Welcome

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 at a Glance

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.

Waste Diversion

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.

Waste Disposal

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.

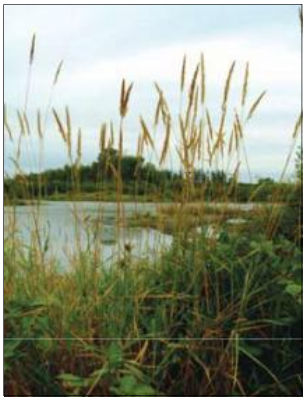
- The new landfill footprint is the undertaking that requires EA approval, and will be constructed using the latest technology and processes to ensure the highest available standards of safety and efficiency.

- 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^3, 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.



Community Uses

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.

Closure of the Richmond Landfill

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.

Our Community Involvement

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.

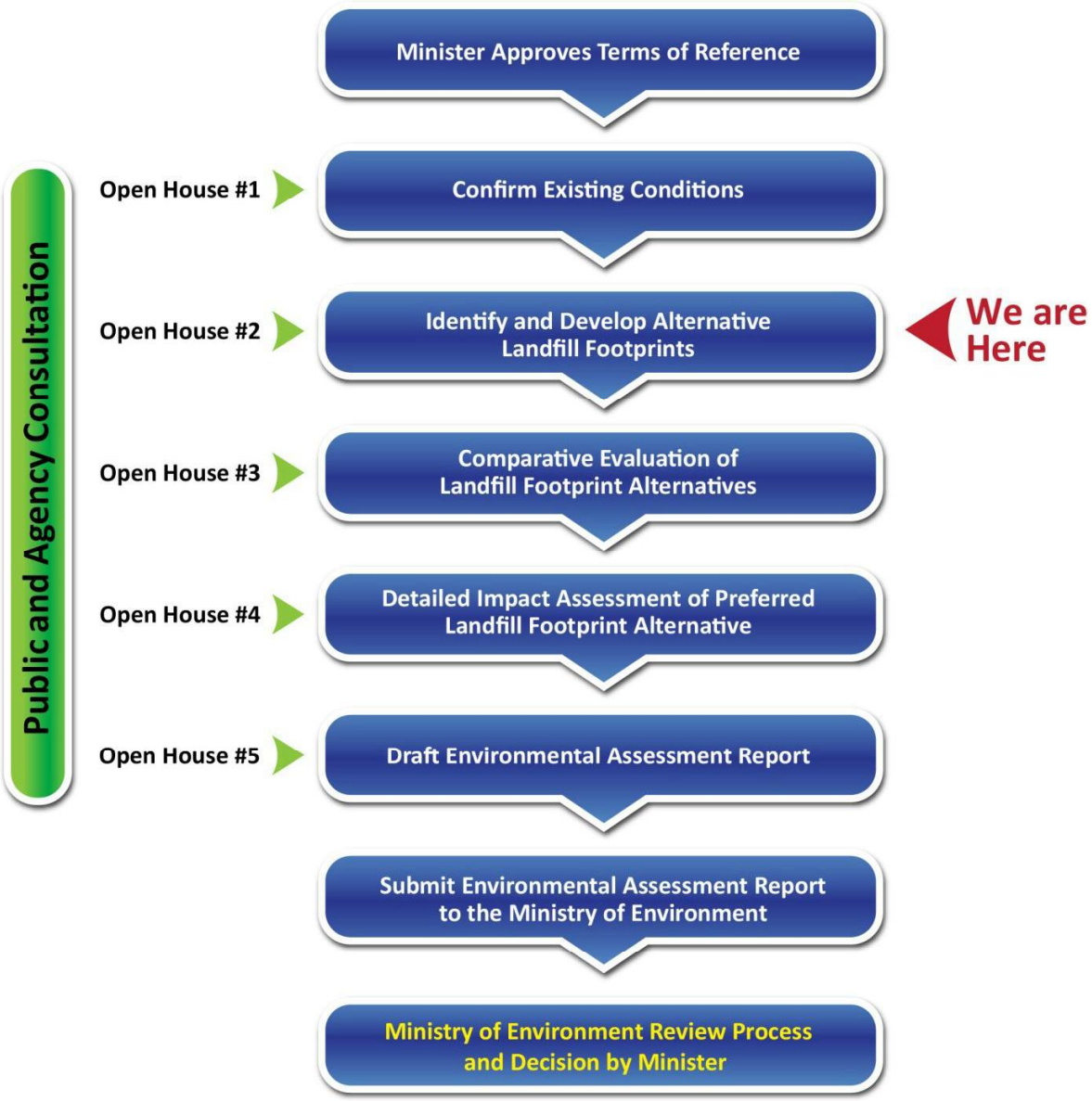
Terms of Reference

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.

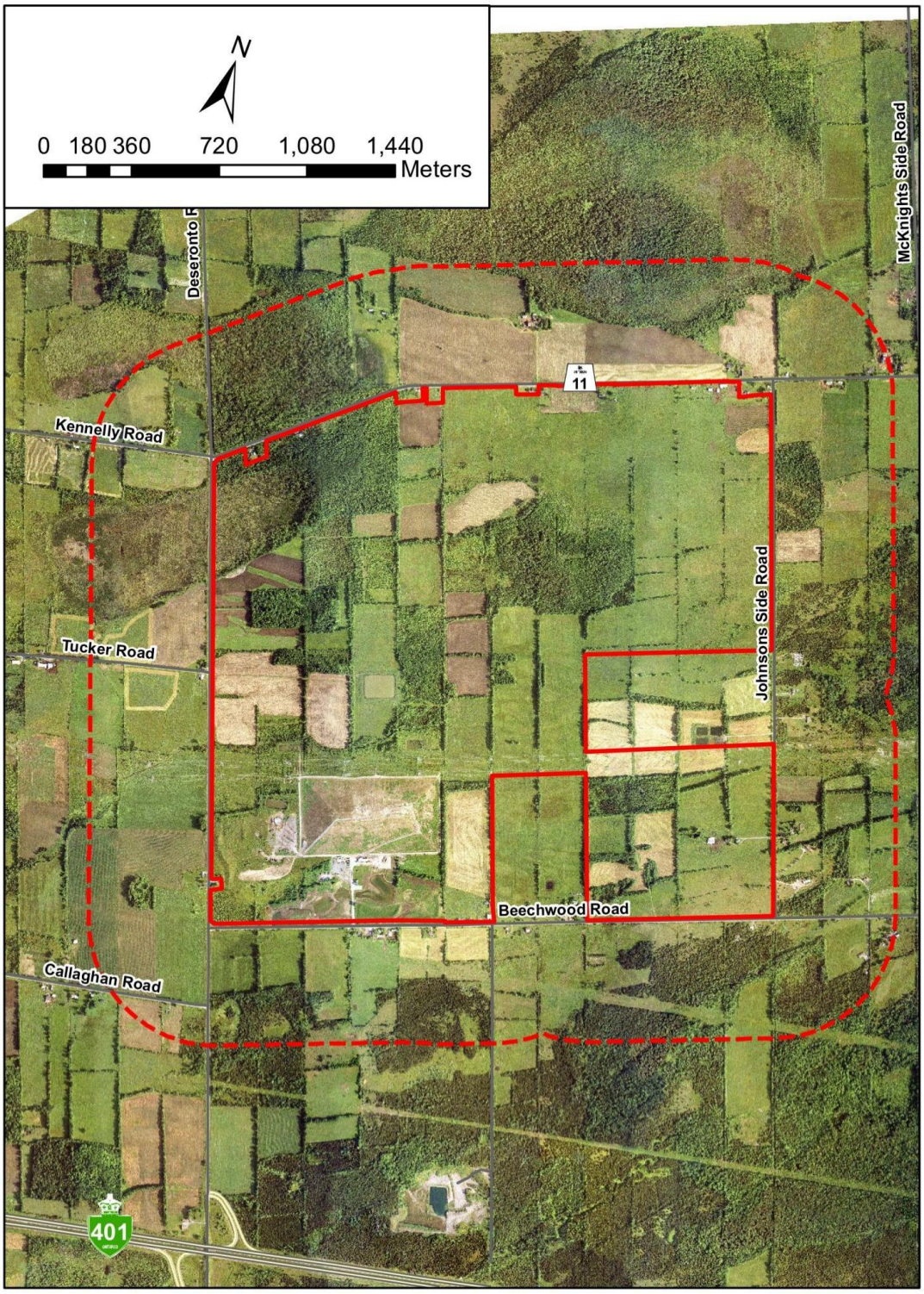
- The ToR provides a framework (or work plan) for conducting the EA studies and assessing the predicted impacts of the project.
- The EA will include the following steps:
  - **Step 1 – Overview of the Proposed Project**
    - Approved ToR, EA study Work Plans, proposed Consultation process.
  - **Step 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**

EA Process

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.



Study Area



LEGEND

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

Baseline Conditions

- 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.

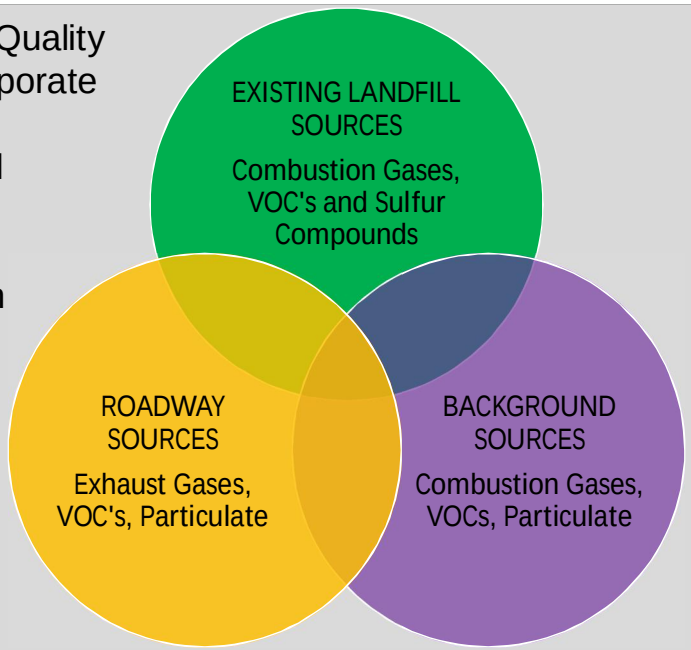
- Data for the EA will be collected and analyzed for three study areas:
  - **On-Site** – the lands owned and/or optioned by WMCC for the proposed new landfill;
  - **Site Vicinity** – the lands in the vicinity of the Site extending about 500m in all directions; and
  - **Regional** – the lands within 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.

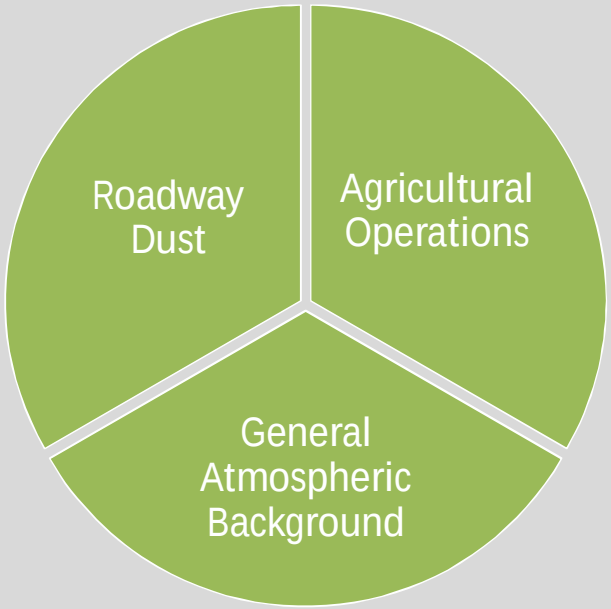
Existing Conditions

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



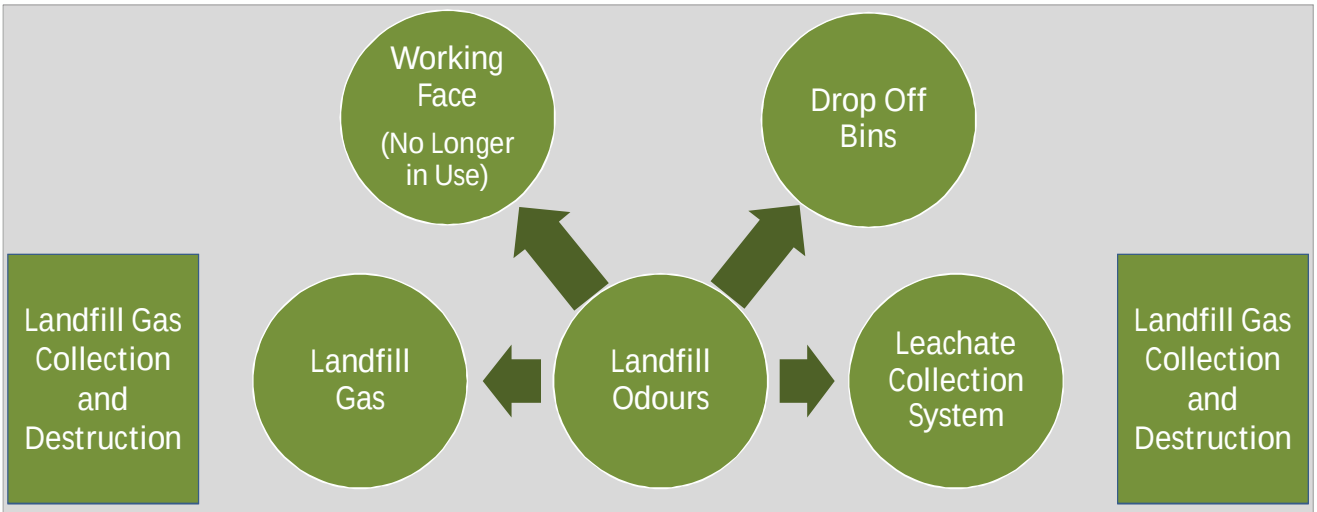
Atmospheric Environment- Dust



- 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

Existing Conditions

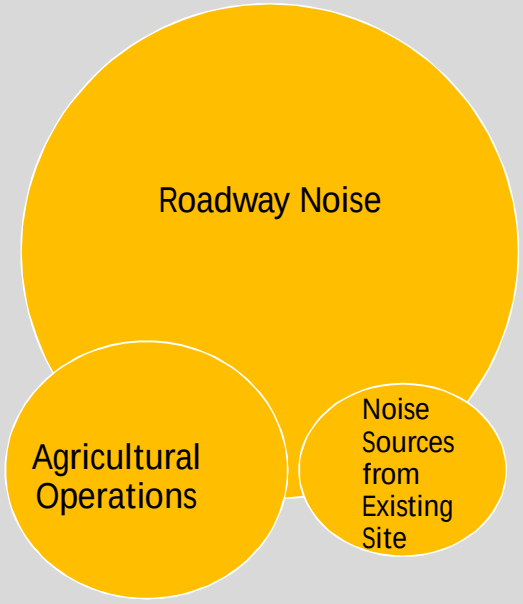
Atmospheric Environment- Odour



- 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

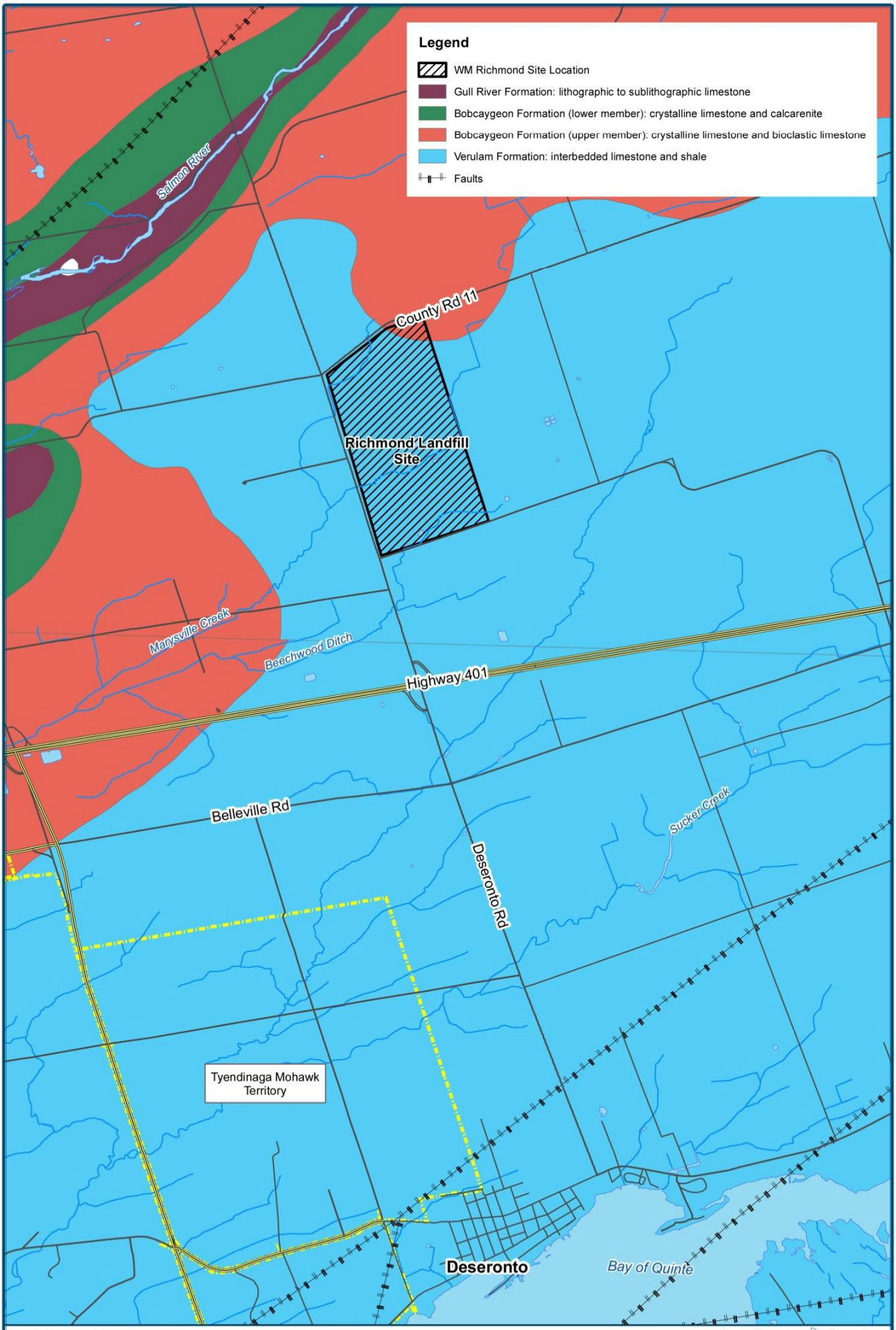
Regional Study Area

- 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

0.7 0.35 0 0.7 Kilometres

Figure 3.1
Regional Bedrock Geology

Project : K-B5691-11
Data Source: LIO, MNDM, WESA
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

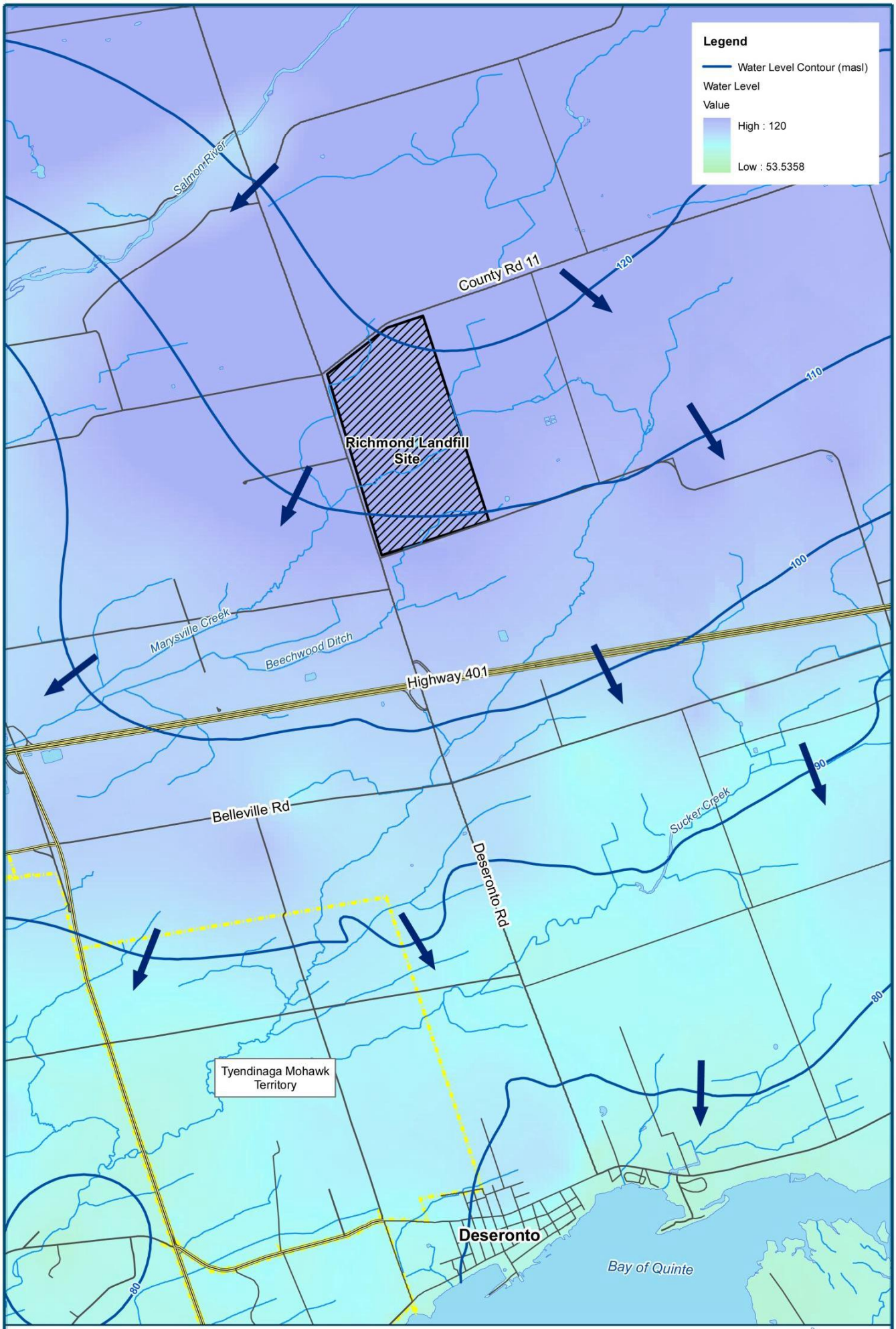


Figure 4.1
Regional Groundwater Elevations and Generalized Flow Orientations

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

Existing Conditions

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

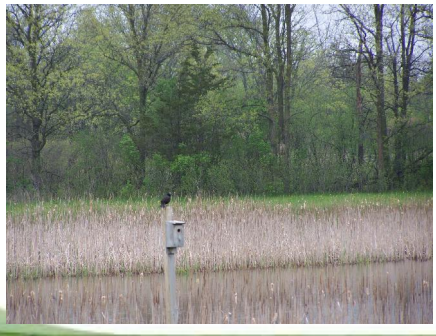
Natural Environment

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

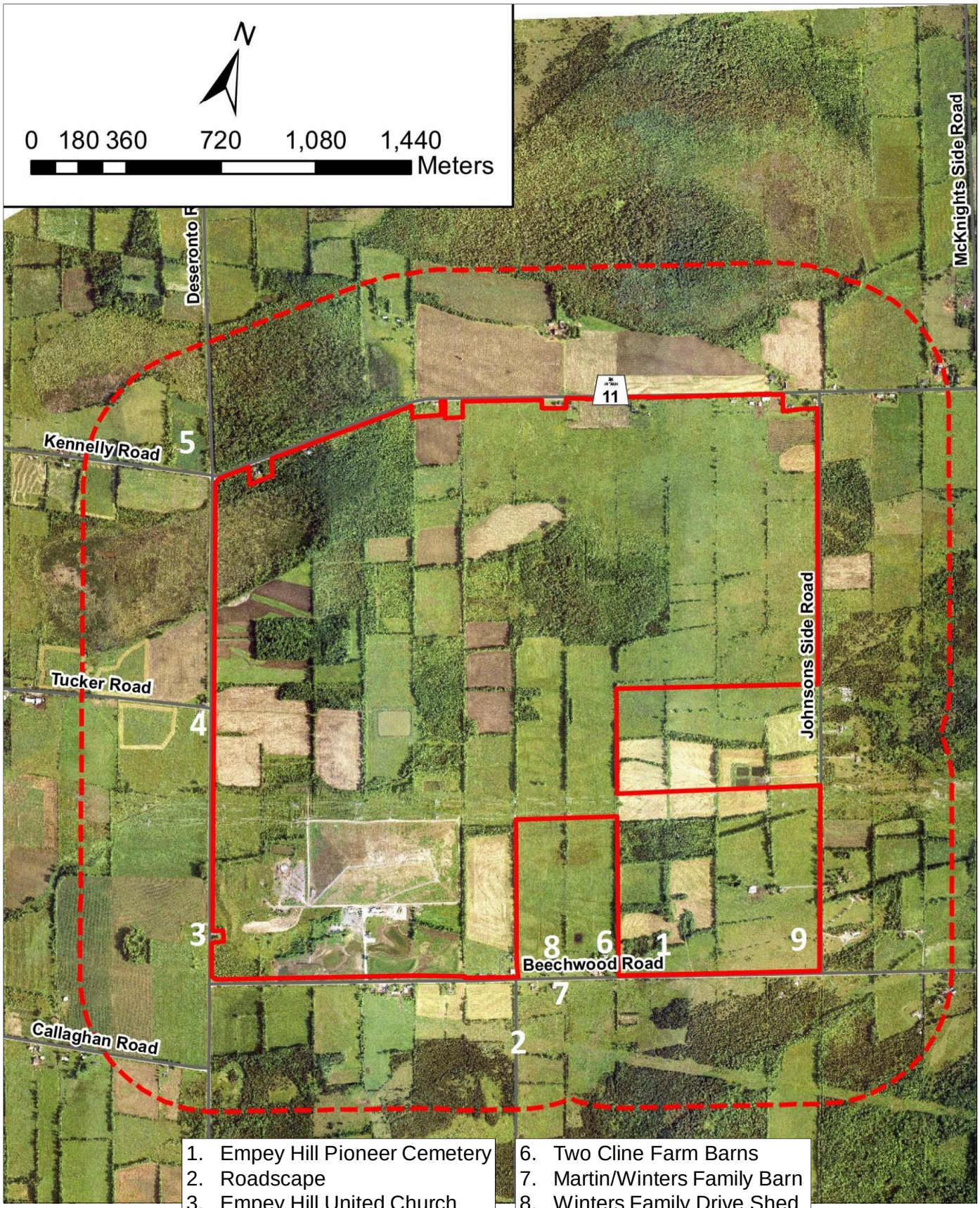
Site-Vicinity

- ***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 19thC 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

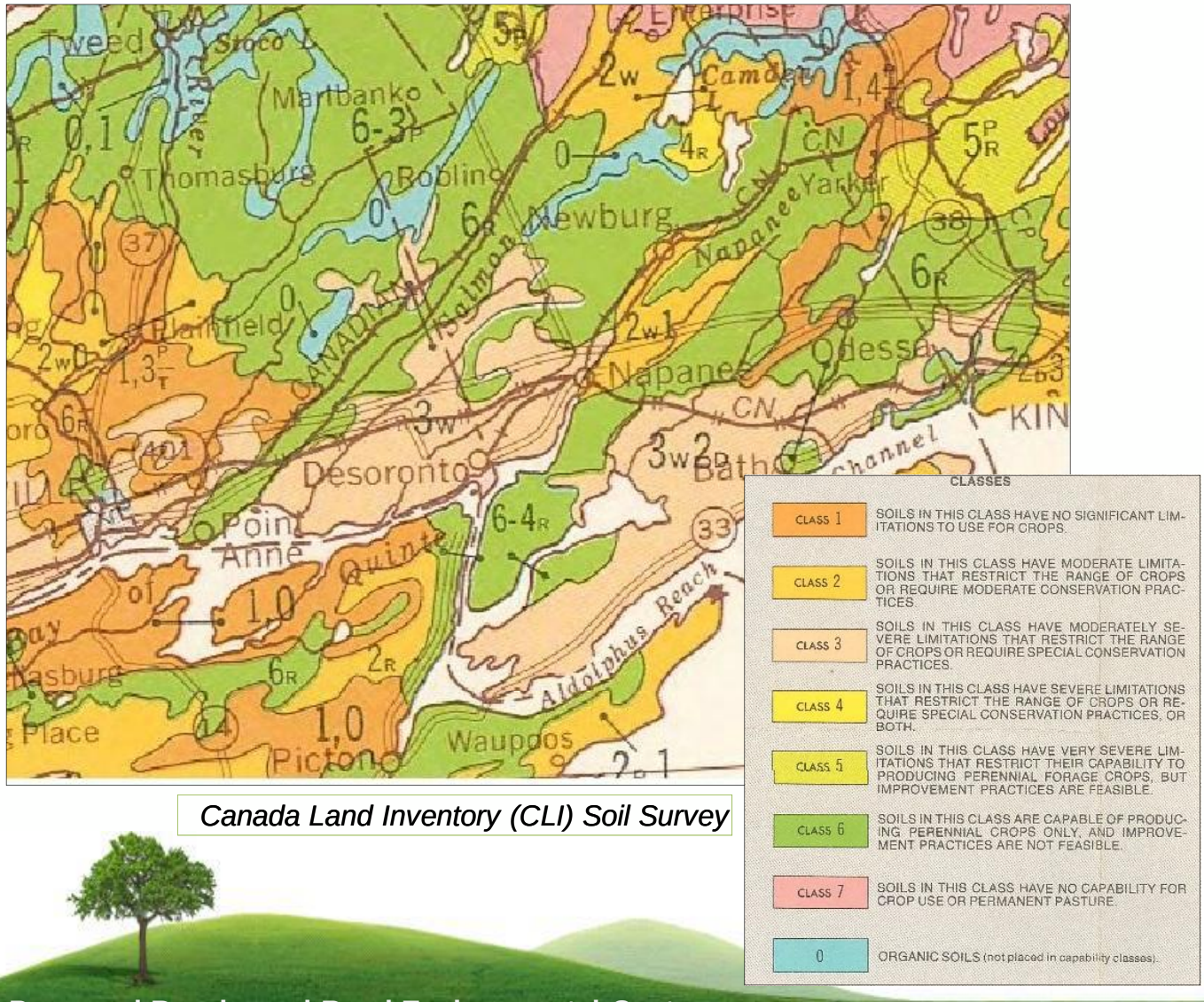
Existing Conditions



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

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

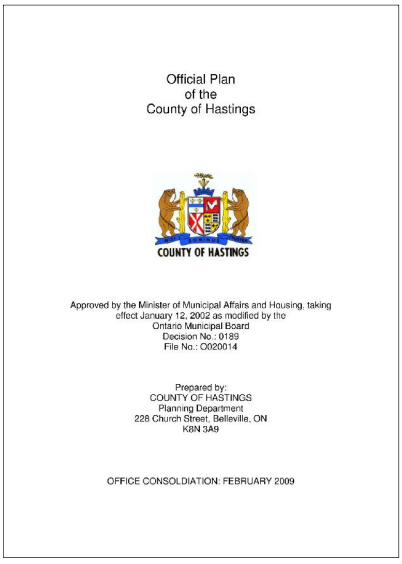
- Approx. 12 km northwest of the urban centre of the Town of Greater Napanee, which has a population of approx. 15,400
- Approx. 7 km north of the urban centre of the Town of Deseronto, which has a population of approx. 1,800
- Approx. 5 km east of the Hamlets of Marysville and Lonsdale, which have populations 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

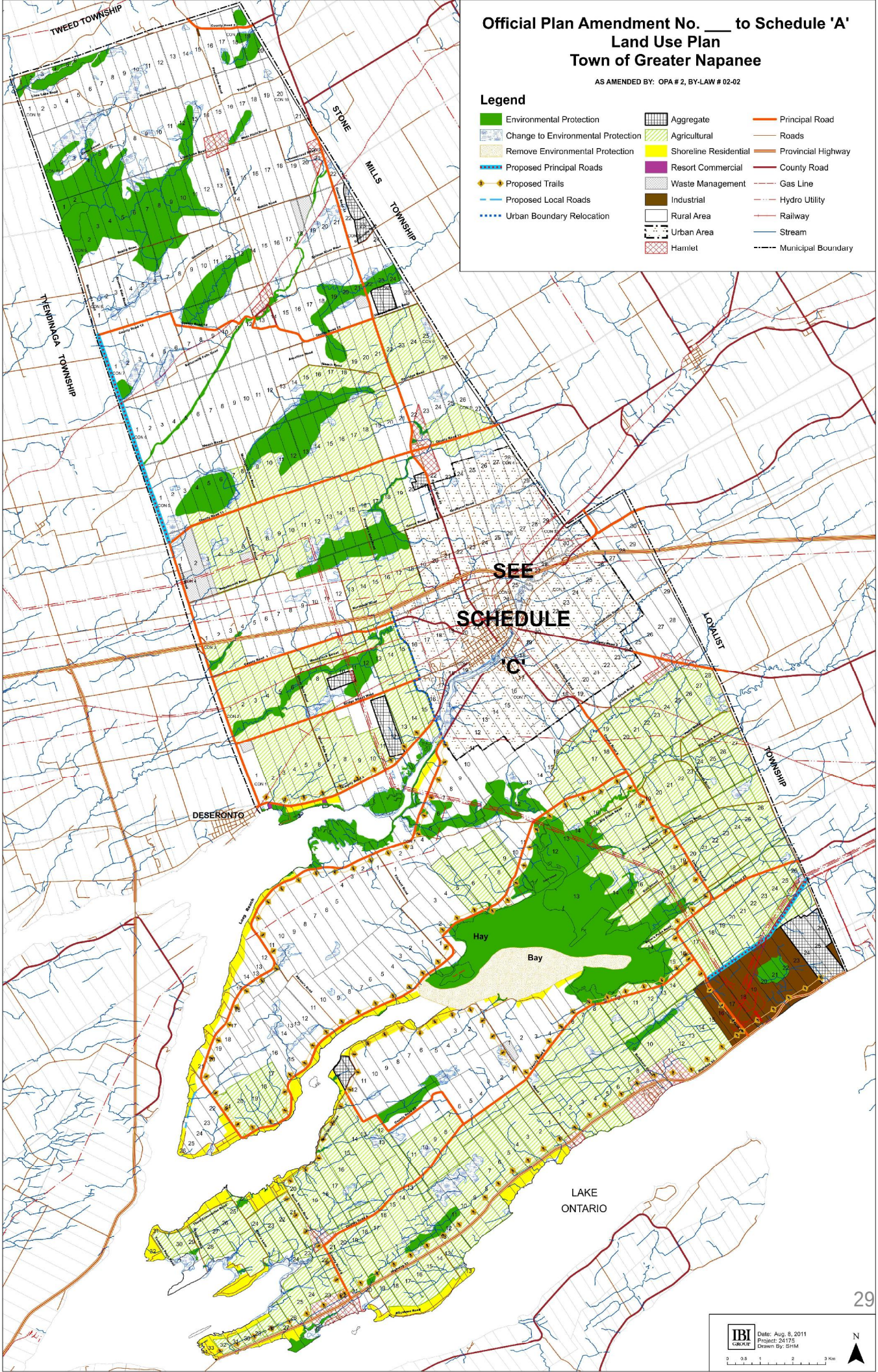
Land Use

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 *Agricultura*l
  - 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*


THE
OFFICIAL PLAN
OF THE
TOWN OF GREATER NAPANEE
(OFFICE CONSOLIDATION)
MARCH 2002
Cumming Cockburn Limited
Consulting Engineers and Planners
Project No. 8446-P


Official Plan
of the
County of Hastings
COUNTY OF HASTINGS
Approved by the Minister of Municipal Affairs and Housing, taking effect January 12, 2002 as modified by the Ontario Municipal Board
Decision No.: 0189
File No.: O020014
Prepared by:
COUNTY OF HASTINGS
Planning Department
228 Church Street, Belleville, ON
K8N 3A9
OFFICE CONSOLDIATION: FEBRUARY 2009


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
Change to Environmental Protection
Remove Environmental Protection
Proposed Principal Roads
Proposed Trails
Proposed Local Roads
Urban Boundary Relocation
Aggregate
Agricultural
Shoreline Residential
Resort Commercial
Waste Management
Industrial
Rural Area
Urban Area
Hamlet
Principal Road
Roads
Provincial Highway
County Road
Gas Line
Hydro Utility
Railway
Stream
Municipal Boundary
TWEED TOWNSHIP
STONE MILLS TOWNSHIP
TYENDINAGA TOWNSHIP
LOYALIST TOWNSHIP
SEE SCHEDULE 'C'
DESERONTO
Hay Bay
LAKE ONTARIO
Date: Aug. 8, 2011
Project: 24175
Drawn By: SHM
N
0 0.5 1 2 3 Km

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, Kahniote 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

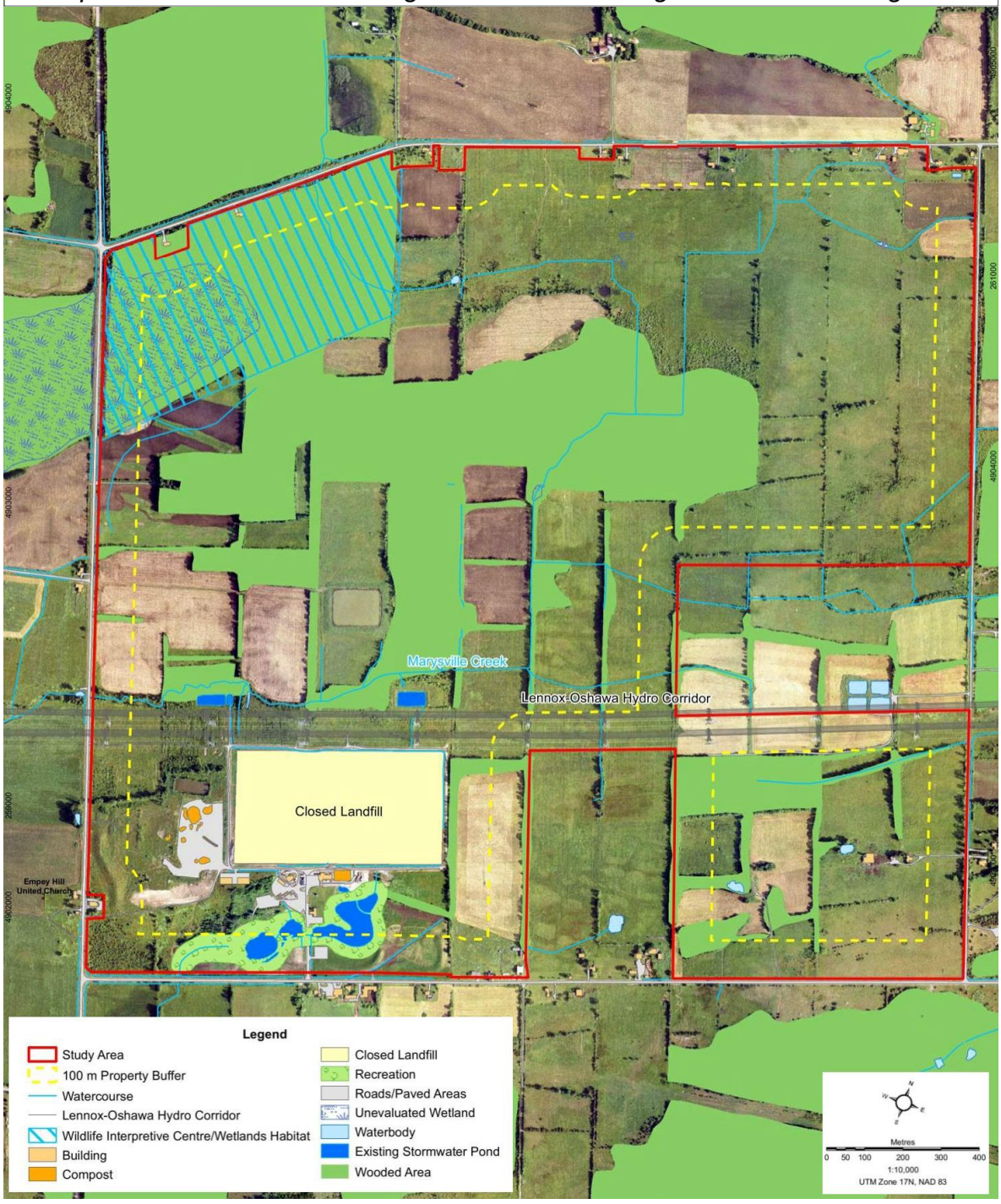
"Alternative Methods" is the assessment of the different ways of implementing the proposed undertaking. For example, the proposed new landfill footprint for residual waste could be constructed in different locations and configurations (size, height, etc.) at the BREC.

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

Constraint Mapping

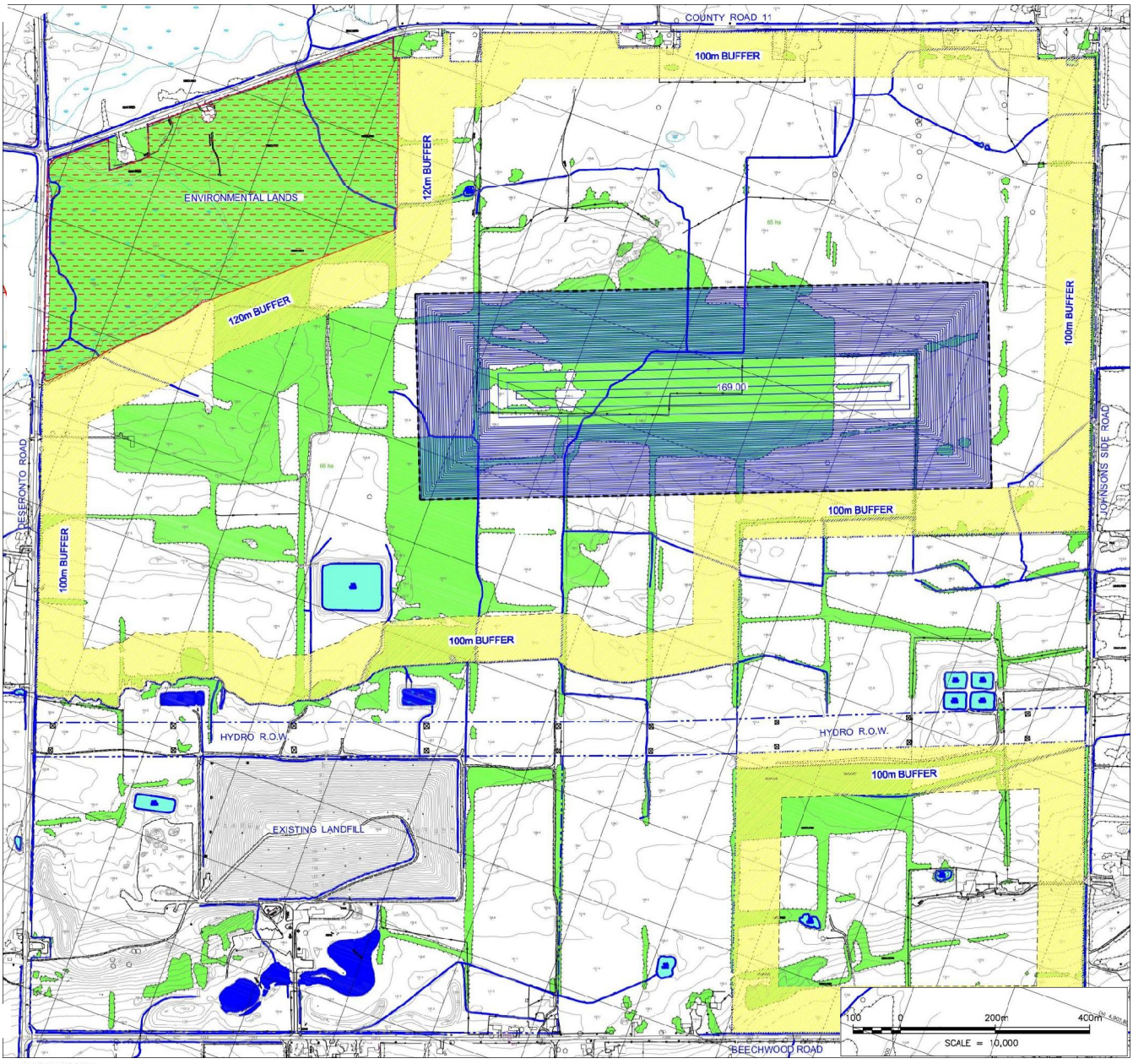
The constraints identified on this map should be considered preliminary and will be updated based on the findings of the final existing conditions investigations



Basemapping from Ontario Ministry of Natural Resources Orthophotography

Alternative Landfill Footprint Options

Alternative Landfill Footprint Option #1



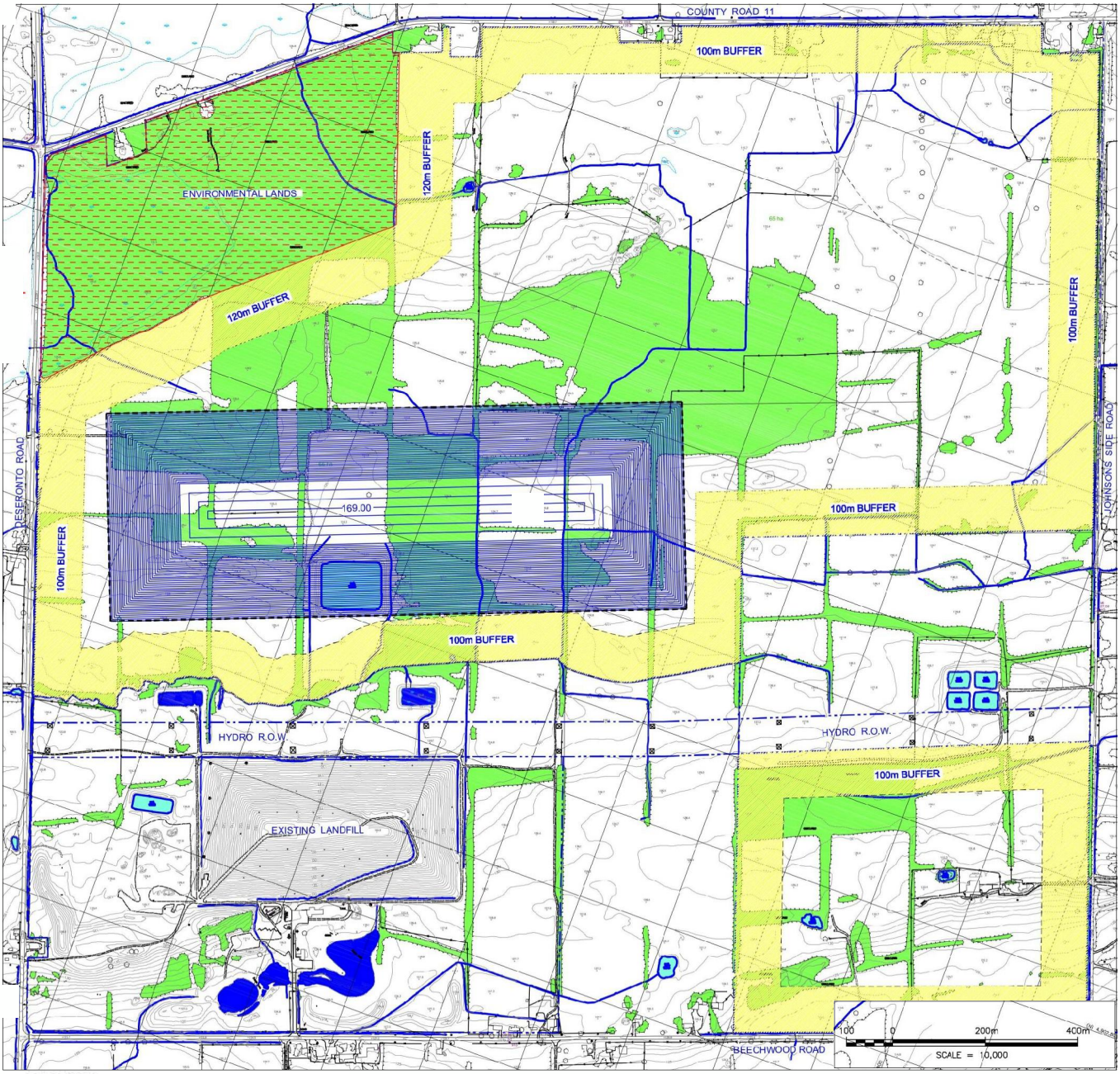
LEGEND:

- 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^2
Air Space: 13 million m^3

Alternative Landfill Footprint Options

Alternative Landfill Footprint Option #2



LEGEND:

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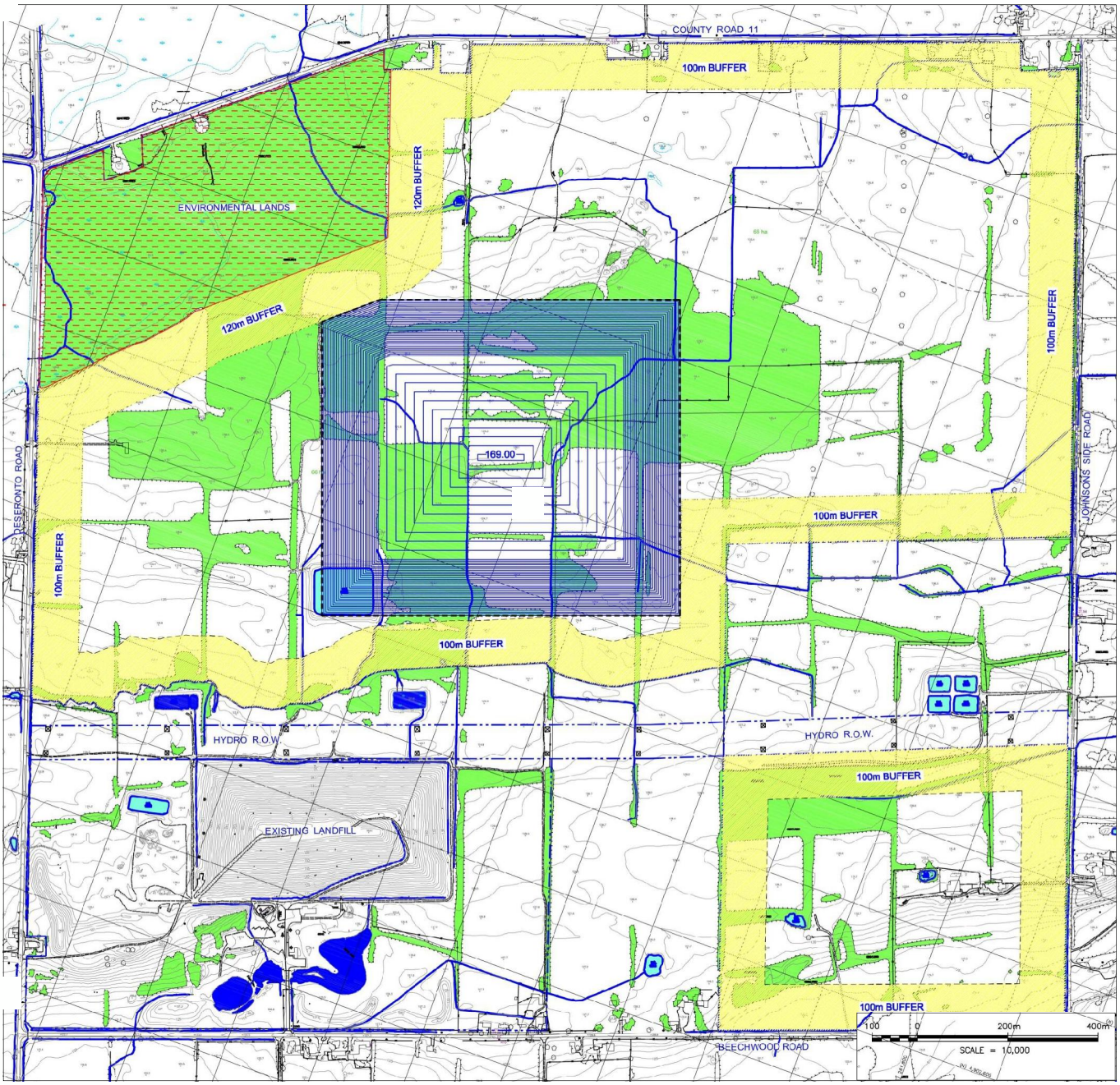
- LIMIT OF WASTE FOR 13.0 MILLION cu.m. CAPACITY (AREA = 562,500 sq. m.)

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

Alternative Landfill Footprint Options

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^2
Air Space: 13 million m^3

Evaluation Methodology

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)

Evaluation Criteria

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.

Environmental Criteria	
Atmosphere	Air quality, Noise, Odour
Geology & Hydrogeology	Groundwater quality, Groundwater flow
Surface Water	Surface water quality, Surface water quantity
Biology	Terrestrial ecosystems, Aquatic ecosystems
Cultural & Heritage Resources	Cultural landscape, Built heritage, Archaeological resources
Transportation	Effects on airport operations, Effects from truck traffic along access roads
Land Use	Effects on current and planned future land uses
Agriculture	Effects on agricultural land and agricultural operations
Socio-economic	Effects on the cost of services to customers, Continued service to customers, Economic effects to local municipality, Effects on recreational resources, Visual impact of the facility
Aboriginal	Potential effects on aboriginal communities
Site Design & Operations	Site design and operations characteristics

A full description of the Criteria, Indicators, Rationale for their selection and Data Sources are available for comment at this Public Open House.

Consultation Program

Open House #1 – Review of Approved ToR

Open House #1 presented a review of the approved ToR for the BREC, including the amendments made; preliminary baseline existing conditions; and proposed criteria and indicators for the evaluation of alternative landfill footprint options

Workshop #1 – Landfill Footprint Options

Workshop #1 gave attendees an opportunity to comment on material presented at Open House #1; provide feedback on the proposed Work Plans; review preliminary baseline conditions and proposed evaluation criteria; and invited participants to identify constraints in the development of new landfill footprints and locations for the various BREC facility components.

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.

Consultation Program

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

Open House #3 will include a summary of existing environmental conditions, based on updated investigations conducted in Fall 2012. The results of the comparative evaluation of alternatives and identification of a preferred alternative will also be presented.

Workshop #3 – Comparative Evaluation & Preferred Alternative

Workshop #3 will invite participants to discuss and provide input to the comparative evaluation of Alternative Methods and identification of the preferred alternative.

Open House #4 – Impact Assessment of the Preferred Alternative

Open House #4 will present the findings of the detailed impact assessment for the proposed new landfill footprint at the BREC facility as well as the cumulative impact assessment of the new landfill footprint in conjunction with additional facilities at the BREC and other projects in the future in the area.

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.

Next Steps

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