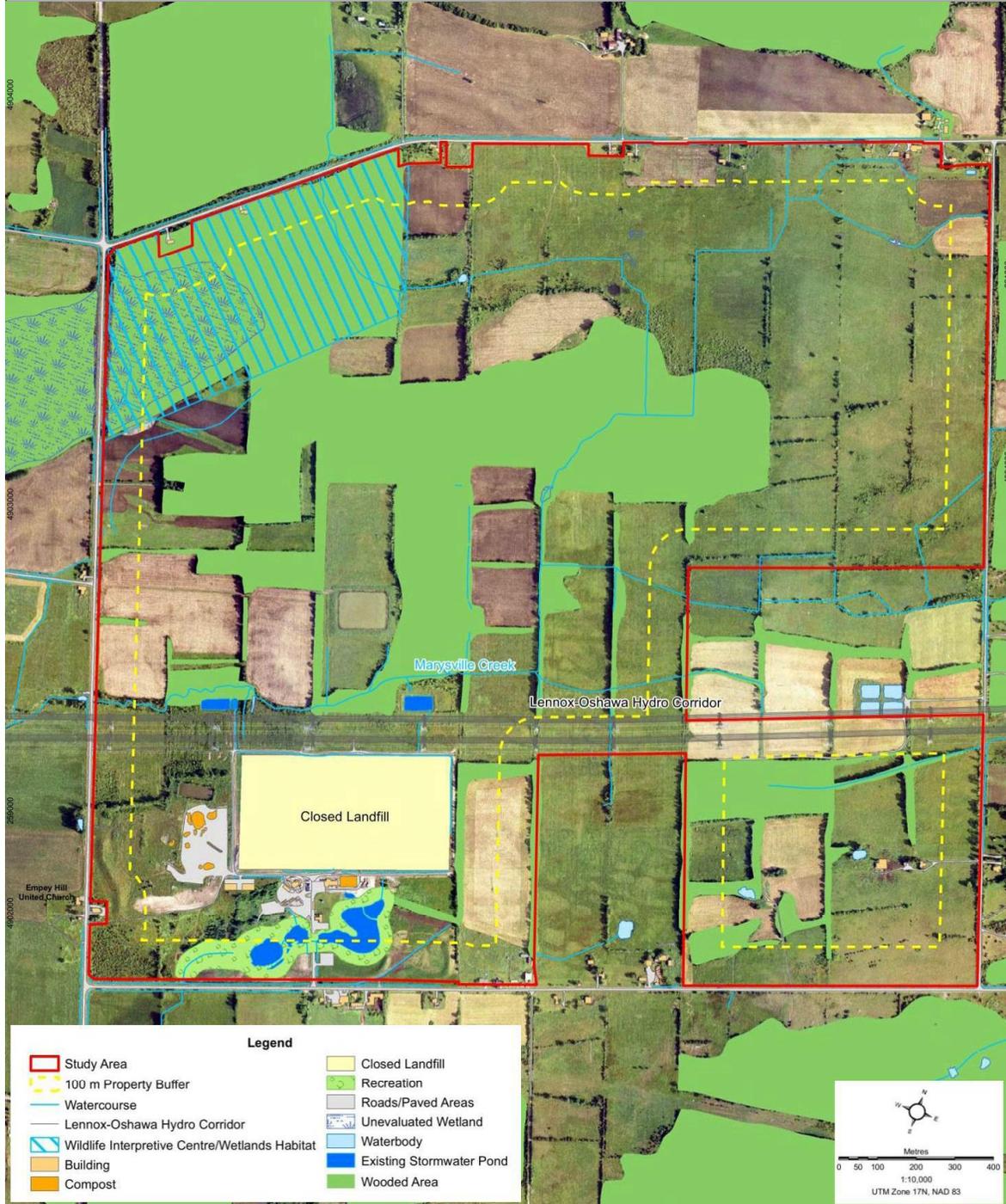
“Alternative Methods” is the assessment of the different ways of implementing the proposed undertaking. For example, the proposed new landfill footprint for residual waste could be constructed in different locations and configurations (size, height, etc.) at the BREC.

## Identifying Alternative Methods

- The approved ToR identified the study area within which Alternative Methods have been identified, bounded by Beechwood Road on the south, Deseronto Road on the west, County Road 11 on the north and Johnsons Side Road on the east
- Constraint mapping was used to determine the preliminary land envelopes within the lands owned and optioned by WMCC for the possible location of the proposed alternative landfill footprints
- The alternative methods are a function of a number of site-specific factors: streams, wetlands, electricity transmission facilities, transportation access, provision of perimeter buffer zones, and landfill design and operations
- After considering these constraints a large envelope was identified for the proposed development
- Three possible landfill footprint alternatives have been identified. A comparative evaluation of alternative landfill footprints will be conducted and an impact assessment on the preferred landfill footprint will be carried out
- In addition, as part of the operational component of the landfill footprint, leachate treatment alternatives will also be identified and assessed
- The preferred landfill footprint will be refined and finalized in consultation with the public, Government Review Team (GRT), First Nations and Aboriginal communities and other stakeholders during the EA process



*The constraints identified on this map should be considered preliminary and will be updated based on the findings of the final existing conditions investigations*

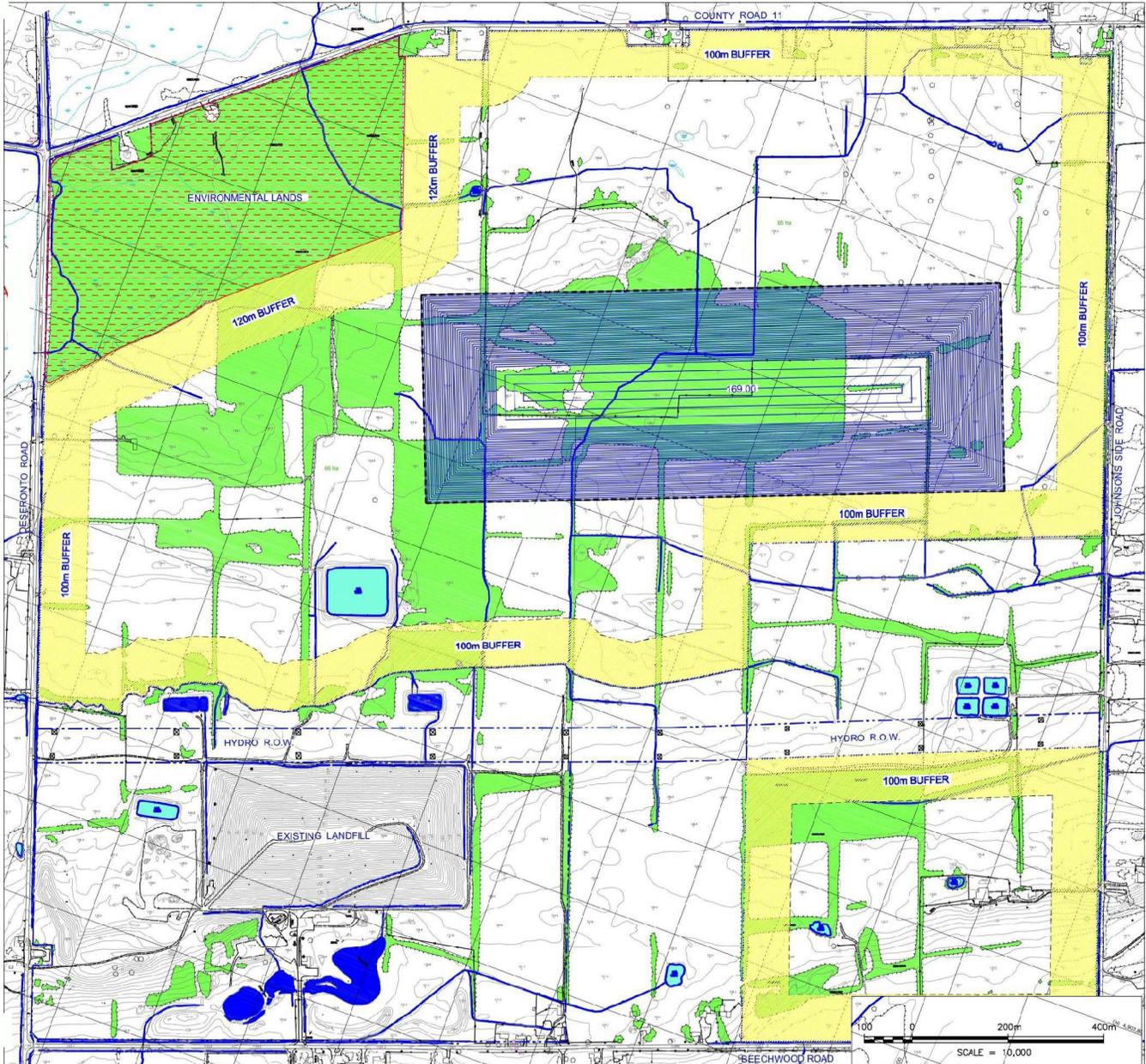


Basemapping from Ontario Ministry of Natural Resources Orthophotography

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## Alternative Landfill Footprint Option #1

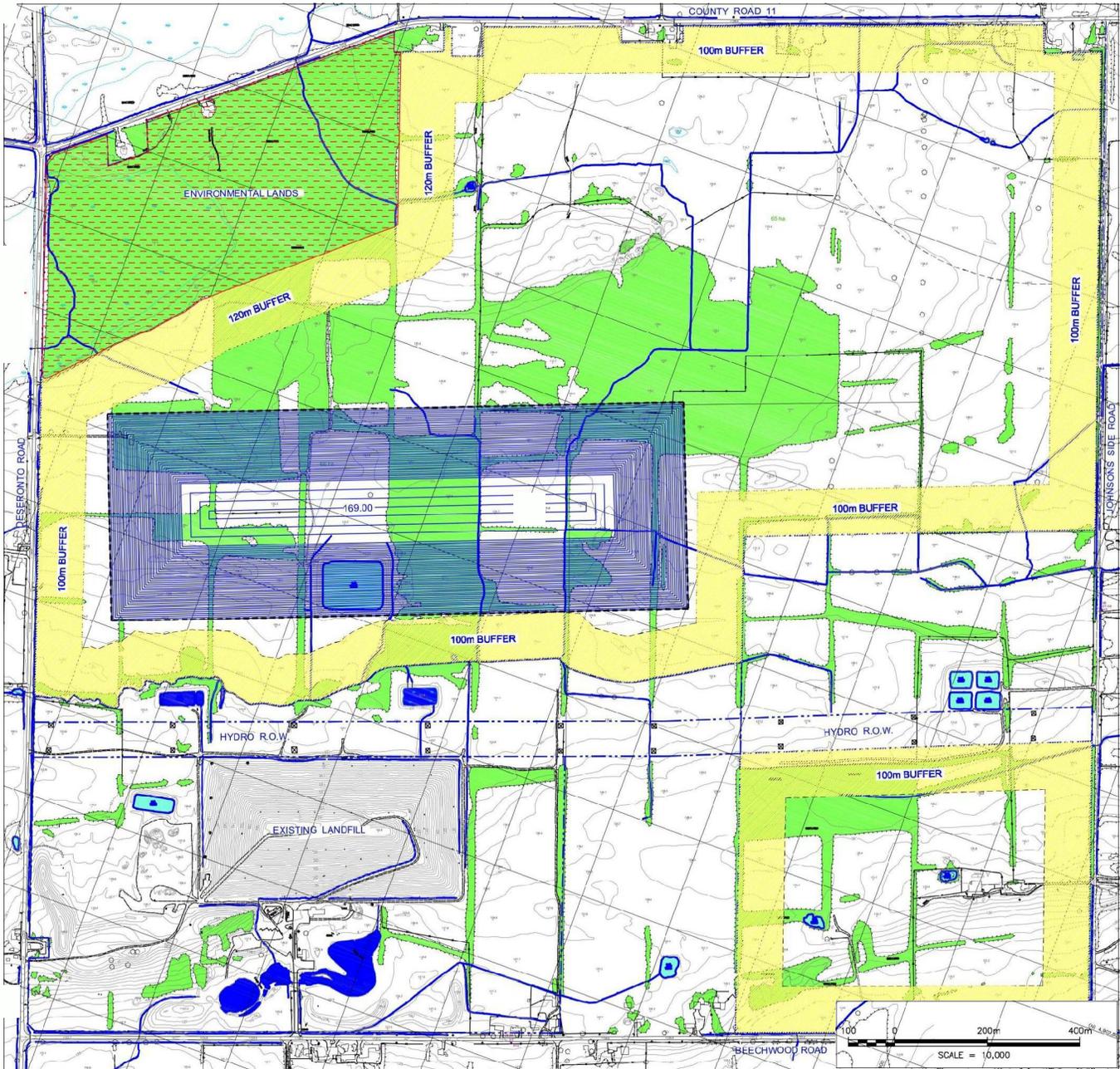


**LEGEND:**

- PROPERTY BOUNDARIES
- EXISTING CONTOURS WITH ELEVATION
- WATERCOURSE
- WATERBODY
- STORMWATER PONDS
- WETLAND CONSERVATION AREA
- WOODED AREAS
- BUFFER ZONE SETBACK
- PROPOSED TOP OF WASTE CONTOURS
- LIMIT OF WASTE FOR 13.0 MILLION cu.m. CAPACITY (AREA = 562,500 sq. m.)

**Top of Waste: Approx. 169 mASL/ 45 m**  
**Area: 562,500 m<sup>2</sup>**  
**Air Space: 13 million m<sup>3</sup>**

## Alternative Landfill Footprint Option #2

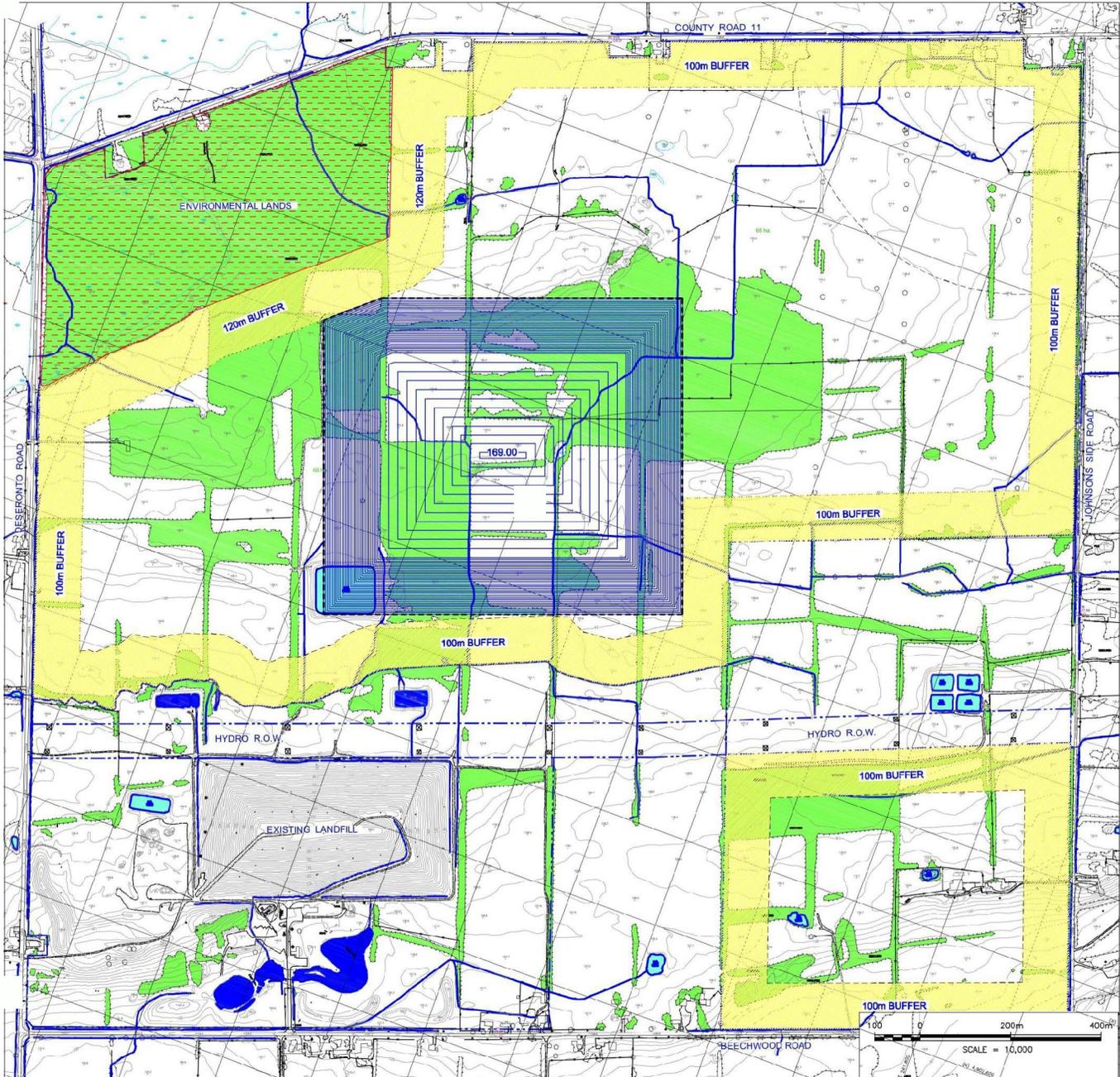


**LEGEND:**

- PROPERTY BOUNDARIES
- EXISTING CONTOURS WITH ELEVATION
- WATERCOURSE
- WATERBODY
- STORMWATER PONDS
- WETLAND CONSERVATION AREA
- WOODED AREAS
- BUFFER ZONE SETBACK
- PROPOSED TOP OF WASTE CONTOURS
- LIMIT OF WASTE FOR 13.0 MILLION cu.m. CAPACITY (AREA = 562,500 sq. m.)

**Top of Waste: Approx. 169 mASL/ 45 m**  
**Area: 562,500 m<sup>2</sup>**  
**Air Space: 13 million m<sup>3</sup>**

## Alternative Landfill Footprint Option #3



**LEGEND:**

-  PROPERTY BOUNDARIES
-  EXISTING CONTOURS WITH ELEVATION
-  WATERCOURSE
-  WATERBODY
-  STORMWATER PONDS
-  WETLAND CONSERVATION AREA
-  WOODED AREAS
-  BUFFER ZONE SETBACK
-  PROPOSED TOP OF WASTE CONTOURS
-  LIMIT OF WASTE FOR 13.0 MILLION cu.m. CAPACITY (AREA = 562,500 sq. m.)

**Top of Waste: Approx. 169 mASL/ 45 m**  
**Area: 551,335 m<sup>2</sup>**  
**Air Space: 13 million m<sup>3</sup>**

A comparative evaluation of alternative landfill footprints will be conducted and an impact assessment on the preferred landfill footprint will be carried out in subsequent stages of the EA. A comparative evaluation means that the differential impacts between the three (or more) alternatives will be described and assessed.

## Evaluation of Alternative Methods

- The evaluation of Alternative Methods of carrying out the proposed undertaking (alternative landfill footprints) will consider:
  - The environment potentially affected;
  - The effects that will be caused on the environment;
  - The actions necessary to prevent, change, mitigate or remedy the effects on the environment; and
  - An evaluation of the advantages and disadvantages to the environment
- The comparative evaluation methodology will:
  - Prepare a further description of each of the alternative landfill footprints;
  - Describe the environment potentially affected for each alternative in relation to the proposed evaluation criteria and indicators;
  - Describe the net effects on the environment for each alternative relative to the other alternatives, taking into account reasonable mitigation methods (i.e., methods for which there is a reasonable expectation that they can be implemented both technically and economically); and
  - Evaluate the advantages and disadvantages to the environment for each of the alternatives, and prepare a rationale for the preferred alternative(s)



Preliminary Evaluation Criteria and Indicators were outlined in Appendix B of the Approved ToR and may be broadly grouped into Environmental Components. These were presented to the public at Open House #1 and Workshop #1. These criteria form the basis for characterizing existing environmental conditions, for assessing potential adverse effects of the Undertaking, comparing Alternative Methods, and helping to identify a preferred alternative.

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<b>Surface Water</b>	Surface water quality, Surface water quantity
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## **Open House #2 – Preliminary Alternative Landfill Footprint Options**

Open House #2 includes a description of existing baseline conditions collected to date; presentation of preliminary alternative landfill footprint options; and an overview of evaluation criteria and indicators as well as assessment methodologies that will be used to predict and assess the impacts of each alternative.



## **Workshop #2 – Evaluation Methodology**

Workshop #2 will invite participants to provide input on the relative importance of evaluation criteria; discuss the comparative evaluation methodology; and review the proposed alternative landfill footprint options.



### **Open House #3 – Existing Conditions, Comparative Evaluation, & Preferred Alternative**

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### **Open House #5 – EA Report**

EA Open House #5 will present a summary of the EA Report.

Consultation events are your opportunity to get involved in the EA process to let us know your opinion and ideas about the proposed development at the BREC site.



Over the coming months, we will continue working on the EA for the proposed Undertaking. There are a lot of opportunities for you to get involved in the process and make your views known.

Get involved in the BREC EA and make your views known:

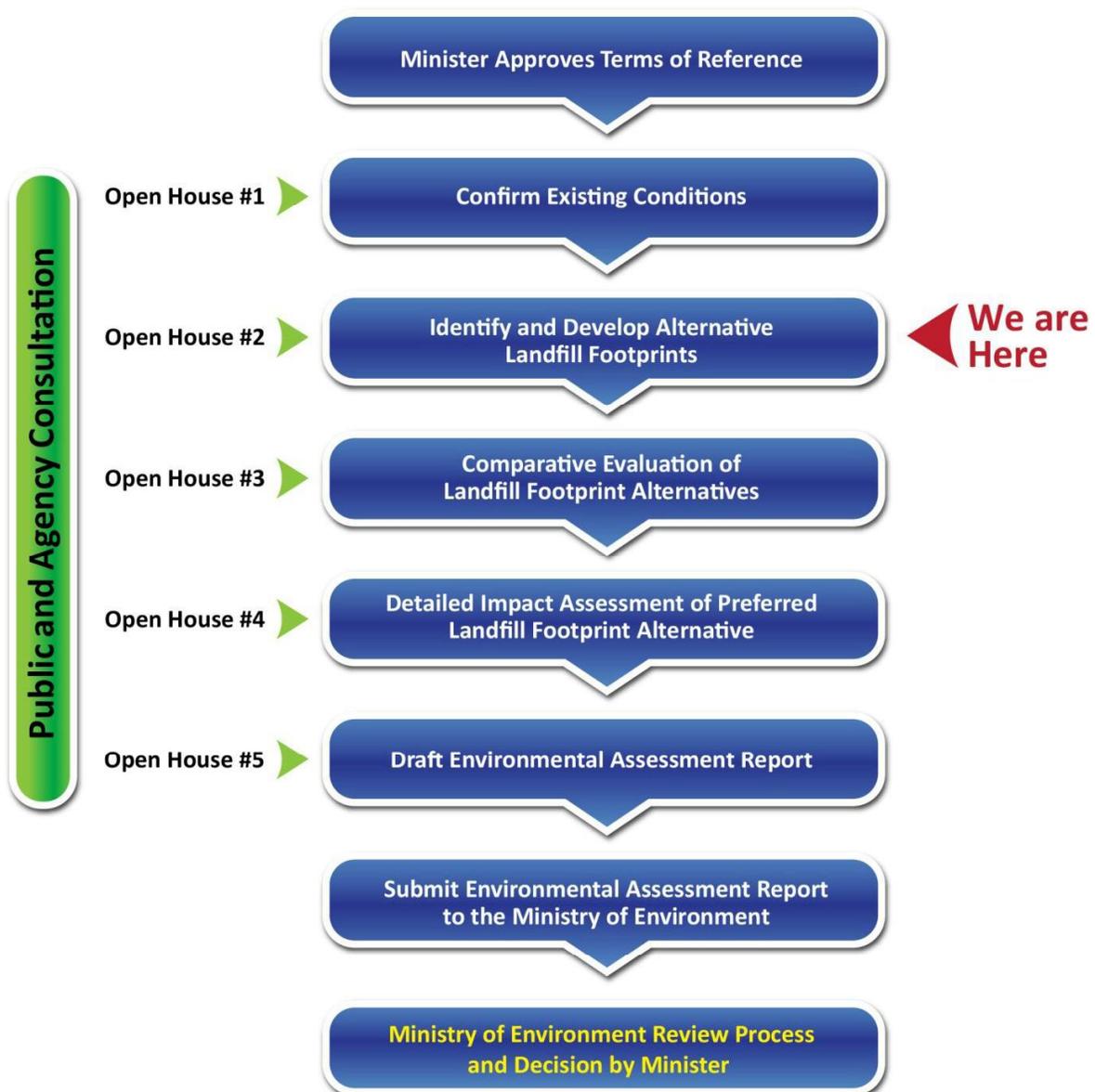
- Workshop #2 is planned for November 27, 2012, from 6 pm to 8 pm at the Lion's Hall
- Please sign-up at this Open House if you wish to be involved
- Please include your email address if you wish to receive further information on the project as well as the future Workshop
- Attend future Open Houses and Workshops
- Meet with us individually or in groups to ask questions, express your viewpoints or provide your input
- Visit our website <http://BREC.wm.com> to get more information or to provide your comments

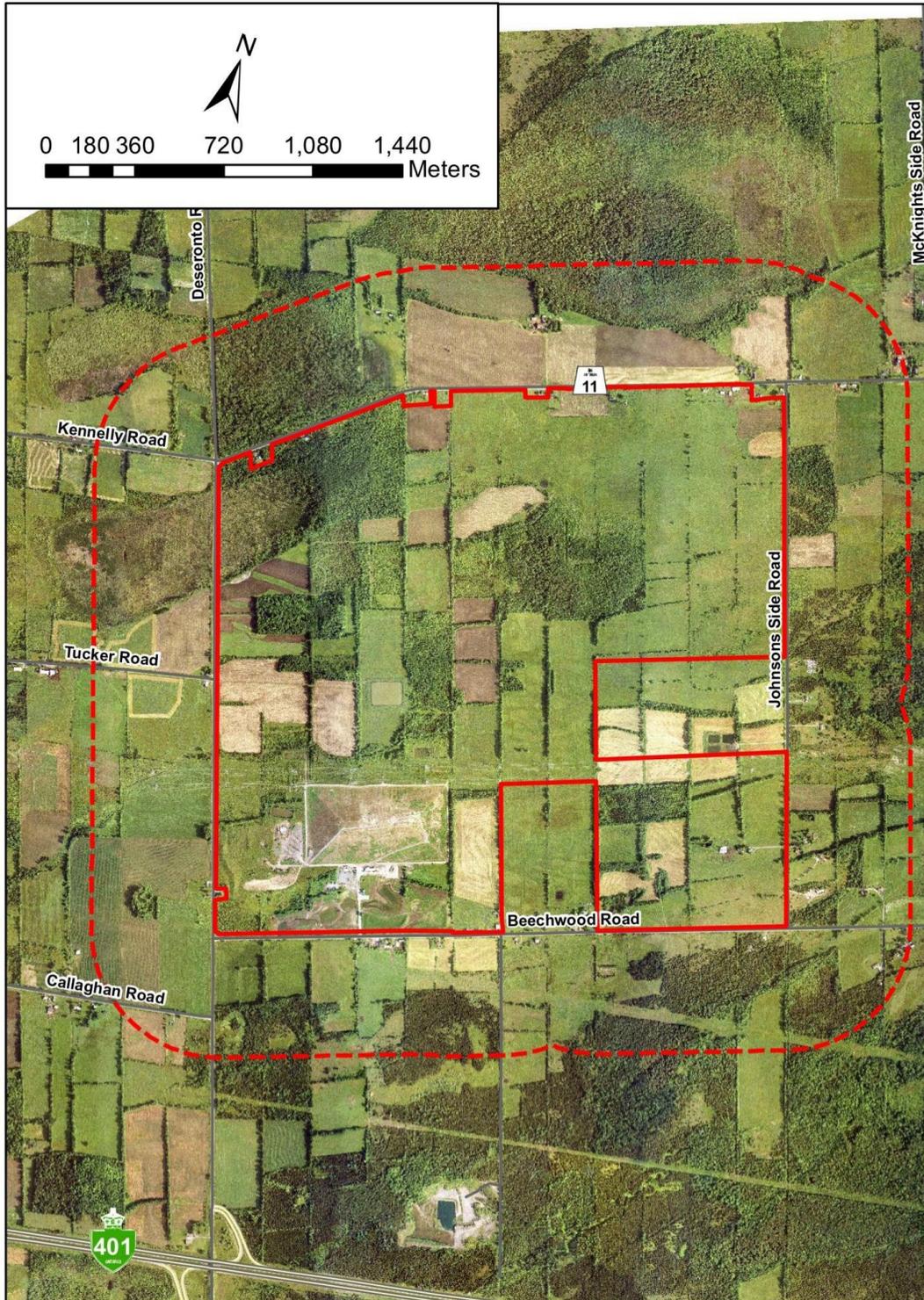


# Appendix C

OPEN HOUSE #2  
PRESENTATION SLIDES

Following ToR approval by the Minister of the Environment, the next step in the EA process involves conducting studies to confirm the existing environmental conditions in the study area, as well as finalizing the Alternative Methods of site optimization. From these studies, impacts on the environment for each Alternative can be assessed and compared in order to identify the Preferred Alternative Method of carrying out the Undertaking.





**LEGEND**

-  Property Boundary of Site Lands Owned/Optioned by Waste Management (The Site)
-  500 metre Site-Vicinity Study Area

- A preliminary description of the existing environment at the BREC was described in the approved ToR.
- The EA will address the following components of the environment that may be affected by the alternative methods of carrying out the undertaking:
  - Atmosphere;
  - Geology and Hydrogeology;
  - Surface Water;
  - Biology;
  - Cultural & Heritage Resources;
  - Archaeology;
  - Transportation;
  - Land Use;
  - Agriculture;
  - Socio-economic;
  - Aboriginal; and
  - Site Design & Operations.
- Data for the EA will be collected and analyzed for three study areas:
  - **On-Site** – the lands owned and/or optioned by WMCC for the proposed new landfill;
  - **Site Vicinity** – the lands in the vicinity of the Site extending about 500m in all directions; and
  - **Regional** – the lands within about 25km of the Site for the Socio-economic environment.
- During the EA, the project team will collect information and conduct studies (desktop and field) to describe the environmental components listed above that may be affected by the Undertaking. This will be done for each Alternative Method (alternative footprint) identified.



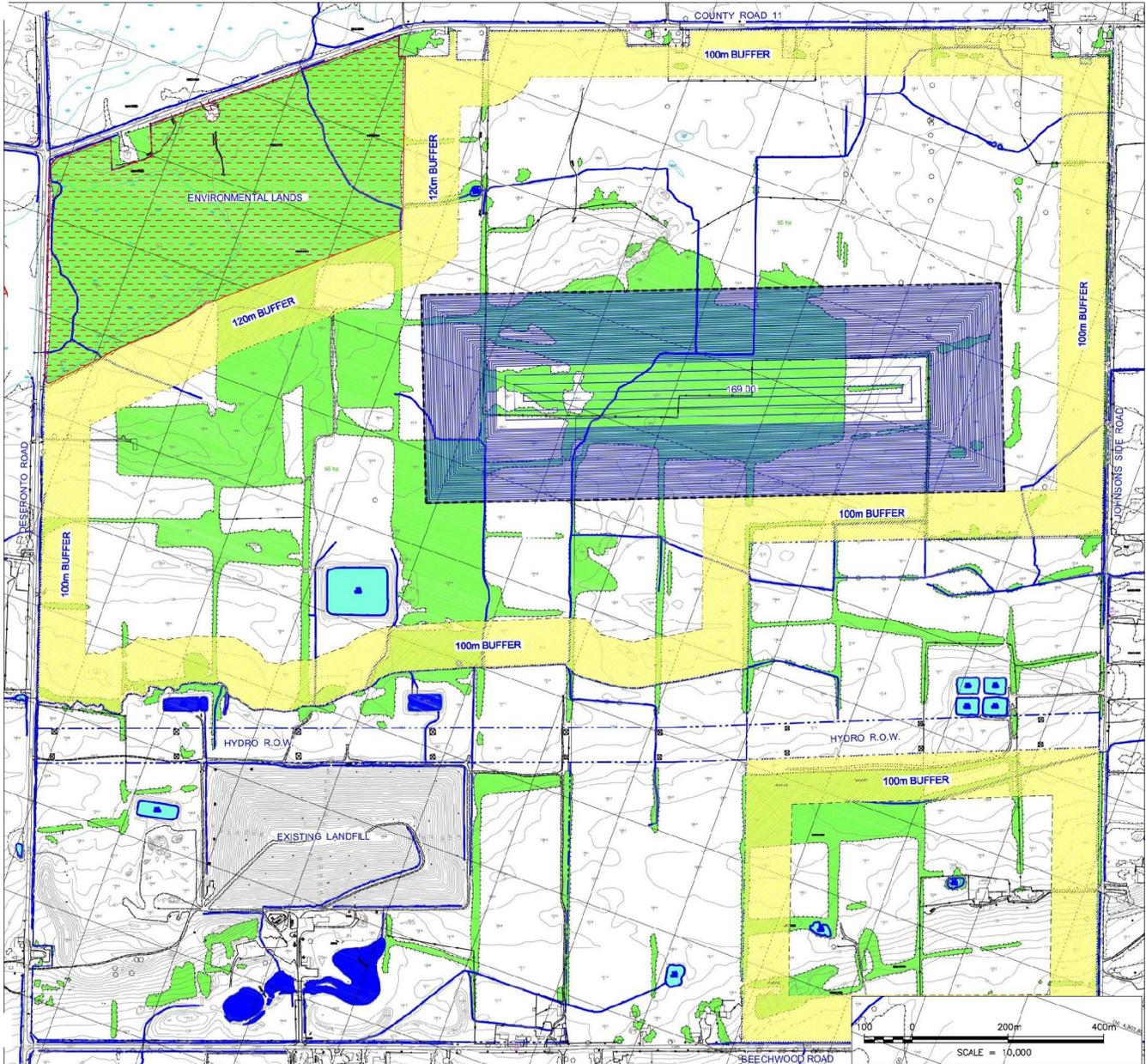
“Alternative Methods” is the assessment of the different ways of implementing the proposed undertaking. For example, the proposed new landfill footprint for residual waste could be constructed in different locations and configurations (size, height, etc.) at the BREC.

## Identifying Alternative Methods

- The approved ToR identified the study area within which Alternative Methods have been identified, bounded by Beechwood Road on the south, Deseronto Road on the west, County Road 11 on the north and Johnsons Side Road on the east
- Constraint mapping was used to determine the preliminary land envelopes within the lands owned and optioned by WMCC for the possible location of the proposed alternative landfill footprints
- The alternative methods are a function of a number of site-specific factors: streams, wetlands, electricity transmission facilities, transportation access, provision of perimeter buffer zones, and landfill design and operations
- After considering these constraints a large envelope was identified for the proposed development
- Three possible landfill footprint alternatives have been identified. A comparative evaluation of alternative landfill footprints will be conducted and an impact assessment on the preferred landfill footprint will be carried out
- In addition, as part of the operational component of the landfill footprint, leachate treatment alternatives will also be identified and assessed
- The preferred landfill footprint will be refined and finalized in consultation with the public, Government Review Team (GRT), First Nations and Aboriginal communities and other stakeholders during the EA process



## Alternative Landfill Footprint Option #1

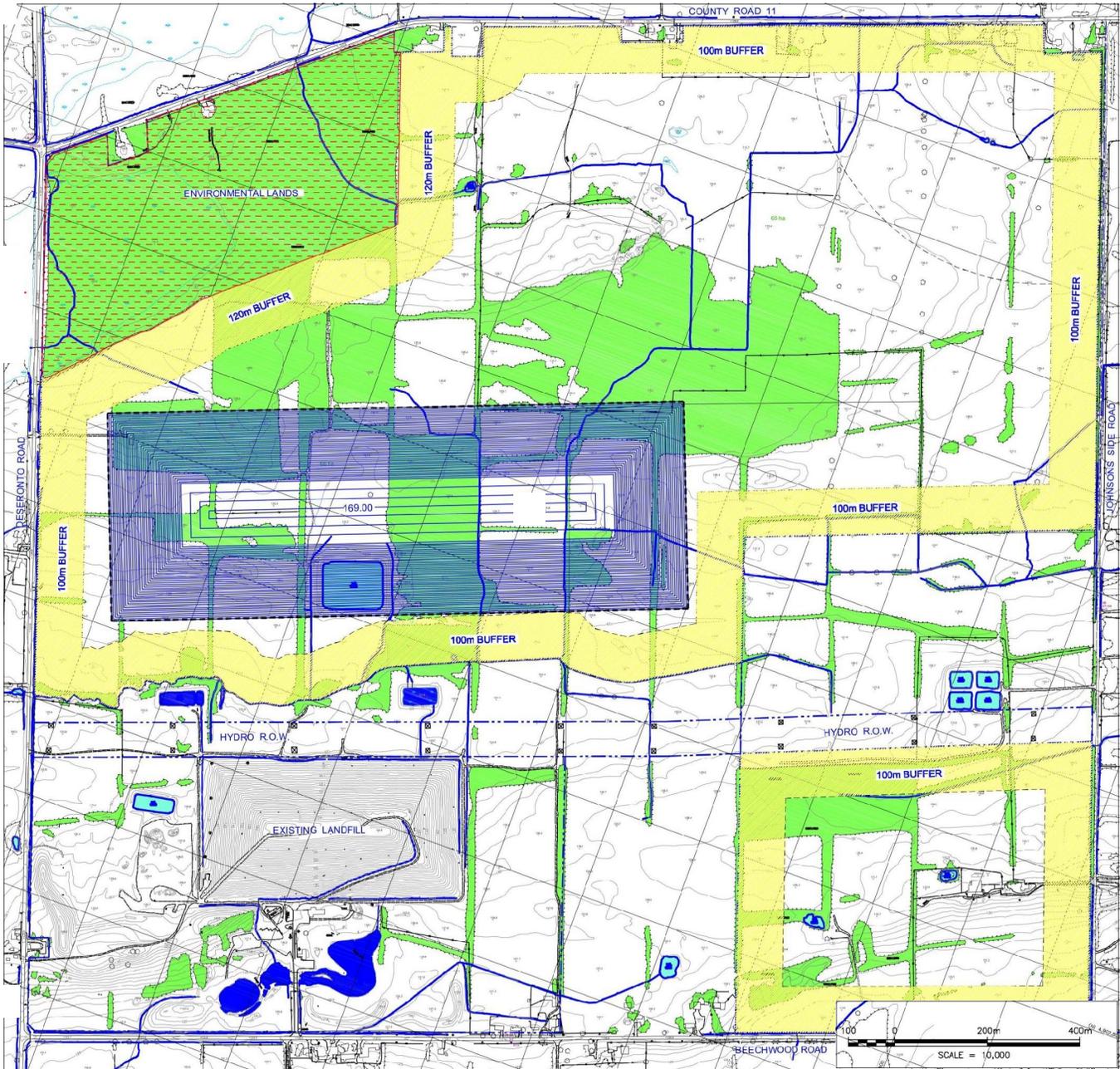


**LEGEND:**

-  PROPERTY BOUNDARIES
-  EXISTING CONTOURS WITH ELEVATION
-  WATERCOURSE
-  WATERBODY
-  STORMWATER PONDS
-  WETLAND CONSERVATION AREA
-  WOODED AREAS
-  BUFFER ZONE SETBACK
-  PROPOSED TOP OF WASTE CONTOURS
-  LIMIT OF WASTE FOR 13.0 MILLION cu.m. CAPACITY (AREA = 562,500 sq. m.)

**Top of Waste: Approx. 169 mASL/ 45 m**  
**Area: 562,500 m<sup>2</sup>**  
**Air Space: 13 million m<sup>3</sup>**

## Alternative Landfill Footprint Option #2

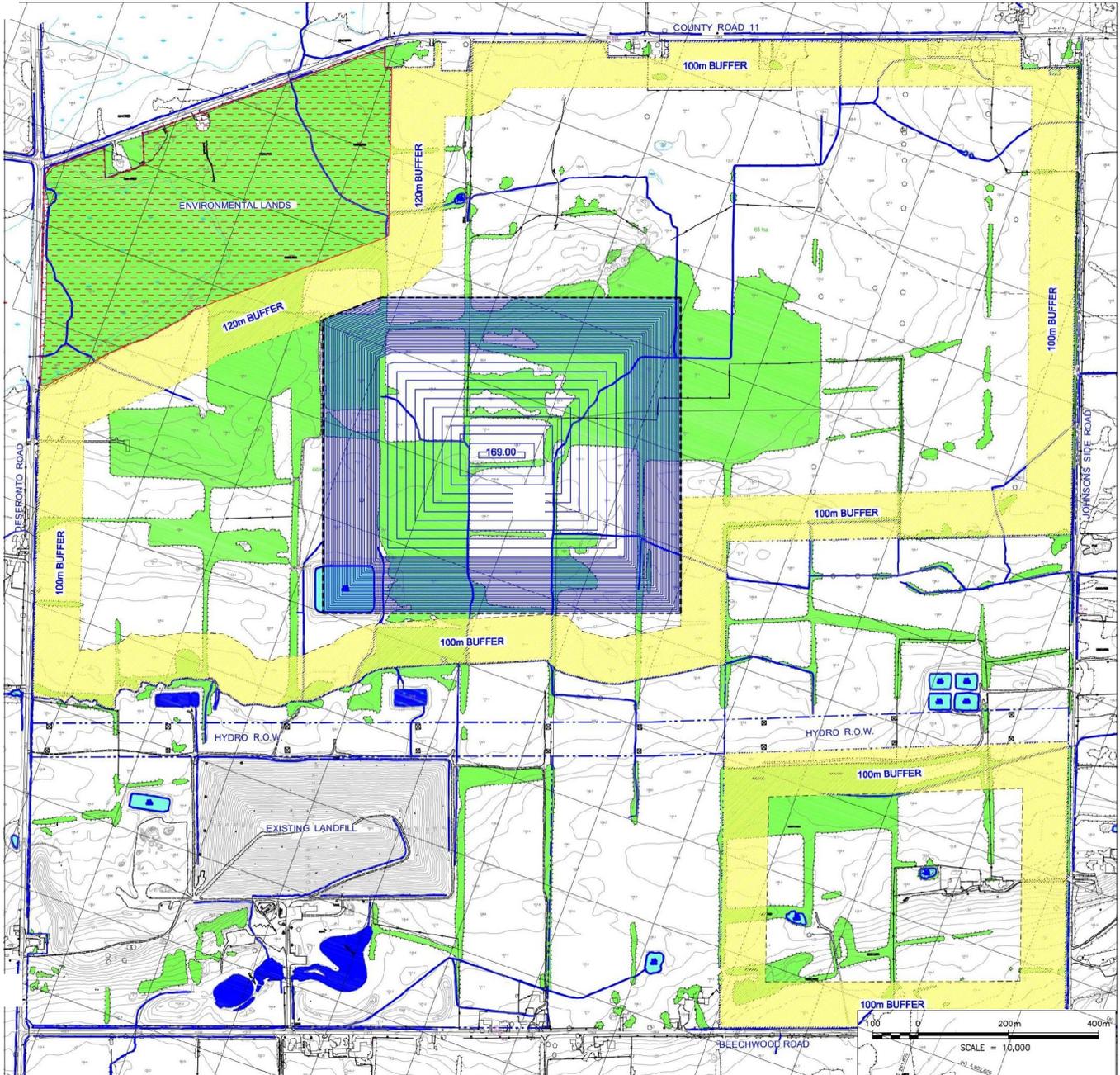


**LEGEND:**

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**Area: 562,500 m<sup>2</sup>**  
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## Alternative Landfill Footprint Option #3



**LEGEND:**

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# Appendix D

OPEN HOUSE #2  
COMMENT SHEET

