

WALKER SOUTH LANDFILL PHASE 2 ENVIRONMENTAL ASSESSMENT

NIAGARA FALLS, ONTARIO

NOISE EXISTING CONDITIONS

RWDI # 2402272

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SUBMITTED TO

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1 INTRODUCTION

This Noise Existing Conditions report provides an overview of the existing environmental sound conditions within the study area for the South Landfill Phase 2 Environmental Assessment (EA). The Minister of the Environment, Conservation and Parks (Minister) Approved Terms of Reference (ToR) for the EA included a preliminary description of the existing environmental conditions and made a commitment to expand upon this description during the EA.

Walker Environmental Group (Walker) initiated a Comprehensive EA under the Ontario EA Act seeking approval to expand the capacity of its existing South Landfill located at the Walker Resource Management Campus (Campus) in Niagara Falls. The South Landfill is an essential component of Walker's Campus since it began operating in 2009 under Environmental Compliance Approval (ECA) No. 008-78RKAM, as amended, and provides safe, reliable, and affordable disposal capacity for solid, non-hazardous waste from residential and industrial, commercial, and institutional (IC&I) sources to its customer base within the City of Niagara Falls, the Regional Municipality of Niagara, and the Province of Ontario. The South Landfill's total approved disposal capacity is 17.7 million m³ and is expected to reach maximum capacity by 2029 to 2031.

The proposed Phase 2 of the South Landfill would extend its approved capacity by approximately 18 million m³ over a 20-year period, ensuring Walker can continue to provide essential residual waste disposal services to its existing customer base. Walker is proposing to locate the additional disposal capacity (Phase 2) to the east of the existing South Landfill within the area currently occupied by Walker's Southeast Quarry. The proposal would maintain the existing landfill service area, as well as the annual volume of solid, non-hazardous waste from the sources currently accepted.

The EA Act requires that proponents describe the environment that may potentially be affected or may reasonably be expected to be affected, directly or indirectly, by the Alternative Methods of Carrying Out the Undertaking (Alternative Methods) proposed as part of an EA. The description of the existing environmental conditions will provide the baseline for the assessment of potential effects for the proposed Undertaking, which will be conducted during the EA. This report focuses on characterizing the existing conditions within the study area for the South Landfill Phase 2 EA for environmental sound.

2 STUDY AREA

This section introduces the study area, identifies the points of reception (PORs) and describes the general acoustic environment.

2.1 Study Area Limits

The facility is located at municipal address 2800 Thorold Townline Road in Niagara Falls, Ontario. The site is in the north-west corner of the municipality of Niagara Falls, near the intersection of Thorold, St. Catharines and Niagara-On-The-Lake municipalities. From an environmental sound perspective, the characterization of noise existing conditions within the following study area is appropriate to this EA:



- Site Study Area (SSA), including all lands (76.12 ha) owned and operated by Walker that are within the existing approved boundaries of the Southeast Quarry; and
- Local Study Area (LSA), including all lands within a 1.0 km radius of the SSA.
- Regional Study Area (RSA), including all lands within a 3.0 km radius of the SSA.

The SSA includes sound sources outside the scope of the Noise Existing Conditions report as the existing conditions considers sound sources contributing to the ambient sound levels. The LSA extends 1.0 km from the limits of the proposed landfill and includes existing roadways. The RSA extends 3.0 kms from the limits of the proposed landfill and includes existing roadways and more distant sounds that possibly contribute to the environmental soundscape.

The noise study areas are illustrated in **Figure 2-1**, attached.

2.2 Noise Sensitive Points of Reception

A POR is defined as a location where noise from landfill operations, ancillary facilities, pest control devices or haul route is received. As defined in NPC-300, PORs are located:

- On the façade of a dwelling;
- On the property of, and within 30 m of a dwelling;
- On the façade of a noise-sensitive commercial-purpose building (e.g., hotel, motel);
- On the façade of a noise-sensitive institutional-purpose building (e.g., hospital, day nursery, educational facility, place of worship not on commercially or industrially zoned land); or
- On a vacant lot zoned for noise-sensitive use that is accessible by public road or navigable waterway.

Five (5) representative receptors were identified as representative PORs for the Noise Existing Conditions report assessment. They are existing residences and potentially accessible vacant lots where noise-sensitive uses are permitted. The five (5) locations are presented in **Figure 2-2**, attached.

All POR locations have been modelled at two distinct heights based on the evaluation period. Daytime levels have POR locations modelled at 1.5 m above grade, while evening and nighttime periods have POR locations modelled at 4.5 m, consistent with industry practice for residences up to two stories in height.

2.3 Existing Acoustic Environment

2.3.1 Background Offsite Traffic

Traffic volumes on public roadways within the LSA were considered, including the following secondary highways and local roadways:

- Taylor Road (Highway 70);
- Mountain Road;
- Garner Road;
- Thorold Stone Road (Highway 57);



- Beechwood Rd;
- Thorold Townline Road; and
- Old Thorold Stone Road.

Road traffic on the Queen Elizabeth Way highway located east of the proposed landfill in the RSA is considered a distant contributor to the existing noise condition and not included in the ORNAMENT calculation assessment. Also not considered in the existing acoustic environment is the rail traffic on the CN Grimsby subdivision section of main track located approximately 1.0 km north of the proposed landfill limits and the rail traffic on the Fonthill Spur freight track to the west and aircraft fly-over and ship sounds from boat traffic in the Welland Canal. Distant sounds from these traffic sound sources not included may be captured in future ambient soundscape monitoring.

2.3.2 Ambient Monitoring

Future existing conditions noise studies will include long-term monitoring that would potentially capture sounds originating from within the RSA. Monitoring will be conducted at the five key receptor locations. Monitoring will be conducted in spring of 2025 to capture representative conditions and will be conducted over a continuous week.

Ambient monitoring will capture the cumulative sound level due to existing traffic conditions and contributions from the existing landfilling and quarrying activities.

3 METHODOLOGY

3.1 Data Sources

Available secondary sources of information were collected and reviewed to characterize noise existing conditions within the study area. The following sources of secondary information were collected and reviewed:

Table 3-1: Noise Existing Conditions Data Sources for Noise

Evaluation Criteria	Indicator	Data Sources
Environmental Noise		
Ambient Noise	<ul style="list-style-type: none"> • Predicted off-site traffic (roadway) noise levels (dBA) • Measurements of off-site noise levels (dBA) 	<ul style="list-style-type: none"> • Applicable MECP guidelines, technical standards and models • Aerial mapping Imagery to confirm off-site points of reception • Topographic and land-use mapping • Land use zoning plans • Proposed facility characteristics • Landfill design and operations data • Traffic counting, characterization and modelling studies, completed by the traffic consultant • Niagara Waste Systems Limited Environmental Compliance Approval Amendment Acoustic Assessment Report (RWDI #1201154)

3.2 Field Studies

3.2.1 Background Off-Site Traffic Study

A traffic count field study was conducted by the traffic consultant. The traffic data supplied for the Noise Existing Conditions report is included in **Appendix A**. (Appendix A to be updated; this data has not been received by RWDI at the time of writing)

3.2.2 Ambient Monitoring Study

Field Studies are to be completed by RWDI. Monitoring will be conducted at the five key receptor locations. Monitoring will be conducted in spring of 2025 to capture representative conditions and will be conducted over a continuous week. Monitoring procedures will follow those provided in NPC-233.

Audio review of the measurement data will be used to characterise the existing acoustic environment and will provide auditory context on the soundscape. The audio review will be used to remove portions of invalid data such as precipitation, high winds, and close proximity noise sources that may elevate background levels.

Measured data will be used to provided overall existing sound levels for day, evening, and nighttime periods.

3.3 Modelling

The acoustic environment has road traffic noise that elevates the background sound for the key representative noise-sensitive POR locations. The background sound has been calculated by modelling using the ORNAMENT algorithms (MOE, 1989), following the requirements of Publication NPC-206 Sound Levels Due to Road Traffic (MOE, 1995b).

This road traffic noise includes only the contribution of vehicles from non-landfilling activities (i.e., public traffic on public roadways). The haul route traffic is not included in the Existing Noise Condition modelling for background sound. The modelling considered the following factors:

- Road traffic parameters including traffic volume and speed limits;
- Vehicle type (automobiles, medium trucks, and heavy trucks); and
- Source-receptor characteristics, including heights, distances, and ground type.

Sound levels due to the adjacent roads were predicted using emission algorithms from the Ontario Road Noise Analysis Method for Environment and Transportation (ORNAMENT) guidelines (MOE, 1989) implemented in the Cadna/A software package. Sound levels due to the adjacent transportation (road and rail) sources were predicted using the RLS-90 standard (RLS,1990) as implemented in the Cadna/A software package. Noise modelling of road traffic noise sources was also completed using the ISO 9613 (ISO, 1994 and ISO, 1996) algorithms implemented in the Cadna/A software package. The CadnaA results were compared to the ORNAMENT calculation results for consistency.



The Cadna/A modelling takes into account the following factors:

- Source sound power level;
- Distance attenuation;
- Source-receptor geometry including heights, elevations and topography;
- Barrier effects of the site and surrounding buildings;
- Ground and air (atmospheric) attenuation; and
- Meteorological effects on sound propagation.

4 CHARACTERIZATION OF THE EXISTING ENVIRONMENT

Existing noise conditions are defined as the existing ambient soundscape around the proposed Phase 2 landfill expansion site. At the time of writing no traffic data was available to include in the study. The Noise Existing Conditions report will be updated once traffic data is received.

4.1 Existing Traffic Volumes

Sources of environmental sound from road traffic travelling along public roadways contribute to the existing noise conditions soundscape.

Traffic volumes were obtained from the traffic consultant with the traffic reports presented in **Appendix A**. Traffic volumes for the following roadways were considered:

- Taylor Road (Highway 70);
- Mountain Road;
- Garner Road;
- Thorold Stone Road (Highway 57);
- Beechwood Rd;
- Thorold Townline Road; and
- Old Thorold Stone Road.

For existing conditions modelling purposes the data was modelled as per the traffic consultant traffic volume growth projections; (this data is not received at the time of writing). Heavy vehicle percentages were based on the traffic consultant supplied traffic report. Roadway traffic volumes within the existing landfill development area are not included in the model. **Table 4-1** presents a summary of the road traffic data used for modelling.

Table 4-1: Existing Noise Conditions Road Traffic Volumes

Roadway	Segment	Current Traffic (AADT)	Speed Limit (km/hr)	% Heavy Vehicles (Daytime)	% Heavy Vehicles (Nighttime)
NO DATA					



4.2 Modelling of Existing Sound

Traffic volumes and speed limits were obtained from the traffic information provided by the traffic consultant.

Existing conditions will be evaluated for daytime, evening and nighttime are defined as the periods of time from 7 AM – 7 PM, from 7 PM – 11 PM, and from 11 PM – 7 AM, respectively, as per NPC-300 (MOE, 2013). These periods were modelled for each road segment using the vehicle traffic volume that was lowest in the time period.

The modelled sound levels during the quietest 1-hour periods of daytime, evening and nighttime traffic noise are tabulated in **Table 4-2**. ORNAMENT calculations are provided in **Appendix B**.

Table 4-2: Modelled Quietest Background Sound Level Due to Traffic (dBA)

POR	Daytime 7AM – 7PM	Evening 7PM – 11PM	Nighttime 11PM – 7AM
NO DATA			

5 CONCLUSIONS

The Noise Existing Conditions report has no predicted results to conclude at the time of writing. Existing and future traffic volumes have not yet been made available; therefore, the Noise Existing Condition report will be updated once traffic data is received.

Ambient monitoring is scheduled.



6 REFERENCES

Ministry of the Environment (MOE)

1977a Publication NPC-101: Technical Definitions, originally published as part of the Model Municipal Noise Control By-Law

1977b Publication NPC-102: Instrumentation, originally published as part of the Model Municipal Noise Control By-Law

1977c Publication NPC-103: Procedures, originally published as part of the Model Municipal Noise Control By-Law

1977d Publication NPC-104: Sound Level Adjustments, originally published as part of the Model Municipal Noise Control By-Law

1989 MOE, Approvals Branch, Noise Assessment and Systems Support. ORNAMENT: Ontario road noise analysis method for environment and transportation

1995a Publication NPC-205: Sound Level Limits for Stationary Sources in Class 1 & 2 Areas (Urban)

1995b Publication NPC-206: Sound Levels Due to Road Traffic

1995c Publication NPC-232: Sound Level Limits for Stationary Sources in Class 3 Areas (Rural)

1995d Publication NPC-233: Information to be Submitted for Approval of Stationary Sources of Sound

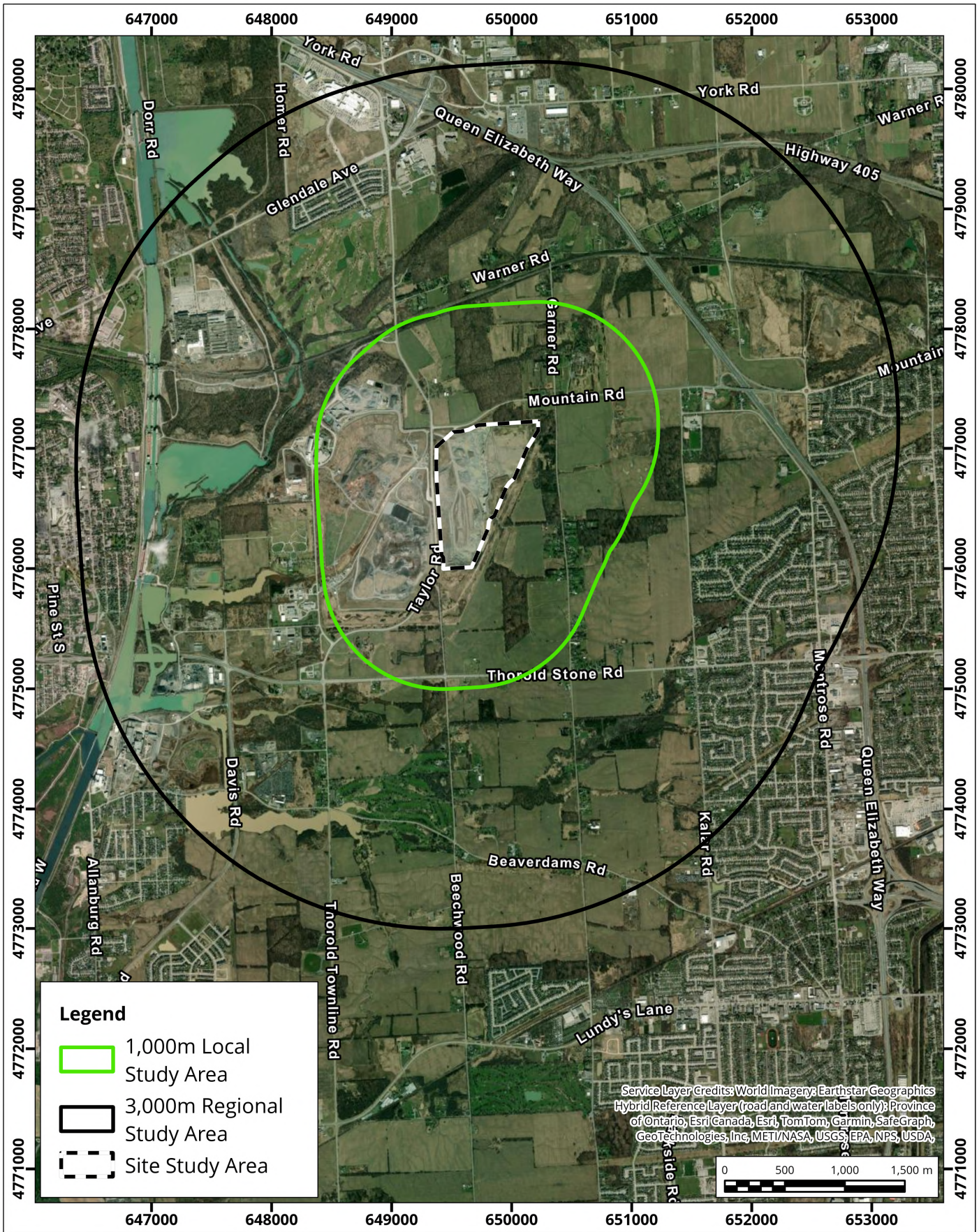
1998 Noise Guidelines for Landfill Sites (October 1998 Draft)

2012 Landfill Standards: A Guideline on the Regulatory and Approval Requirements for New or Expanding Landfilling Sites

2013 Publication NPC-300: Environmental Noise Guideline - Stationary and Transportation Sources - Approval and Planning

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FIGURES



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Study Areas

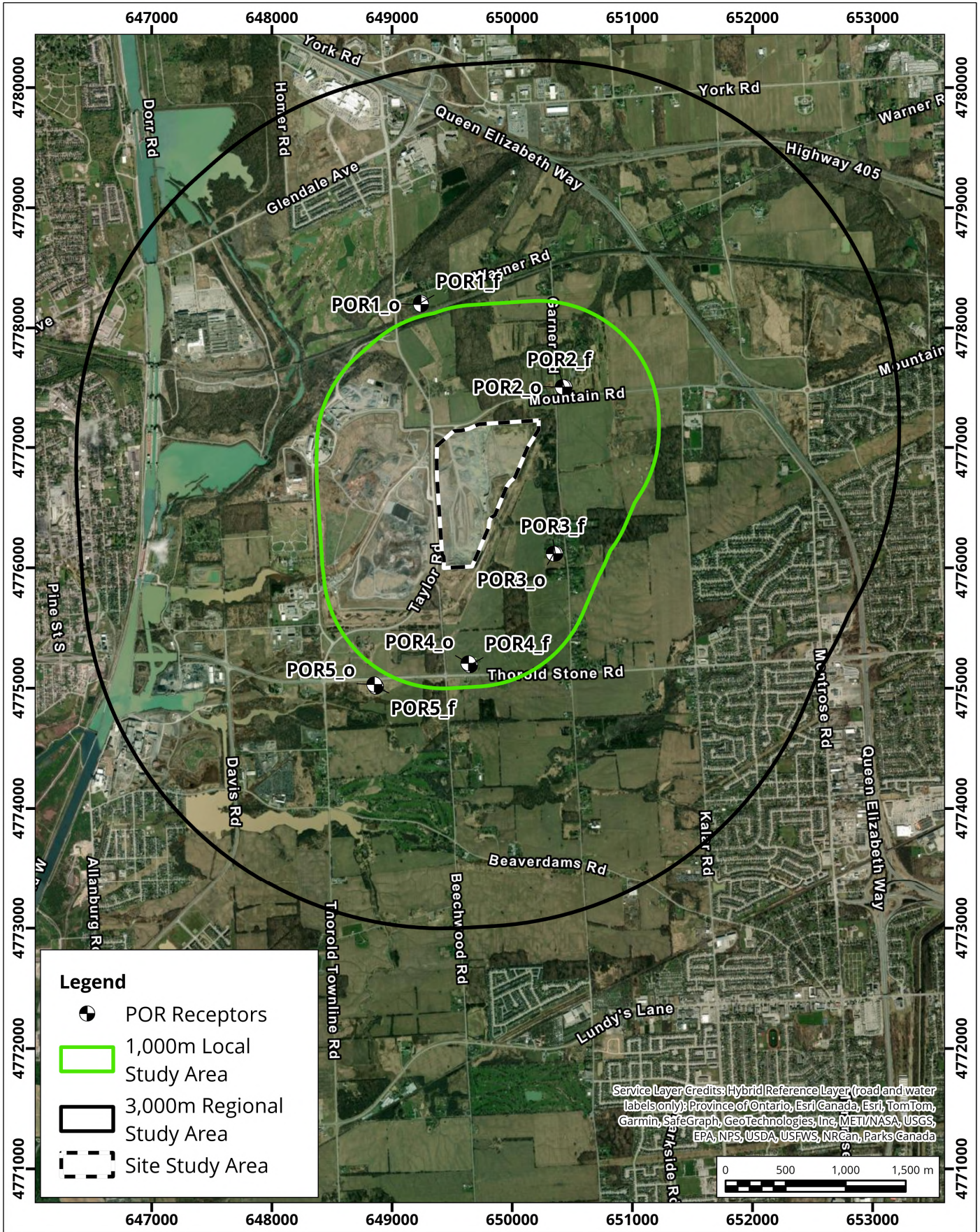
Map Projection: NAD 1983 UTM Zone 17N
 Walkers Phase 2 Landfill Expansion - Niagara Falls, Ontario







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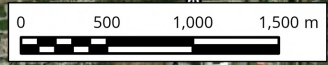




Legend

-  POR Receptors
-  1,000m Local Study Area
-  3,000m Regional Study Area
-  Site Study Area

Service Layer Credits: Hybrid Reference Layer (road and water labels only); Province of Ontario, Esri Canada, Esri, TomTom, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, USDA, USFWS, NRCAN, Parks Canada



POR Receptors Assessed



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APPENDIX A - NO DATA

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