



Siting Report

Mixed Waste Transfer / Pre-Sort and
Anaerobic Digestion Organics
Processing Facility

Regional Municipality of Durham
Waste Planning and Technical
Services

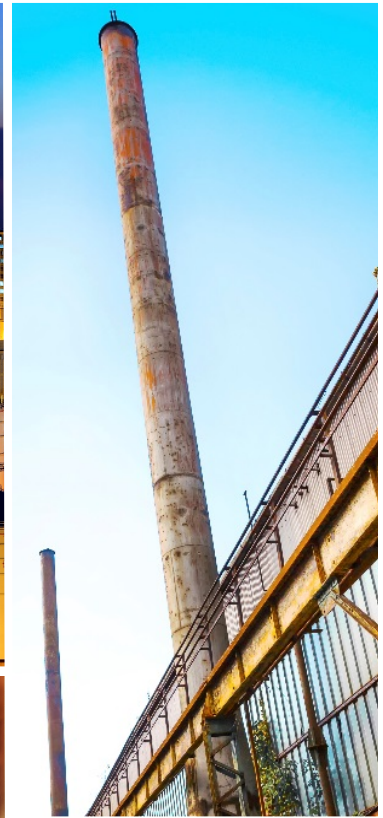




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1. Introduction

On June 26, 2019, the Regional Municipality of Durham (Region) Council granted approval to proceed with the Region's preferred long-term organics management technology solution, with the capital project to include both a mixed waste transfer and pre-sort facility and an anaerobic digestion (AD) organics management processing facility (Facility).

In order to facilitate the development of the Facility, a suitable site within the Region is required. With this in mind, the Region engaged GHD Limited to undertake a siting exercise to evaluate and identify a preferred site that would be brought forward and recommended to Council. The siting process includes the following three steps:

1. **Develop Siting Methodology and Evaluation Criteria** – Determine the search area and minimum site requirements, and develop a siting methodology along with a series of criteria to evaluate potential sites.
2. **Long-List Evaluation** – Apply an initial set of evaluation criteria to the list of candidate sites to arrive at a short-list of sites.
3. **Short-List Evaluation** – Comparative evaluation of short-listed sites against additional evaluation criteria. Assess the advantages and disadvantages of developing a facility on each site, and perform a comparative ranking to determine the preferred site.

This report provides a description, summary of the site selection methodology with evaluation criteria, establishment of a long-list of potential sites, evaluation of the long-list of sites, generation and comparative evaluation of the short-list of sites, and a preliminary preferred site recommendation for future development of the Facility.

2. Facility Need and Background

The Region manages municipal solid waste within its jurisdiction serving single-family residences, multi-family residential properties (multi-residential), and business improvement areas from eight municipalities: Pickering, Ajax, Clarington, Brock, Scugog, Uxbridge, Whitby, and Oshawa. The Region is responsible for non-hazardous municipal solid waste management programs, including collection, processing, diversion, haulage, and disposal of Blue Box recycling. The Region maintains responsibility of garbage, Source Separated Organics (SSO), and leaf and yard waste for all municipalities except for the Town of Whitby and City of Oshawa.

The Region adopted its first Long-Term Waste Management Strategy Plan in 1999. One of the main goals of the strategy plan was to divert at least 50 percent of the residential waste from disposal by 2007. In spring 2019, Regional Council directed staff to begin working on a new Long-Term Waste Management Plan 2021 – 2040, that will include new waste diversion goals over that time horizon.

In 2017, the Region determined a need to focus on an Organics Management Strategy in order to ensure future organics processing capacity would be achieved, particularly in light of the Provincial Organics Action Plan (OAP)¹. Through additional work completed by the Region, it is evident that

¹ Region of Durham Report, Report #2017-COW-180, June 7, 2017



there are several key drivers to ensure the Region provides adequate organics processing capacity to its residents, including:

- Current Diversion Rates – Small increments are required to move the needle on diversion in order for Durham to achieve 70 percent diversion. Increasing capacity for recovery of organics will assist in the Region in making incremental steps to the overall diversion goal.
- Growth in the Region – The Region continues to experience significant and rapid single-family and multi-residential growth, thereby increasing the amount of organic material generated for processing within the Region.
- Other Waste Management Infrastructure – The removal of organics and recyclables from other waste management infrastructure, for example, the Durham York Energy Centre (DYEC) will preserve capacity for materials that cannot be diverted.
- Legislation – The Province has implemented the Food and Organic Waste Action Plan and Policy Statement, which sets targets for the Region with respect to recovery and processing of food and organic waste.

With this in mind, expanded organics capacity through AD and mixed waste processing (MWP) pre-sort technologies will allow the extraction of organics from both single-family households and the multi-residential residual stream, and help increase the Region's diversion rate, while ensuring the legislative requirements are also met.

The Region's SSO program currently accepts all food wastes, household plant clippings, paper fibre wastes, and potting soils. In 2018, a waste composition study was conducted on single and multi-family residential waste samples from within the Region. The waste composition results indicated that the residual waste stream from both single-family and multi-residential households includes up to 40 percent of uncaptured organics materials, which could potentially be diverted through the Facility.

The Region's SSO is processed aerobically by Miller Waste Systems Inc. with in-vessel technology at Miller Waste's composting facility on Squires Beach Road in Pickering, Ontario. The facility processes the SSO into a compost material which is then transported to Miller Waste's compost facility in Clarington where it is mixed with leaf and yard waste compost to finish curing and meeting the current Ontario Composting Guidelines for "AA" grade compost. Aerobic composting introduces limitations because, in order to produce "AA" compost, it cannot accept difficult to compost materials such as animal waste, and hygiene and incontinence products. It also cannot accept more contaminated organics that could be generated in the multi-residential sector or from community centres, civic facilities, fairs and festivals, and other sources of organics with relatively high contamination. This limits the Region's ability to reach its waste diversion goals by limiting the amount of waste the Region can divert from disposal.

While the Region does provide collection of SSO for low-to medium density multi-residential residences, there is limited SSO collection by the Region at high-density multi-residential residences (e.g., high-rise apartments). There are unique challenges in the collection of SSO from high-density multi-residential residences based in part on the lack of infrastructure for separation of the waste stream. The Region is not considering the expansion of the SSO program to include high-density multi-residential residences at this time.



Mixed waste is sent to the DYEC for thermal processing and generation of electricity. Thermal processing in Ontario does not count towards diversion metrics, and is treated as an alternate form of disposal.

There are a number of drivers being encountered by the Region that dictate moving towards the Facility. The additional components to the existing system are in part dictated by the Region's waste profile and existing assets, the Region's goals, and the additional drivers and opportunities generated by new legislation (i.e. the Food and Organic Waste (FOW) Action Plan and the Food and Organic Waste Policy Statement).

With respect to the drivers, this Facility will achieve the following alignment:

- The Facility can harvest organics and recyclables from the mixed waste that will decrease the amount of materials that need to be processed by the DYEC. This preserves capacity at the DYEC for current and future volumes of waste, accommodates growth in the Region, and extends the timeline for expansion of this asset.
- The Facility can harvest organics and recyclables that are currently being sent for disposal at the DYEC and will help increase diversion for the Region on its road towards a 70 percent diversion goal. It is expected that the implementation of this type of system, which is the only viable approach for isolating organics from mixed waste, as part of the Region's completed integrated waste management system would increase diversion towards the Region's goal.
- The Facility can harvest incremental volumes of recyclables and organics, which can then be used to demonstrate greenhouse gas (GHG) reductions. Reducing GHG emissions from solid waste through such diversion and alternative treatment options (including energy from waste) is a strategy included in the Region's Community Climate Change Local Action Plan 2012. The Regional Council also declared a climate emergency in January 2020, thereby recognizing environmental sustainability and climate change as strategic priorities for the Region.
- The Facility can successfully cull organics from mixed waste, attending to the requirements that could be imposed when/if an organics disposal ban is implemented.

The application of an organics management system consisting of the Facility to supplement the Region's existing waste management infrastructure is expected to generate a number of positive outcomes, including the following:

- More than doubling the amount of organics captured compared to the Region's current baseline, adding an initial 27,000 tonnes per year of organic material into the Region's diversion stream. This material will necessitate additional processing and represents a new diversion stream. This approach will further isolate approximately 3,000 tonnes per year of additional recyclable materials.
- Decrease the total amount of waste sent to the DYEC creating excess capacity.
- It is estimated that the Facility would create technical employment opportunities for approximately 30 to 40 highly-skilled staff during full-time operations. For comparison, the DYEC currently employs approximately 40 full-time staff to operate the facility under the Region's supervision for the lifecycle of the Facility (up to 30 years).

- Additional benefits could be driven from advanced technologies such as AD, which can produce energy streams that can be commoditized.

There are two key components to the Facility proposed by the Region. The first is the mixed waste/transfer pre-sort process that isolates the recyclables and organics from the mixed waste. Recyclables are typically sorted, baled, and sent to secondary markets. The isolated organic fraction from the mixed waste will be sent to the organics processing system. SSO from the curbside Green Bin program will also be sent to the organics processing system (See Figure 1).

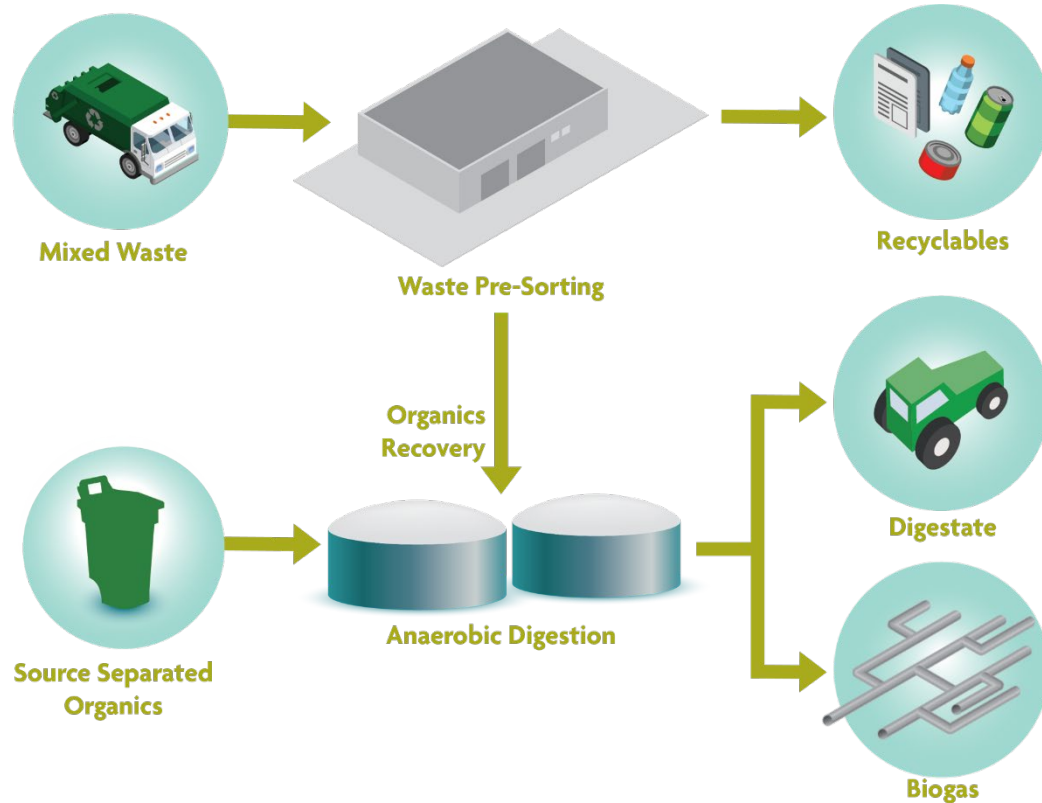


Figure 1 - Facility Process Flow Chart

Mixed waste transfer/pre-sort processing of mixed waste, removes hazardous, dangerous, or oversized materials using equipment or manual sorting, and then utilizes mechanical equipment to separate organics and recyclables. Once organics are removed from the waste stream, the remaining waste is sent to mechanical automated equipment that can sort a variety of recyclable products: metals, aluminum, fibre, different grades of plastics, glass, etc. These commodities can then be sent into the recyclables market to reduce the use of virgin materials in manufacturing. Currently, the organics and recyclables in the mixed waste are combusted in the DYEC. The organic materials culled from the mixed waste can then be processed using the organics processing system.

Wet AD was approved as the Region's technology for processing organic materials including SSO and the separated organics from mixed waste processing, which is also referred to as facility separated organics (FSO). Wet AD technology includes continuously-stirred or plug-flow type, anaerobic digesters where the digestate can be pumped through pipes to the subsequent processing steps. AD occurs in the absence of oxygen and organic materials breaking down in the



absence of oxygen create biogas, which is rich in methane (i.e., natural gas but biologically-based). This methane can be used to create a variety of products such as electricity, renewable natural gas for injection into the natural gas distribution system, vehicle fuel for fueling vehicles, and possibly for liquid fuels to supplement ethanol blend requirements. The production of a fuel product further displaces fossil-based fuels and can generate revenues as a low-carbon fuel or from cap-and-trade offsets. Finally, AD can produce a variety of final products, including digestate, liquid fertilizer, solid fertilizer, or compost. Specific AD technologies have the ability to generate quality final organic products that can be beneficially-utilized, increasing diversion metrics.

3. Facility Description

The Region's service delivery approach for implementing the Region's long-term organics management solution includes public ownership of the Facility with a long-term (estimated to be for 20 years) single contract to be obtained from the private sector to design, build, operate, and maintain (DBOM) the Facility.

The Facility will be sited to accommodate a design for the projected 20-year processing capacity requirements of mixed waste and SSO. FSO recovered from the mixed waste along with the SSO will be sent for AD to the organics processing system. The Facility will be designed with space allocated for the potential transfer of waste to and from the Facility allowing for the potential transfer of mixed waste, SSO, recyclables, and leaf and yard waste.

After having identified the need and the preferred technology, it is important to find an appropriate site to accommodate the type of Facility and preferred technology (i.e. different technologies or approaches to organics management require different footprint sizes and mitigation measures for nuisances). A key consideration for the selection of a site is the approximate size of the lands required to accommodate the Facility. The preliminary sizing of the Facility is based on the mass balance previously developed by GHD for a 20-year and 50-year processing capacity. The mass balance was developed using information provided by and previously presented to the Region. The information provided by the Region included the growth projections and waste composition data.

The preliminary sizing of the buildings/facility includes tip floors, mixed waste pre-sort area, organic pre-processing and AD facilities, residue management area, and material transfer areas. The general assumptions and area assumption used to generate the site sizing requirements resulted in a site footprint ranging from 8 to 15 hectares.

4. Siting Process

With the above context in mind, GHD developed a methodology for the siting of the Facility. In order to ensure that the optimal location is identified, the siting process should:

- Follow a clearly defined methodology.
- Meet all applicable regulations and standards.
- Be consistent with best practices.
- Consider relevant evaluation criteria.



The goal of this Section of the report is to establish a practical siting methodology with associated evaluation criteria that will be undertaken in a step-wise process, which ultimately leads to a recommended site for developing the Facility.

4.1 Regulatory Framework

As part of the siting and development process, it is important to highlight the appropriate legislative framework that applies to waste management in Ontario and, specifically, the development and operation of supporting infrastructure. The mandate of the Ministry of Environment, Conservation and Parks (MECP) is to ensure protection, and where degraded, rehabilitation occurs of the natural environment, and the conservation of environmental and material resources for the enjoyment and benefit of present and future generations of people, as well as for other users of the environment. This mandate is supported by several pieces of applicable Ontario legislation, including:

Managing Waste in Ontario

- (1) Waste-Free Ontario Act, 2016
- (2) Resource Recovery and Circular Economy Act, 2016
- (3) Waste Diversion Transition Act, 2016
- (4) Food and Organic Waste Policy Statement, 2018
- (5) A Made-in-Ontario Environment Plan, 2018
- (6) Reducing Litter and Waste in Our Communities: Discussion Paper, 2019

Siting and Development of Waste Infrastructure

- (1) Environmental Assessment Act
 - Ontario Regulation 101/07 (Guide to Environmental Assessment Requirements for Waste Management Projects)
- (2) Environmental Protection Act
 - Ontario Regulation 347 (General Waste Management)
 - Ontario Regulation 419/05 (Air Pollution – Local Air Quality)
 - Ontario Regulation 419/05 and Guide for Applying for Approval (Air and Noise), S.9 EPA, November 2005, Guideline 4174e
- (3) Ontario Water Resources Act

Land Use Planning

- (1) The Planning Act
 - Provincial Policy Statement, 2014 (PPS)
 - Growth Plan for the Greater Golden Horseshoe, 2017
 - Oak Ridges Moraine Conservation Plan, 2017



These Acts, along with the Regulations under them, are used to establish and detail the authority and responsibility of the MECP as well as the legal requirements for proponents of various proposals. These Acts detail the obligations of facility owners with respect to their impact on public health and the environment, along with the rights of residents of Ontario.

Approvals or permits must be obtained prior to implementation of proposals with a potential for impact on public health or the environment. The residents of Ontario also have the right to be made aware of the proposal, so that the public has the opportunity to comment. Applications for MECP approvals go through the Environmental Bill of Rights public posting (30 days), during which time they are displayed publicly for comment on the material. The MECP and the Facility proponent must take due account of all comments and respond in a reasonable fashion.

4.1.1 Managing Waste in Ontario

The Waste-Free Ontario Act, 2016, which is comprised of the Resource Recovery and Circular Economy Act, 2016 and the Waste Diversion Transition Act, 2016 replaces the Waste Diversion Act, 2002. It and the accompanying Strategy for a Waste Free Ontario – Building the Circular Economy (Strategy), set goals for the waste sector with interim targets of 30 per cent diversion by 2020, 50 per cent diversion by 2030, and 80 per cent diversion by 2050. The legislation and Strategy seek to transform our current linear take-make-dispose consumption model that treats our resources and energy as limitless and disposal as inexpensive, to a circular model whereby wastes are reduced and what remains is captured and returned as productive resource inputs into our economy. The Strategy for a Waste Free Ontario – Building the Circular Economy, identifies food and organic wastes as an action item to ensure the volume going to landfill is reduced (Action 10: Implement an action plan to reduce the volume of food and organic wastes going to landfill). The Strategy acknowledges that there is a lack of regional infrastructure capacity, including organics processing capacity as it relates to the diversion targets.

The Resource Recovery and Circular Economy Act, 2016 establishes a new waste diversion framework, which includes allowing the Province to provide direction related to resource recovery and waste reduction activities through policy statements and provincial interests. Municipal Official Plans must be consistent with policy statements and zoning bylaws must conform within three years of changes to Official Plans. These requirements are similar to those in the Planning Act.

The first Policy Statement established pursuant to Section 11 of the Resource Recovery and Circular Economy Act was the FOW Policy Statement. The FOW Policy Statement provides (amongst other items) policy direction across the production chain including the Province, municipalities, and the private sector. The Resource Recovery and Circular Economy Act, 2016 requires relevant instruments (e.g. environmental approvals, municipal by-laws and Official Plans) to be consistent with appropriate policies in the FOW Policy Statement. Section 3(8) of the Planning Act now includes a provision that a Policy Statement issued under s. 11 of the Resource Recovery and Circular Economy Act is deemed to be a policy statement for the purpose of s. 3(1) of the Planning Act, ensuring that there is a “consistency” requirement for policy statements.

The FOW Policy Statement contains direction on supporting resource recovery infrastructure (Section 6), which seeks to ensure the Province as a whole develops the infrastructure required to address the increased food and organic waste processing capacity needs. Section 6 of the FOW Policy Statement describes this as follows:



“As the province, municipalities and the private sector take action to increase resource recovery of food and organic waste, Ontario will face significant demand for new or expanded resource recovery systems. Ontario will need to support existing resource recovery systems and develop additional capacity to process food and organic waste. These facilities must be well-planned and suitably sited to ensure the long-term effectiveness of our resource recovery systems.”

The FOW Policy Statement establishes direction based on the language used (i.e., 'shall' - clear direction, 'should' - moderate direction, and 'encourage' or 'may' which is minimal direction). The following would apply to the Region under the FOW Policy Statement:

- Municipalities that currently provide green bin collection **shall**:
 - Achieve a performance target of 70 per cent waste reduction and resource recovery of food and organic waste generated by its single-family dwellings by 2023.
 - Achieve a performance target of 50 per cent waste reduction and resource recovery of food and organic waste generated by multi-residential building owners by 2025.
 - Ensure that official plans are consistent by end of period determined under section 26(1) of the Planning Act, while municipal bylaws must be amended within three years after official plan amendment.
 - Ensure that approvals for new or expanded resource recovery systems address the D-Series Land Use Compatibility Guidelines and the Guideline for the Production of Compost in Ontario.

- Municipalities that currently provide green bin collection should:
 - Ensure official plans, zoning bylaws, plan or subdivision approvals and site plan approvals support resource recovery of food and organic waste.
 - Protect existing and planned resource recovery systems from incompatible uses and plan for new systems, where appropriate, to meet projected needs.

- Municipalities that currently provide green bin collection **are encouraged**:
 - To engage in additional waste reduction and resource recovery efforts to achieve their target with respect to additional types of organic waste, including personal hygiene wastes, sanitary products, shredded paper, additional paper fibre products, compostable products and packaging and pet food/wastes.

With respect to mixed waste processing, the FOW provides guidance for those municipalities, such as the Region, that already provide curbside collection of SSO to meet food and organic waste diversion targets (Section 4.1 of FOW):

“Municipalities that, as of the effective date, provide curbside collection of source separated food and organic waste shall maintain or expand these services to ensure residents have access to convenient and accessible collection services.”

i. In addition to curbside collection of source separated food and organic waste, other collection methods, such as directing disposal streams to mixed waste processing, may be used to support collection of additional food and organic waste.

As the Region has an established curbside program in place, the proposed Facility will expand the Region’s services and assist in increasing the overall diversion rate, while ensuring the proposed



facility is in keeping with the FOW Policy Statement. Other parameters around mixed waste processing within the FOW Policy Statement that the Region has considered includes:

6.12 When undertaking mixed waste processing, owners and operators of resource recovery systems should only accept source separated food and organic waste in instances when contamination or availability issues arise.

6.13 When undertaking mixed waste processing, owners and operators of resource recovery systems should demonstrate that recovered organic resources will regularly meet all applicable environmental quality standards.

6.14 When undertaking mixed waste processing, owners and operators of resource recovery systems should send recovered organic resources for further processing, such as composting or anaerobic digestion, where necessary.

In concert with the need for developing the necessary infrastructure to accommodate the goals and targets for food and organic waste diversion from landfill, the FOW Policy Statement also discusses the importance of both timely approvals to develop the facilities, as well as developing the facilities within close proximity to the generated material:

“Municipal and provincial approvals (e.g. land use and environmental approvals) ensure that resource recovery systems are designed, sited and developed to address matters related to the environment, economy and society. A strategic and collaborative approach will help facilitate timely decisions for these essential facilities.

6.5 The province, municipalities and other planning authorities should co-ordinate and complement approaches to provincial and municipal approvals, wherever possible, to facilitate timely decisions for resource recovery systems.

6.9 Owners and operators of resource recovery systems are encouraged to reduce greenhouse gas emissions generated from their operations, where feasible. Food and organic waste should be managed as close to the source as is realistically possible to limit greenhouse gas emissions resulting from transportation and haulage.”

The Made-in-Ontario Environment Plan and subsequent Reducing Litter and Waste in Our Communities: Discussion Paper, specifically speaks to improving the organics diversion program in Ontario, ensuring the FOW Policy Statement moves forward and that “The province will look for opportunities to support the localized management of organic waste such as on-site management or small-scale composting.”

The discussion paper also touches on the potential for an organics landfill ban, which would require “the development of additional resource recovery systems”. With this in mind, the Province is currently in an organics processing deficit from an infrastructure perspective, particularly if they want to meet key diversion targets within the FOW Policy Statement and implement a food waste ban. Note that under the FOW Policy Statement/Framework, there is a focus on improving the approvals process – but only in the context of streamlining Environmental Compliance Approvals (the “ECAs”).

In order to implement the FOW Policy Statement and Action Plan, the Province will require the development of additional infrastructure to divert from landfill and process the material.



With the above in mind, the Region's proposed facility will facilitate the development of the necessary infrastructure to meet the diversion targets, as well as ensuring the management of the food and organic waste occurs as close to the generated source as possible. Providing context around how Policy is shaping the development of infrastructure is important when developing and applying a siting methodology that will move rapidly to determine an appropriate site to facilitate the achievement of key FOW Policy goals.

4.1.2 Environmental Assessment Act

The Ontario Environmental Assessment Act (EA Act) is a provincial statute that sets out a planning and decision-making process to evaluate the potential environmental effects of a proposed undertaking. In March of 2007, the Ontario Government enacted Ontario Regulation (O. Reg.) 101/07, the Waste Management Projects Regulation, made under the EA Act. The purpose of the Regulation was to bring greater clarity as to which types of waste projects require an EA to be completed under the EA Act.

The Regulation provides for three waste project EA processes:

- Projects exempt from Part II of the EA Act (generally small scale and known through past experience to have insignificant environmental effects).
- Projects exempt from Part II of the EA Act, subject to the legal requirement of completion of the Environmental Screening Process (generally moderate in scale, considered to have predictable environmental effects that can be readily reduced to acceptable levels).
- Projects designated under the EA Act that must undergo an Individual EA (usually more complex and major in scale with potentially far-reaching environmental effects requiring significant levels of assessment and mitigation. This process requires both a Terms of Reference and an EA).

If a proposed undertaking has not been designated or defined under the EA Act or O. Reg. 101/07, then the legislation does not apply. We have reviewed O. Reg 101/07 as well as the accompanying Guide to Environmental Assessment Requirements for Waste Management Projects and based on the assumed volumes², the potential facility will not transfer, on an annual basis, an average of more than 1,000 tonnes of waste per day from the site for final disposal (including to the DYEC). Therefore, it will not require any EA Act approvals as it is not designated as an undertaking to which the EA Act applies.

It should be noted, however, that as an application under the Environmental Protection Act (EPA), the public has the opportunity to request that the application be subjected to a discretionary hearing and/or be designated under the EA Act.

4.1.3 Environmental Protection Act

Under EPA Regulation 347, various Environmental Compliance Approvals (ECA) or Amendments to existing ECAs will be required for the potential facility. ECAs typically required for this type of facility include: a Waste Disposal Site ECA; an Air and Noise ECA; and a Stormwater Management ECA under Section 53 of the Ontario Water Resources Act.

² Preliminary Facility Siting – Mixed Waste Processing and Anaerobic Digestion Facility Integrated Waste Management System – Pre-sort and Anaerobic Digestion, GHD, August 7, 2019



The statutory requirement for an ECA for a Waste Disposal Site is contained under Part V, Section 27 of the EPA. Section 27 requires that approval be obtained from the Director of the Environmental Assessment & Permissions before using, operating, establishing, altering, enlarging, or extending a waste management system or a Waste Disposal Site. For clarification, this type of a facility is considered under the legislation as a Waste Disposal Site even though it does not necessarily correspond with the conventional definition of waste *disposal* (i.e., landfill, incineration). Supporting information and documentation typically required for a Waste Disposal Site ECA includes a Design and Operations Report, a Site Drainage Report, and a Waste Analysis Plan. For the proposed facility, the Part V approval would typically set out limits on incoming material, define on-site traffic patterns and delivery schedules, identify storage and processing functions, and quantify residual wastes produced.

Air and Noise ECAs are required for facilities that release emissions into the natural environment (excluding water). Section 9 of the EPA requires equipment, structures, or processes that may discharge a contaminant to the atmosphere to be approved before construction, alteration, extension, or replacement of any equipment or structure of any ongoing operation. For the proposed facility, a Section 9 approval typically relates to treatment of process air through abatement systems such as biofilters, and describes possible noise sources such as shredding and screening equipment.

Section 33 of Ontario Regulation 419/05 states that emissions of any air contaminant may not cause discomfort to persons, cause loss of enjoyment of normal use of property, interfere with the normal conduct of business, or cause damage. Although no specific odour limits are set out in the Regulation, an odour criterion/guideline of 1 odour unit (o.u.) at the property line is routinely required by the MECP and defined in the Section 9 approval. Generally, compliance with this criterion is assessed using a source testing methodology at the odour source (such as a biofilter) and then modeled to estimate the odour profile at the property line and at sensitive receptors.

Supporting information and documentation typically required for Air and Noise ECAs includes a full and detailed air and noise analysis, and a summary of emission calculations in an Emission Summary and Dispersion Modeling (ESDM) Report.

4.1.4 Ontario Water Resources Act

The Environmental Assessment & Approvals section of the MECP issues ECAs under the Ontario Water Resources Act (OWRA) for the treatment and disposal of sewage by municipal and private systems. An ECA is required for any facility that discharges contaminants to groundwater and/or surface water. Section 53 of the OWRA requires that an ECA be obtained in order to establish any sewage works (sewage works are defined as works used for the collection, transmission, treatment, or disposal of wastewater) including stormwater management facilities.

If any surface water discharge were to be directed to an existing sanitary system, an OWRA approval will likely be required. However, discharging surface water directly to a sanitary system is not a common practice or generally employed methodology. Discharge of process water to the sanitary sewer is regulated by the municipal sewer use by-laws, but requirements for a Section 53 ECA should be examined, especially where surface water is utilized in the facility as make-up water. Any discharge of process water to the natural environment requires either a new Section 53 ECA or an amendment to an existing one. Supporting information and documentation typically required for a



Sewage Works ECA includes an Environmental Study report (including a hydrogeological assessment and drainage study). The particular area of consideration for the proposed Facility is the requirement to adequately control any stormwater management on-site.

4.1.5 Other Approvals

Aside from the MECP, requirements under the following authorities and standards may also be applicable for the Site works:

- Ministry of Natural Resources and Forestry.
- Ministry of Transportation.
- Technical Standards and Safety Act.
- Ontario Building Code.
- Occupational Health and Safety Act.
- Ontario Fire Code.

Standard municipal approvals such as building permits and Site Plan approval will also be required for the potential Facility. The Planning Act establishes land use by means of Official Plans at both the upper tier municipality (Region) and the lower tier municipality (City/Township), and zoning by-laws at the lower tier municipal level.

4.1.6 Guidelines

In addition to the Regulations noted above, existing Guidelines were reviewed with respect to the siting and development of waste management facilities of a similar type, including:

- "Guideline for the Production of Compost in Ontario: Companion to the Ontario Compost Quality Standards"³ which provides recommendations regarding planning, design and operational practices for composting facilities, including site selection considerations (e.g., separation distances from sensitive receptors and buffer zones), site and facility design considerations, operating procedures during each stage of material handling, feedstock management (e.g., acceptance of plastic bags, compostable plastic bags, disposable diapers and sanitary items), and odour prevention and control measures.
- "Technical Document on Municipal Solid Waste Organics Processing"⁴ developed by Environment Canada. The document provides insight on many aspects of organics processing, including: the science and principles of aerobic and anaerobic processing, processing technologies, system selection, facility siting and design considerations, supporting infrastructure and equipment, procurement approaches, odour control and management, and market considerations.

³ Ontario MECP, Waste Management Policy Branch, July 25, 2012
<http://www.ontario.ca/environment-and-energy/guideline-production-compost-ontario-companion-ontario-compost-quality>.

⁴ Government of Canada, 2013
<http://ec.gc.ca/Publications/default.asp?lang=En&xml=6CC55580-0271-46F0-99CC-CADD171C1976>



4.2 Siting Methodology - Overview

With the above Regulatory and Guidance Documents in mind, the following represents an overview of the siting methodology utilized to develop, evaluate, and recommend a site for the Facility within and under the current control of Durham Region.

1. Determine search area / minimum site requirements.
2. Identify list of candidate sites based on minimum site requirements.
3. Develop evaluation criteria for candidate / long list of sites and short-list of sites.
4. Apply evaluation criteria to the long list of sites to determine a short-list of sites.
5. Stakeholder consultation – municipal (February 19, 2020) and public (February 27, 2020).
6. Apply evaluation criteria to short-list of sites to undertake a comparative evaluation to establish advantages / disadvantages between sites.
7. Identify preferred site

A summary of each of the steps highlighted above is presented below.

As there is not one set of guidelines or approach to siting this type of infrastructure in Ontario, a number of complementary policies, technical guidance documents and approaches to siting facilities were reviewed to establish a transparent and traceable siting methodology. One overarching element utilized in establishing the methodology was to model the general approach after the MECP's Statement of Environmental Values (SEV), which is considered whenever decisions that might significantly affect the environment are made by the MECP. The SEV outlines the MECP's vision for an "Ontario with clean and safe air, land and water that contributes to healthy communities, ecological protection, and environmentally sustainable development for present and future generations". In this regard, the siting and development of the Facility will be based on the:

- Prevention, reduction, and elimination of impacts to the environment.
- Protection and conservation of natural resources and ecologically sensitive areas.
- Integration of social, economic, and other considerations.
- Provision of opportunities for consultation.

Incorporating these principles throughout the siting process will assist in identifying the optimal site that not only satisfies the objectives of the Facility, but accomplishes it in a manner that is both efficient and fully approvable. The siting methodology should also be well defined to ensure that the site selection process itself runs smoothly, and that the decisions being made are traceable and defensible.

In addition to incorporating the SEV into the evaluation methodology, the siting process proposed includes elements of the Ontario EA Act. On September 20, 2019, the Region submitted a letter to Ms. Barb McMurray at the MECP requesting to meet with the Partnerships unit to discuss the Facility. On August 16, 2019, the Region submitted a letter to Ms. Heather Malcolmson at the MECP to receive confirmation from the MECP that the proposed Facility would not be considered an undertaking under the Ontario Environmental Assessment Act. The MECP confirmed that an EA is not required for the Facility. Although the proposed facility is exempt from the EA Act requirements,



the siting process undertaken was modelled after the EA Act by utilizing the broad definition of "environment" under the EA Act as the basis for developing the site evaluation criteria, as well as incorporating a comparative evaluation of the advantages and disadvantages of each of the sites commonly utilized in an EA process.

4.2.1 Define the Search Area and Establish Candidate Sites

The first step in the siting process was to define the search area within which the Facility will be located. The search area included all of Durham Region, encompassing all eight member municipalities. It is the Region's desire to develop the Facility within the Region's boundaries to be able to better manage the waste generated therein.

A list of Region-owned sites was provided by the Region for consideration, based on an inventory of existing sites. The list of candidate sites were limited to Region-owned properties only, which included opened/closed waste management facilities, operations facilities, or vacant lots that are currently undeveloped. It was important for the Region to conduct this high level candidate list generation early in the planning process to focus the siting efforts and resources within potentially suitable areas. As discussed in Section 3, the Region has set and prioritized goals to increase diversion to 70 percent, preserve capacity at the DYEC, and extend the timeline for expansion of the DYEC. Thus, the Region is on a tight procurement timeline for this Facility and aims to release the Request for Prequalification (RFPQ) in early 2020 that includes information on the selected site.

Region-owned sites can offer significant advantages over privately-owned sites, with the potential to simplify the siting process and to decrease capital costs. Siting the Facility on Region-owned property is an effective way to maximize the use of resources, and provides an opportunity to build a facility that complements the Region's existing infrastructure. The Region's open and closed waste facilities may have the required regulatory framework in place for a waste management site such as permits and ECAs, simplifying the approvals process and avoiding potential delays. It is also likely that the zoning and land use considerations for these sites are consistent with the surrounding properties, limiting exposure of the Facility to sensitive receptors. Region-owned sites helps mitigate the exposure to risk and liability that could arise during the procurement of a private site. For the abovementioned reasons and as per the Region's direction, privately-owned facilities were excluded from consideration.

Most parcels of land in Ontario are assigned a unique Property Identification Number (PIN), which is associated with information such as: legal ownership, geographic location (municipal street address and/or lot and concession numbers), size, and boundaries. PINs are maintained through the Province of Ontario Land Registration Information System (POLARIS) and associated mapping database, which is managed by Teranet Enterprises Inc., under an agreement with the Ontario government (Land Information Ontario), and the Municipal Property Assessment Corporation (MPAC).

PINs for each site were provided by the Region and included in the list of Region-owned sites for consideration.



4.2.1.1 Candidate/ Long List of Sites

Based on the search details outlined above, a total of 16 sites were identified for consideration in siting the Facility. A complete listing of the candidate sites is provided in Table 1.

Table 1 – List of Candidate Sites

ID	Municipality	Address	PIN	Size (ha)
1.	Brock	133 Main St., Beaverton, ON	720380119	3.82
2.	Pickering	West of Whites Road and South of Granite Court southerly along East side of Canadian National Railway (CNR) tracks, designated as Bayly St. 40M-1334 City of Pickering	263110524	1.96
3.	Clarington	3094 Liberty St. N.	266930067	0.21
4.	Clarington	339 Courtice Road, Courtice	266050113	3.26
5.	Clarington	1797 South Service Road, Courtice (now named 1797 Megawatt Drive)	266050114	7.67
6.	Clarington	1797 South Service Road, Courtice (now named 1797 Megawatt Drive)	266050116	4.90
7.	Clarington	1835 Energy Drive, Clarington	266050111	12.12
8.	Pickering	Seaton Lands South of Highway 7, ON	263860136	2.96
9.	Scugog	#10 Regional Road No. 21 (full address is 10 Goodwood Rd, Port Perry, ON L9L 1B5)	268190095	41.35
10.	Clarington	9293 Woodley Rd, Municipality of Clarington, ON	267430092	8.49
11.	Oshawa	1640 Ritson Road North, City of Oshawa, ON	162700206	32.37
12.	Brock	C22480 Side Road #17, Township of Brock, ON	720230047	42.06
13.	Scugog	1623 Reach Road, Port Perry, ON	268040072	119.02
14.	Scugog	3590 Edgerton Road, Blackstock, Township of Scugog, ON	267460002	1.98
15.	Uxbridge	12630 Concession 6, Township of Uxbridge, ON	268720016	1.60
16.	Whitby	4600 Garrard Road, Whitby, ON	162650054	19.87

4.2.2 Develop and Apply Exclusionary Criteria

Once the candidate/long list of sites was established, a list of exclusionary criteria was established in order to reduce the long list of sites down to a manageable short-list for further evaluation. These criteria can be considered as "must pass", which a given candidate site must satisfy in order to be carried forward for further evaluation.

The exclusionary criteria are based largely on the technical requirements of the facility that meet the program needs set out by the Region. If a site generally failed to meet all of the requirements set out in the exclusionary criteria listed above, it was excluded from further consideration. Each of the sites considered are presented in a tabular and mapped format to show the results of the preliminary



evaluation. Table 3 shows those sites that meet all of the exclusionary criteria and are therefore carried forward to form the short-list of sites for further evaluation.

The final list of exclusionary criteria, was developed by GHD with input from the Region. Prior to applying the exclusionary criteria to the long- list of candidate sites, available information on existing conditions and spatial data was collected and reviewed from a variety of sources. The information collected was focused on the criteria and indicators for both the exclusionary criteria, as well as the further, more detailed criteria established for the short-list of sites. The most current GIS data from the Region, Conservation Authorities, and the lower tier municipalities were obtained, including:

- Property parcel information including size/dimensions, boundaries, and locations.
- Waterbodies/watercourses.
- Location of existing Provincially Significant Wetlands (PSW).
- Environmentally Significant Areas (ESA).
- Location/extent of Areas of Natural and Scientific Interest (ANSI).
- Presence of significant wooded areas.
- Oak Ridges Moraine.
- Regulated floodplains.
- Source Water Protection Areas, including: Wellhead Protection Areas, Intake Protection Zones, Vulnerable Aquifers, and Significant Groundwater Recharge Areas.
- Draft/approved development.

In addition, existing guidance documents and regulatory requirements information was obtained, including:

- Region of Durham Official Plan.
- Official Plans of lower-tier municipalities.
- Greenbelt Protection Plan.
- Provincial Policy Statement.
- Ministry of Natural Resources Natural Heritage Reference Manual.
- Oak Ridges Moraine Conservation Plan.
- Ontario Clean Water Act.
- Region of Durham Draft Strategic Communications and Public Consultation Plan.

The available existing conditions information collected was incorporated into a GIS database and model to assist in the generation and evaluation of candidate sites and short-listed sites.

In order to assess the long-list of candidate sites against the exclusionary criteria, GIS layers (as identified above) were compiled and mapped in conjunction with the site locations and boundaries



as defined by their property boundaries. Each site was assessed to determine which criteria, if any, would exclude it from being considered further. To assist in the analysis, ortho-imagery from Google Earth was utilized to gain a better understanding of the local site conditions and the regional context.

If a site was affected by multiple criteria, it was eliminated based on the criterion that had the most significant impact or would be the most difficult to overcome when considering the development of the Facility (e.g., constructing the facility in a wetland).

The exclusionary criteria were developed based on other complimentary processes that utilize criteria as part of their evaluation process. This includes past siting experiences by GHD as well as a review of the various guidance documents identified in Section 4.1.6.

The exclusionary criteria developed by GHD that was applied to the long list of sites has been grouped by component (mirroring the broad definition of environment under the Ontario EA Act) and is accompanied by a statement of rationale for each criterion – see Table 2.

Table 2 – Exclusionary Criteria Grouping

Component	Criteria/Indicator	Rationale
Technical	Site Suitability <ul style="list-style-type: none"> Meets minimum size requirements (8-15 ha) Meets minimum buffer area requirements to sensitive receptors (e.g., residential areas, parks, recreational areas, and institutions) Must be Regional owned land within the Search Area 	The facility must ensure that the site is suitable for construction and operation from a size, location and site constraints perspective. The site must be owned by the Region of Durham with minimal existing development on the site.
	Utilities and Services <ul style="list-style-type: none"> Availability to connect utilities and services including hydro, water, sewer, etc.) 	The facility requires connections to municipal services and other utilities for both construction and operation.
Social/ Environmental/ Cultural	Land Use Compatibility <ul style="list-style-type: none"> Avoids sensitive receptors (number and distribution of) Avoids natural heritage elements including Designated Greenlands (Oak Ridges Moraine, Greenbelt Areas, etc.), Source Water Protection Areas Avoids Class 1 and 2 Agricultural Areas Avoids Cultural Heritage/ Archaeological Potential areas Avoids Wetlands, Floodplains and Water Bodies 	<p>The facility has the potential to affect local sensitive receptors from a nuisance perspective.</p> <p>The facility may remove or disturb the functioning of natural heritage habitats (terrestrial and aquatic, species at risk) and protected sources of water.</p> <p>Agricultural land may be displaced by the development of the facility.</p> <p>Archaeological and Cultural Heritage resources are non-renewable cultural resources that can be</p>



Component	Criteria/Indicator	Rationale
		<p>permanently displaced by the development of the facility.</p> <p>The construction of the facility may disrupt natural surface drainage patterns and may alter runoff and peak flows. The presence of the facility may also affect base flow to surface water.</p>

An ideal site carried forward in the evaluation process is one that is completely clear of potential conflicts with exclusionary criteria. However, if through the evaluation, it is determined that a majority of sites are affected or a part of the site is partially affected by at least 1 exclusionary criteria, GHD determined if the site should be carried forward for further analysis in the short-list evaluation. If a site is partially affected by an exclusionary criteria, but the remainder of the site still meets the minimum size requirements, with no further potential conflicts, the site will be carried forward to the short-list. If the potential conflicts can be rationalized in a way that would still allow for the development of the facility, then the site will be carried forward to the short-list for further evaluation. This does not necessarily signify that the criteria in question would not ultimately rule the site out, but merely that it should be exposed to further scrutiny during subsequent analyses.

4.2.2.1 Exemptions

Certain exemptions were considered during the application of the evaluation criteria. Sites that were exempt from meeting a given criteria passed the exclusionary criteria, though will be evaluated in greater detail when reviewing the short-list of sites.

Size

With respect to site size, individual sites were assessed in conjunction with adjacent sites if they could be combined to meet the minimum size requirement of 8 ha. For example, adjacent sites with respective areas of 7 ha and 2 ha would not meet the minimum size requirement if assessed individually; however, since the total area of both sites exceeds the minimum size requirement, these sites would be combined and carried forward as a single site. In cases where it was not advantageous to combine adjacent sites to meet the minimum size requirement (e.g., adjacent sites with respective areas of 1 ha and 9 ha), then these sites were evaluated on an individual basis.

Agricultural

Although the Provincial Policy Statements (PPS), 2014, state that Prime Agricultural Areas should be protected for long term use for agriculture (which includes Specialty Crop Areas, followed by Class 1, 2 and 3 lands, in that order of importance), some sites affected by this criteria were carried forward through to the short-list for further analysis. Exclusionary criteria relies heavily on secondary source information, which in this particular case includes mapping from Canada Lands Inventory (CLI), which the Region utilizes for their Official Plan mapping. The CLI mapping is a significant database of information, but does not necessarily reflect land use changes over the years. Further, the CLI mapping itself is based largely on secondary sources. Therefore, to be prudent, certain



site(s) were carried forward to the long list of sites to ensure that the sites could be assessed further in subsequent screening to confirm the agricultural use(s) on-site. For example, some exemptions included lands that have not been farmed in the last 10 years, or lands that have been historically used for a purpose other than agriculture (e.g., quarries, waste management facilities). Therefore, some exempted sites passed the exclusionary criteria, and were assessed in greater detail by confirming the current land use and the Official Plan designation of the lower-tier municipality.

Source Water Protection

Certain sites are constrained with a number of Source Water Protection designations, as well as other surface water features, such as watercourses and unevaluated wetlands, which can result in a potential site being excluded from further evaluation. However, certain site(s) were exempt from meeting this criteria based on existing zoning or previously disturbed land use and were carried forward from the long list to the short-list of sites. It should be noted that none of the sites evaluated as part of this process fall within the Wellhead Protection Area (WPA) designation under the Source Water Protection Plan, as this designation represents the most vulnerable areas and significant threats to drinking water. Sites with other Source Water Protection Plan designations were carried forward, including Intake Protection Zones (IPZ), Highly Vulnerable Aquifers (HVA) and Significant Groundwater Recharge Areas (SGRA).

4.2.3 Short-List Evaluation (Develop and Apply Evaluation Criteria)

The purpose behind this step is to ensure that each site's characteristics are adequately defined to ensure the comparative evaluation is consistent across all short-listed sites. Table 5 presents additional criteria that were applied to the short-list of sites.

Once the application of the more detailed evaluation criteria occurred, a review of the relative advantages and disadvantages of each site was undertaken in order to determine which site was the optimal in comparison to all other short-listed sites. A preliminary preferred site will be recommended to Council.

It should be noted that for the preliminary preferred site, further investigative work will be required.

5. Site Evaluation and Results

5.1 Long List to Short-Listed Sites

An ideal site carried forward in the evaluation process was one that was completely clear of potential conflicts with exclusionary criteria. However, it should be noted that some sites contained at least some areas that were affected by the exclusionary criteria. In these cases, the sites passed the exclusionary criteria if the remaining area of the site with no potential conflicts was large enough to meet the minimum size requirement of 8 ha. This analysis was only required in a fraction of the sites, as most were affected by at least one criteria, or the remaining area of the site free from conflicts was too small.

Final assessment considered the exemptions noted in Section 4.2.2.1. If the potential conflicts could be rationalized in a way that would still allow for the development of the Facility, then the site was carried forward for further evaluation. This did not necessarily signify that the criteria in question



would not ultimately rule the site out, but merely that it should be exposed to further scrutiny during subsequent analyses.

Table 3 shows which sites meet all of the exclusionary criteria and which ones were excluded from being carried forward to the short-list of sites for further evaluation.

Table 3 – List of candidate sites carried forward to the short-list

ID	Municipality	Address	PIN	Size (ha)	Decision
1.	Brock	133 Main St., Beaverton, ON	720380119	3.82	Excluded from Short List as the minimum site size requirement is not met.
2.	Pickering	West of Whites Road and South of Granite Court southerly along East side of CNR tracks, designated as Bayly St. 40M-1334 City of Pickering	263110524	1.96	Excluded from Short List as the minimum site size requirement is not met.
3.	Clarington	3094 Liberty St. N.	266930067	0.21	Excluded from Short List as the minimum site size requirement is not met.
4.	Clarington	339 Courtice Road, Courtice	266050113	3.26	Amalgamated into one site to meet the minimum site size requirement. Carried forward to Short List.
5.	Clarington	1797 South Service Road, Courtice (now named 1797 Megawatt Drive)	266050114	7.67	
6.	Clarington	1797 South Service Road, Courtice (now named 1797 Megawatt Drive)	266050116	4.90	
7.	Clarington	1835 Energy Drive, Clarington	266050111	12.12	Excluded from Short List as the property contains DYEC, which will not be displaced.
8.	Pickering	Seaton Lands South of Highway 7, ON	263860136	2.96	Excluded from Short List as the minimum site size requirement is not met.
9.	Scugog	#10 Regional Road No. 21 (full address is 10 Goodwood Rd, Port Perry, ON L9L 1B5)	268190095	41.35	Carried forward to Short List.
10.	Clarington	9293 Woodley Rd, Municipality of Clarington, ON	267430092	8.49	Carried forward to Short List.



ID	Municipality	Address	PIN	Size (ha)	Decision
11.	Oshawa	1640 Ritson Road North, City of Oshawa, ON	162700206	32.37	Carried forward to Short List.
12.	Brock	C22480 Side Road #17, Township of Brock, ON	720230047	42.06	Excluded from Short List as the minimum site size requirement is not met following avoidance of environmental constraints covering site.
13.	Scugog	1623 Reach Road, Port Perry, ON	268040072	119.02	Carried forward to Short List.
14.	Scugog	3590 Edgerton Road, Blackstock, Township of Scugog, ON	267460002	1.98	Excluded from Short List as the minimum site size requirement is not met.
15.	Uxbridge	12630 Concession 6, Township of Uxbridge, ON	268720016	1.60	Excluded from Short List as the minimum site size requirement is not met.
16.	Whitby	4600 Garrard Road, Whitby, ON	162650054	19.87	Carried forward to Short List.

The sites that comprise the short-list are summarized in Table 4. As outlined, a total of 6 sites were carried forward to the short-list evaluation.

5.2 Short-List of Sites

Six of the 16 candidate sites assessed through the application of Long-List to Short-List criteria were carried forward for comparative evaluation. The six short-listed sites are listed in Table 4 and include the remaining site size available for development following avoidance of environmental constraints (PSW, ESA, ANSI). A map showing the locations of these short-listed sites is provided as Figure 2. Individual maps of each of the short-listed sites are provided as Figures 2A to 2F.

Table 4 – List of Short-List Sites

ID	Municipality	Site Name	Address	PIN	Utilization	Remaining Site Size (ha)
1	Clarington	South Clarington	339 Courtice Road, Clarington	266050113	Vacant	12.45
	Clarington		1797 South Service Road, Clarington	266050114		
	Clarington		1797 South Service Road, Clarington	266050116		



ID	Municipality	Site Name	Address	PIN	Utilization	Remaining Site Size (ha)
2	Township of Scugog	West Scugog	#10 Regional Road No. 21	268190095	Scugog Depot Site - Balance Future Gravel Pit	41.35
3	Clarington	North Clarington	9293 Woodley Rd, Municipality of Clarington, ON.	267430092	Darlington Closed Landfill - used by Flyers Club	8.49
4	Oshawa	Oshawa	1640 Ritson Road North, City of Oshawa, ON	162700206	Former City of Oshawa Landfill - current location of WMF	24.13
5	Township of Scugog	East Scugog	1623 Reach Street, Port Perry, ON	268040072	Closed Landfill - houses WMF - Parent property includes Water Pollution Control Plant (WPCP)	52.75
6	Whitby	Whitby	4600 Garrard Road, Whitby	162650054	Material Recovery Facility (MRF)	10

5.3 Short-List Evaluation Criteria

Information related to the short-list evaluation criteria was collected and reviewed from a variety of sources, including: the Region, conservation authorities, utility providers, other stakeholders, and through professional experience (e.g., technical and economic data). Additional information regarding select criteria is summarized below.

5.3.1 Region Greenlands

The 2017 Durham Regional Official Plan (OP) provides relevant policies and mapping related to the Region’s Greenlands System. In 2019, the Region launched Envision Durham, which is a municipal comprehensive review of the 2017 OP. The status of the OP review is being monitored to ensure that any newly-approved policies that may apply are considered in the evaluation process.

During the evaluation process, GHD utilized Greenbelt Area and Oak Ridges Moraine (ORM) Conservation Plan Area mapping – both sets of Greenlands System mapping were utilized in the evaluation of the short-listed sites. At this point in time, it is recognized that further investigations and approvals may be necessary should the OP review result in new Greenlands System mapping prior to the development of the Facility.

It should be noted that sites that are currently designated or may be designated (under revised 2017 mapping) as Greenlands were carried forward for the short-list evaluation. Under 2017 OP policies, it is noted that infrastructure (such as a waste management facility) may be permitted within the Region Greenlands designation in accordance with the OP, which outlines how site alteration/development may take place on lands designated as Region Greenlands. Further, a number of criteria used in the site evaluation and selection process already considered certain elements that fall under the Region Greenlands designation, including ANSIs, species at risk (SAR), and significant wetlands (i.e., PSWs, evaluated and unevaluated wetlands).



With respect to completing further work on sites that are mapped as Region Greenlands (both approved and pending approval subject to 2017 OP revisions), following the identification of the preferred site(s), the Region will follow the processes and policies outlined in the applicable Region OP with respect to re-designating lands within the Region Greenlands designation. This includes consultation amongst internal departments, affected lower tier municipalities, and external agencies such as Conservation Authorities, to determine the required steps, including a scoped Environmental Impact Statement (EIS), which will be undertaken to support the land use planning applications.

5.3.2 Source Protection

In 2006, the provincial government passed the Clean Water Act, which aims to protect municipal drinking water in the province with a multi-barrier approach, starting with Source Protection (also referred to as Source Water Protection). Within the Region, Source Protection Committee approved the Source Protection Plan in March 2019, which outlines policies to address potential threats to drinking water in vulnerable areas:

1. Highly Vulnerable Aquifers (HVA) – An aquifer is an area underground that is highly saturated with water, enough so to be drawn for human use. A HVA is one that is particularly susceptible to contamination because of either its location near the ground's surface or because of the type of materials found in the ground around it (for instance, clay versus sand versus fractured rock).
2. Significant Groundwater Recharge Areas (SGRA) – These are areas on the landscape that are characterized by porous soils, such as sand or gravel that allow the water to seep readily into the ground and flow to an aquifer. A recharge area is considered significant when it helps maintain the water level in an aquifer that supplies a community with drinking water.
3. Wellhead Protection Areas (WHPA) – WHPA are areas on the land around a municipal well, the size of which is determined by how quickly water travels underground to the well, measured in years. WHPA designations range from WHPA-A to WHPA-D, which represent travel times between zero and 25 years, respectively.
4. Intake Protection Zones (IPZ) – IPZ are the area on the water and land surrounding a municipal surface water intake. The size of each zone is determined by how quickly water flows to the intake, in hours.

If a Waste Disposal Site is determined to be a significant threat to drinking water (e.g., located within a WHPA), then the proposed use would be prohibited in that particular location. For clarification, the proposed Facility is considered as a Waste Disposal Site under the legislation even though it does not necessarily correspond with the conventional definition of waste disposal (i.e., landfill, incineration). The definition of a Waste Disposal Site under Part V of the Environmental Protection Act means:

- a) Any land upon, into, in or through which, or building or structure in which, waste is deposited, disposed of, handled, stored, transferred, treated or processed.
- b) Any operation carried out or machinery or equipment used in connection with the depositing, disposal, handling, storage, transfer, treatment or processing referred to in clause (a).



With respect to the SGRA, HVA, WHPA, and IPZ designations, and in accordance with the Technical Rules: Assessment Report under the Clean Water Act, 2006 (MOE, 2009)⁵, mapping must delineate three separate areas – Low, Medium, and High Vulnerability

In addition to the vulnerability of an area, potential threats, or more specifically, land use activities (such as a waste facility) are also factored into the decision making process to understand whether the proposed use would pose a Low, Moderate or Significant Threat to drinking water. The vulnerability scoring approach relies upon the extensive Tables of Drinking Water Threats created by the MECP to identify and rank drinking water threats.

The proposed Facility is categorized as a municipal Waste Disposal Site (Part V of Environmental Protection Act) and would fall under a Drinking Water Threat that involves the establishment, operation or maintenance of a Waste Disposal Site. In reviewing the Clean Water Act, 2006, Table 1 identifies a number of Drinking Water Threats with respect to the establishment, operation or maintenance of a Waste Disposal Site within the meaning of Part V of the Environmental Protection Act. However, all of the references to "Municipal Waste" only equate a threat to "Land Disposal" as defined in Section 1 of O. Reg. 347. "Land Disposal" means, with respect to a waste, the deposit or disposal of the waste upon, into, in or through land, including:

- a. The deposit of the waste at a dump.
- b. The landfilling of the waste.
- c. The discharge of the waste into a geological formation by means of a well.
- d. The landfarming of the waste, in the case of a petroleum refining waste.

It is clear based on the definition above that the proposed Facility does not involve land disposal. However, to be conservative, GHD reviewed Table 1 (Tables of Drinking Water Threats, Clean Water Act, 2006) for all references to Municipal Waste and Land Disposal⁶. The Tables of Drinking Water Threats under the Clean Water Act show that lands identified as HVA and SGRA have a Low Threat level in areas with a vulnerability score of 6. Therefore, it is conceivable that the facility could be located within the Low, Medium or High Vulnerability HVA or SGRA, as per the provincial legislation.

Notwithstanding the above, the Source Protection Policies contained within the Source Protection Plan would still need to be considered. The Source Protection Policies for waste disposal sites were reviewed and it was determined that the policies only apply to Waste Disposal Sites (including the transfer or processing of waste) that are a Significant Threat which has a vulnerability score of 8 to 10. Because the maximum vulnerability score of 6 is applied to SGRAs, (i.e., not a Significant Threat), the policies prohibiting a waste facility would not apply. This is in keeping with the provincial legislation, Clean Water Act, 2006, which deems Moderate to Significant Threats as having a vulnerability score of 7-10.

Given the review of the provincial legislation and the Source Protection Policies contained within the Source Protection Plan, coupled with the conservative approach taken with respect to SGRA, it was

⁵ Clean Water Act, 2006, Technical Rules: Assessment Report, 2009, Section 80-81, p. 35

⁶ Tables of Drinking Water Threats are provided a Reference Number – all Municipal Solid Waste projects reviewed for this proposed undertaking are identified as References 1639-1673.



determined that sites with a Low Vulnerability HVA and SGRA should be carried forward for further evaluation.

5.3.3 Mapping

Maps were prepared for each of the six short-listed sites and organized by components as follows:

- Site size
- Source Water Protection Plan designations
- Wetlands, floodline, top of bank, and regulated drainage
- Soils classification
- Locations of sensitive receptors/residential areas with respect to potential air quality, odour, and noise criteria
- Natural Environment with respect to SAR
- Wildlife Habitat Network with respect to core wildlife habitat and landscape corridor

It should be noted that not all components, criteria, and indicators are shown in these figures (Figures 2A to Figure 2F – only those that are well-suited to mapping and available through existing sources of information. However, between the Site Review Summary Table (Table 5) and the maps, all components, criteria, and indicators are presented for each short-listed site.

5.3.4 Site Visits

To supplement the information from the desktop review, GHD conducted windshield survey site visits to each of the short-listed sites on Wednesday, January 15, 2020. The site visits were used to confirm surrounding land uses and the presence of sensitive receptors. Photo logs for each site are provided as Appendix A.

5.3.5 Comparative Evaluation

The assessment and evaluation of the short-listed sites was conducted in two steps:

Step 1 – Apply additional evaluation criteria

Step 2 – Carry out the Comparative Evaluation focused on the relative advantages and disadvantages for each site and rank each site.

6. Evaluation and Results

With the methodology of assessing and evaluating the short-listed sites presented, the following sub-sections review the advantages and disadvantages for each of the short-listed sites. It should be noted that there are a number of common potential effects across the short-listed sites to which common mitigation measures can be applied. Therefore, a number of Best Management Practices (BMPs) have been developed relating to mitigation measures that are applicable to all sites. Key



BMPs that were applied as mitigation measures are detailed in the sections that follow and would be revisited during subsequent approvals.

It should be noted that these BMPs are not exhaustive, but will be augmented and tailored to the preferred site(s), and final design. Further, the BMPs will be reviewed with key stakeholders and neighbours of the preferred site(s) for their input and recommendations during subsequent approvals.

Dust, Noise & Odour BMPs

- Mitigation through design will address dust, odour and noise, by ensuring that: all material is received and processed indoors; the building will operate under negative air pressure (areas handling SSO material); air pollution control systems and biological filtering are incorporated as required, etc.
- Perimeter plantings, berms or other wind screens will be implemented as required.
- Dust suppression and control through the paving internal roads, routine cleaning, and use of water for suppression as necessary.
- Ensure construction and operation equipment are inspected and in good working condition.
- Truck idling will be minimized.
- All construction equipment should meet the sound emission standards as set out by MECF Publication NPC-115.
- Hours of construction as well as operation will be defined and adhered to.
- Facility layout will be designed to the greatest extent possible to reduce the use of vehicle back-up beepers.

Surface Water BMPs

- Surface water controls will be put in place to manage run-off from impervious surfaces and directed to appropriate storage or conveyance areas. This will also mitigate any potential effects on groundwater as the surface water controls will protect groundwater. An on-site stormwater management pond is envisioned which will include Oil-Grit Separators (OGS).
- All process water will be contained, re-circulated, or collected and treated either on-site or trucked off-site.
- Emergency management measures will be developed and implemented to address potential accidental spills.
- Storage and refueling of equipment to prevent potential fuel, oil, and grit runoff.

Terrestrial/Aquatic BMPs

- Confirm through investigations that no Species at Risk are present, or where they are present, habitat is avoided, if possible.



- Minimize removal of vegetation and where vegetation is removed; identify plant material for possible salvage.
- Replace vegetation removed on a minimum 1:1 basis, either on-site or off-site.
- Install appropriate measures to protect trees beyond the clearing limits.
- Minimize grade changes/alterations to topography.
- Minimize loss of confirmed Class 1-3 soils (Prime Agricultural Lands).
- Wildlife management (in terms of vectors) includes ensuring all waste is stored in an enclosed area.

Visual BMPs

- Internal roadway should be designed to minimize site lines from the site entrance.
- Berms and vegetated buffers should be implemented as close to the facility as reasonable.

6.1 South Clarington Site

The application of the short-list evaluation criteria for the South Clarington Site includes the criteria mapping (see figures) and additional criteria application (see Table 5). Key aspects are summarized below.

Advantages

- The site meets the minimum criteria of 8 hectares and provides for flexibility due to the availability of area on adjoining parcels of property.
- There are no sensitive receptors within 500 metres of the site boundary.
- The site has the shortest waste transfer distance from the three contracted transfer stations to the site, with recyclables and residuals transferred to the DYEC adjacent to site; resulting in the lowest waste transfer costs from a transportation perspective.
- There will be minimal impact on local traffic as waste is currently sent to the adjacent DYEC.
- No significant road infrastructure upgrades are required for either Energy Drive or Megawatt Drive. There is a dedicated road for waste delivery trucks along the CNR track. Minimal traffic impacts expected as waste is currently transported to adjacent DYEC.
- There are synergies with the existing DYEC and WPCP within the Energy Park. The potential exists to build on the energy related character of the Energy Park through the development of this Facility and new energy production facilities, including District Energy and sustainable energy. It is adjacent to the existing DYEC where pre-sorted recyclables and Facility residue will be processed. It is adjacent to the WPCP which may be able to treat Facility effluent, thereby reducing wastewater treatment plant costs. As a result, this site will likely require minimal utility upgrades.
- There are no designated Greenlands or Oak Ridges Moraine Land Use areas on the site.



- There are no PSWs, ESAs, ANSI on site.
- There are no areas pertaining to core wildlife habitats, wetlands, and regulated drainage areas.
- The site is within the Municipal Official Plan designation of Business Park and the Regional Official Plan designation of Employment Area. With respect to Employment designation, this facility will provide employment in the range of 30-40 full time positions (estimated). The zoning designation is Industrial (M).
- No known areas of archeological significance or important cultural heritage were noted on any of the short-listed sites. Previous archaeological studies were completed for the Region on the site and on the adjacent DYEC site and determined no archaeological significance.
- The site is not in proximity to an airport; therefore there is no major concern from a safety perspective (i.e. site is compatible with the safe operation of an airport, and will not cause interference with aircraft signals/communications or collision with birds).
- From a cost perspective:
 - The site is undeveloped land, therefore no significant site demolition costs are required.
 - The site is not a closed landfill, thus no significant site remediation costs are required in contaminated waste and soil removal.
 - The nearest natural gas utility pipeline connection is approximately 1 km from the site, translating to a capital cost ranging from approximately \$3,000,000 to \$7,000,000. The West Scugog, Oshawa and Whitby sites have shorter pipeline connection distances; however, this site contains access to all other utility connections (water, hydro, and sewer).
 - The site has the lowest overall site remediation capital costs (i.e. utility connection, contaminated waste/soil removal, existing building demolition, and road upgrades) when compared to all short-listed sites.

Disadvantages

- A new waste and air/noise ECA will be required for this site.
- Vegetation on-site requires removal. Plantings and earthworks would be required for visual screening, as well as for dust and noise mitigation.
- The sites have an irregular shape, with Energy Drive bisecting the three amalgamated properties.
- The Central Lake Ontario Conservation Authority (CLOCA Regulated Area covers portions of the site, with a small tributary of Tooley Creek that runs east-west through the middle of the north portion of the site and extends to the southwest portion of the site. A floodline encompasses a portion of the southwest part of the site. The southeast portion of the site remains unaffected by the CLOCA Regulated Area. Based on previous studies completed by the Region, Tooley Creek is part of a larger 1,050 ha Tooley Creek watershed area, and is likely a coldwater stream with



the potential for fish habitat. However, no fish or amphibian species were noted during the previously completed site assessment⁷.

- Should the design of the Facility require land within the Regulated Area, a permit would be required from CLOCA to alter or encroach upon the Regulated Area. Further studies would be required to make this determination, should the future design of the Facility require CLOCA Regulated lands.
- There is a Significant Groundwater Recharge Area along the western edge of the 339 Courtice Road property.

6.2 West Scugog Site

The application of the short-list evaluation criteria for the West Scugog Site includes the criteria mapping (see figures) and additional criteria application (see Table 5). Key aspects are summarized below.

Advantages

- The site has a total of approximately 41 hectares available for development, which satisfies the minimum criteria of 8 hectares.
- There are 3 sensitive receptors within 500 metres of the site boundary. However, with the implementation of appropriate design and BMPs for odour, dust, and noise, net effects will be minimized. Further, on-site wind measurements should be collected to determine actual wind conditions (speed and direction) at the site.
- Limited natural environment constraints (PSWs, ESAs, ANSI) on site as per Kawartha Conservation Authority.
- No known areas of archeological significance or important cultural heritage were noted on any of the short-listed sites. However, each site can still have the potential for archaeological significance. A Stage 1 Archaeological Assessment can be completed on the preferred site.

Disadvantages

- The site is within the Municipal Official Plan designation of Oak Ridges Moraine Countryside Area and the Regional Official Plan designation of Oak Ridges Moraine Area. The zoning designation is Rural Industrial (ORM-M3). There is a policy conflict with ORM Conservation Plan as it covers part of site (countryside area) with respect to development of infrastructure. However, there are no designated Greenlands.
- The site has the second longest waste transfer distance from the three contracted transfer stations to the site, with recyclables and residuals transferred to the DYEC adjacent to site; resulting in the second highest waste transfer costs from a transportation perspective.
- A new waste and air/noise ECA will be required for this site.

⁷ DYEC Environmental Assessment Study Document (as amended), November 27, 2009



- Highly Vulnerable Aquifer and Significant Groundwater Recharge Area covers the entire site except for a very small portion of northeast corner of the site.
- Displacement of existing Regional infrastructure may be required as it is an existing operations facility depot.
- The site is in proximity to proposed Pickering Airport and is within the Wildlife Hazard Zone (secondary bird hazard zone) as per Transport Canada's proposed drawings for the airport an airport. Therefore, there is a concern from a safety perspective (i.e. site is incompatible with the safe operation of an airport, and may cause interference with aircraft signals/communications or collision with birds).
- From a cost perspective:
 - Nearest municipal water supply and sanitary sewer connection is more than 9km from site, resulting in utility costs ranging from \$10,000,000 to \$18,000,000. Natural gas, hydro and telecommunication utilities are available on site.
 - The site is not a closed landfill, thus no significant site remediation costs required in contaminated waste and soil removal.
 - Road infrastructure upgrades are required on Goodwood Rd (widen left turning lane) to allow room for queuing and not block intersection, for which costs range from \$500,000 to \$1,000,000.

6.3 North Clarington Site

The application of the short-list evaluation criteria for the North Clarington Site includes the criteria mapping (see figures) and additional criteria application (see Table 5). Key aspects are summarized below.

Advantages

- There are 2 sensitive receptors within 500 metres of the site boundary. However, with the implementation of appropriate design and BMPs for odour, dust, and noise, net effects will be minimized. Further, on-site wind measurements should be collected to determine actual wind conditions (speed and direction) at the site.
- Limited natural environment constraints (PSWs, ESAs, ANSI) on site within the CLOCA regulated area. There are no CLOCA regulated areas pertaining to wetlands and regulated drainage areas on site.
- The site is not in proximity to an airport; therefore there is no major concern from a safety perspective (i.e. site is compatible with the safe operation of an airport, and will not cause interference with aircraft signals/communications or collision with birds).
- Minimal traffic impact expected as Woodley Rd. is a dead end road with no through traffic. However, some little existing traffic volume due to Long Sault Conservation Area multi-use trail north of site.



- No known areas of archeological significance or important cultural heritage were noted on any of the short-listed sites. However, each site can still have the potential for archaeological significance. A Stage 1 Archaeological Assessment can be completed on the preferred site.

Disadvantages

- The site has a total of approximately 8 hectares available for development, which narrowly satisfies the minimum site size requirement for the Facility.
- There is a policy conflict with ORM Conservation Plan as it covers part of site (natural core area) with respect to the development of infrastructure. However, there are no designated Greenlands.
- Long Sault Conservation Area multi-use trail directly north of site and parking area, which is considered a passive sensitive receptor.
- The site is covered by Core Habitat, which is part of the Wildlife Habitat Network within CLOCA's Natural Heritage System of core habitats and corridors. Further studies would be required to determine if significant wildlife habitat exists at the site.
- The site has the fourth longest waste transfer distance from the three contracted transfer stations to the site, with recyclables and residuals transferred to the DYEC adjacent to site; resulting in the second highest waste transfer costs from a transportation perspective.
- Eastern 2/3 of site is within Highly Vulnerable Aquifer and Significant Groundwater Recharge Area covers the entire site. While this site has Source Water Protection Plan designations, it should be noted that it was previously disturbed.
- New waste and air/noise ECA will be required for this site.
- From a cost perspective:
 - The site has no utility connections available on site. There is no natural gas supply line in vicinity of site, with the nearest municipal water supply and sanitary sewer connection over 11km from site, resulting in utility costs ranging from \$43,000,000 to \$100,000,000. Some hydro connection costs are included as Hydro tower is approximately 350m south of site, and nearest telecommunication connection is 890m from site.
 - The site is a closed landfill with significant site remediation costs required in contaminated waste and soil removal, ranging from \$4,000,000 to \$14,000,000.
 - Road infrastructure upgrades are required on Woodley Rd to support traffic transfer trailer volume and loads. Vehicle turning lanes are likely required in east and east bound direction of Durham Regional Road 20. Costs range from \$1,000,000 to \$2,000,000.

6.4 Oshawa Site

The application of the short-list evaluation criteria for the Oshawa Site includes the criteria mapping (see figures) and additional criteria application (see Table 5). Key aspects are summarized below.



Advantages

- The site has a total of approximately 34 hectares available for development, which satisfies the minimum criteria of 8 hectares.
- The site has the second shortest waste transfer distance from the three contracted transfer stations to the site, with recyclables and residuals transferred to the DYEC adjacent to site; resulting in the second lowest waste transfer costs from a transportation perspective.
- Water, sewer, and hydro utility connections available on site.
- An amended waste and air/noise ECA will be required for this site.
- CLOCA regulates the west and northwest edge of the property as there is an unevaluated wetland, regulated drainage, floodline, top of bank, landscape corridor, and a secondary habitat. However, most of the site is not impacted or within the CLOCA Regulated Area. It should be noted that this site has been previously disturbed/developed, and therefore has already influenced surface water conditions on-site.
- There are no designated Greenlands or Oak Ridges Moraine Land Use areas on the site.
- Limited natural environment constraints (PSWs, ESAs, ANSI) on site.
- No known areas of archeological significance or important cultural heritage were noted on any of the short-listed sites. However, each site can still have the potential for archaeological significance. A Stage 1 Archaeological Assessment can be completed on the preferred site.

Disadvantages

- There are a significant amount of off-site receptors and several residential neighbourhoods developed within 500 metres of the site boundary.
- There will be a great impact on local traffic as high traffic volumes are already experienced on Ritson Rd North due to residential properties in close proximity to site and existing WMF operations.
- The site is in proximity to the Oshawa Executive Airport and is within the flight path (within approach Surface Slope 1:50) as per Transport Canada's Oshawa Airport Zoning Regulations. Therefore, there is a concern from a safety perspective (i.e. site is incompatible with the safe operation of an airport, and may cause interference with aircraft signals/communications or collision with birds).
- Highly Vulnerable Aquifer covers 80% of the site (except a few pockets on the eastern boundary). Western portion of the site is within Intake Protection Zone 3.
- Displacement of existing Regional infrastructure will be required as it is an existing public waste drop-off / transfer site.
- There are no synergies with the existing WMF building as it is too small to be used for the pre-sort portion of the Facility.
- From a cost perspective:



- The nearest natural gas supply line is 600m from the site, with utility connection costs ranging from \$1,000,000 to \$3,000,000.
- The site is a closed landfill with significant site remediation costs required in contaminated waste and soil removal, ranging from \$4,000,000 to \$14,000,000.
- Road infrastructure upgrades are required on northbound Ritson Road (widen left turning lane) to allow room for queuing to support traffic transfer trailer volume and loads. Costs range from \$250,000 to \$500,000.

6.5 East Scugog Site

The application of the short-list evaluation criteria for the East Scugog Site includes the criteria mapping (see figures) and additional criteria application (see Table 5). Key aspects are summarized below.

Advantages

- The site has a total of approximately 120 hectares available for development, which satisfies the minimum criteria of 8 hectares.
- Limited natural environment constraints (PSWs, ESAs, ANSI) on site within the Kawartha CA regulated area.
- The site is not in proximity to a municipal airport; therefore there is no major concern from a safety perspective (i.e. site is compatible with the safe operation of an airport, and will not cause interference with aircraft signals/communications or collision with birds).
- Minimal traffic impact expected as there is little existing traffic volume on Reach Street. However, new development on Sherrington Drive south of site may increase traffic volumes in the near future.
- No known areas of archeological significance or important cultural heritage were noted on any of the short-listed sites. However, each site can still have the potential for archaeological significance. A Stage 1 Archaeological Assessment can be completed on the preferred site.
- An amended waste and air/noise ECA will be required for this site.

Disadvantages

- The site has the longest waste transfer distance from the three contracted transfer stations to the site, resulting in the highest waste transfer costs from a transportation perspective.
- There are Policy conflicts due to designated Greenlands – Protected Countryside with respect to infrastructure development.
- The property is affected by a number of Source Water Protection Plan designations. A portion of the property is designated as a Highly Vulnerable Aquifer along northeast boundary. 75% of site is within a Significant Groundwater Recharge Area, while a majority of site is within the Intake Protection Zone 3. While this site has Source Water Protection Plan designations, it was previously disturbed.



- Displacement of existing Regional infrastructure as there is an existing waste management facility on site.
- From a cost perspective:
 - Nearest natural gas supply line is approximately 2.5km from site. Nearest municipal water supply is approximately 300m from site. Sanitary sewer costs are low as site backs onto WPCP. Resulting utility costs range from \$6,000,000 to \$15,000,000. Hydro and telecommunication connections are available on site.
 - The site is a closed landfill with significant site remediation costs required in contaminated waste and soil removal, ranging from \$4,000,000 to \$14,000,000.
 - Road infrastructure upgrades are required when approaching site from the west on Reach Street (widen left turning lane) to allow room for queuing, for which costs range from \$500,000 to \$1,000,000.

6.6 Whitby Site

The application of the short-list evaluation criteria for the Whitby Site includes the criteria mapping (see figures) and additional criteria application (see Table 5). Key aspects are summarized below.

Advantages

- Large areas of provincially significant wetlands within and adjacent to site, along with core habitat, floodline, and top of bank CLOCA Regulated Area. However, since the site is already developed/previously disturbed for waste management/processing, it can be modified as per Facility requirements.
- No amendments to the Regional and Municipal Official Plan and Zoning By-Law are anticipated.
- No known areas of archeological significance or important cultural heritage were noted on any of the short-listed sites. However, each site can still have the potential for archaeological significance. A Stage 1 Archaeological Assessment can be completed on the preferred site.
- An amended waste and air/noise ECA will be required for this site.

Disadvantages

- There are 8 sensitive receptors within 500 metres of the site boundary and proposed future residential development to occur north of site.
- The site is in proximity to the Oshawa Executive Airport and is within the flight path (within Outer Surface Elevation 180.0 ASL) as per Transport Canada's Oshawa Airport Zoning Regulations. Therefore, there is a concern from a safety perspective (i.e. site is incompatible with the safe operation of an airport, and may cause interference with aircraft signals/communications or collision with birds).
- The site has the third longest waste transfer distance from the three contracted transfer stations to the site, with recyclables and residuals transferred to the DYEC adjacent to site; resulting in the third highest waste transfer costs from a transportation perspective.



- Approval may be required from Ministry of Infrastructure for work under Hydro corridor.
- Highly Vulnerable Aquifer and Significant Groundwater Recharge Area covers the entire site. While this site has Source Water Protection Plan designations, the site was previously disturbed. Depending on area for development, proximity to on-site Wetlands may create potential effects.
- Displacement of existing Regional infrastructure as there is an existing material recovery facility on-site. With incoming Extended Producer Responsibility legislation, the material recovery facility may become a stranded asset.
- From a cost perspective:
 - Nearest natural gas supply line connection is 500m from site. Nearest sanitary sewer connection is 1.5km from site (currently using underground septic tank), resulting in utility costs ranging from \$2,000,000 to \$4,000,000. Hydro, municipal water, and telecommunication utilities are available on site.
 - The site is not a closed landfill, thus no significant site remediation costs required in contaminated waste and soil removal. However, the site has existing MRF buildings, which will need to either be demolished or remediated to account for new Facility. This will add site demolition costs of about \$2,000,000 to \$4,000,000.
 - Road infrastructure upgrades will likely require left and right vehicle turning lanes on Garrard Rd and Conlin Rd if used as entrance to site, for which costs range from \$2,000,000 to \$4,000,000.

6.7 Comparative Evaluation

The comparative evaluation results are summarized in the sections that follow, with additional details provided in the Comparative Evaluation Tables following the text – Table 7 presents the comparative evaluation for the Facility. Sites are ranked from most preferred to least preferred.

6.7.1 Environmental

Air Quality, Odour, Noise

A wind rose was generated based on 10-year hourly average wind data (March 6th, 2010 to January 19th, 2020) collected at the Oshawa Municipal Airport Station, which is considered central and representative for the short-listed sites. The average hourly wind speed was 3.97 m/s or 14.29 km/h and the prevailing wind blows was predominately coming from a northwesterly to southwesterly direction. The wind rose is included at the top left corner of the figures to demonstrate which surrounding sensitive receptors are most susceptible to wind blows during construction and potential odours during Facility start-up/commissioning.

While this wind rose provides a general overview of historic wind data within the Region of Durham, further meteorological data should be collected to determine site-specific information using anemometer and vane equipment (for wind speed and wind direction respectively). For example, the wind directionality from the North Clarington site can vary from the South Clarington site, as it can be strongly influenced by local factors such as topography and the measurement location relative to



large bodies of water. In other words, a higher percentage of southerly winds could be expected at the South Clarington site due to Lake Breeze effects.

All sites are expected to be within compliance from an air quality, odour and noise perspective (based on design specifications for the Facility), although a majority of the sites have sensitive receptors (residential neighbourhoods) within close proximity. The South Clarington Site and the North Clarington Site have significantly less number of sensitive receptors within close proximity.

Terrestrial

Affected Greenlands – East Scugog Site falls within Greenbelt area with Protected countryside. None of the other sites are affected by greenlands. ORM Conservation Plan Area covers part of West Scugog and North Clarington sites. None of the other sites are affected by ORM Land Use areas. Further study and analysis such as an Environmental Impact Statement (EIS) would be required to provide additional mitigation and compensation measures and to demonstrate that there would be no negative impacts to the natural features at the preferred site. This would be undertaken on the area of the site required for the Facility footprint.

Species of Special Concern, Threatened, and/or Endangered – Potential SAR habitat was identified by The Natural Heritage Information Centre (NHIC) on all short-listed sites. Recent records of SAR were identified at the West Scugog, Oshawa, and East Scugog sites. Through appropriate avoidance measures, the effects on SAR are likely low. Further detailed field investigations will be required to confirm presence (if any) of SAR on the preferred site. SAR potential mapping are included (see figures). Key SAR identification terms are as follows:

- END – Endangered
- THR – Threatened
- EXP – Extirpated
- SC – Special Concern
- NAR – Not at Risk
- DD – Data Deficient
- EXT – Extinct
- S2 – Imperiled
- S3 – Vulnerable
- S4 – Apparently Secure
- N – non-breeding

Aquatic

There are no aquatic SAR listed as potentially occurring at any of the sites.

Surface Water

The Oshawa, East Scugog, Whitby, and South Clarington sites have a number of surface water features on-site, (watercourses, wetlands, floodlines, etc.) which acts as a constraint for siting the



facility. The East Scugog site contains the Nonquon River Water Pollution Control Plant and much of the site is within the Kawartha CA regulated area, which reduces the site size from 120 to 52 hectares. The CLOCA regulated area occupies a portion of the South Clarington site and includes a surface water feature (tributary of Tooley Creek) which would require an approval from CLOCA to encroach or develop within the Regulated Area (should this be required once a conceptual design is established). Based on this, the West Scugog and North Clarington sites are preferred from a surface water perspective.

Groundwater

Source Water Protection Areas – All of the short-listed sites either have Significant Groundwater Recharge Area or a Highly Vulnerable Aquifer covering a portion of the property, with East Scugog having an Intake Protection Zone (IPZ) designation. The site with the least amount of area designated under the Source Water Protection Plan is the South Clarington site. Further discussion on the approach to Source Protection Areas is provided in Section 5.3.2.

Agricultural

All sites have been either previously disturbed or have not been utilized for agricultural purposes in the recent past. The South Clarington site is Class 1, East Scugog site is Class 1 and 2 - Oshawa and Whitby are Class 2. West Scugog and North Clarington are Class 6.

Overall – Environmental

Based on the above and the comparative evaluation tables, the following sites are more preferred:

- South Clarington Site
- Whitby Site
- Oshawa Site

6.7.2 Social

Sensitive Receptors

With respect to the Facility and sensitive receptors, the South Clarington, North Clarington, and East Scugog are the preferred sites due to the combination of the number of sensitive receptors within 500 metres of the site/Facility boundary and the proximity of those receptors (i.e., number of residences immediately adjacent to the site boundary, reduced buffers, etc.). The Oshawa site is least preferred as it is immediately surrounded by residential neighbourhoods. Although mitigation measures would be applied to this site, the relative setback distances from the proposed facility footprint are the lowest of all potential sites.

Land Use/Zoning

South Clarington site will not require any amendments to the current Regional and Municipal Official Plan and Zoning By Law as it currently permits the proposed use of the site for a mixed waste transfer and pre-sort facility with anaerobic digestion. A new waste and air/noise ECA will be required for this site. West Scugog site will also require a new waste and air/noise ECA. The South Clarington site also meets the Energy Park objectives, including energy related development, employment for energy related development, and ability for district energy/ sustainable energy.



For all remaining sites, an amendment to existing waste and air/noise ECAs will be required. Some ECAs are old/outdated and will require greater amendment efforts than others.

Transportation

From a transportation perspective, each site presents its own constraints with respect to the two indicators under this criterion, which relate to existing or required transportation infrastructure and neighbourhood impacts from traffic. Viewing the sites from a Facility-only perspective, the South Clarington site is most preferred as it requires no major upgrades to nearby existing roads, and it will have a smaller impact on local traffic as waste is currently sent to the adjacent DYEC.

Visual

No discernible difference between sites from a visual perspective as each site would need to implement typical mitigation measures to ensure the sites are appropriately screened.

Overall – Social

Based on the above and the comparative evaluation tables, the following sites are more preferred:

- South Clarington Site
- Whitby Site
- Oshawa Site

6.7.3 Cultural

Archaeological

The only site to be cleared of archaeological significance is the South Clarington site as a previous archaeological investigation was completed. No known archeologically significant areas were found on or adjacent to any of the short-listed sites. However, each site can still have the potential for archaeological significance. A Stage 1 Archaeological Assessment can be completed on the preferred site.

Heritage

No known areas of important cultural heritage were found on or adjacent to any of the short-listed sites. North of the Oshawa site is a Class A (greatest historic interest) campground/scouts called Camp Samac, however it will not be affected as a result of developing the Facility, given the relative distance and mitigation measures proposed. The Ministry of Heritage, Sport, Tourism and Culture Industries (MHSTC) may provide additional information as further studies are initiated on the preferred site.

Overall – Cultural

Based on the above and the comparative evaluation tables, no preference for a site from a Cultural Component perspective has been identified. Further work will be completed on the preferred site, as required by the MHSTC.



6.7.4 Technical

Permitting/Approvals

While most sites will require an amendment to existing waste, air/noise ECAs, the South Clarington and West Scugog sites will require new ECAs.

Safety

A commercial airport – the Oshawa Municipal Airport is located within Durham Region. In addition, Greenbank Airport is a small private airport within Durham Region. The Pickering lands, owned by the Federal Government, were declared an “airport site” in August 2001. To protect Federal Lands for future aviation needs, the Pickering Airport Site Zoning Regulations (AZR) came into effect September 2005. The AZR restrict the height of buildings, structures and objects including natural growth on regulated lands and protect aircraft from potential hazards such as bird strikes and electronic signal interference for a distance of up to 15 km off the end of each runway.

The two national railroads that run through the study area are the main line of the Canadian National Railway (CNR) and the main line of the Canadian Pacific Railway (CPR).

From a safety perspective, the South Clarington site was identified as the most preferred over all other sites as it is not in proximity to an airport (i.e. site is compatible with the safe operation of an airport, and will not cause interference with aircraft signals/communications or collision with birds). A railroad track runs approximately 50 metres south of site, though there is a road in between (site access road for DYEC).

All other sites have another facility or a use that may allow for an interaction and increase the safety risk. This includes West Scugog site (proximity to proposed Pickering airport, within secondary bird hazard zone), North Clarington site (Long Sault Conservation Area multi-use trail), Oshawa site (proximity to Oshawa airport – flight path within approach surface slope), East Scugog site (proximity to Greenbank airport), and Whitby site (proximity to Oshawa airport - flight path within outer surface elevation).

Utilities and Services

Municipal Water – Municipal water connection information was provided by the Region. The West Scugog and North Clarington sites do not have nearby access to municipal water connection, with the nearest connection point being over 9km and 11km respectively.

Sanitary Sewer – Sanitary sewer connection information was provided by the Region. The West Scugog and North Clarington sites do not have nearby access to municipal water connection, with the nearest connection point being over 9km and 24km respectively. The Whitby site utilizes an underground septic tank(s), with the nearest connection being over 1km away. The East Scugog site contains the Nonquon River Water Pollution Control Plant, with the nearest connection being only 300m away.

Natural Gas – Enbridge was contacted to provide natural gas pipeline connection information for the short-listed sites. Enbridge has noted that the North Clarington site does not have existing gas network within proximity, with the nearest connection being over 11km away. Since the Facility will



require an incoming natural gas pipeline for utility purposes and an outgoing renewable natural gas (RNG) pipeline, this makes the North Clarington site the least preferred from a cost perspective.

Enbridge requires a Non-Disclosure Agreement (NDA) to be signed so that information shared between Enbridge and GHD or the Region is classified as confidential. They have asked for a 7-year confidentiality agreement, the purpose of which would be to obtain a network connection assessment and cost estimates for pipe reinforcement and RNG injection station at the proposed site. Enbridge also requires additional information including but not limited to: RNG injection volume flow rate, and biogas outlet pressure and temperature, which has not been established at this stage of the Facility.

Enbridge will need to conduct a further detailed study to ensure proper gas supply is available for each site. RNG injection station will be required at each of the sites, with an additional cost of approximate \$1,000,000. Reinforcement to existing pipeline connection will also be required by Enbridge.

Hydro/Electricity – Hydro One and Oshawa Power were contacted to provide hydro related information for each of the short-listed sites, however, Hydro One was unable to provide information at this time. Oshawa Power confirmed power availability to supply the Oshawa Site from their existing overhead 13.8kV power lines on Ritson Road. Oshawa Power also noted that the maximum service that can be connected from the 13.8kV lines is a 1200A-600/347V main switch. Should the Facility require a service larger than 1200A-600/347V, the 44kV line up Ritson Road will need to be extended, which can be costly.

The North Clarington site has a hydro tower running 350m south of the property, and the Whitby site has a hydro tower passing through south of the property. Further investigation is required to retrieve accurate hydro information.

Telecommunication – Rogers and Bell were contacted to provide telecommunication related information for each of the short-listed sites. Bell has noted that they provide telecommunication services to all sites except for the North Clarington, for which the nearest connection point is 890m from the site.

Rogers has noted that there are no coax or fiber internet options available at these locations. However, Rogers is launching a new service at the end of February 2020 called a Fixed Wireless Internet solution. The concept will work off of the cell phone wireless network, and equipment would need to be installed on a building within the site. Rogers has provided a high-level cost estimate of \$500/month for each site, which translates to a lifecycle cost of \$150,000 for a 25-year operating Facility. This was used as a minimum cost for the North Clarington site. Should the Region wish to install underground cables, the cost will roughly be the same at around \$180,000 based on GHD experience (maximum cost scenario).

Suitability of Area

The South Clarington site was determined to be the most preferred from a suitability perspective as it has the greatest compatibility with existing adjacent DYEC waste infrastructure. Waste is currently hauled from the private transfer stations to the DYEC for incineration. Recyclables that will be pre-sorted at the Facility, and remaining residual waste from the Facility can easily be transported to the DYEC (i.e. waste can be transported via conveyor belts from Facility across to the DYEC site).



Typically, MWP/AD facilities of this capacity require construction of separate wastewater treatment plants to treat high-strength effluent from the facility. Since there is a WPCP located south of the site, it may have the capacity to process Facility effluent with minimal new infrastructure requirements. At the very least, a new full-sized wastewater treatment plant will not be required.

Overall – Technical

Based on the above and the comparative evaluation tables, the following sites are more preferred:

- South Clarington Site
- Whitby Site
- Oshawa Site

6.7.5 Economic

Capital Costs

From a capital cost perspective, the most preferred site is South Clarington, as it is not located on a closed landfill (low remediation costs), is undeveloped (no demolition costs), does not require upgrades to existing transportation infrastructure, and only requires connection to natural gas utility pipeline (existing water, sanitary sewer, hydro, and telecommunication utility connections are already in place). The North Clarington site is the least preferred site due as it being situated on a closed landfill and being a remote location, which translates to high utility connections costs, site remediation costs, and transportation infrastructure upgrades.

Further breakdown of all capital costs are attached separately as Table 6.

Utility Connection Costs – All sites require natural gas supply line connection costs. Based on GHD’s experience, a gas pipeline costs \$1,500 per metre of pipeline construction (minimum cost scenario). However, with Enbridge being the natural gas provider for all of these sites, their participation will be required at an early stage. To account for Enbridge’s stringent specifications, pipeline costs are expected to increase by at least 2.5 times base costs (maximum cost scenario). As noted earlier, Enbridge has noted that they will need to conduct a further detailed study to ensure proper gas supply is available for each site. An RNG injection station will be required at each of the sites, each with an additional cost of approximate \$1,000,000. Reinforcement to existing pipeline connection will also be required by Enbridge.

Municipal water supply and sanitary sewer connections are required at most of the short-listed sites. Based on GHD’s experience, relevant pipeline construction unit costs range from \$500 to \$1,000 per metre and were used to develop minimum and maximum cost estimates respectively.

Hydro connection is available at all sites, except for the North Clarington site, for which the nearest connection point is 350m south of the property. Based on GHD’s experience, hydro line installation unit costs range from \$500 per metre (minimum cost scenario) to \$1,000 per metre (maximum cost scenario). However, further investigation is required to retrieve accurate hydro information.

Telecommunication connection is available at all sites, except for the North Clarington site, for which the nearest connection point is 890m from the site. As noted earlier, costs are minor and range from \$150,000 to \$180,000 (based on unit costs of \$200/metre based on GHD experience).



Transportation Infrastructure Upgrade Costs – In order for waste to be transferred to and from the Whitby site, several major upgrades to the existing transportation infrastructure will be required. No major road improvements are required at the South Clarington site. All sites will require a traffic impact study.

Site Remediation Costs – In order for the Facility to be located at the North Clarington, Oshawa, and East Scugog sites, a significant quantity of contaminated waste and soil will require removal as they are situated on closed landfills, resulting in high site remediation costs. As the extent (depth) of waste at the closed landfills is unknown, site remediation costs were calculated on a per metre depth basis. The Region should note that the costs will double as the depth doubles. In order to incorporate a range of site remediation costs, a minimum cost scenario, whereby 30% of the building footprint was estimated to require contaminated soil/waste removal was considered. A maximum cost scenario considered ultimate building footprint estimates as provided in Memo No. 1 for this project.

Site Demolition Costs – In order for the Facility to be located at the Whitby site, the former MRF and current MRF buildings will need to be demolished or remediated to include the new Facility due to the limited site size available. In order to incorporate a range of demolition costs, a minimum cost scenario, whereby the existing building demolition costs are considered negligible due to sales from existing building components was considered. A maximum cost scenario considered no re-sale value of existing building components.

For the West Scugog site, as it is a much larger site, a minimum demolition cost was not applied as it was assumed that the Facility could be constructed on other undeveloped parts of the site. Similar to the Whitby site, a maximum cost scenario of site demolition with no re-sale value of existing building components was considered.

Transportation / Waste Transfer Costs

From a transportation perspective, the South Clarington site was identified as the preferred site, as the site has the lowest waste transfer costs. The site has the shortest waste transfer distance from the three private transfer stations to the site (Miller's Squires Beach Transfer Station, Miller's Pebblestone Transfer Station, and the Waste Management of Canada Courtice Road Transfer Station), with the recyclables and residuals then transferred to the adjacent DYEC.

The next comparable site will cost more than twice as much for waste transfer on a per transfer trailer basis. The East and West Scugog sites are least preferred as these sites will cost more than 5 times for waste transfer, when compared to the South Clarington Site.

Transportation to markets and end users for the beneficial use end-product from the Facility depends on the type of technology used at the Facility and is the responsibility of the preferred Proponent. This aspect was not evaluated.

Employment

All sites offer the same employment opportunities (estimated to be between 30-40 full time jobs), however the South Clarington site meets specific objectives within the Energy Park plan, including providing for employment for energy related developments.



Overall – Economic

Based on the above and the comparative evaluation tables, the following sites are more preferred:

- South Clarington
- Whitby
- Oshawa

7. Recommended Site

Based on a review of the advantages and disadvantages described in Section 6, the South Clarington Site is the Recommend site for development as it has a greater number of advantages than disadvantages when compared against all other short-listed sites from an Environmental, Social, Cultural, Technical, and Cost perspective.

The advantages of the South Clarington site in comparison to the other short-listed sites include:

- No off-site sensitive receptors within 500 metres of the site.
- No policy conflicts from a provincial policy/plan perspective (i.e. Oak Ridges Moraine, Greenbelt, etc.)
- No wetlands on site and limited areas of Source Water Protection Plan designations (small portion of site), particularly in comparison to all other short-listed sites.
- Consistent with existing, proposed and surrounding land uses and land use designations and allows for an acceptable use within the land use planning context. The site is within the Municipal Official Plan designation of Business Park and the Regional Official Plan designation of Employment Area. With respect to Employment designation, this facility will provide employment in the range of 30-40 full time positions (estimated). The zoning designation is Industrial (M).
- The potential exists to build on the energy related character of the Energy Park through the development of this Facility and new energy production facilities, including District Energy and sustainable energy. The Facility fits into the Energy Park's sustainable development and design standards, and future opportunities in the renewable and alternative energy sector. This would also meet the Provincial objectives of ensuring facilities such as the Region's are well-planned and suitably sited to ensure long-term effectiveness of the resource recovery system and campus.
- Synergies with existing solid waste management infrastructure, including DYEC where mixed-waste residuals would be processed, will help create energy savings and environmental benefits. By removing the organic waste material (SSO and FSO) through the pre-sorting process at the Facility, which generally contains more moisture, the combustion process at the DYEC will become more efficient. Synergies with adjacent WPCP may be able to treat Facility effluent and utilize natural gas.



- Road network to the site has been upgraded to accommodate volumes of traffic that would be generated for the proposed use. There is a dedicated road for waste delivery trucks along the Canadian National railroad track.
- Previous archaeological studies were completed for the Region on the site and on the adjacent DYEC site and determined no archaeological significance.
- Utilities and servicing are available on-site with nearest natural gas line in close proximity
- Lowest Capital costs (remediation, demolition and utilities)
- Lowest transportation costs, thereby reducing transportation emissions as waste material outputs from the Facility could enter the DYEC in close proximity.

With the above in mind, the South Clarington site is the preferred site for the proposed Facility.

8. Municipal Staff and Public Consultation

Consultation was undertaken as follows:

Municipal Consultation

- February 19, 2020: Meeting with local municipal staff

Public Information Centre (PIC)

- February 27, 2020: PIC
- March 20, 2020: Close of PIC comment period

These consultation sessions allowed GHD and the Region to engage directly with members of the public. At the same time, these sessions also allow the public to provide their input, thoughts and perspectives to GHD and the Region, creating an open, two-way dialogue. For example, GHD will present their evaluation results from the long list of sites to the short-list, which is based on a number of Region and Region Council endorsed evaluation criteria. Members of the public will have the opportunity to provide site specific information from a historical and local perspective that may be important to include in the overall recommendation for the preferred site.

The results of the municipal staff and public consultation events, for the information presented in this Report, will be reviewed and addressed. This Report will be revised to incorporate all appropriate feedback and comments.

9. Next Steps

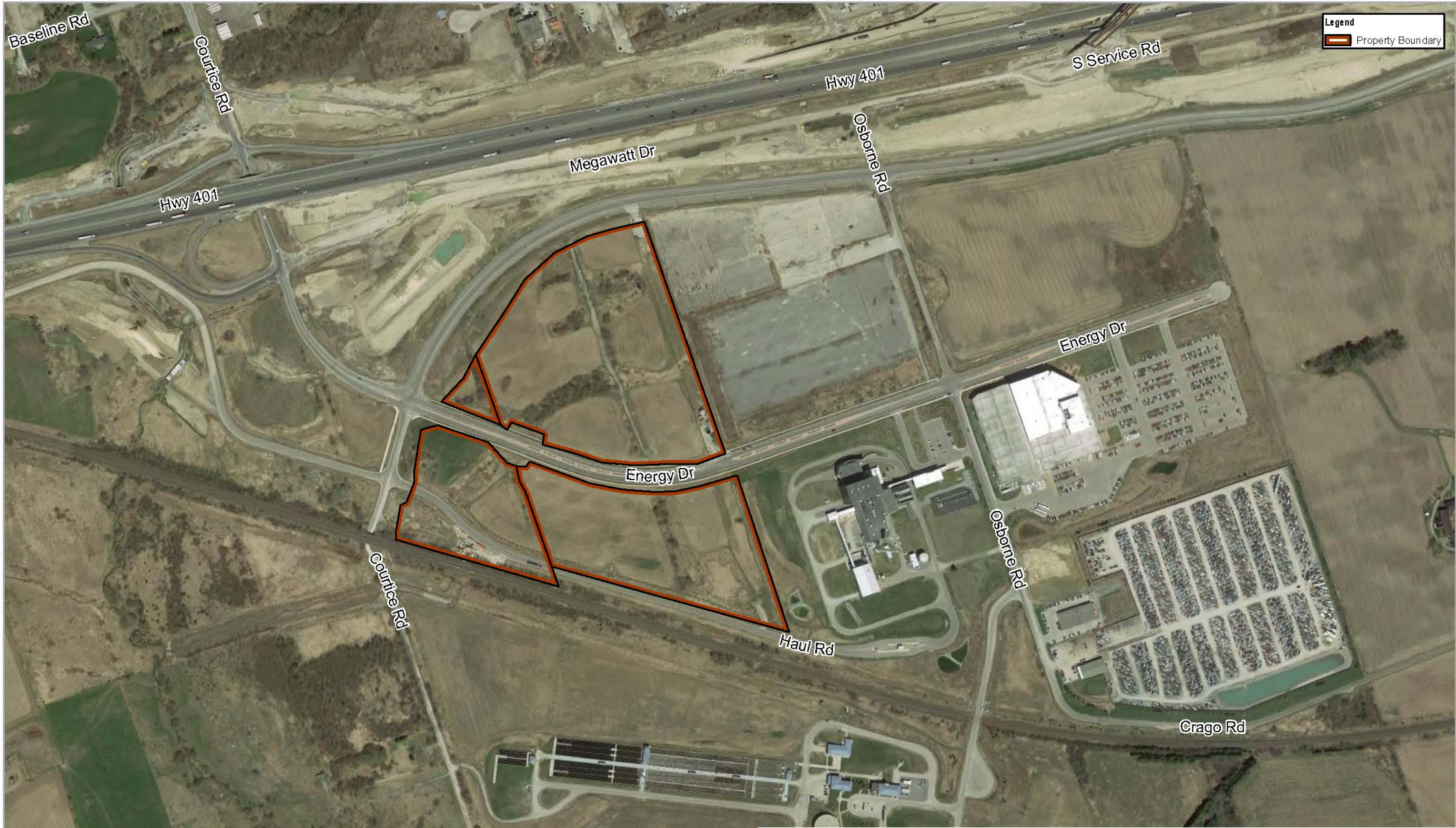
Prior to moving forward with further detailed work and further approvals on the preferred site for the Facility, Regional Council approval and endorsement of the preferred site will be sought. The Region



anticipates undertaking the following steps once Regional Council have provided further direction on the preferred site for the Facility:

- Work Plans will be established for each technical discipline involved in further investigations on the site, which may include: planning justification report, geotechnical investigations, EIS, Traffic Impact Study, noise assessment, site plan, hydrogeological studies, archaeological studies etc. Timelines for data collection and assessment of findings will be established as part of the Work Plans.
- Further consultation with neighbouring landowners will occur, with discussion on potential further approvals required (i.e., land use, ECA), facility footprint location on the site, potential design/technology, mitigation measures, Best Management Practices, and anticipated schedule of major milestones. Discussion will also include details on how best to seek their input on future site design and selection of technology.
- Further public information/consultation sessions on Facility milestones and the procurement process.
- Initiation of the Planning approvals process, working in cooperation with both Regional planning staff and the host municipalities Planning staff.
- Advancing the site-specific design that will be put forward in the procurement process.
- Preparation of Request for Pre-Qualification (RFPQ) documents, followed by the preparation of Request for Proposal (RFP) documents as the procurement of processing technology is advanced.
- Continue to seek guidance from the MECP in preparation for submitting application(s) for ECA(s).

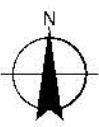
Figures



Legend
 Property Boundary

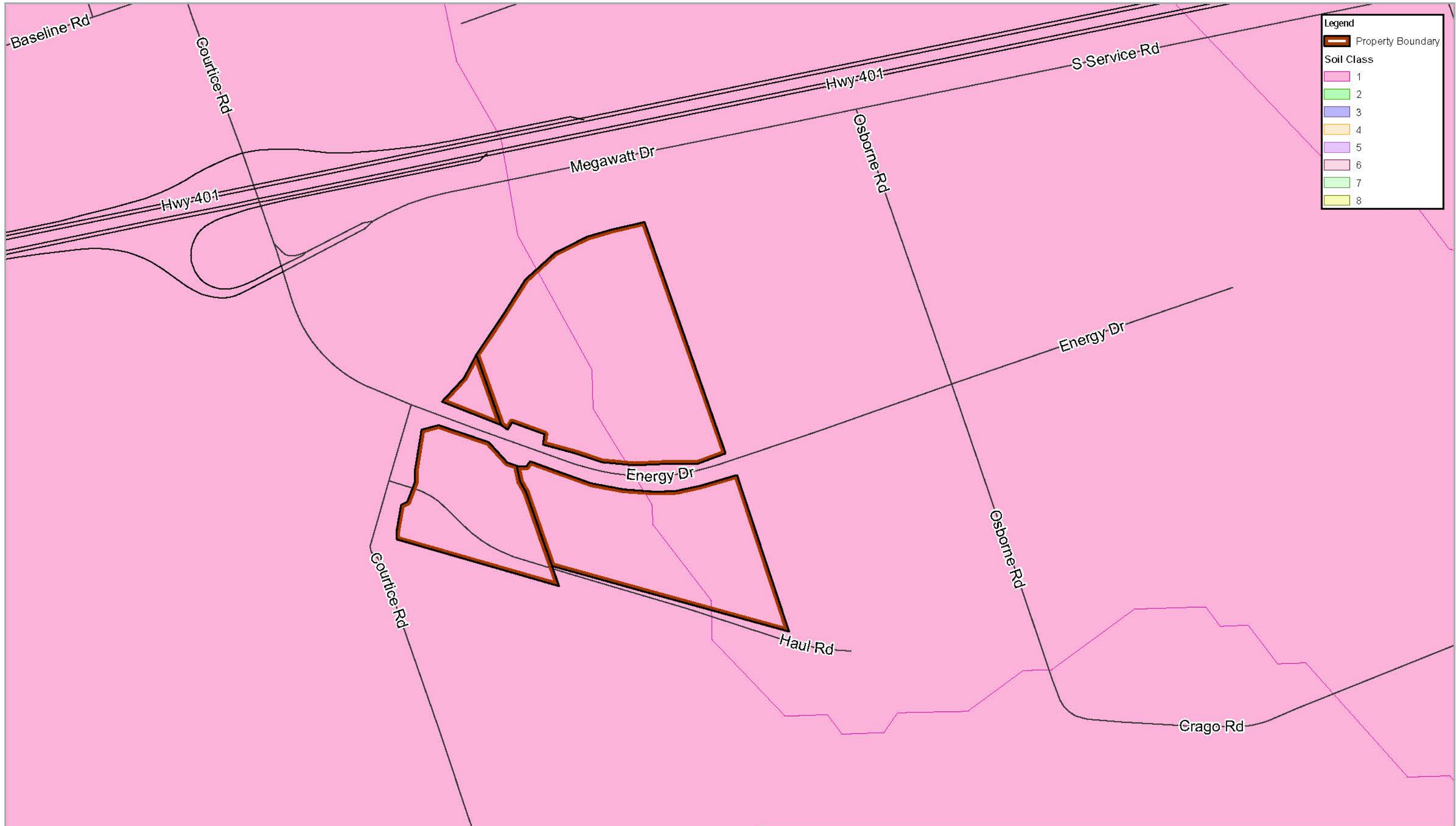


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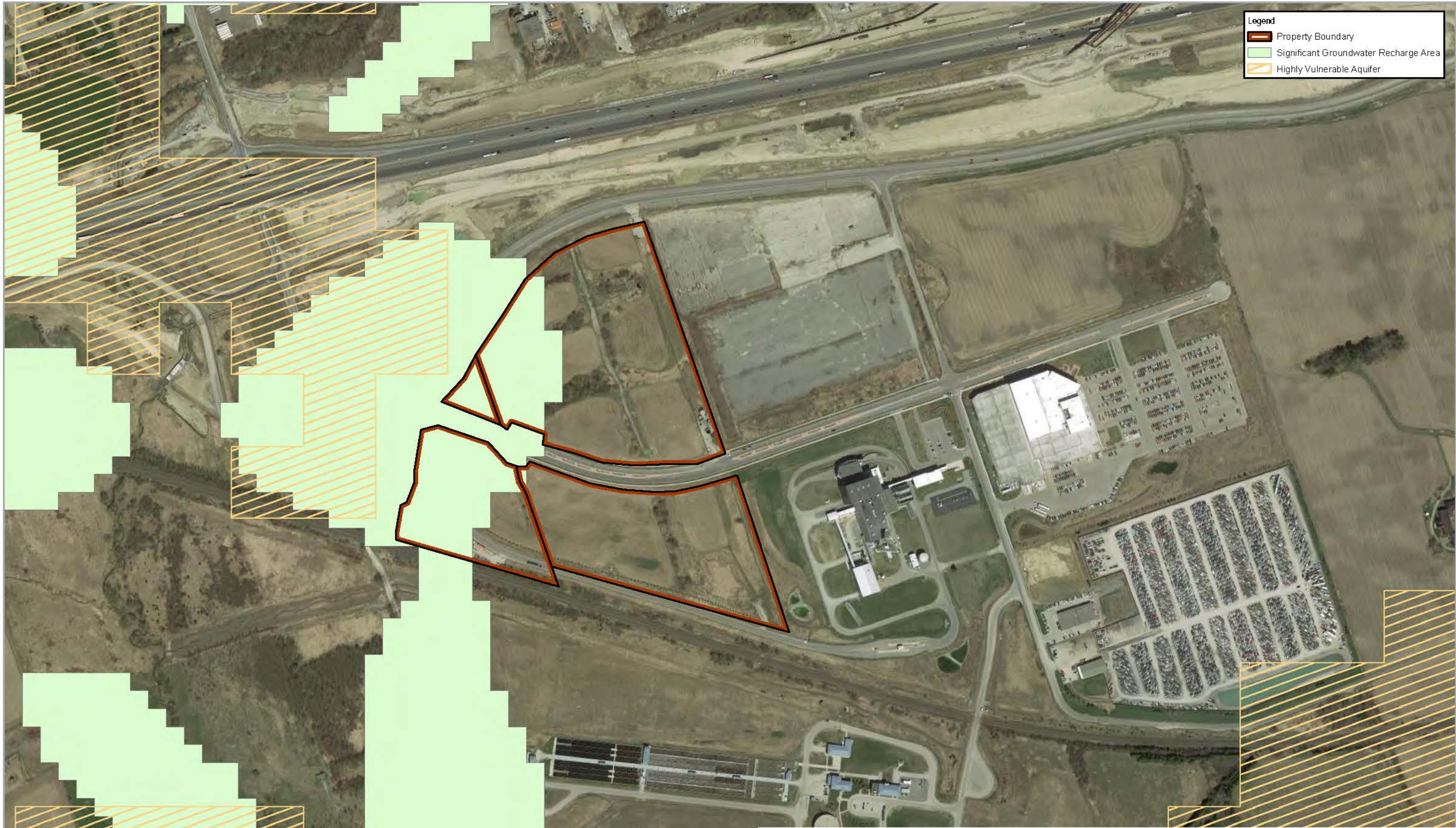


REGIONAL MUNICIPALITY OF DURHAM
MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
DIGESTION ORGANICS PROCESSING FACILITY
SITES MEETING MINIMUM
SIZE CRITERIA (8 HA)
SOUTH CLARINGTON

Project No. **11199994**
 Revision No. -
 Date **Nov 29, 2019**

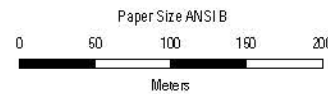


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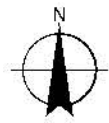


Legend

- Property Boundary
- Significant Groundwater Recharge Area
- Highly Vulnerable Aquifer

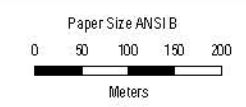
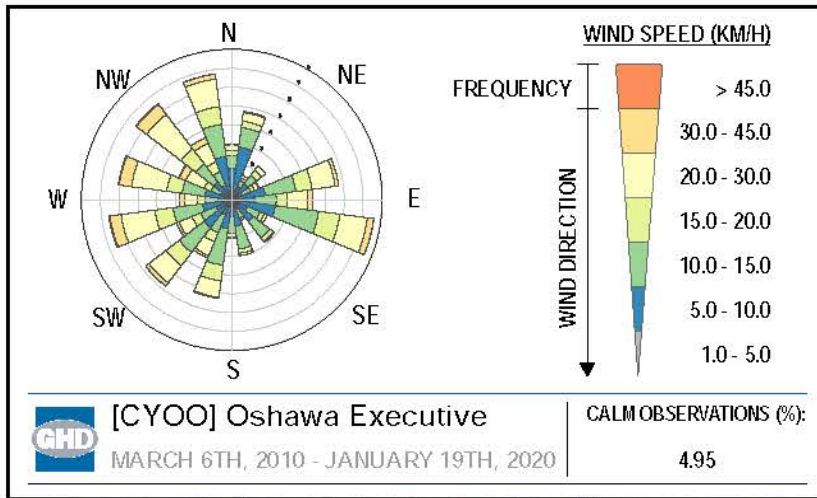


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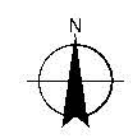


REGIONAL MUNICIPALITY OF DURHAM
 MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
 DIGESTION ORGANICS PROCESSING FACILITY
 SITES MEETING MINIMUM
 SIZE CRITERIA (8 HA)
 SOURCE WATER PROTECTION PLAN

Project No. 11199994
 Revision No. -
 Date Nov 29, 2019



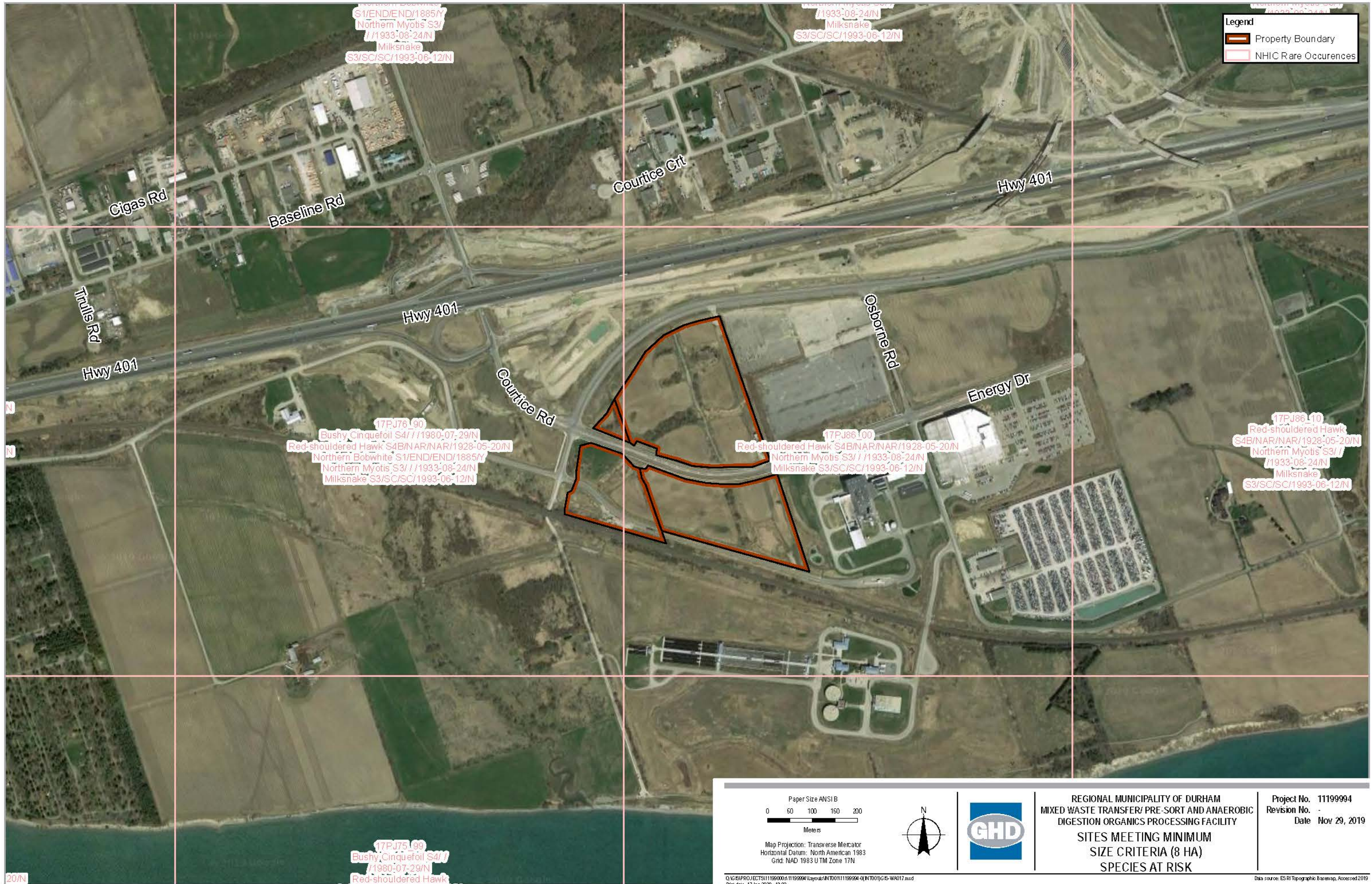
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Grid: NAD 1983 UTM Zone 17N



REGIONAL MUNICIPALITY OF DURHAM
MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
DIGESTION ORGANICS PROCESSING FACILITY

**SITES MEETING MINIMUM
SIZE CRITERIA (8 HA)
SENSITIVE RECEPTORS**

Project No. 11199994
Revision No. -
Date Nov 29, 2019



Legend

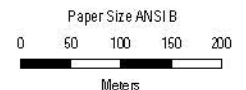
- Property Boundary
- NHIC Rare Occurrences

17PJ76_90
 Bushy Cinquefoil S4//1980-07-29/N
 Red-shouldered Hawk S4B/NAR/NAR/1928-05-20/N
 Northern Bobwhite S1/END/END/1885/Y
 Northern Myotis S3//1933-08-24/N
 Milksnake S3/SC/SC/1993-06-12/N

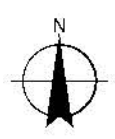
17PJ86_100
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 Northern Myotis S3//1933-08-24/N
 Milksnake S3/SC/SC/1993-06-12/N

17PJ86_10
 Red-shouldered Hawk S4B/NAR/NAR/1928-05-20/N
 Northern Myotis S3//1933-08-24/N
 Milksnake S3/SC/SC/1993-06-12/N

17PJ75_99
 Bushy Cinquefoil S4//1980-07-29/N
 Red-shouldered Hawk



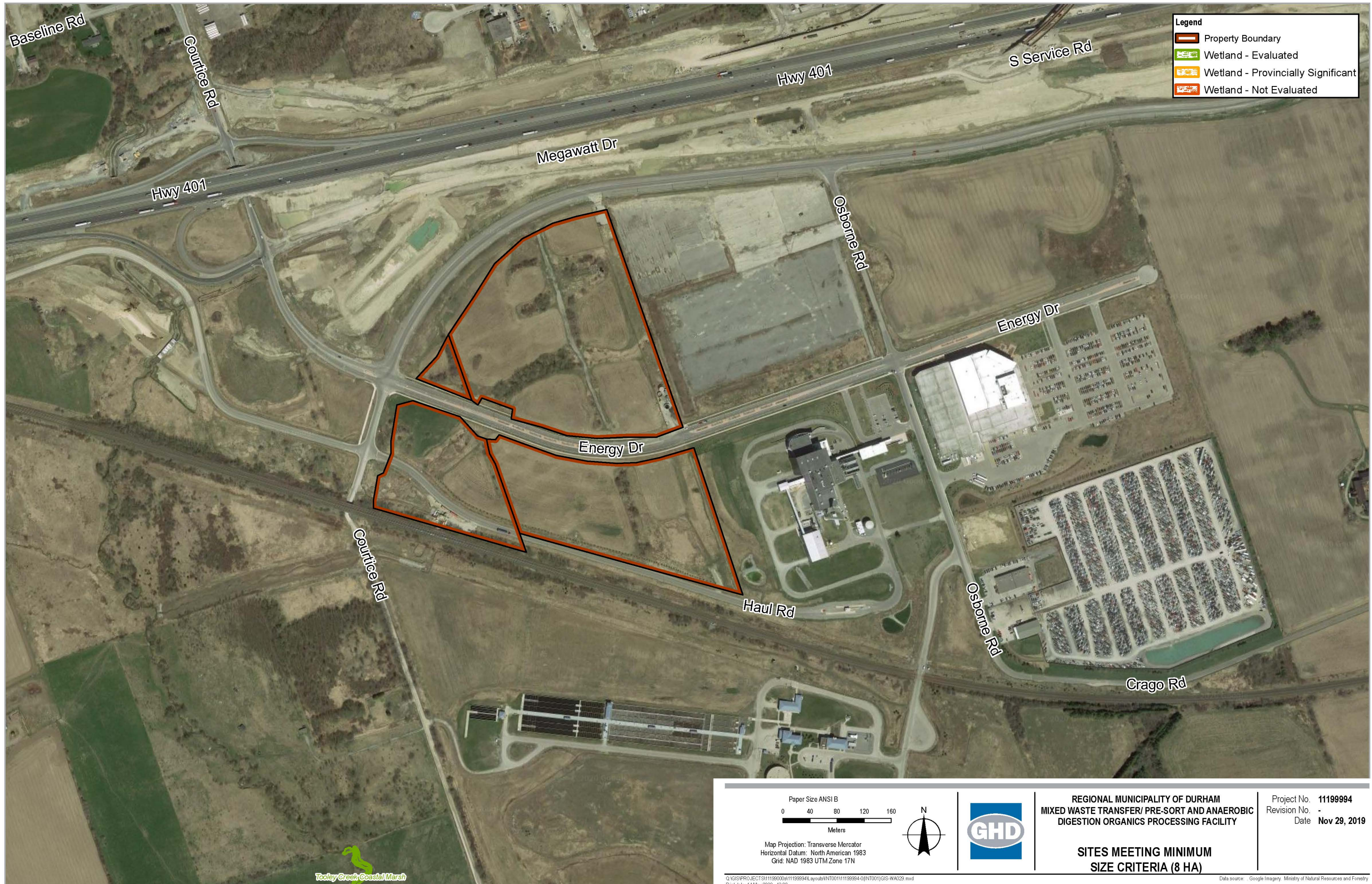
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REGIONAL MUNICIPALITY OF DURHAM
 MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
 DIGESTION ORGANICS PROCESSING FACILITY

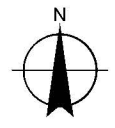
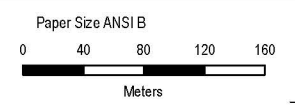
**SITES MEETING MINIMUM
 SIZE CRITERIA (8 HA)
 SPECIES AT RISK**

Project No. 11199994
 Revision No. -
 Date Nov 29, 2019



Legend

- Property Boundary
- Wetland - Evaluated
- Wetland - Provincially Significant
- Wetland - Not Evaluated



Map Projection: Transverse Mercator
 Horizontal Datum: North American 1983
 Grid: NAD 1983 UTM Zone 17N



REGIONAL MUNICIPALITY OF DURHAM
MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
DIGESTION ORGANICS PROCESSING FACILITY

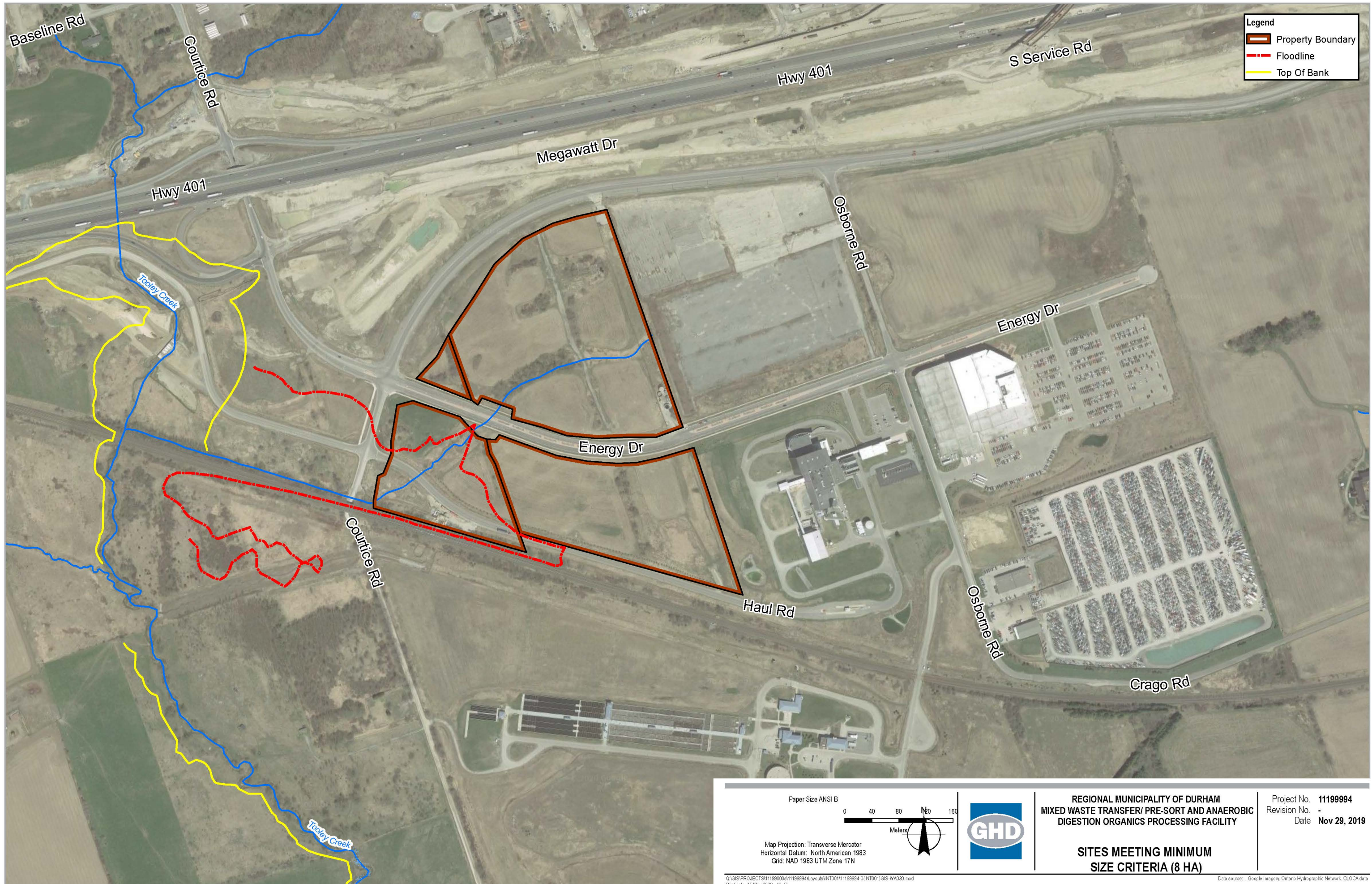
Project No. **11199994**
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 Date **Nov 29, 2019**

SITES MEETING MINIMUM
SIZE CRITERIA (8 HA)

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Data source: Google Imagery, Ministry of Natural Resources and Forestry





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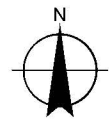
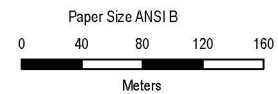
- Property Boundary
- Floodline
- Top Of Bank

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Legend

- Property Boundary
- Wildlife Habitat Network**
- Core Habitat
- Landscape Corridor
- Secondary Habitat



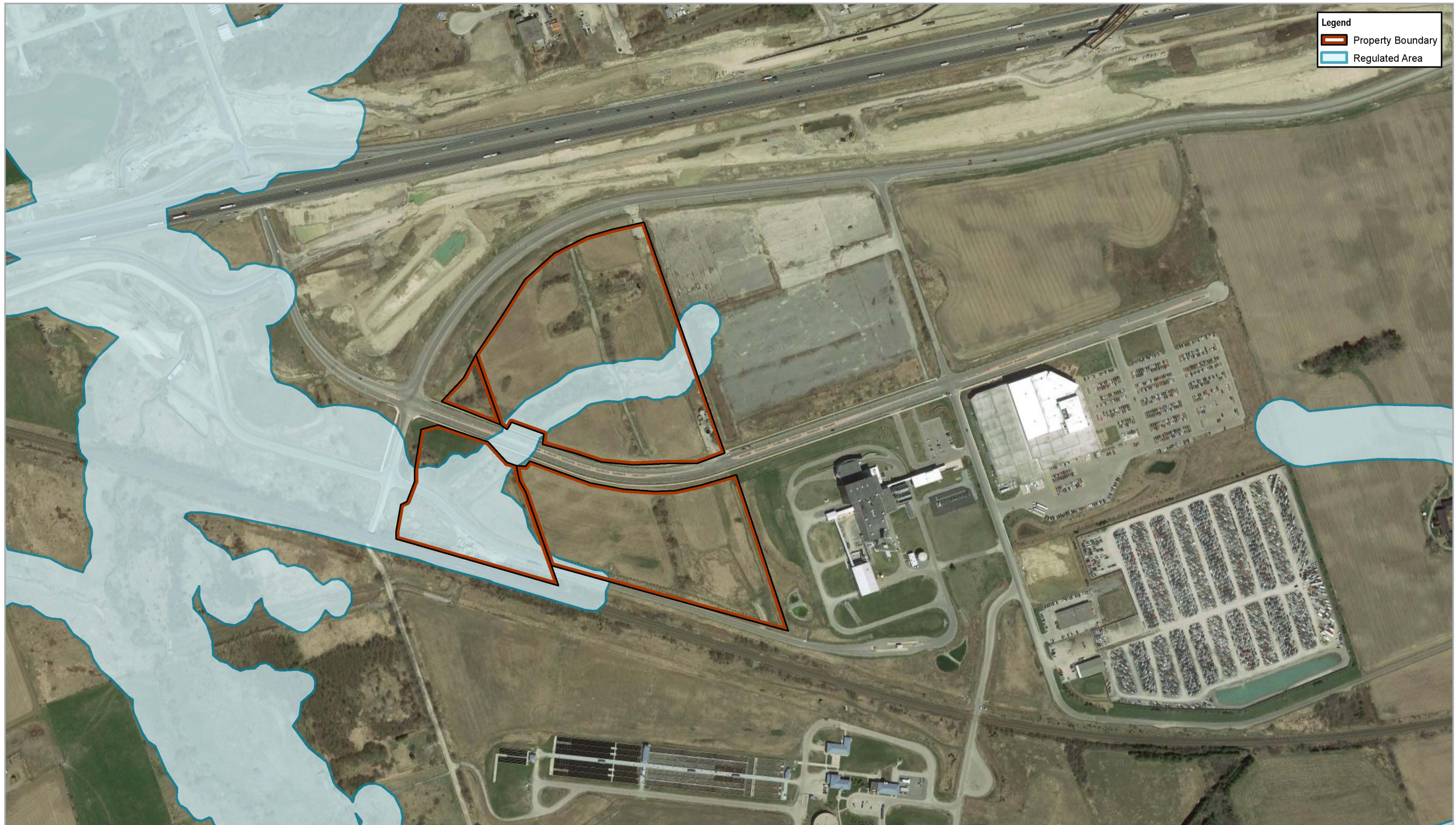
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REGIONAL MUNICIPALITY OF DURHAM
MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
DIGESTION ORGANICS PROCESSING FACILITY

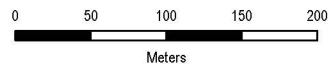
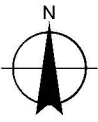

Project No. **11199994**
 Revision No. -
 Date **Nov 29, 2019**

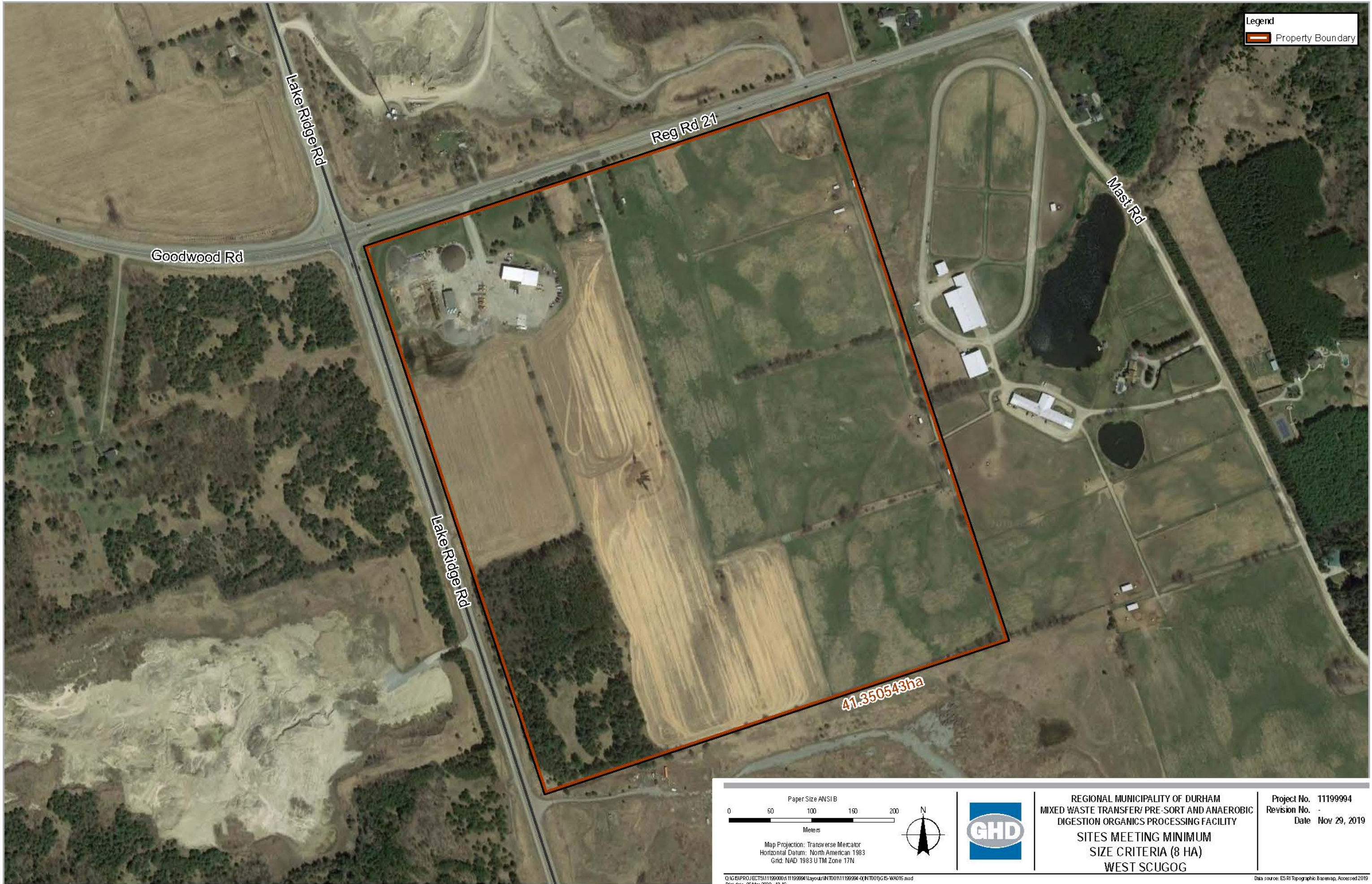
SITES MEETING MINIMUM
SIZE CRITERIA (8 HA)



Legend

-  Property Boundary
-  Regulated Area

<p>Paper Size ANSI B</p>  <p>Meters</p>			<p>REGIONAL MUNICIPALITY OF DURHAM MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC DIGESTION ORGANICS PROCESSING FACILITY</p> <p>SITES MEETING MINIMUM SIZE CRITERIA (8 HA) REGULATED AREA</p>	<p>Project No. 11199994 Revision No. - Date Nov 29, 2019</p>
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Legend
 Property Boundary

Goodwood Rd

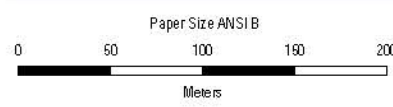
Lake Ridge Rd

Reg Rd 21

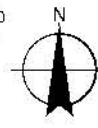
Mast Rd

Lake Ridge Rd

41.350543ha

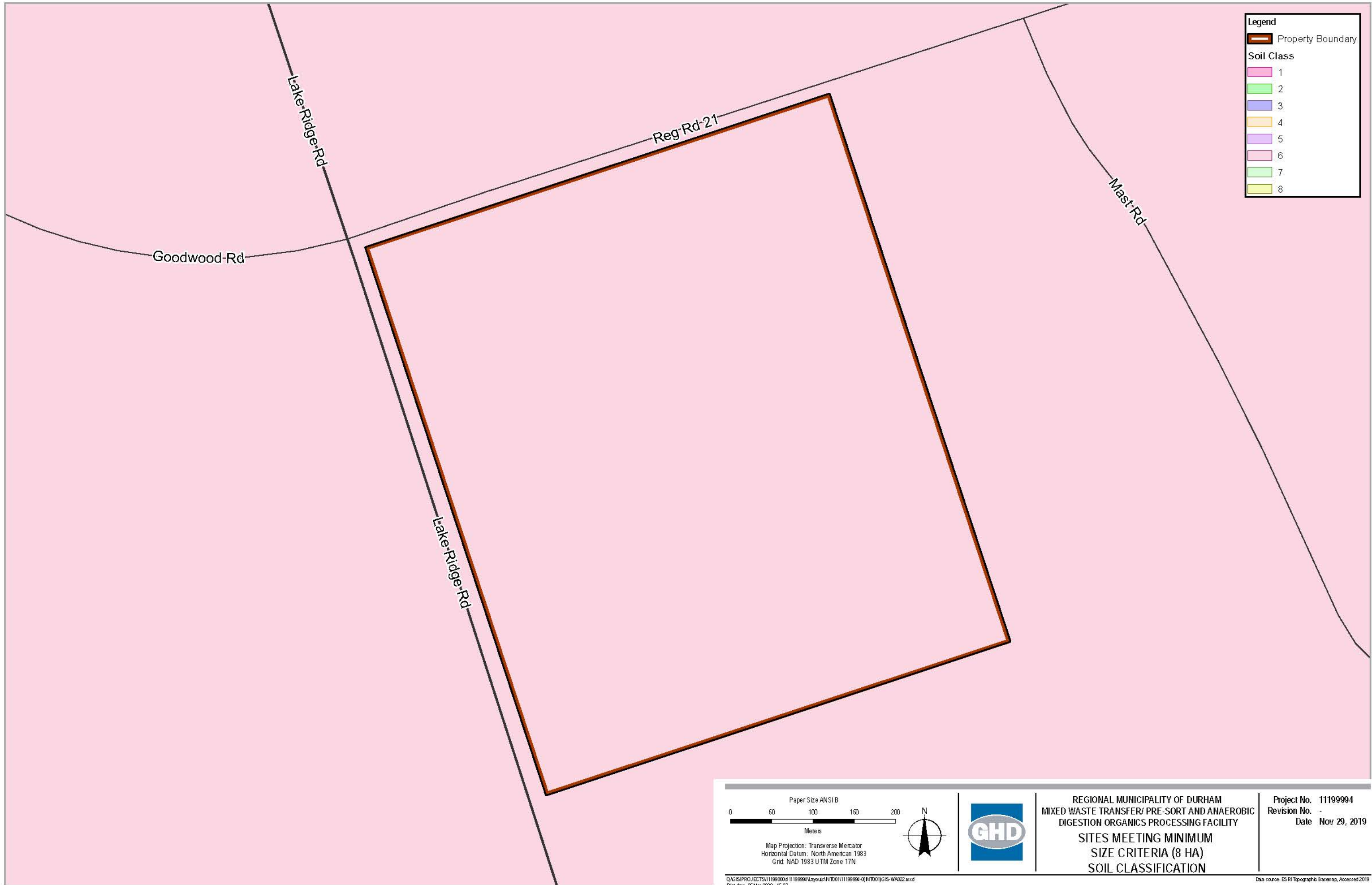


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REGIONAL MUNICIPALITY OF DURHAM
 MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
 DIGESTION ORGANICS PROCESSING FACILITY
 SITES MEETING MINIMUM
 SIZE CRITERIA (8 HA)
 WEST SCUGOG

Project No. 11199994
 Revision No. -
 Date Nov 29, 2019

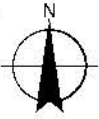


Legend

Property Boundary

Soil Class

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8



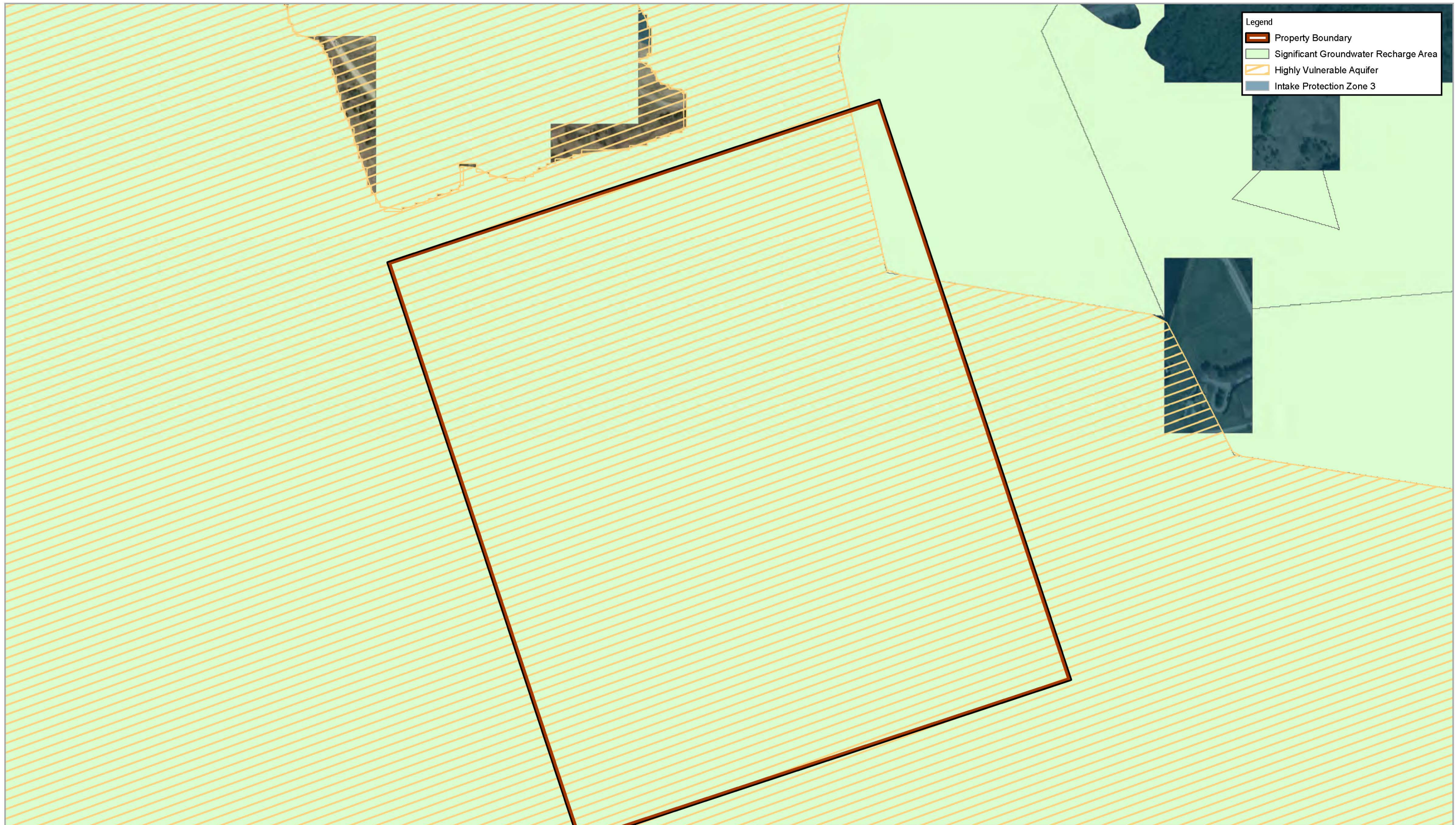
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


REGIONAL MUNICIPALITY OF DURHAM
 MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
 DIGESTION ORGANICS PROCESSING FACILITY

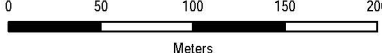
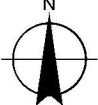

**SITES MEETING MINIMUM
 SIZE CRITERIA (8 HA)
 SOIL CLASSIFICATION**

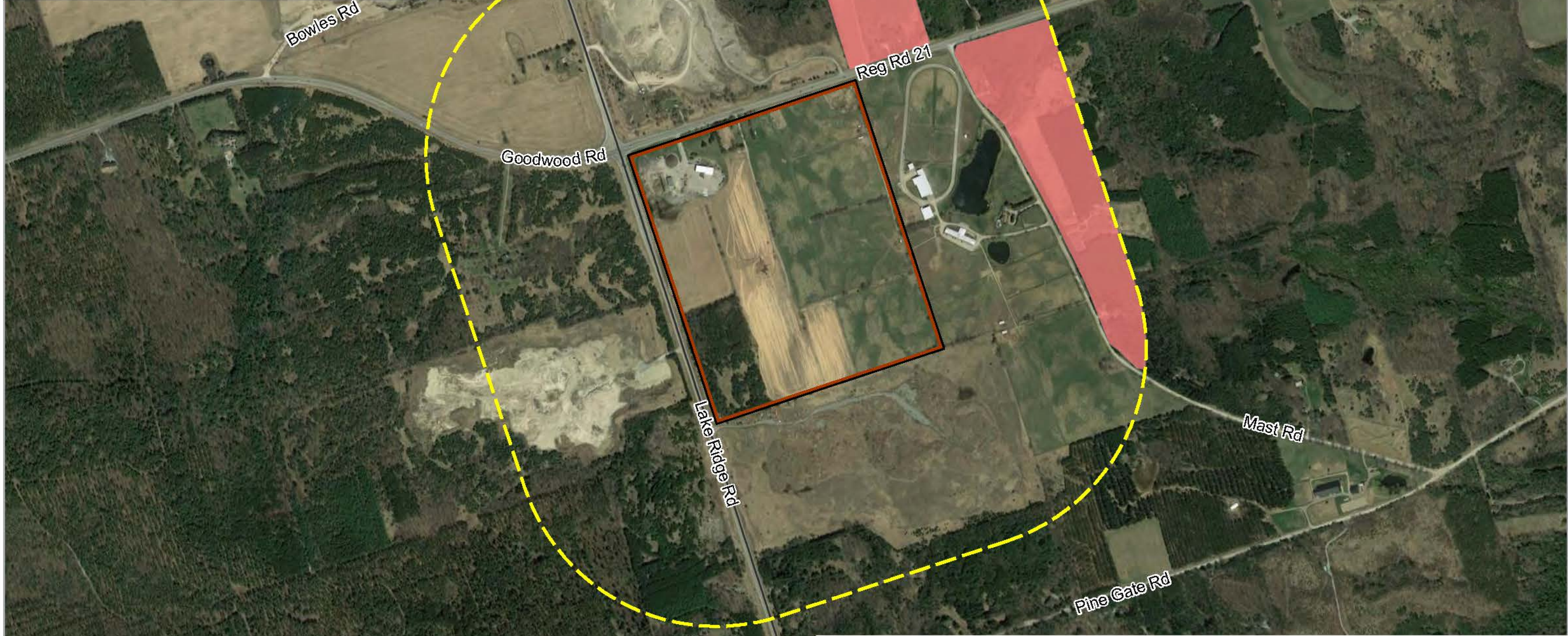
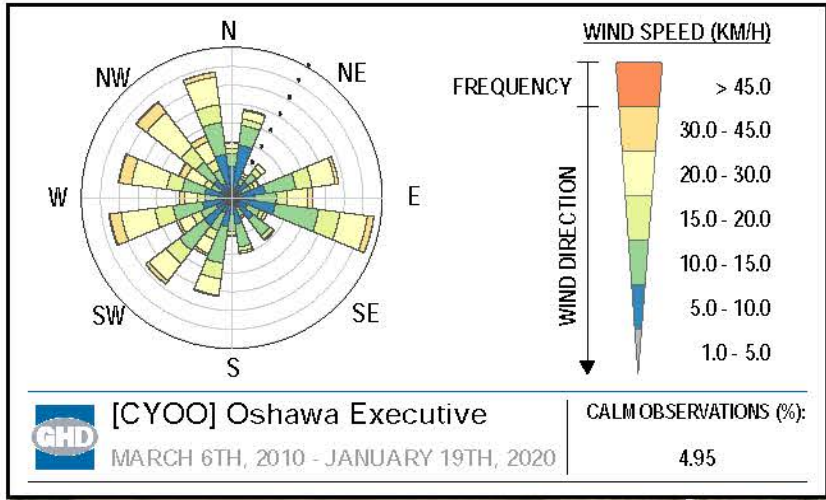
Project No. 11199994
 Revision No. -
 Date Nov 29, 2019



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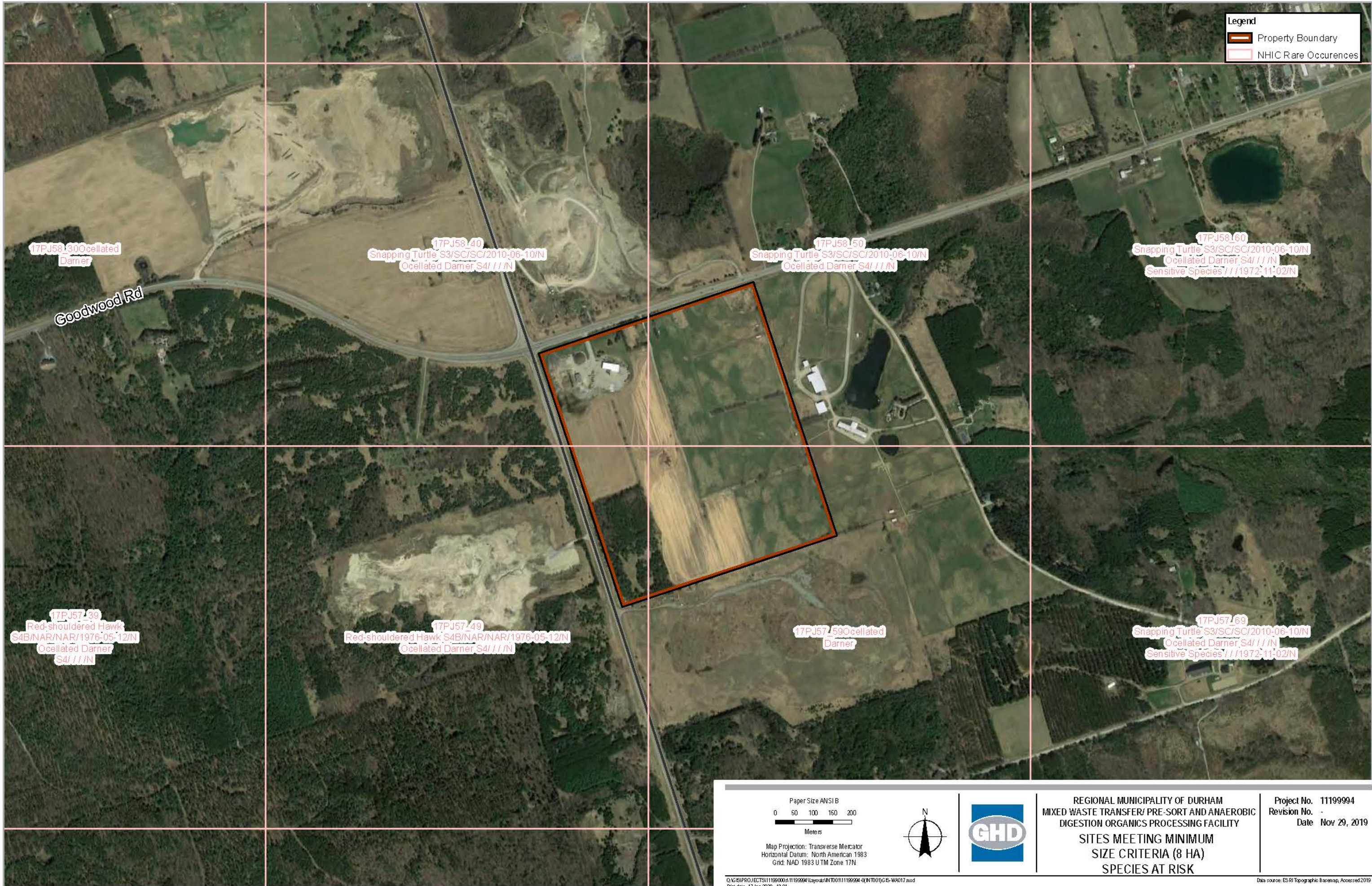
-  Property Boundary
-  Significant Groundwater Recharge Area
-  Highly Vulnerable Aquifer
-  Intake Protection Zone 3

<p>Paper Size ANSI B</p>  <p>Meters</p> <p>Map Projection: Transverse Mercator Horizontal Datum: North American 1983 Grid: NAD 1983 UTM Zone 17N</p>			<p>REGIONAL MUNICIPALITY OF DURHAM MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC DIGESTION ORGANICS PROCESSING FACILITY</p> <p>SITES MEETING MINIMUM SIZE CRITERIA (8 HA) SOURCE WATER PROTECTION PLAN</p>	<p>Project No. 11199994 Revision No. - Date Nov 29, 2019</p>
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Paper Size ANSI B 0 50 100 150 200 Meters Map Projection: Transverse Mercator Horizontal Datum: North American 1983 Grid: NAD 1983 UTM Zone 17N			REGIONAL MUNICIPALITY OF DURHAM MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC DIGESTION ORGANICS PROCESSING FACILITY	Project No. 11199994 Revision No. - Date Nov 29, 2019
			SITES MEETING MINIMUM SIZE CRITERIA (8 HA) SENSITIVE RECEPTORS	

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 Print date: 05 Mar 2020 - 16:23
 Data source: ESRI Topographic Base map, Accessed 2019



Legend
 Property Boundary
 NHIC Rare Occurrences

17PJ58_30 Ocellated
Damner

Goodwood Rd

17PJ58_40
Snapping Turtle S3/SC/SC/2010-06-10/N
Ocellated Damner S4/ / / N

17PJ58_50
Snapping Turtle S3/SC/SC/2010-06-10/N
Ocellated Damner S4/ / / N

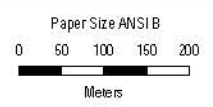
17PJ58_60
Snapping Turtle S3/SC/SC/2010-06-10/N
Ocellated Damner S4/ / / N
Sensitive Species / / / 1972-11-02/N

17PJ57_39
Red-shouldered Hawk
S4B/NAR/NAR/1976-05-12/N
Ocellated Damner
S4/ / / N

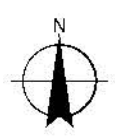
17PJ57_49
Red-shouldered Hawk S4B/NAR/NAR/1976-05-12/N
Ocellated Damner S4/ / / N

17PJ57_59 Ocellated
Damner

17PJ57_69
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Ocellated Damner S4/ / / N
Sensitive Species / / / 1972-11-02/N

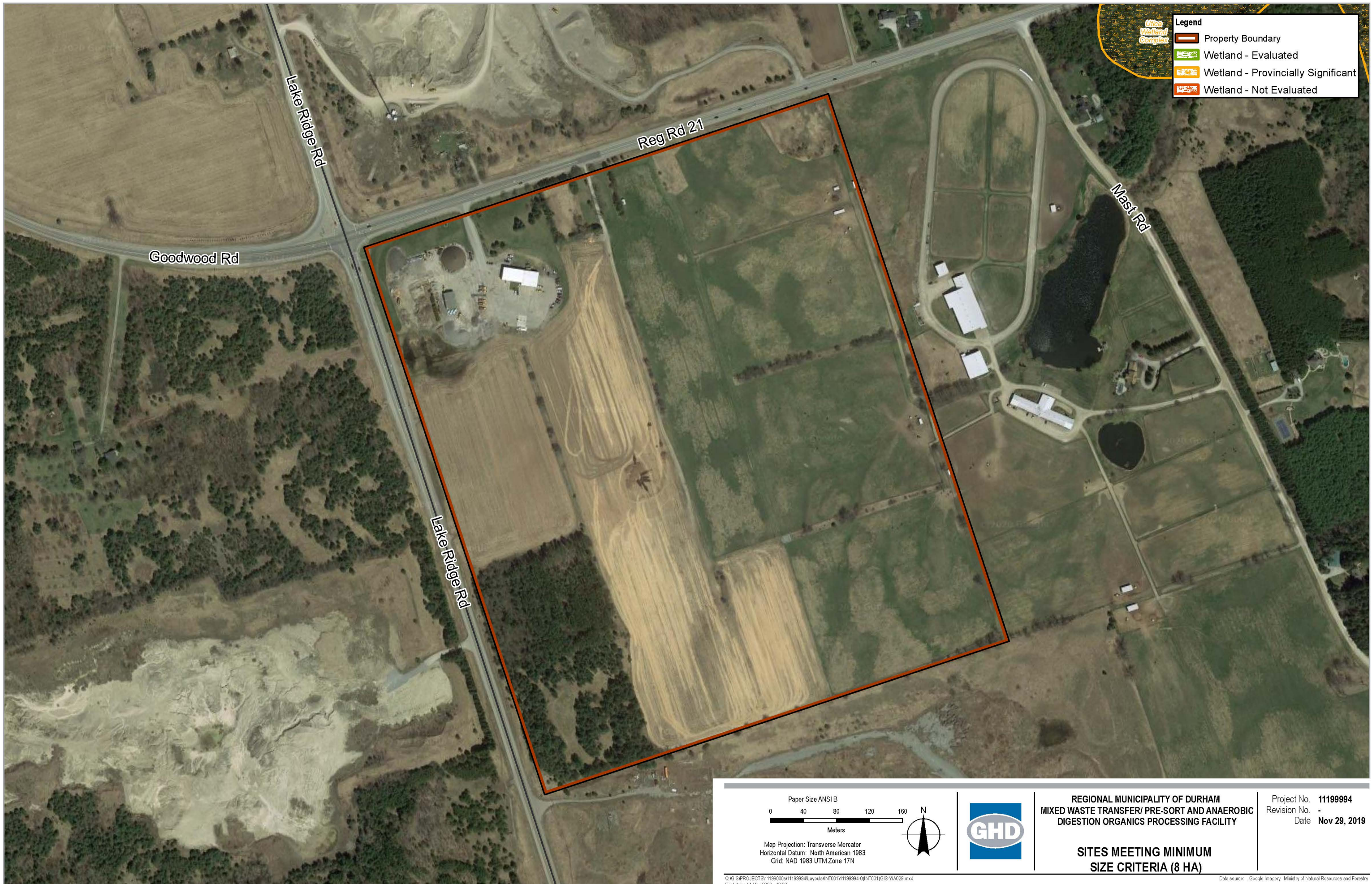


Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N



REGIONAL MUNICIPALITY OF DURHAM
MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
DIGESTION ORGANICS PROCESSING FACILITY
**SITES MEETING MINIMUM
SIZE CRITERIA (8 HA)
SPECIES AT RISK**

Project No. 11199994
Revision No. -
Date Nov 29, 2019



Uice Wetland Complex

Legend

- Property Boundary
- Wetland - Evaluated
- Wetland - Provincially Significant
- Wetland - Not Evaluated

Paper Size ANSI B

Meters

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N

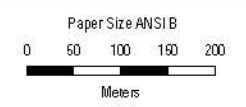


REGIONAL MUNICIPALITY OF DURHAM
MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
DIGESTION ORGANICS PROCESSING FACILITY

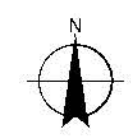
SITES MEETING MINIMUM
SIZE CRITERIA (8 HA)

Project No. **11199994**
 Revision No. -
 Date **Nov 29, 2019**

Legend
Property Boundary



Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N



REGIONAL MUNICIPALITY OF DURHAM
MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
DIGESTION ORGANICS PROCESSING FACILITY
SITES MEETING MINIMUM
SIZE CRITERIA (8 HA)
NORTH CLARINGTON

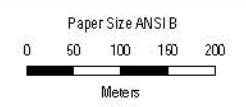
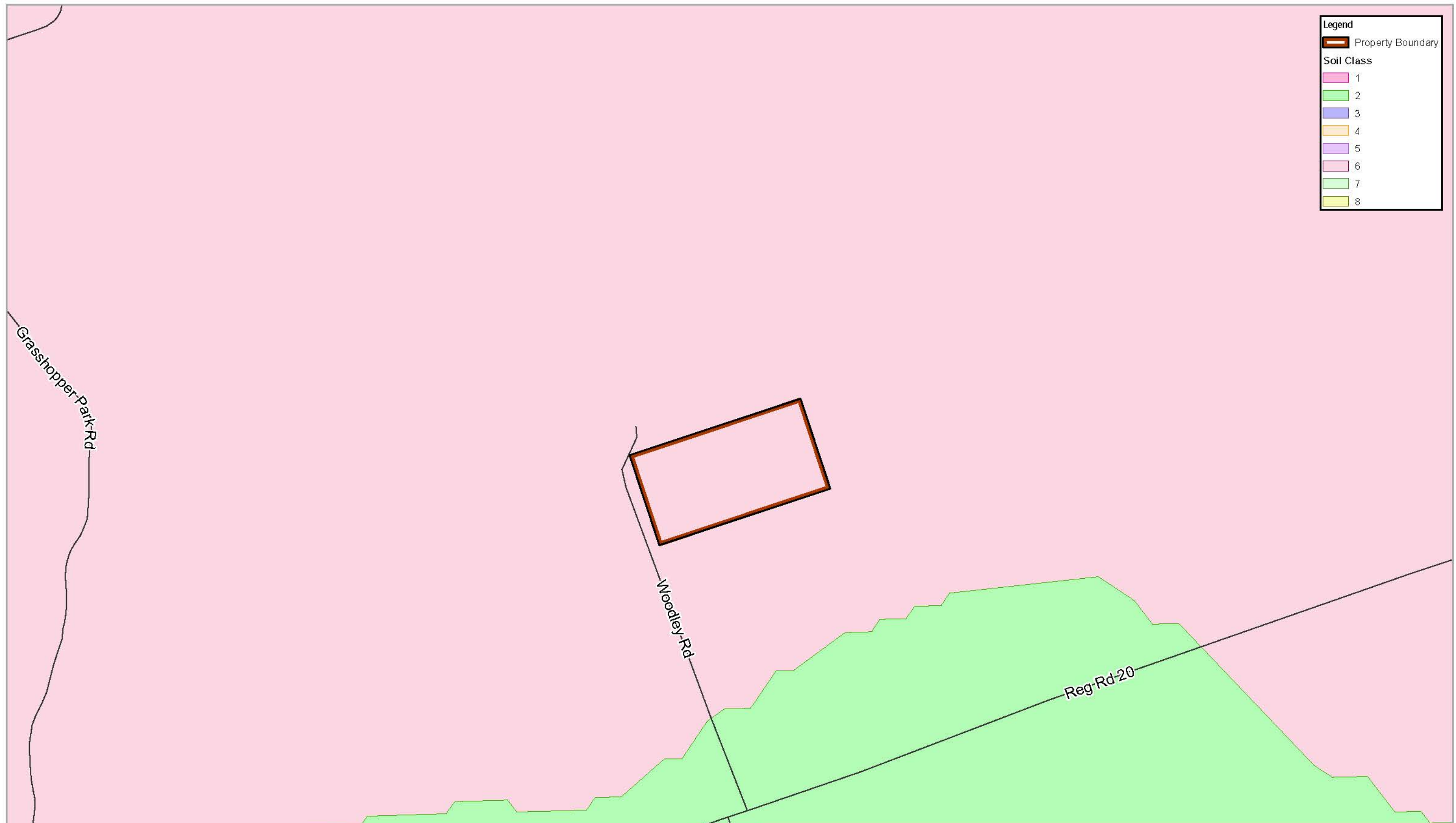
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Revision No. -
Date Nov 29, 2019

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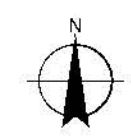
Property Boundary

Soil Class

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8



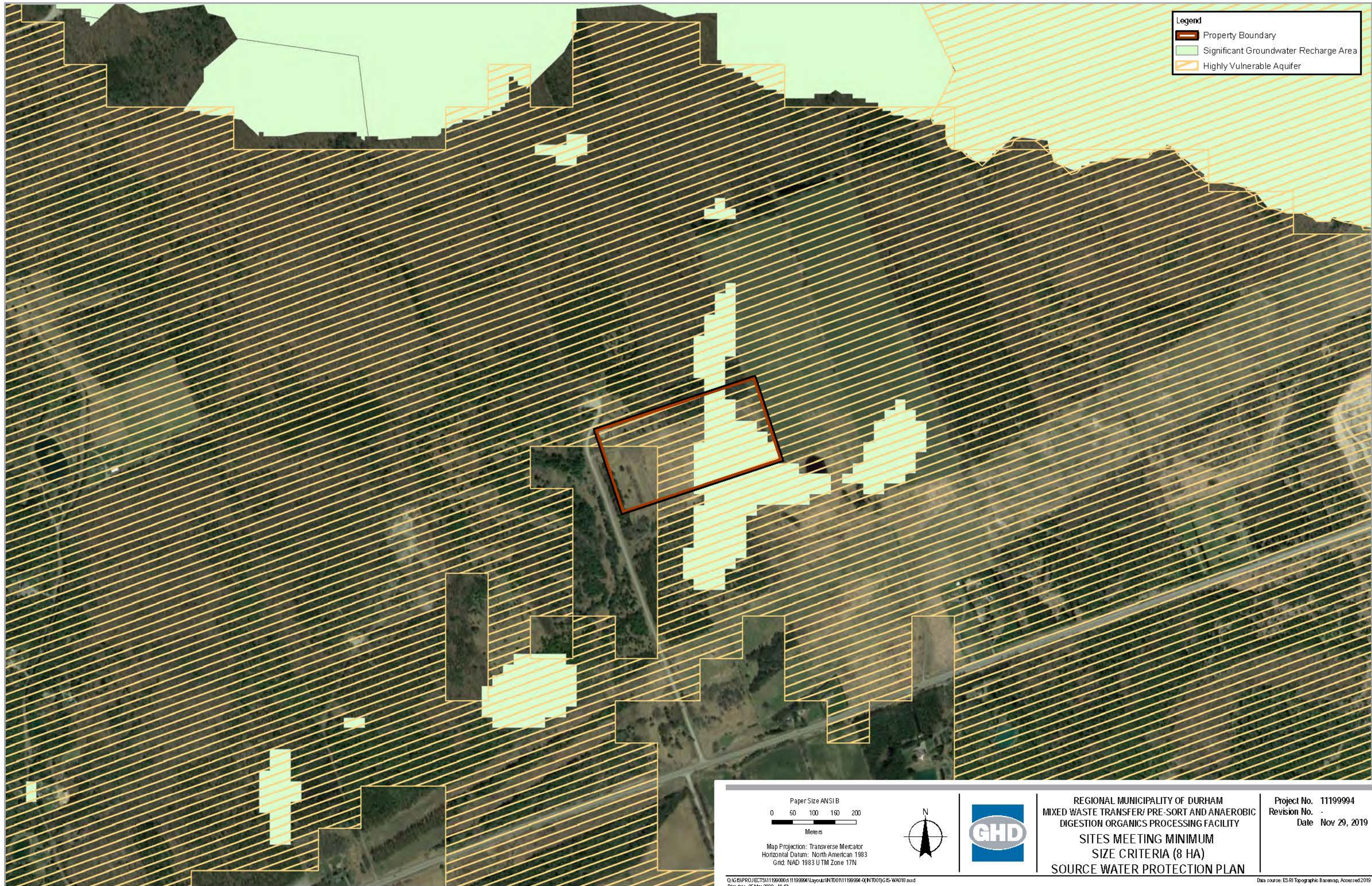
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

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 MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
 DIGESTION ORGANICS PROCESSING FACILITY

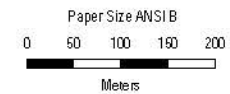
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 SIZE CRITERIA (8 HA)
 SOIL CLASSIFICATION**

Project No. 11199994
 Revision No. -
 Date Nov 29, 2019

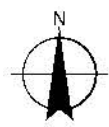


Legend

-  Property Boundary
-  Significant Groundwater Recharge Area
-  Highly Vulnerable Aquifer

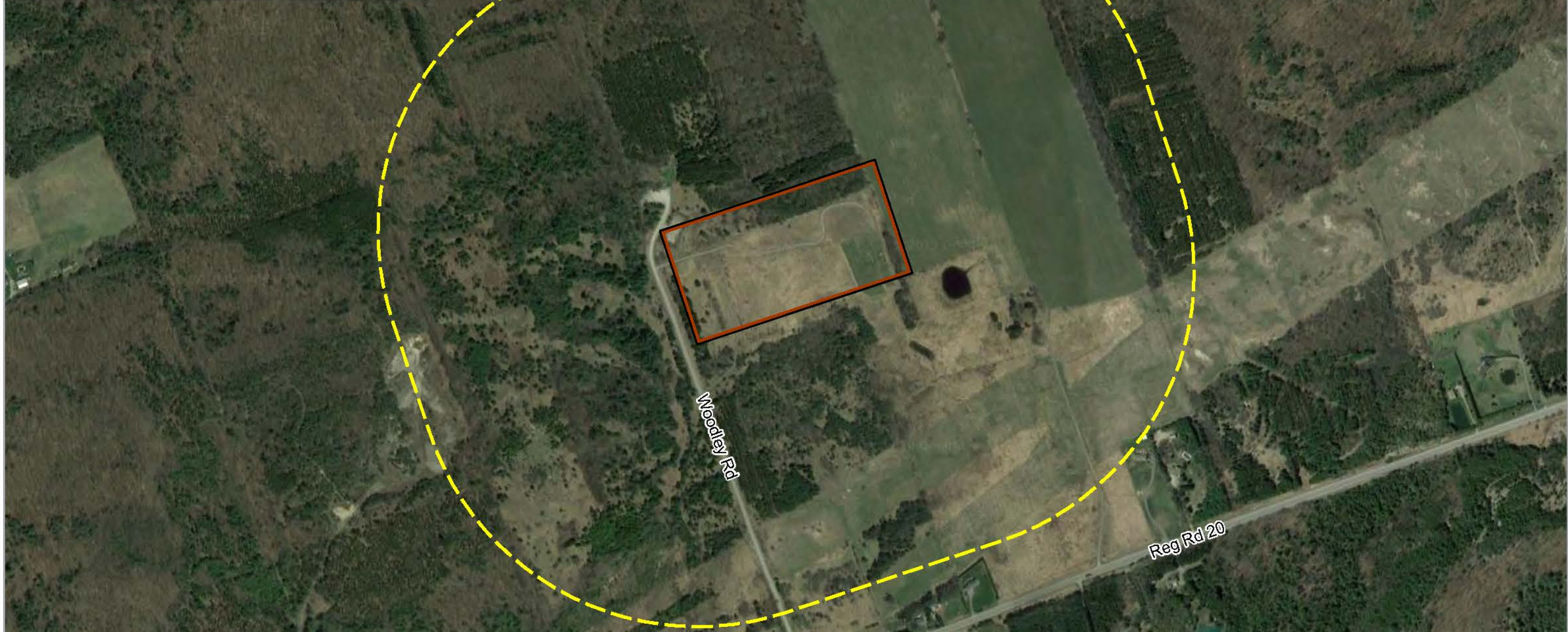
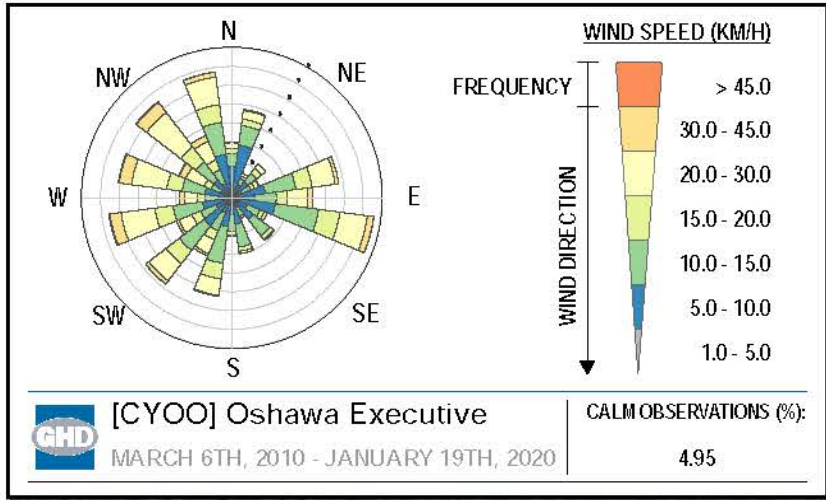


Map Projection: Transverse Mercator
 Horizontal Datum: North American 1983
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REGIONAL MUNICIPALITY OF DURHAM
 MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
 DIGESTION ORGANICS PROCESSING FACILITY
 SITES MEETING MINIMUM
 SIZE CRITERIA (8 HA)
 SOURCE WATER PROTECTION PLAN

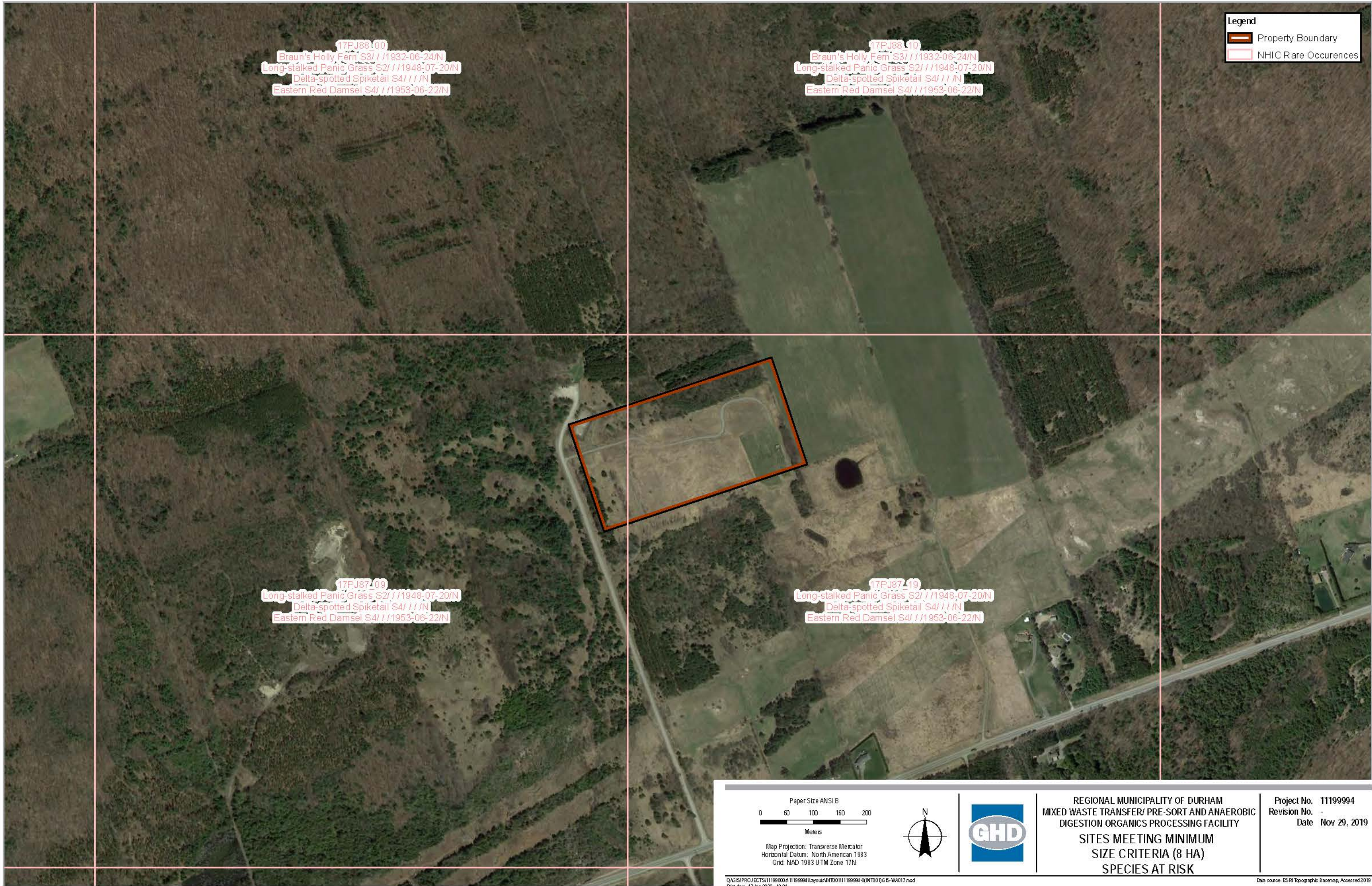
Project No. 11199994
 Revision No. -
 Date Nov 29, 2019



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			<p>SITES MEETING MINIMUM SIZE CRITERIA (8 HA) SENSITIVE RECEPTORS</p>	<p>Revision No. -</p> <p>Date Nov 29, 2019</p>

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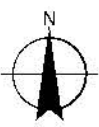
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 Long-stalked Panic Grass S2 // 1948-07-20/N
 Delta-spotted Spiketail S4 // / / N
 Eastern Red Damsel S4 // 1953-06-22/N

17PJ88_10
 Braun's Holly Fern S3 // 1932-06-24/N
 Long-stalked Panic Grass S2 // 1948-07-20/N
 Delta-spotted Spiketail S4 // / / N
 Eastern Red Damsel S4 // 1953-06-22/N

17PJ87_09
 Long-stalked Panic Grass S2 // 1948-07-20/N
 Delta-spotted Spiketail S4 // / / N
 Eastern Red Damsel S4 // 1953-06-22/N

17PJ87_19
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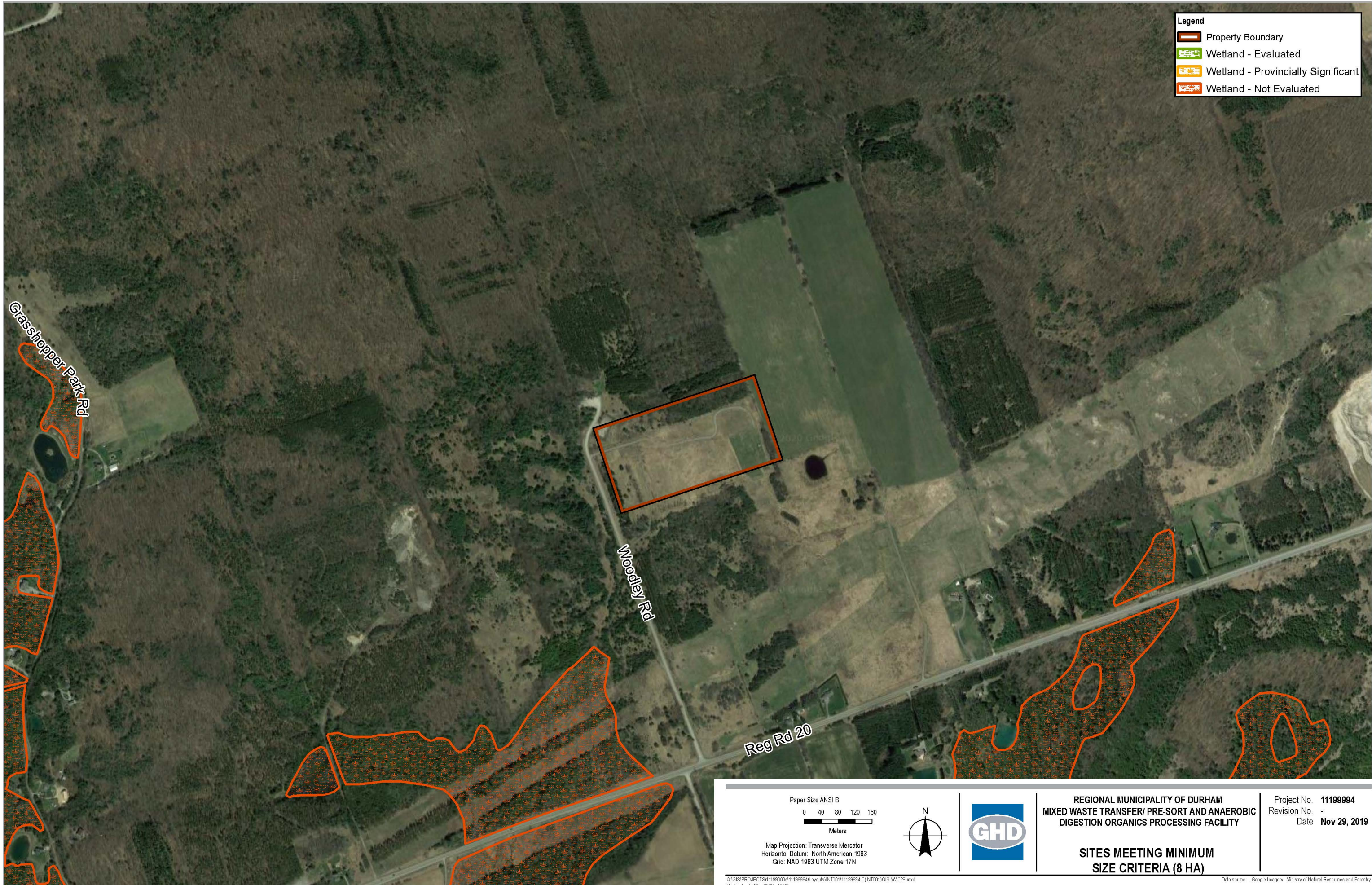
Legend
 Property Boundary
 NHIC Rare Occurrences






Map Projection: Transverse Mercator
 Horizontal Datum: North American 1983
 Grid: NAD 1983 UTM Zone 17N

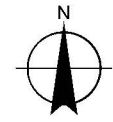
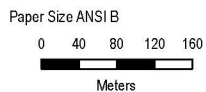
REGIONAL MUNICIPALITY OF DURHAM
 MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
 DIGESTION ORGANICS PROCESSING FACILITY
 SITES MEETING MINIMUM
 SIZE CRITERIA (8 HA)
 SPECIES AT RISK

Project No. 11199994
 Revision No. -
 Date Nov 29, 2019



Legend

-  Property Boundary
-  Wetland - Evaluated
-  Wetland - Provincially Significant
-  Wetland - Not Evaluated



Map Projection: Transverse Mercator
 Horizontal Datum: North American 1983
 Grid: NAD 1983 UTM Zone 17N



REGIONAL MUNICIPALITY OF DURHAM
MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
DIGESTION ORGANICS PROCESSING FACILITY

Project No. **11199994**
 Revision No. -
 Date **Nov 29, 2019**

SITES MEETING MINIMUM
SIZE CRITERIA (8 HA)



Legend
 Property Boundary

~2.368715ha

Sarasota Cres

Simcoe St N

Norwill Cres

Glovers Rd

Woodgate Trail

Goldstream Dr

Falconridge Dr

Luple Ave

Northfield Ave

Ritson Rd N

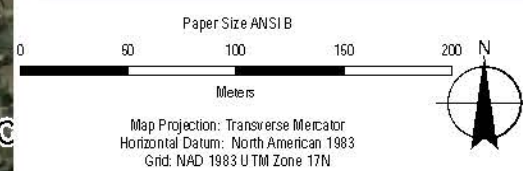
Pompano Cr

Everglades Dr

Ormond Dr

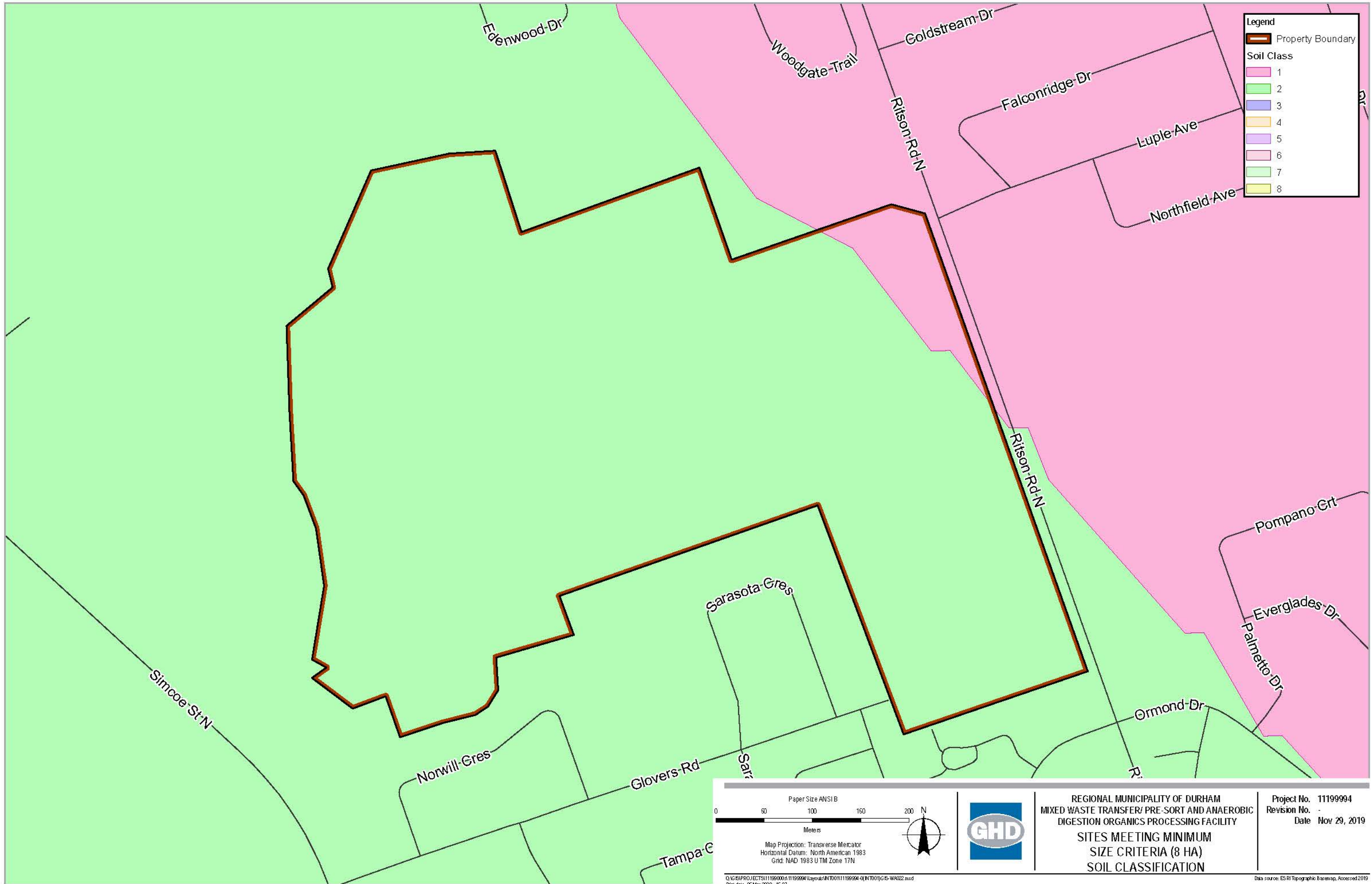
Palmetto Dr

Tampa C



REGIONAL MUNICIPALITY OF DURHAM
 MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
 DIGESTION ORGANICS PROCESSING FACILITY
 SITES MEETING MINIMUM
 SIZE CRITERIA (8 HA)
 OSHAWA

Project No. 11199994
 Revision No. -
 Date Nov 29, 2019



Legend

- Property Boundary
- Soil Class**
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8

Paper Size ANSI B

Meters

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N



REGIONAL MUNICIPALITY OF DURHAM
MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
DIGESTION ORGANICS PROCESSING FACILITY

**SITES MEETING MINIMUM
SIZE CRITERIA (8 HA)
SOIL CLASSIFICATION**

Project No. 11199994
Revision No. -
Date Nov 29, 2019

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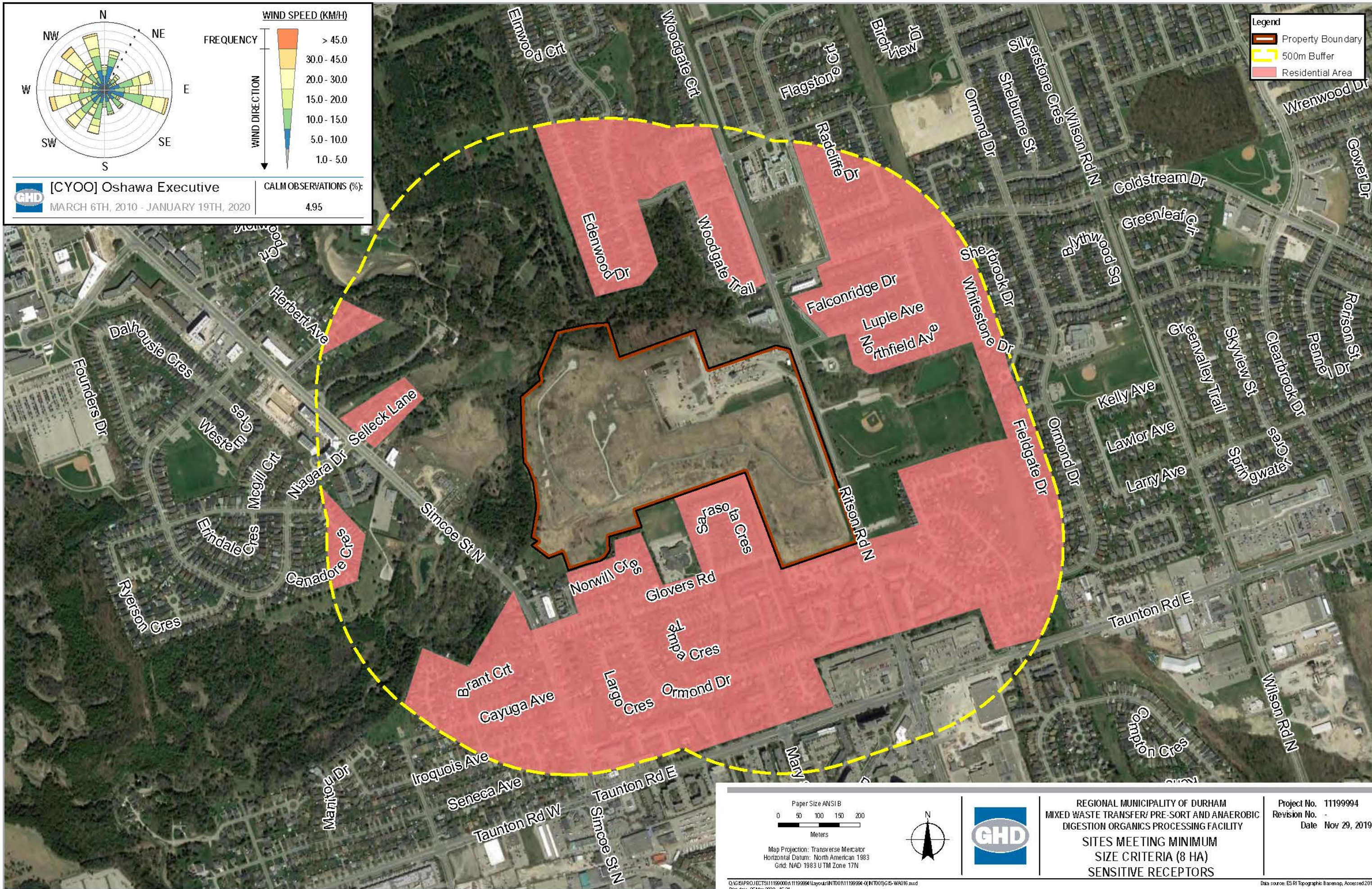
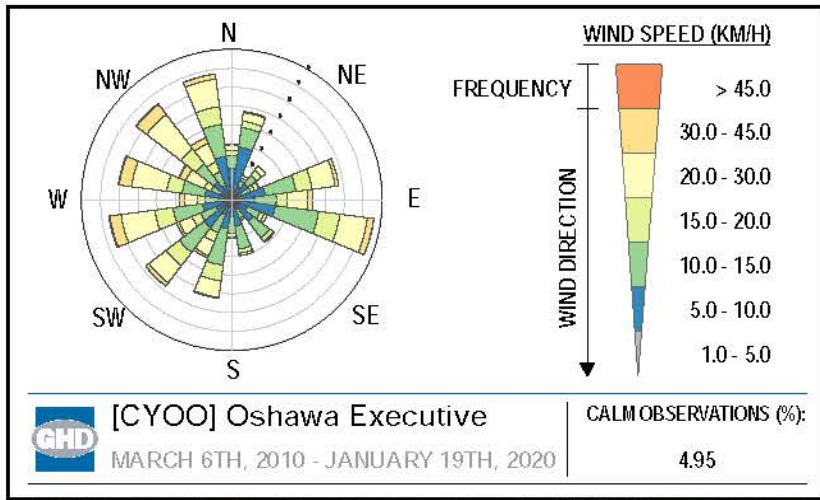
Legend

- Property Boundary
- Significant Groundwater Recharge Area
- Highly Vulnerable Aquifer

<p style="text-align: center;">Paper Size ANSI B</p> <p style="text-align: center;">Meters</p> <p style="font-size: small;">Map Projection: Transverse Mercator Horizontal Datum: North American 1983 Grid: NAD 1983 UTM Zone 17N</p>			<p>REGIONAL MUNICIPALITY OF DURHAM MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC DIGESTION ORGANICS PROCESSING FACILITY</p> <p>SITES MEETING MINIMUM SIZE CRITERIA (8 HA) SOURCE WATER PROTECTION PLAN</p>	<p>Project No. 11199994 Revision No. - Date Nov 29, 2019</p>
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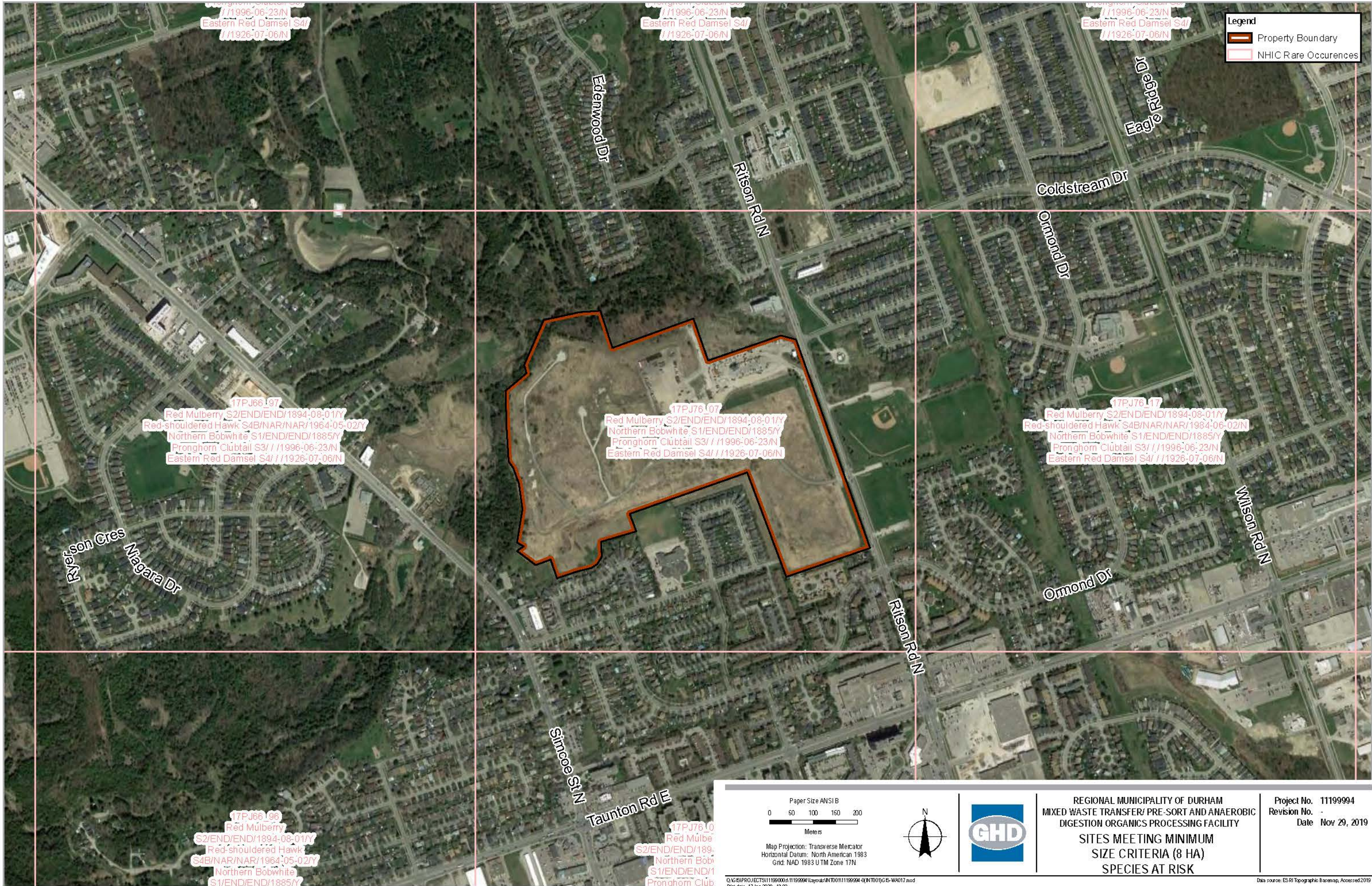
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			<p>SITES MEETING MINIMUM SIZE CRITERIA (8 HA) SENSITIVE RECEPTORS</p>	

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Data source: ESRI Topographic BaseMap, Accessed 2019



Pronghorn Clubtail S3 // 1996-06-23/N
Eastern Red Damsel S4 // 1926-07-06/N

Pronghorn Clubtail S3 // 1996-06-23/N
Eastern Red Damsel S4 // 1926-07-06/N

Pronghorn Clubtail S3 // 1996-06-23/N
Eastern Red Damsel S4 // 1926-07-06/N

Legend
 Property Boundary
 NHIC Rare Occurrences

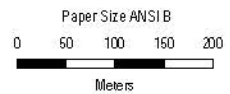
17PJ66.97
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 Red-shouldered Hawk S4B/NAR/NAR/1964-05-02/Y
 Northern Bobwhite S1/END/END/1885/Y
 Pronghorn Clubtail S3 // 1996-06-23/N
 Eastern Red Damsel S4 // 1926-07-06/N

17PJ76.07
 Red Mulberry S2/END/END/1894-08-01/Y
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 Pronghorn Clubtail S3 // 1996-06-23/N
 Eastern Red Damsel S4 // 1926-07-06/N

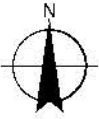
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 Red-shouldered Hawk S4B/NAR/NAR/1964-06-02/N
 Northern Bobwhite S1/END/END/1885/Y
 Pronghorn Clubtail S3 // 1996-06-23/N
 Eastern Red Damsel S4 // 1926-07-06/N

17PJ66.96
 Red Mulberry S2/END/END/1894-08-01/Y
 Red-shouldered Hawk S4B/NAR/NAR/1964-05-02/Y
 Northern Bobwhite S1/END/END/1885/Y

17PJ76.00
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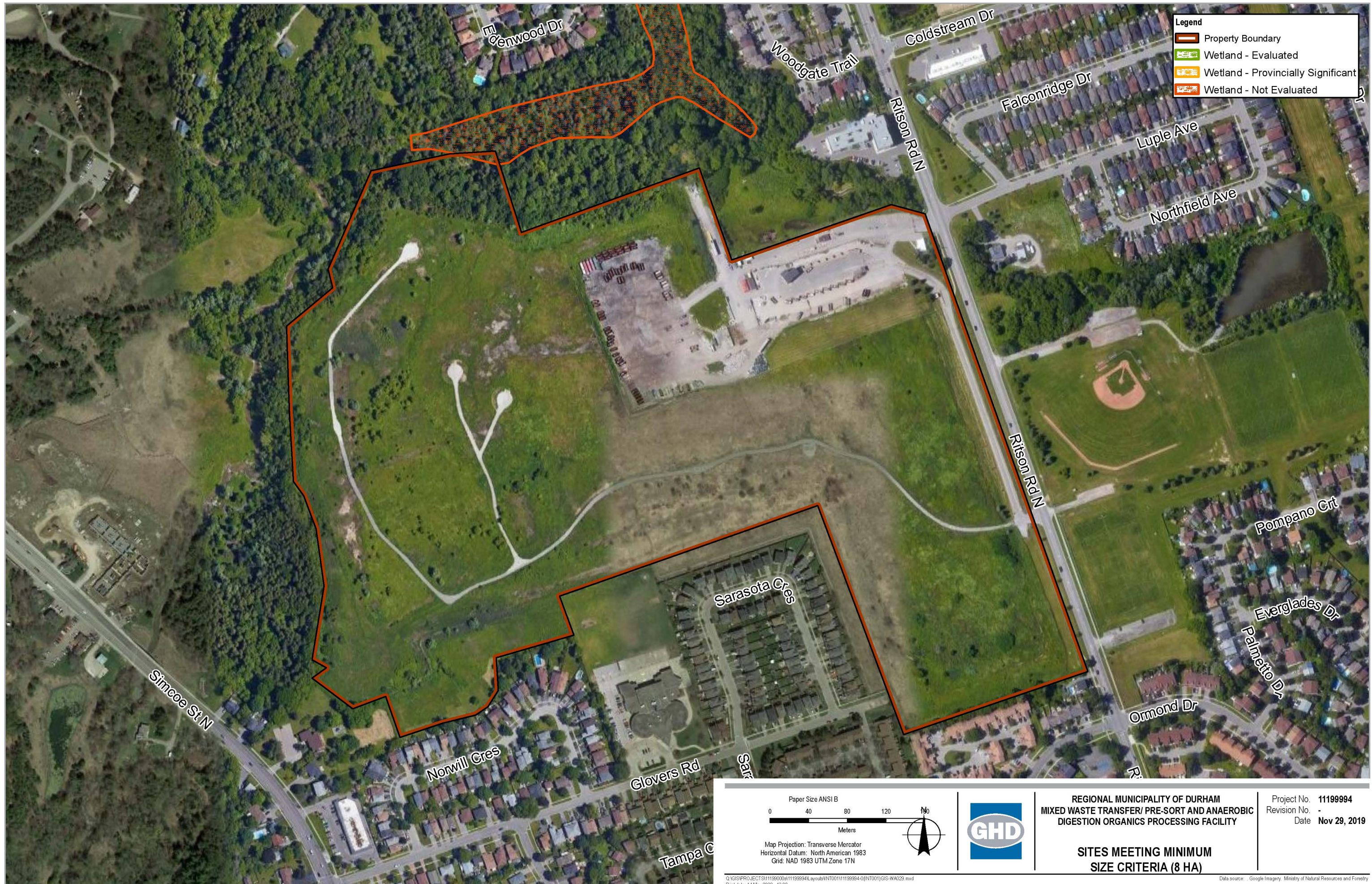


Map Projection: Transverse Mercator
 Horizontal Datum: North American 1983
 Grid: NAD 1983 UTM Zone 17N



REGIONAL MUNICIPALITY OF DURHAM
 MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
 DIGESTION ORGANICS PROCESSING FACILITY
 SITES MEETING MINIMUM
 SIZE CRITERIA (8 HA)
 SPECIES AT RISK

Project No. 11199994
 Revision No. -
 Date Nov 29, 2019



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Data source: Google Imagery, Ministry of Natural Resources and Forestry



Legend

- Property Boundary
- Floodline
- Top Of Bank

Paper Size ANSI B

Map Projection: Transverse Mercator
Horizontal Datum: North American 1983
Grid: NAD 1983 UTM Zone 17N



REGIONAL MUNICIPALITY OF DURHAM
MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
DIGESTION ORGANICS PROCESSING FACILITY

SITES MEETING MINIMUM
SIZE CRITERIA (8 HA)

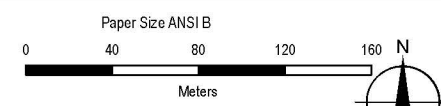
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 Revision No. -
 Date **Nov 29, 2019**

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Legend

- Property Boundary
- Wildlife Habitat Network**
- Core Habitat
- Landscape Corridor
- Secondary Habitat



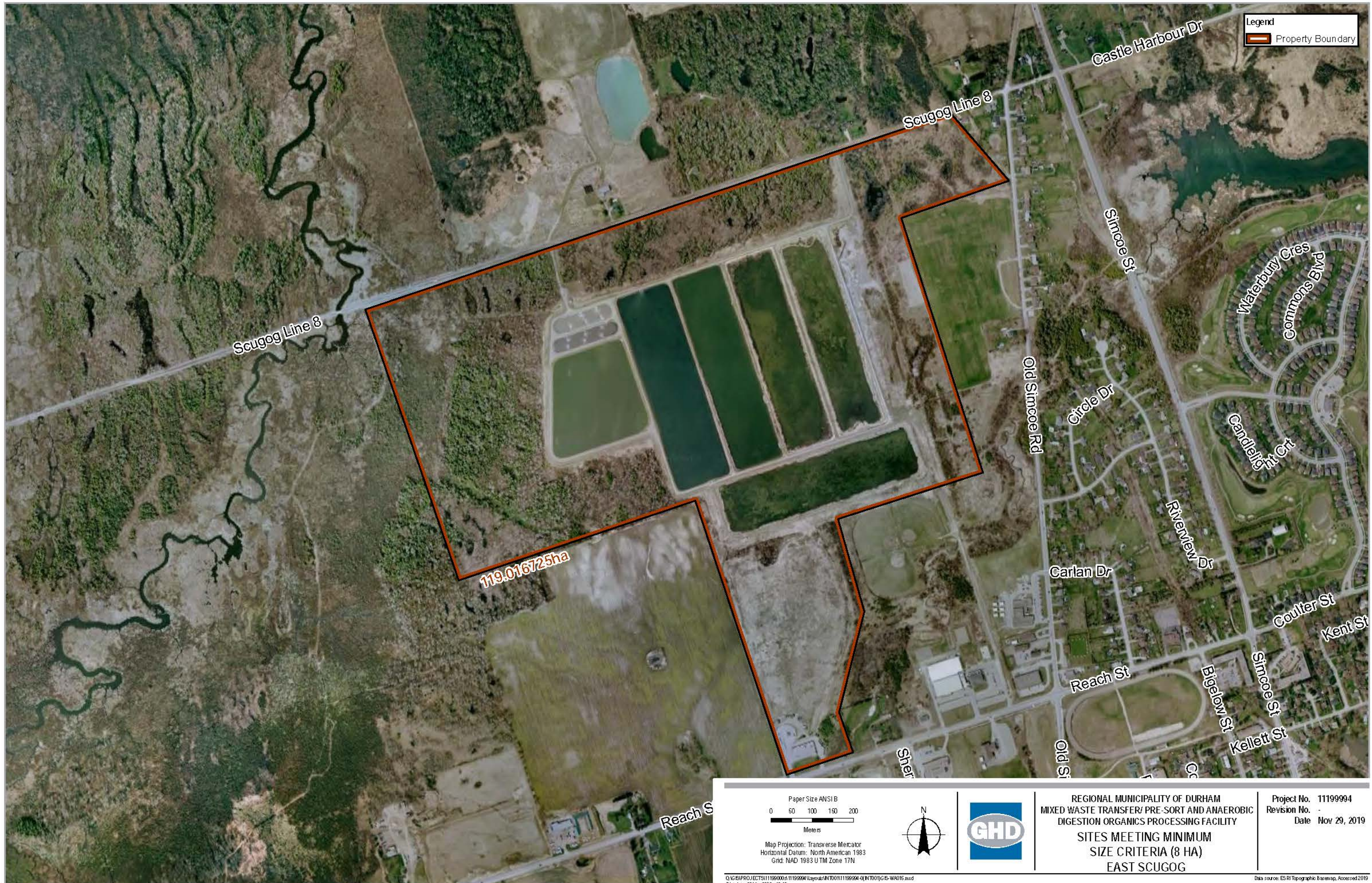
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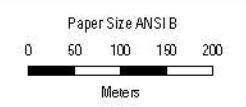
REGIONAL MUNICIPALITY OF DURHAM
MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
DIGESTION ORGANICS PROCESSING FACILITY

Project No. **11199994**
 Revision No. -
 Date **Nov 29, 2019**

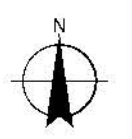
SITES MEETING MINIMUM
SIZE CRITERIA (8 HA)



Legend
 Property Boundary

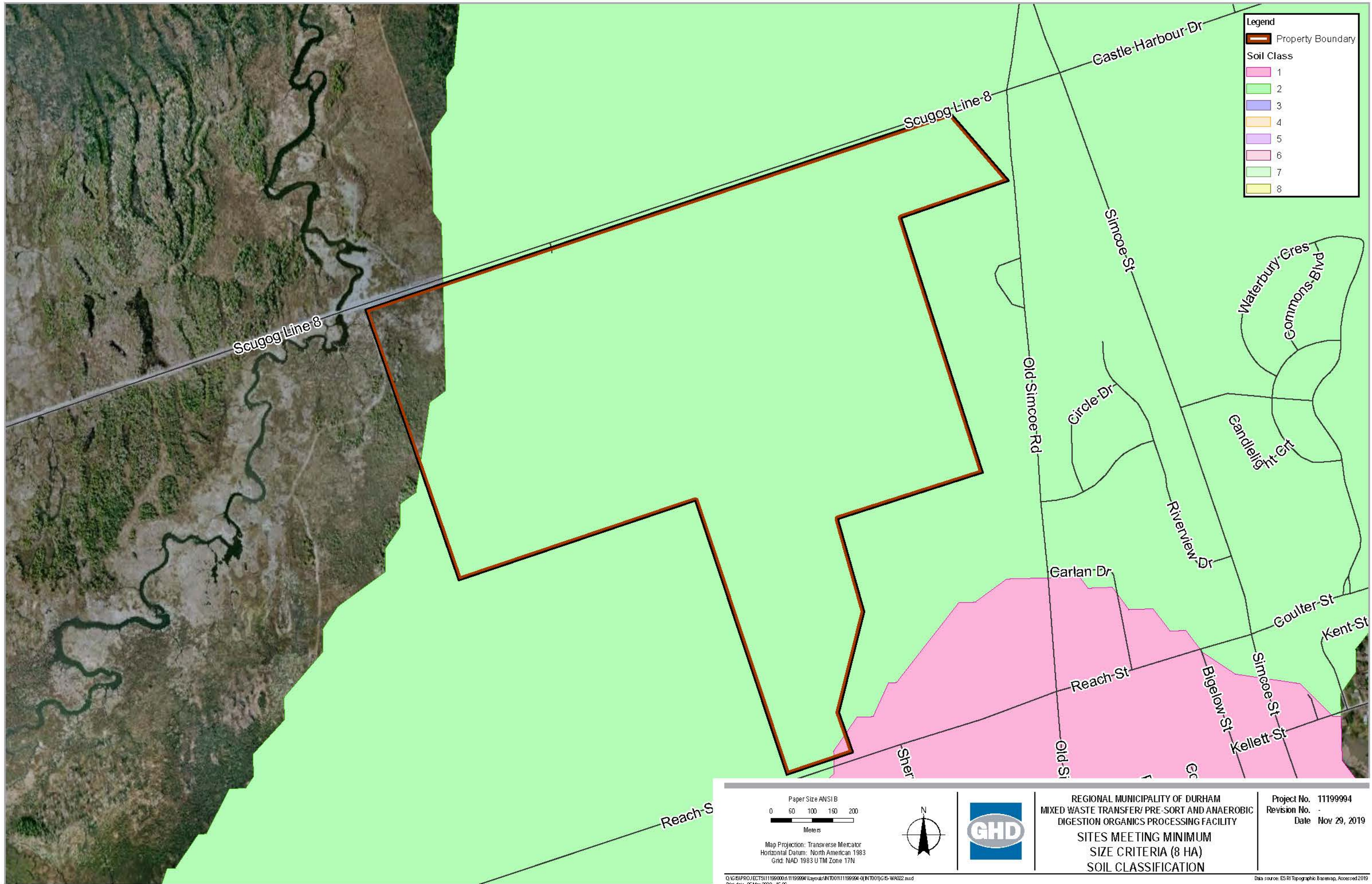


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









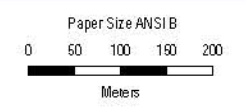
REGIONAL MUNICIPALITY OF DURHAM
 MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
 DIGESTION ORGANICS PROCESSING FACILITY
 SITES MEETING MINIMUM
 SIZE CRITERIA (8 HA)
 EAST SCUGOG

Project No. 11199994
 Revision No. -
 Date Nov 29, 2019

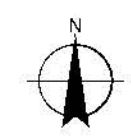


Legend

-  Property Boundary
- Soil Class**
-  1
-  2
-  3
-  4
-  5
-  6
-  7
-  8

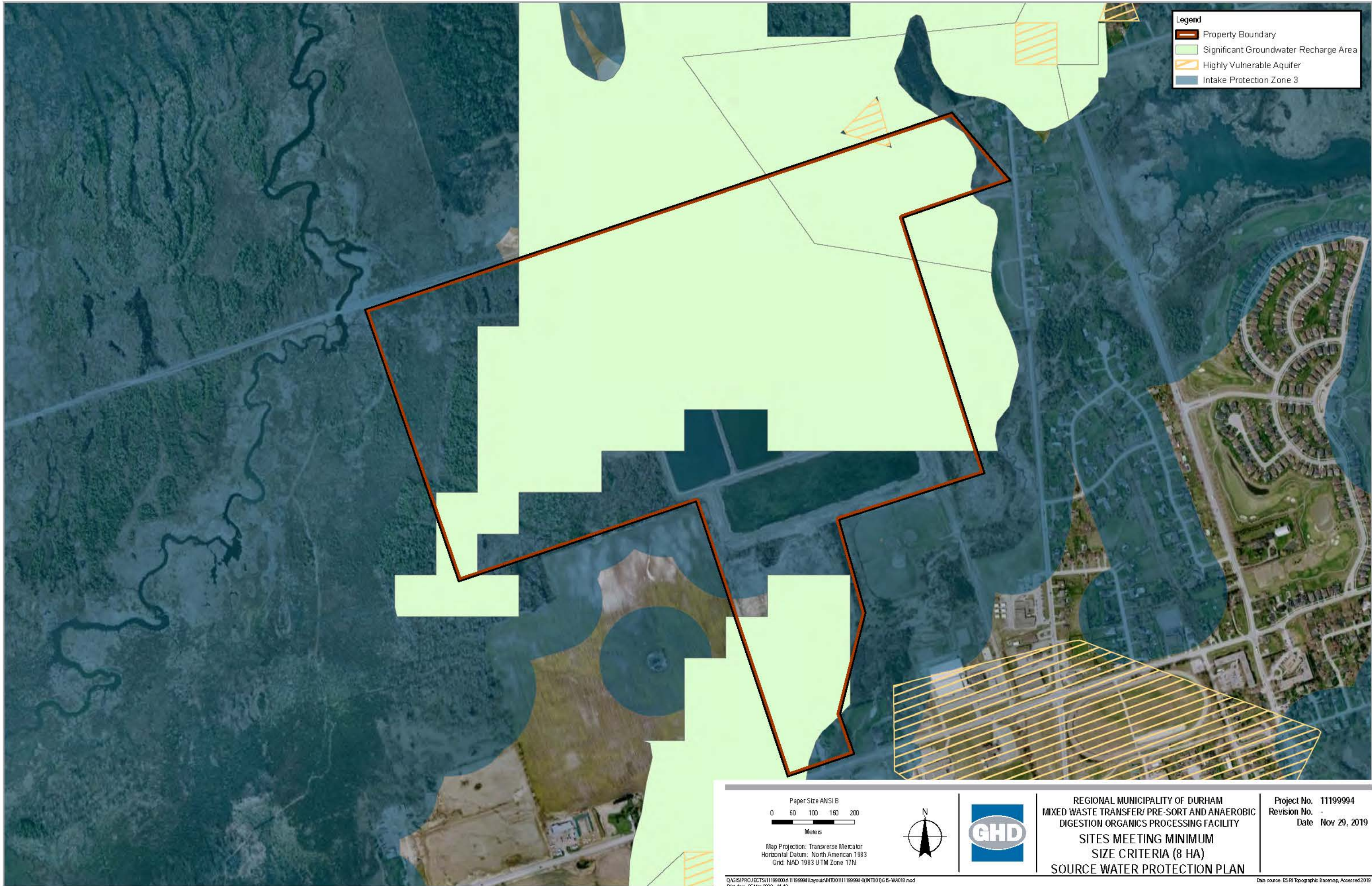


Map Projection: Transverse Mercator
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 Grid: NAD 1983 UTM Zone 17N







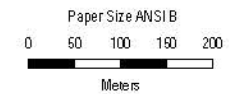
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 MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
 DIGESTION ORGANICS PROCESSING FACILITY
**SITES MEETING MINIMUM
 SIZE CRITERIA (8 HA)
 SOIL CLASSIFICATION**

Project No. 11199994
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 Date Nov 29, 2019

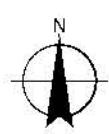


Legend

-  Property Boundary
-  Significant Groundwater Recharge Area
-  Highly Vulnerable Aquifer
-  Intake Protection Zone 3

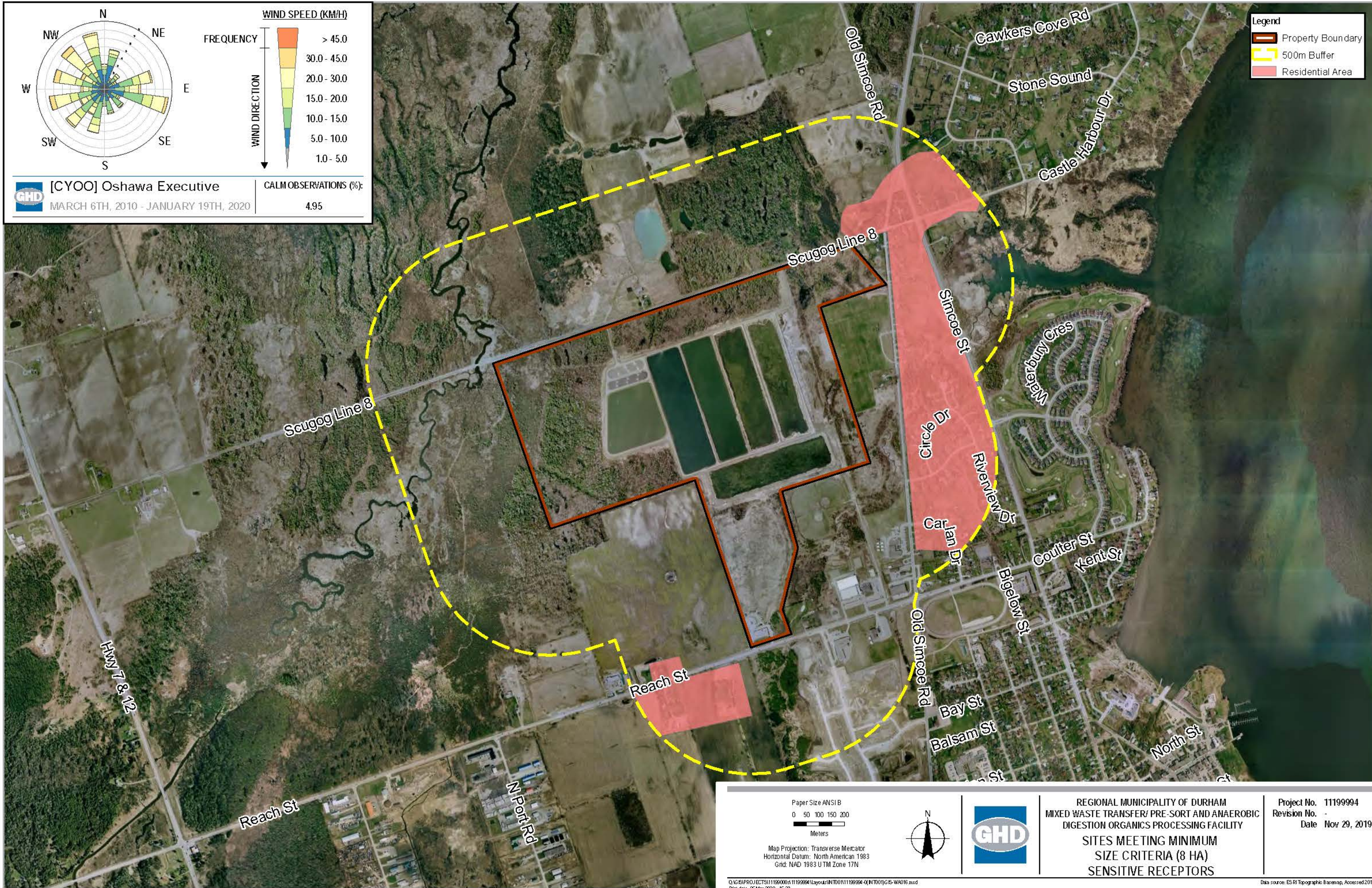
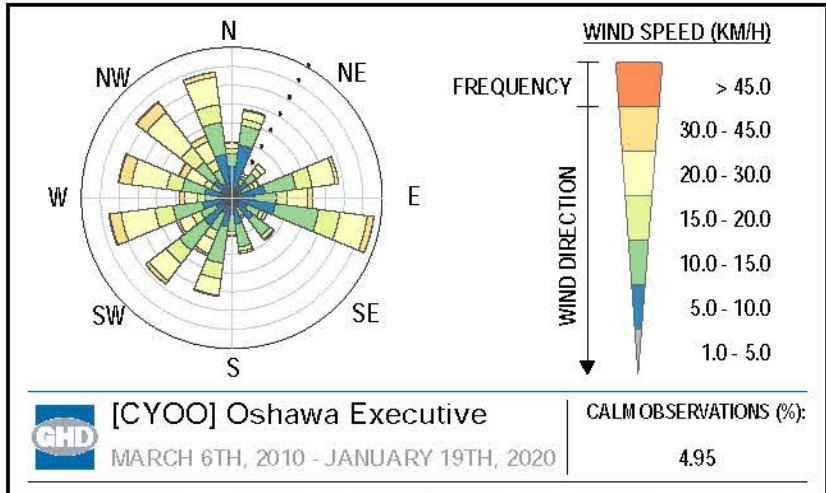


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 Horizontal Datum: North American 1983
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REGIONAL MUNICIPALITY OF DURHAM
 MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
 DIGESTION ORGANICS PROCESSING FACILITY
 SITES MEETING MINIMUM
 SIZE CRITERIA (8 HA)
 SOURCE WATER PROTECTION PLAN

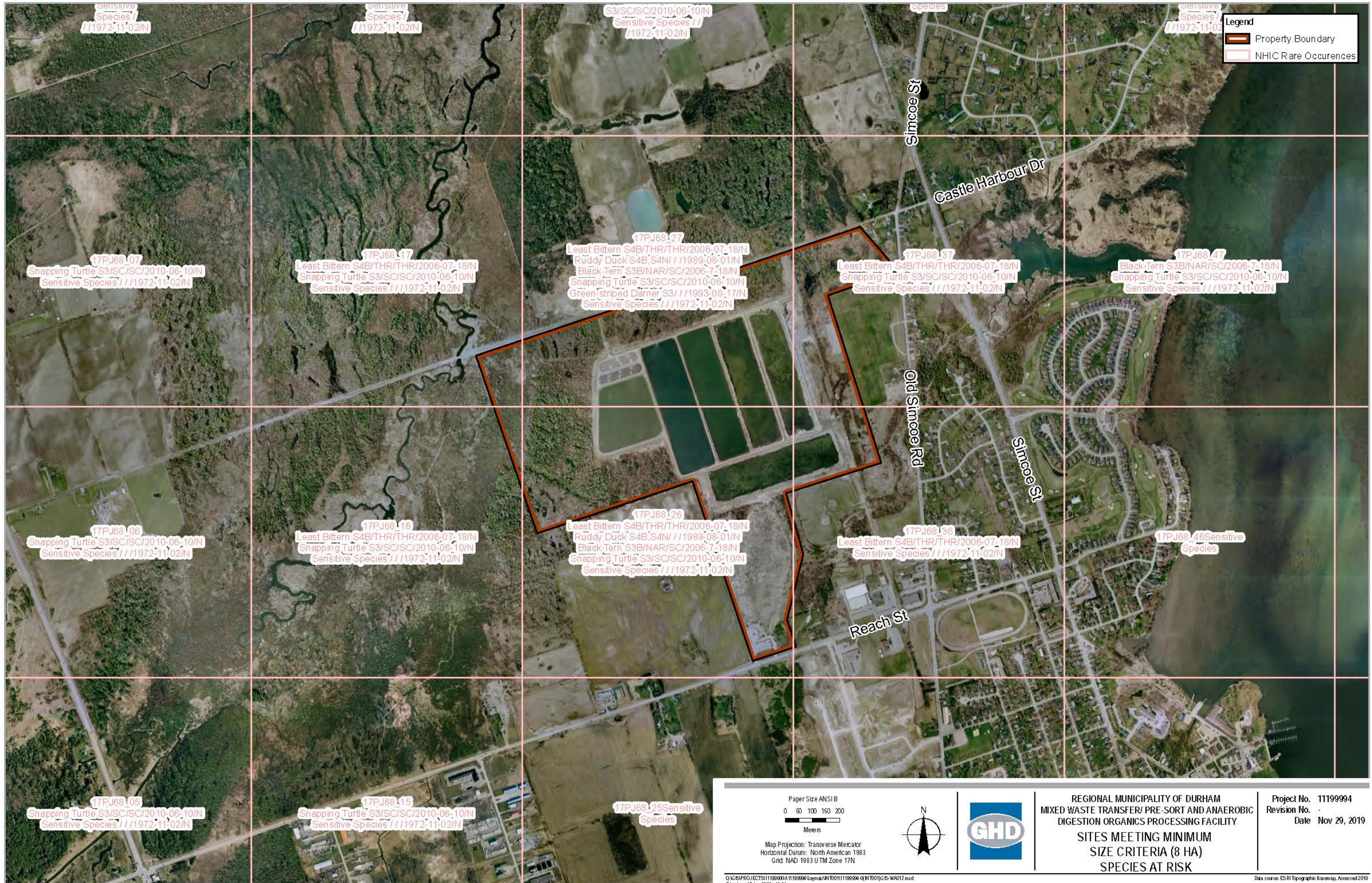
Project No. 11199994
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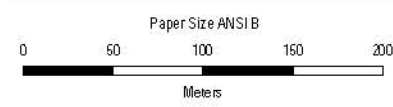
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 Property Boundary

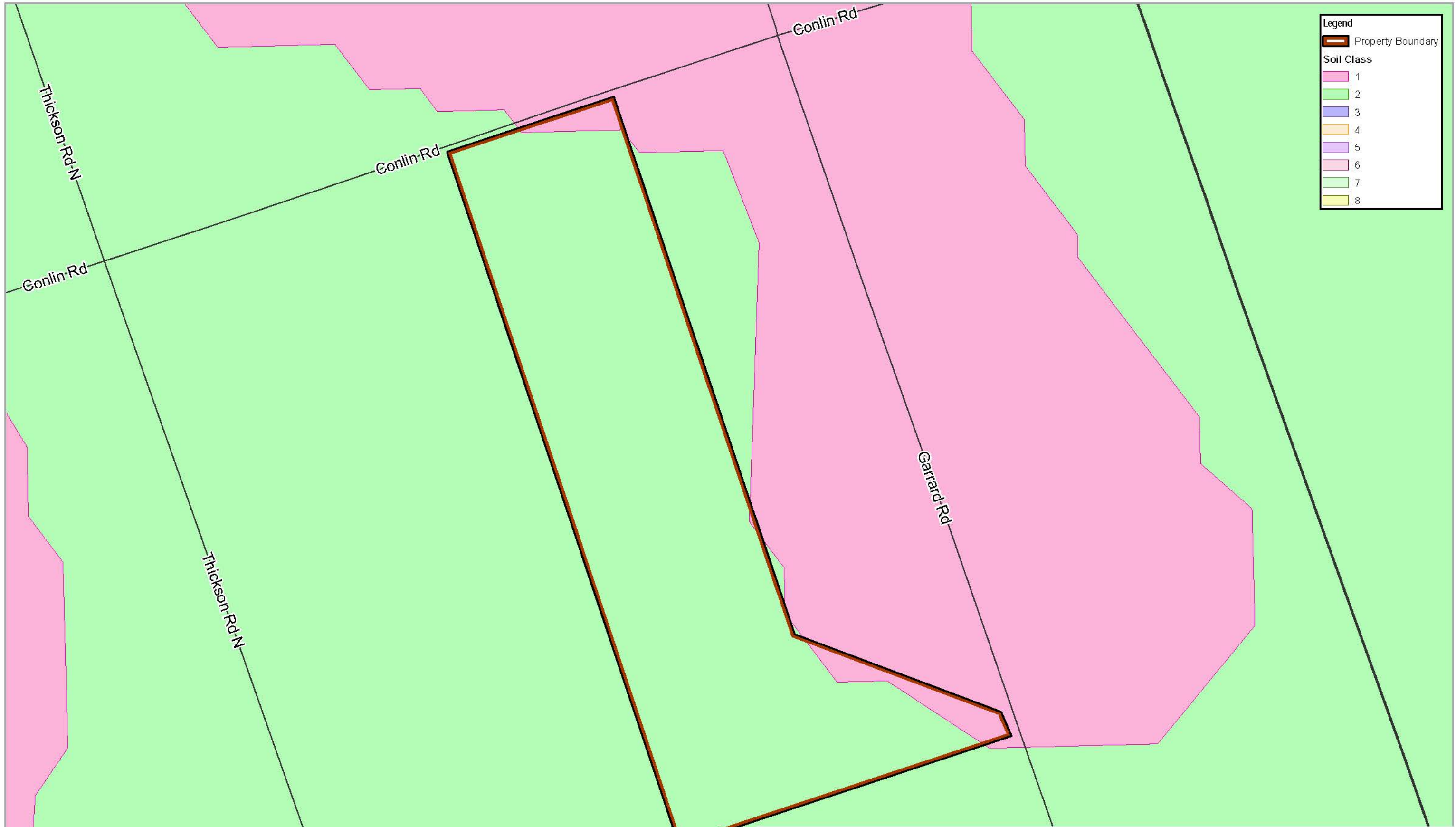


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REGIONAL MUNICIPALITY OF DURHAM
 MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
 DIGESTION ORGANICS PROCESSING FACILITY
 SITES MEETING MINIMUM
 SIZE CRITERIA (8 HA)
 WHITBY

Project No. 11199994
 Revision No. -
 Date Nov 29, 2019



Legend

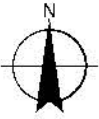
Property Boundary

Soil Class

- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8



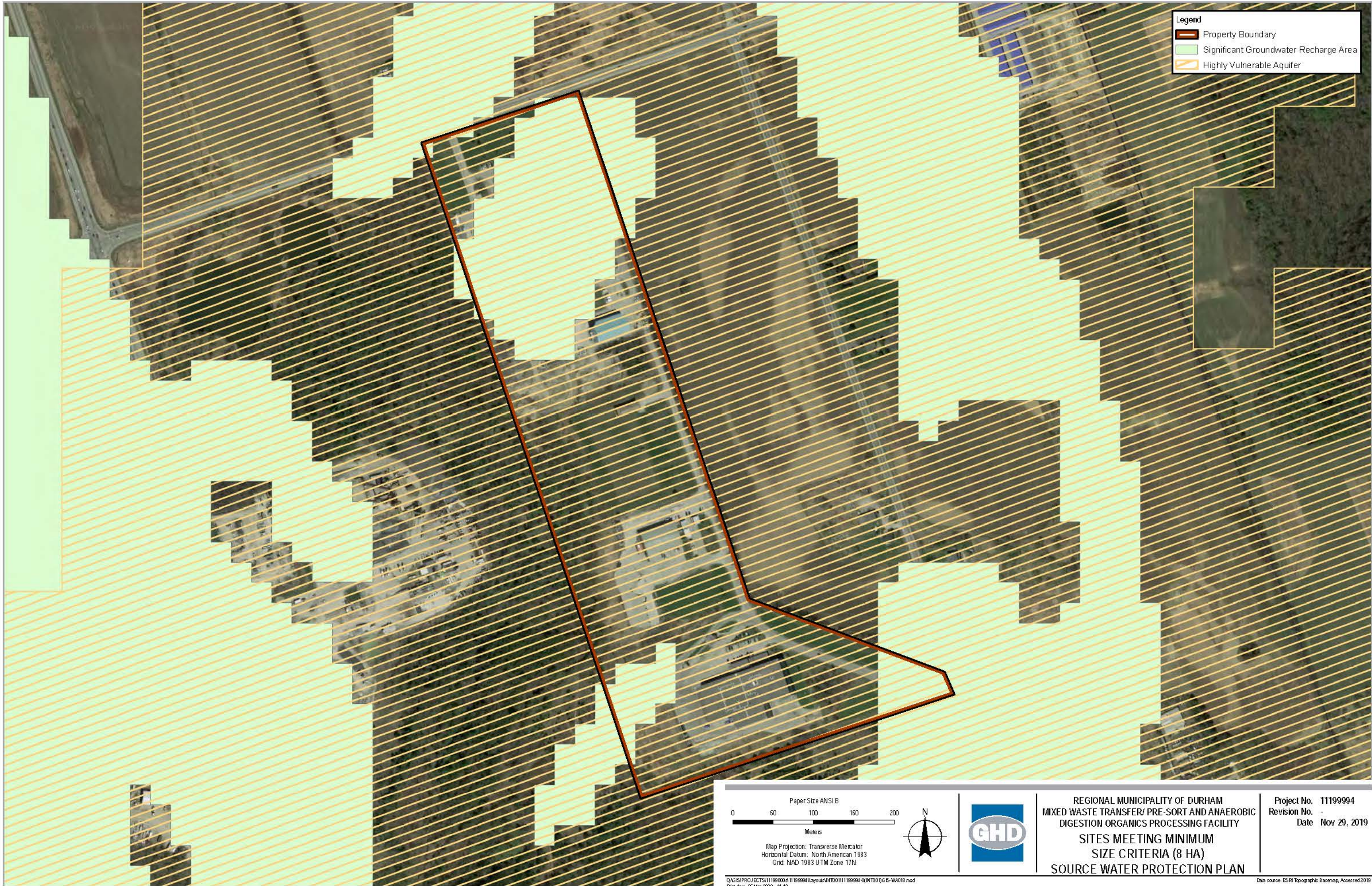
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

REGIONAL MUNICIPALITY OF DURHAM
 MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
 DIGESTION ORGANICS PROCESSING FACILITY

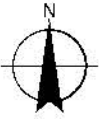
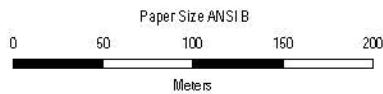
**SITES MEETING MINIMUM
 SIZE CRITERIA (8 HA)
 SOIL CLASSIFICATION**

Project No. 11199994
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 Date Nov 29, 2019



Legend

-  Property Boundary
-  Significant Groundwater Recharge Area
-  Highly Vulnerable Aquifer

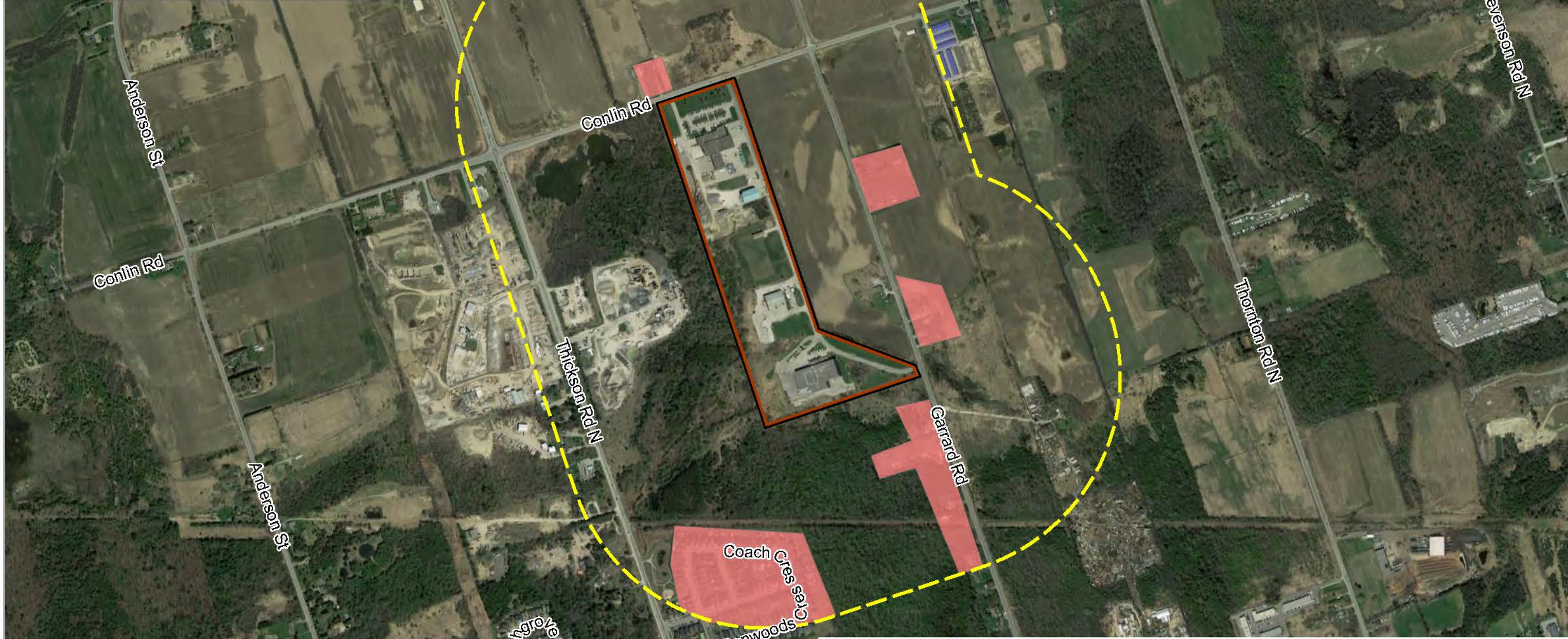
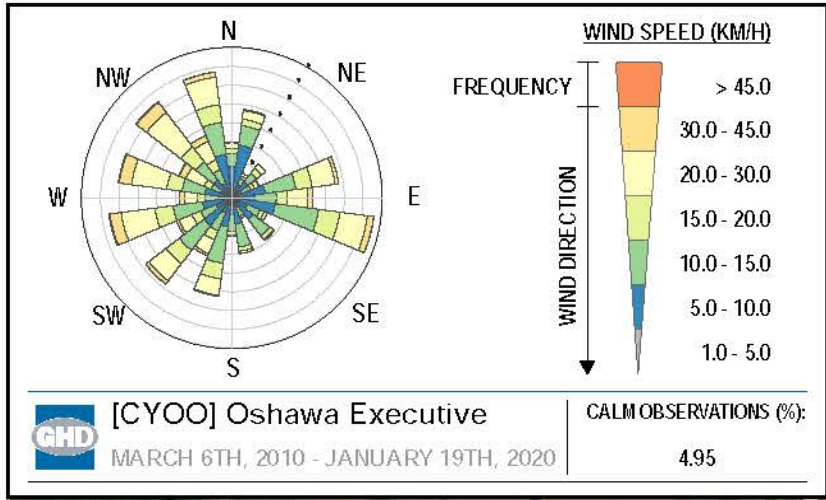


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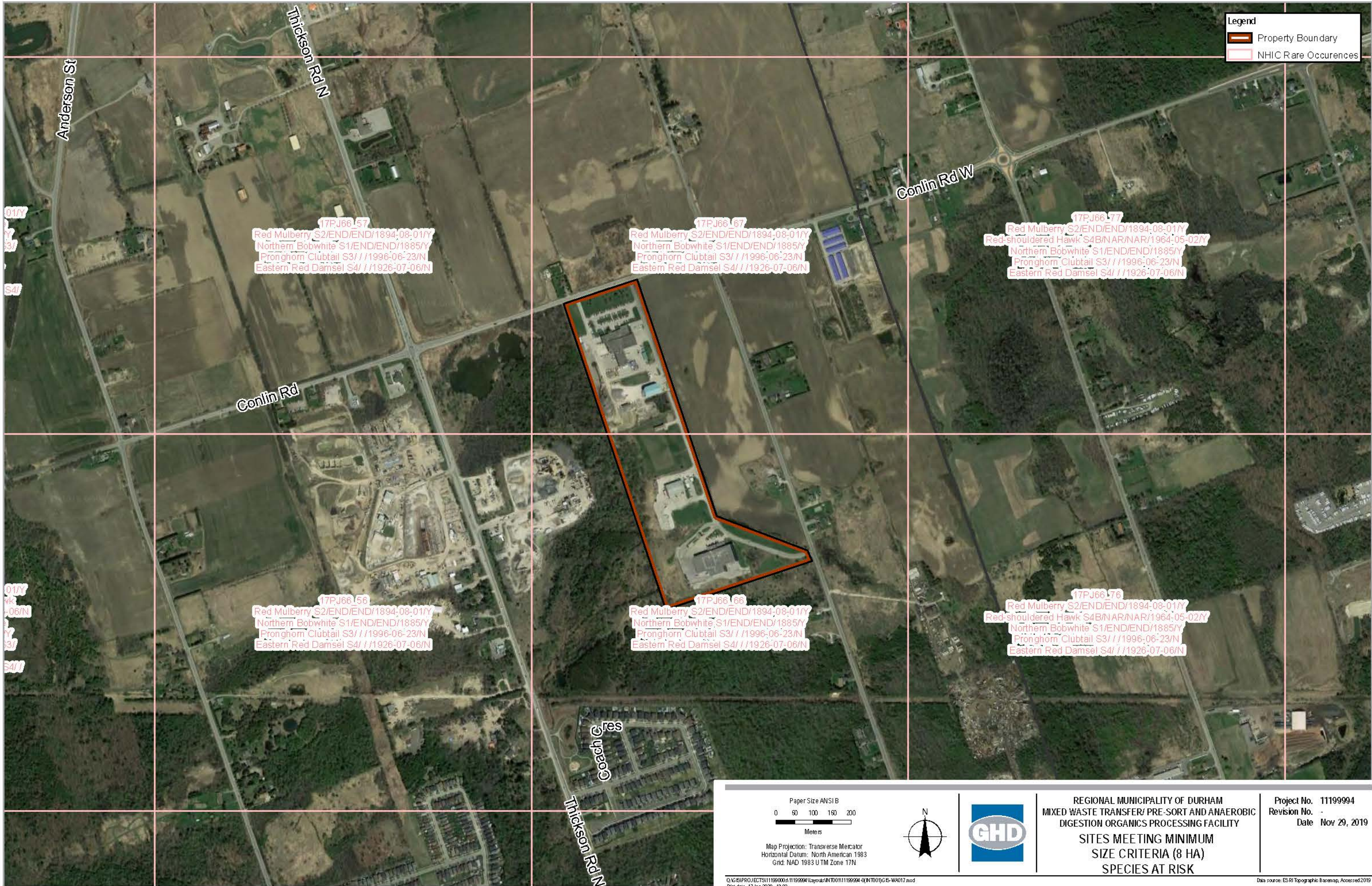




REGIONAL MUNICIPALITY OF DURHAM
 MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
 DIGESTION ORGANICS PROCESSING FACILITY
 SITES MEETING MINIMUM
 SIZE CRITERIA (8 HA)
 SOURCE WATER PROTECTION PLAN

Project No. 11199994
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<p>Paper Size ANSI B</p> <p>Map Projection: Transverse Mercator Horizontal Datum: North American 1983 Grid: NAD 1983 UTM Zone 17N</p>			<p>REGIONAL MUNICIPALITY OF DURHAM MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC DIGESTION ORGANICS PROCESSING FACILITY</p>	<p>Project No. 11199994 Revision No. - Date Nov 29, 2019</p>
			<p>SITES MEETING MINIMUM SIZE CRITERIA (8 HA) SENSITIVE RECEPTORS</p>	



Legend
 Property Boundary
 NHIC Rare Occurrences

17PJ66_57
 Red Mulberry S2/END/END/1894-08-01/Y
 Northern Bobwhite S1/END/END/1885/Y
 Pronghorn Clúbtail S3//1996-06-23/N
 Eastern Red Damsel S4//1926-07-06/N

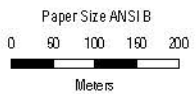
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 Pronghorn Clúbtail S3//1996-06-23/N
 Eastern Red Damsel S4//1926-07-06/N

17PJ66_77
 Red Mulberry S2/END/END/1894-08-01/Y
 Red-shouldered Hawk S4B/NAR/NAR/1964-05-02/Y
 Northern Bobwhite S1/END/END/1885/Y
 Pronghorn Clúbtail S3//1996-06-23/N
 Eastern Red Damsel S4//1926-07-06/N

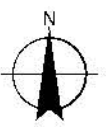
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 Eastern Red Damsel S4//1926-07-06/N

17PJ66_66
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 Northern Bobwhite S1/END/END/1885/Y
 Pronghorn Clúbtail S3//1996-06-23/N
 Eastern Red Damsel S4//1926-07-06/N

17PJ66_76
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 Eastern Red Damsel S4//1926-07-06/N

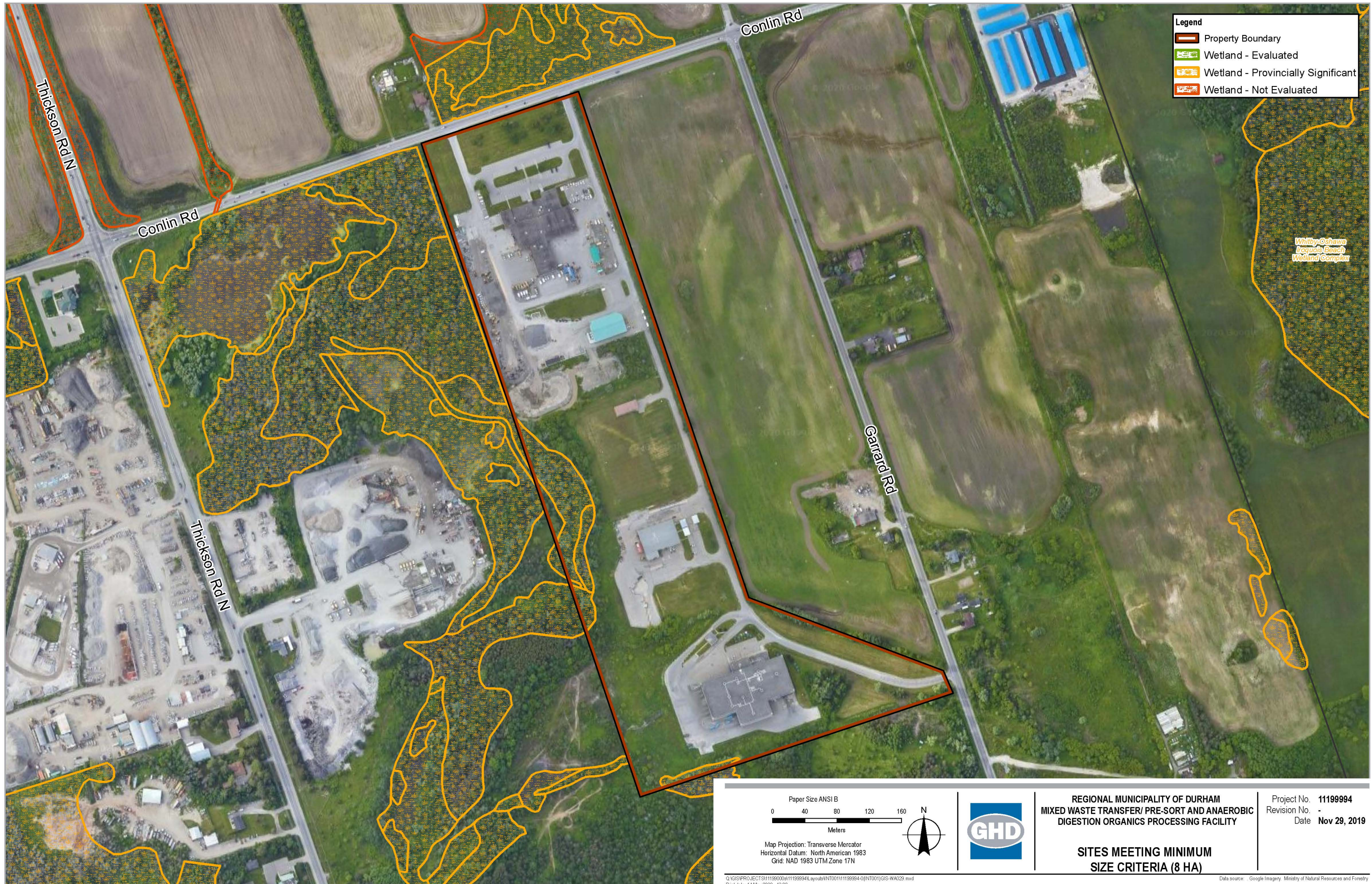


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REGIONAL MUNICIPALITY OF DURHAM
 MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
 DIGESTION ORGANICS PROCESSING FACILITY
 SITES MEETING MINIMUM
 SIZE CRITERIA (8 HA)
 SPECIES AT RISK

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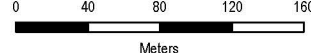


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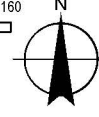
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-  Wetland - Evaluated
-  Wetland - Provincially Significant
-  Wetland - Not Evaluated

Whitby-Oshawa
Tremains Beach
Wetland Complex

Paper Size ANSI B



Meters



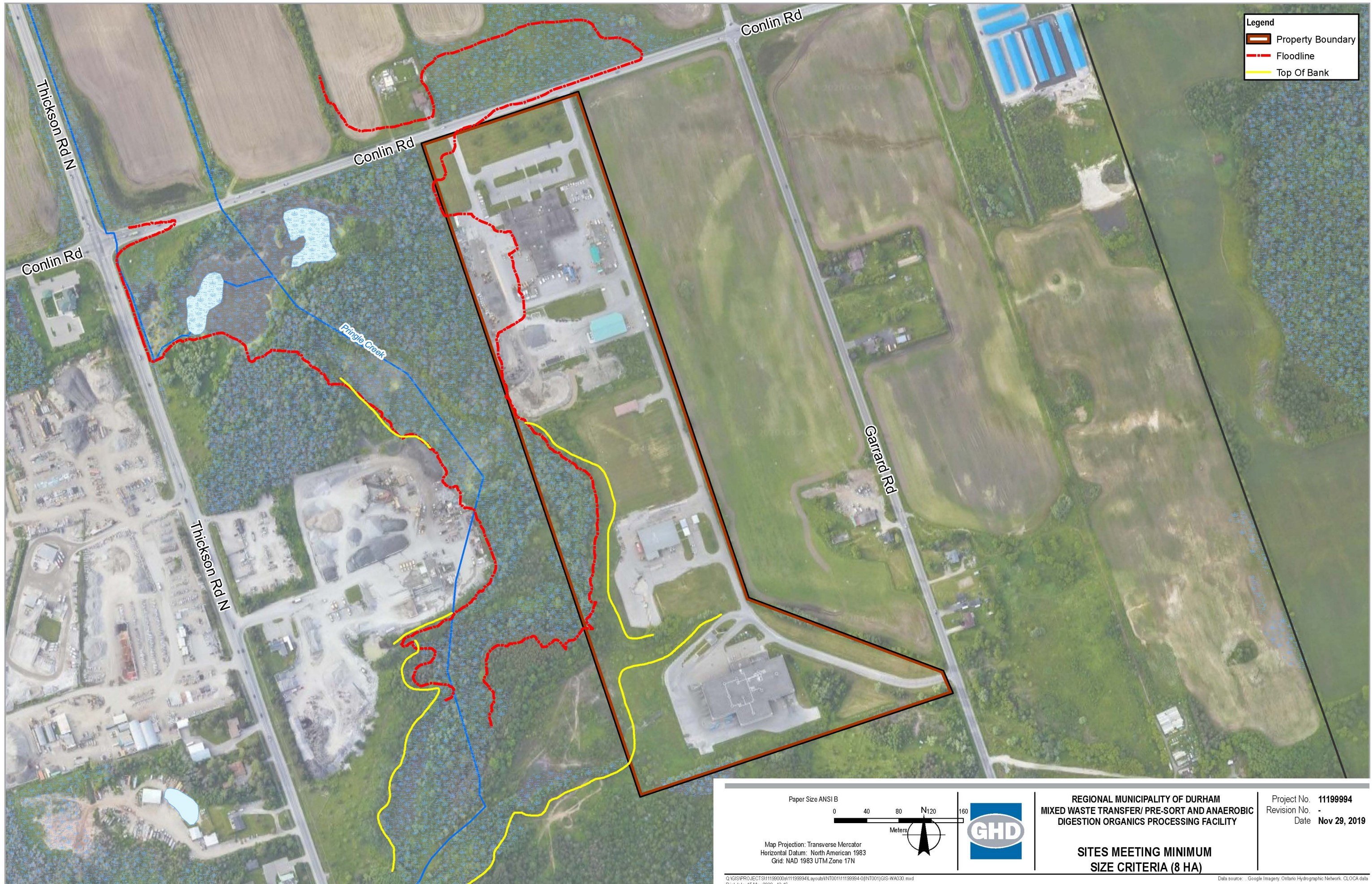
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REGIONAL MUNICIPALITY OF DURHAM
MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
DIGESTION ORGANICS PROCESSING FACILITY

SITES MEETING MINIMUM
SIZE CRITERIA (8 HA)

Project No. **11199994**
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 Date **Nov 29, 2019**



Paper Size ANSI B

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Meters

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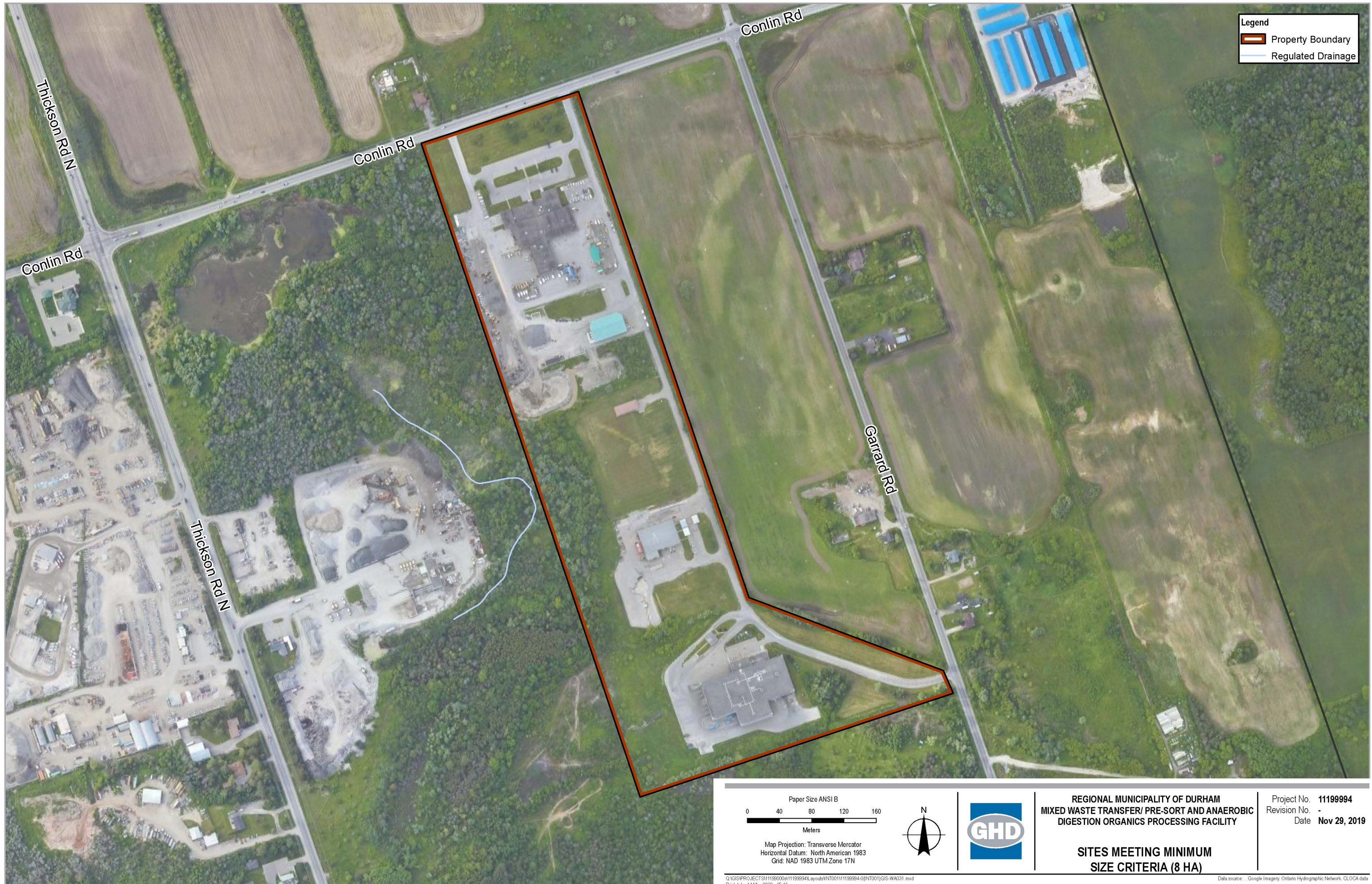
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MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
DIGESTION ORGANICS PROCESSING FACILITY**

**SITES MEETING MINIMUM
SIZE CRITERIA (8 HA)**

Project No. **11199994**
Revision No. -
Date **Nov 29, 2019**

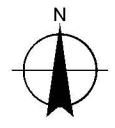
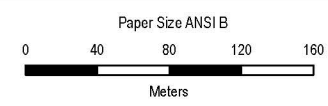
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Data source: Google Imagery; Ontario Hydrographic Network; CLOCA data



Legend

- Property Boundary
- Regulated Drainage



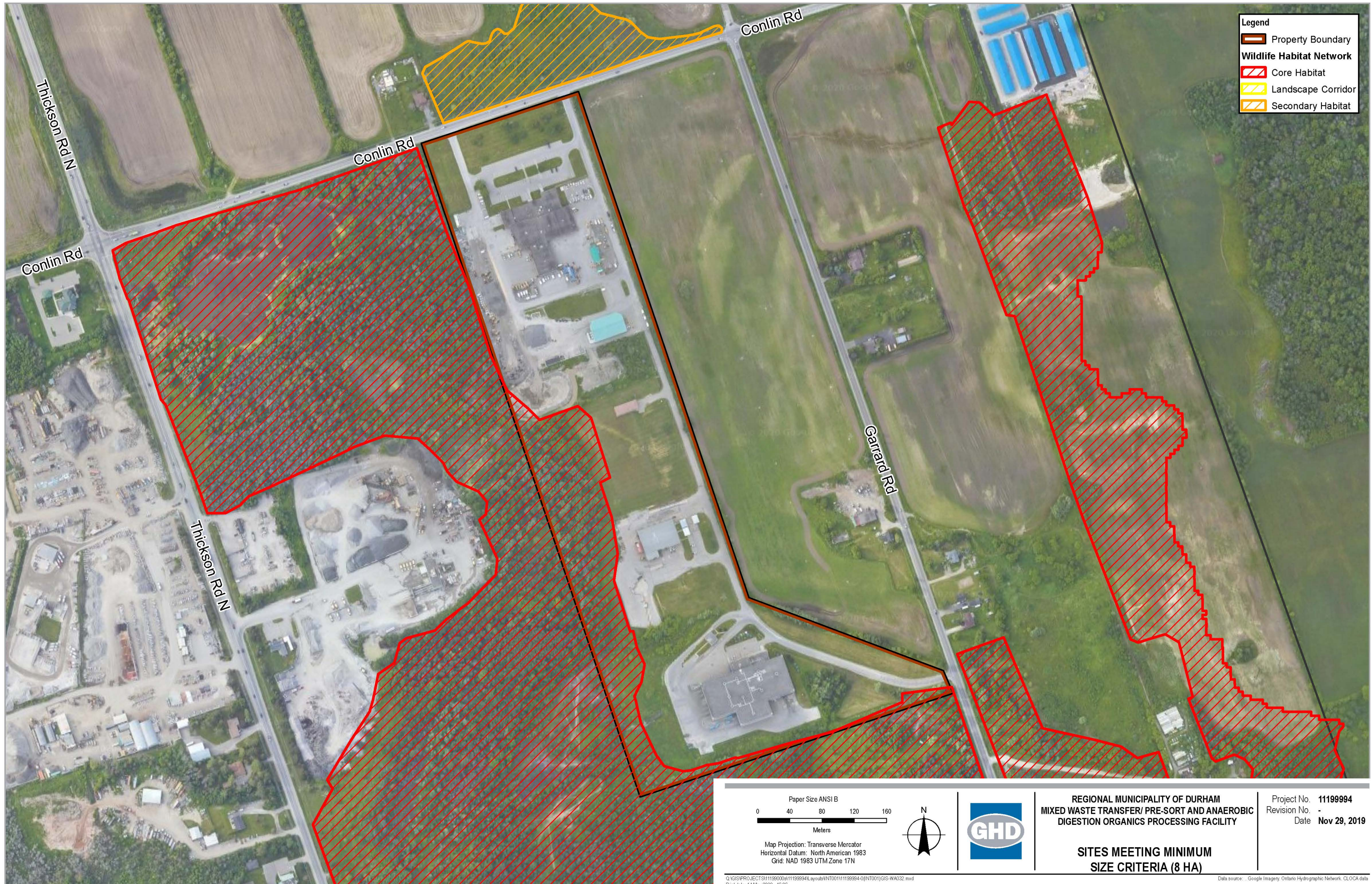
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REGIONAL MUNICIPALITY OF DURHAM
MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
DIGESTION ORGANICS PROCESSING FACILITY

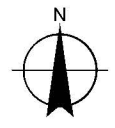
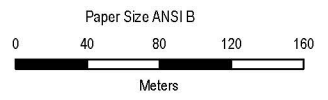
SITES MEETING MINIMUM
SIZE CRITERIA (8 HA)

Project No. **11199994**
 Revision No. -
 Date **Nov 29, 2019**



Legend

-  Property Boundary
- Wildlife Habitat Network**
-  Core Habitat
-  Landscape Corridor
-  Secondary Habitat



Map Projection: Transverse Mercator
 Horizontal Datum: North American 1983
 Grid: NAD 1983 UTM Zone 17N



REGIONAL MUNICIPALITY OF DURHAM
MIXED WASTE TRANSFER/ PRE-SORT AND ANAEROBIC
DIGESTION ORGANICS PROCESSING FACILITY

Project No. **11199994**
 Revision No. -
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SITES MEETING MINIMUM
SIZE CRITERIA (8 HA)

Tables

Table 5 Site Review Summary Table

Environmental

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
Air Quality, Odour, Noise	Wind Speed and Direction	<ul style="list-style-type: none"> Mean wind speed of 3.97 metres per second (m/s) predominately coming from a northwesterly to southwesterly direction. Wind direction is away from off-site sensitive receptors. 	<ul style="list-style-type: none"> Mean wind speed of 3.97 m/s predominately coming from a northwesterly to southwesterly direction. Wind direction is away from off-site sensitive receptors. 	<ul style="list-style-type: none"> Mean wind speed of 3.97 m/s predominately coming from a northwesterly to southwesterly direction. Wind direction is toward some off-site sensitive receptors. 	<ul style="list-style-type: none"> Mean wind speed of 3.97 m/s predominately coming from a northwesterly to southwesterly direction. Wind direction is toward some off-site sensitive receptors. 	<ul style="list-style-type: none"> Mean wind speed of 3.97 m/s predominately coming from a northwesterly to southwesterly direction. Wind direction is away from off-site sensitive receptors. 	<ul style="list-style-type: none"> Mean wind speed of 3.97 m/s predominately coming from a northwesterly to southwesterly direction. Wind direction is toward some off-site sensitive receptors.
Terrestrial	Affected Greenbelt & Oak Ridges Moraine (ORM) Land Use	<ul style="list-style-type: none"> No Greenbelt or ORM designations on site 	<ul style="list-style-type: none"> No Greenbelt designation ORM Conservation Plan designation on site – Countryside Area 	<ul style="list-style-type: none"> No Greenbelt designation ORM Conservation Plan designation on site – Natural Core Area 	<ul style="list-style-type: none"> No Greenbelt or ORM designations on site 	<ul style="list-style-type: none"> Greenbelt area – protected countryside 	<ul style="list-style-type: none"> No Greenbelt or ORM designations on site
	Species of Special Concern, Threatened, and/or Endangered	<ul style="list-style-type: none"> There are no recent records of species at risk (SAR) identified on the Natural Heritage Information Centre (NHIC) mapping. However, historic records include: Bushy Cinquefoil (S4), Red-shouldered Hawk (NAR), Northern Bobwhite (END), Northern Myotis (S3), and Milksnake (SC). 	<ul style="list-style-type: none"> Potential for SAR based on available habitat data, as identified by NHIC, include: Snapping Turtle (SC), Ocellated Darner (S4), and Red-shouldered Hawk (NAR). Not all SAR records are dated; however, the Snapping Turtle (SC) is identified to be a recent record (2010). 	<ul style="list-style-type: none"> There are no recent records of SAR identified on NHIC mapping. However, historic records include: Long-stalked Panic Grass (S2), Delta-spotted Spiketail (S4), and Eastern Red Damsel (S4). 	<ul style="list-style-type: none"> Potential for SAR based on available habitat data, as identified by NHIC include Pronghorn Clubtail (S3). Historical records of SAR on the property include: Red Mulberry (END), Northern Bobwhite (END), and Eastern Red Damsel (S4). 	<ul style="list-style-type: none"> Potential for SAR based on available habitat data, as identified by NHIC, include: Least Bittern (THR), Snapping Turtle (SC), Ruddy Duck (S4N), Black Tern (SC), Green-striped Darner (S3), and an unspecified sensitive species. Recent records of Least Bittern (THR), Black Tern (SC), and Snapping Turtle (SC) identified in 2006, 2006, and 2010 respectively. 	<ul style="list-style-type: none"> There are no recent records of SAR identified on NHIC mapping. However, historic records include: Red Mulberry (END), Northern Bobwhite (END), Pronghorn Clubtail (S3), and Eastern Red Damsel (S4).
	Wildlife Habitat Network (i.e. core wildlife habitat and landscape corridor)	<ul style="list-style-type: none"> No areas pertaining to core wildlife habitats or landscape corridors. 	<ul style="list-style-type: none"> No areas pertaining to core wildlife habitats or landscape corridors. 	<ul style="list-style-type: none"> Site is covered by core habitat within CLOCA regulated area. 	<ul style="list-style-type: none"> West and northwest edge of site has landscape corridor and secondary habitat within CLOCA regulated area. 	<ul style="list-style-type: none"> No areas pertaining to core wildlife habitats or landscape corridors. 	<ul style="list-style-type: none"> Site is covered by core habitat within CLOCA regulated area.
Aquatic	Species of Special Concern, Threatened, and/or Endangered	<ul style="list-style-type: none"> No aquatic SAR listed as potentially occurring at this site 	<ul style="list-style-type: none"> No aquatic SAR listed as potentially occurring at this site 	<ul style="list-style-type: none"> No aquatic SAR listed as potentially occurring at this site 	<ul style="list-style-type: none"> No aquatic SAR listed as potentially occurring at this site 	<ul style="list-style-type: none"> No aquatic SAR listed as potentially occurring at this site 	<ul style="list-style-type: none"> No aquatic SAR listed as potentially occurring at this site
Surface Water	Wetlands, Flood Plains (i.e. floodline and top of bank), Regulated Drainage and Water Bodies	<ul style="list-style-type: none"> No wetlands or regulated drainage areas on or near site. CLOCA regulated area covers portions of site, with small tributary of Tooley Creek running east-west through middle of north portion of site and extends to southwest portion of site. A floodline encompasses a portion of southwest part of site. 	<ul style="list-style-type: none"> No wetlands on or near site. Not in KCA regulated area. 	<ul style="list-style-type: none"> No wetlands or regulated drainage areas on or near site. Not in CLOCA regulated area. 	<ul style="list-style-type: none"> CLOCA regulated area occupies west and northwest edge of property as there is an unevaluated wetland, regulated drainage, floodline and top of bank. Most of site is not impacted or within CLOCA regulated area. Site has been previously disturbed/developed and has already influenced surface water conditions on-site. 	<ul style="list-style-type: none"> No wetlands on or near site. Site contains Nonquon River Water Pollution Control Plant. Site is within the Kawartha CA regulated area. 	<ul style="list-style-type: none"> Large areas of Provincially Significant Wetlands (PSW) within and adjacent to site, along with floodline and top of bank CLOCA regulated area. While PSW is present, the site is already developed and can be modified.

Table 5 Site Review Summary Table

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
Groundwater	Source Water Protection Areas	<ul style="list-style-type: none"> Southeast portion of site remains unaffected by CLOCA regulated area. Significant Groundwater Recharge Area (SGRA) covers most of 339 Courtice Road property, and along western edge of 1797 South Service Road property. No SWP designations on third property. 	<ul style="list-style-type: none"> Highly Vulnerable Aquifer (HVA) and SGRA covers entire site except very small portion of northeast corner. 	<ul style="list-style-type: none"> Eastern 2/3 of site within HVA and SGRA - western 1/3 is within SGRA. 	<ul style="list-style-type: none"> 80% of site (except a few pockets on eastern boundary) within HVA. Western portion of site within Intake Protection Zone (IPZ) 3. 	<ul style="list-style-type: none"> HVA covers a small portion of northeast boundary of site. 75% of site within SGRA. Majority of site within IPZ 3. 	<ul style="list-style-type: none"> HVA and SGRA covers entire site.
Agricultural	Prime Agricultural Areas (Specialty Crop Areas, Class 1, 2, and 3 Agricultural Lands)	<ul style="list-style-type: none"> Class 1 - zoned Industrial 	<ul style="list-style-type: none"> Class 6 	<ul style="list-style-type: none"> Class 6 	<ul style="list-style-type: none"> Class 2 – OSP – Park Open Space Zone 	<ul style="list-style-type: none"> Class 1 and 2 - zoned M5 - Waste Disposal Industrial (majority); FD - Future Development (northeast and eastern boundary); EP - Environmental Protection (northwest corner) 	<ul style="list-style-type: none"> Class 2

Social

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
Sensitive Receptors	Number and Distribution of Sensitive Receptors (e.g., residential areas, parks, recreational areas, institutions, airports) within 500m buffer zone.	<ul style="list-style-type: none"> No off-site sensitive receptors within 500 metres of the site. 	<ul style="list-style-type: none"> Seven off-site sensitive receptors within 500 metres of the site. North: 2 residential properties on north side of Regional Road No. 21 East: Tara Hills Stud stallion - horse farm operation with residence on west side of Mast Road, 3 residences on east side of Mast Road West: individual residential/farm property 	<ul style="list-style-type: none"> Two off-site sensitive receptors within 500 metres of the site. North: Long Sault Conservation Area and parking area (considered passive sensitive receptor) South: residential properties on both sides of Regional Road No. 20 	<ul style="list-style-type: none"> Significant amount of off-site sensitive receptors and residential developments within 500 metres of the site. North: Camp Samac Outdoor Pool, Oshawa Scout Shop, Chartwell Wynfield Long Term Care Residence, midrise residential building on the west side of Ritson Road North adjacent to site, and residential development South: Father Joseph Venini Catholic School, residential neighbourhoods, residential development adjacent to site, townhouses directly south of the site at the north west quadrant of the Ritson Road North and Ormond Drive intersection, medical centre at south west quadrant of Ritson Road North and Ormond Drive intersection 	<ul style="list-style-type: none"> Significant amount of off-site sensitive receptors and a residential development within 500 metres of the site. Southwest: 1 residence west of site on north side of Reach Street, 3 residential properties west of site on south side of Reach Street Southeast: baseball diamonds, new off leash dog park opposite baseball diamonds, skate park on road to baseball diamonds, 1 residential property east of site on north side of Reach Street, new residential development on south side of Reach Street, Catholic School south side of Reach Street in the new development East: Scugog Fields, 1 residential property on the west side of Old Simcoe Road, Residential neighbourhood on east side of Old Simcoe Road, Public School with YMCA 	<ul style="list-style-type: none"> One off-site sensitive receptor within 500 metres of the site. North: 2 residences on north side of Conlin Road, mid-19th century residential property South: residences on west side of Garrard Street south of site East: 5 residences on east side of Garrard Road, 1 residence on west side of Garrard Road recently demolished

Table 5 Site Review Summary Table

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
					<ul style="list-style-type: none"> East: Ritson Fields and baseball diamond directly adjacent to site, one residential property adjacent to site on Ritson Road North (access on Luple Avenue), residential development north east of site West: Oshawa & District Shrine Club, Village Suites Oshawa, Simcoe Residence-CPPI Group Inc., residential development, Kinark Autism Services 	<ul style="list-style-type: none"> before and after school care, Montessori School, Community Care Durham Gym Northeast: 4 residential properties within south west quadrant of Scugog Line 8 and Old Simcoe Road adjacent to site, other residential properties along east side of Old Simcoe Road North: 4 residential properties on Scugog Line 8 directly opposite site 	
Land Use/ Zoning	Current Land Use, Zoning, Approved Development Plans, and Proposed Land Use Changes	<ul style="list-style-type: none"> Regional Official Plan designation is Employment Area Municipal Official Plan designation is Business Park Zoning designation is Industrial (M) 	<ul style="list-style-type: none"> Regional Official Plan designation is Oak Ridges Moraine Area Municipal Official Plan designation is Oak Ridges Moraine Countryside Area Zoning designation is Rural Industrial (ORM-M3) 	<ul style="list-style-type: none"> Regional Official Plan designation is Oak Ridges Moraine Area Zoning designation is ORM Natural Core (small area of land not included in Minimum Area of Influence from Environmental Protection zone) 	<ul style="list-style-type: none"> Regional Official Plan designation is Living Areas/Major Open Space Municipal Official Plan designation is Open Space and Recreation surround by Residential Zoning designation is Park Open Space Zone (OSP) 	<ul style="list-style-type: none"> Regional Official Plan designation is Employment Area/Living Area Municipal Official Plan designation is within Port Perry Urban Boundary, Open Space, and Hazard Lands (small area to south) Zoning designation is Waste Disposal Industrial (M5) (majority of site), Future Development (FD) (northeast and eastern boundary), and Environmental Protection (EP) (northwest corner) 	<ul style="list-style-type: none"> Regional Official Plan designation is Employment Area/Major Open Space Municipal Official Plan designation is General Industrial/Major Open Space Zoning designation is Agricultural
	Compatibility with Existing Land Use/ Zoning Designations on Adjacent Sites	<ul style="list-style-type: none"> Adjacent Official Plan designated as Business Park Areas to the north of highway 401 designated as light industrial Utility designation for the Courtice Water Pollution Control Plan south of the CNR railway Adjacent zoning maintains the Energy Park Light Industrial Zone, with a portion of adjacent lands zoned as Environmental Protection (EP). One development application in close proximity for the East Penn Battery Facility (warehouse and Office) 	<ul style="list-style-type: none"> Adjacent Official Plan is designated as ORM Aggregate Area and ORM Natural Core Area Township of Uxbridge Official Plan Designates the area to the west of the Site as Countryside with approved Mineral Aggregate Extraction Areas Surrounding area is zoned as ORM M4 Extractive Industrial, ORM EP Environmental Protection and ORM AG Agricultural Township of Uxbridge zones the surrounding area to the west of the Site as M3 Rural 	<ul style="list-style-type: none"> Official Plan and Zoning By-law designate the Surrounding Area as Environmental Protection Area and Natural Core Area Site is within the Oak Ridges Moraine. 	<ul style="list-style-type: none"> Adjacent Official Plan designation is primarily designated as Residential, Open Space and Recreation The surrounding area is primarily various Residential zones, Park Open Space (Ritson Fields), UR Urban Reserve, CIN Community Institutional (Schools) The current open area south of Ritson Fields is zoned as Residential 	<ul style="list-style-type: none"> Surrounding area to the east and south (Port Perry) is designated under the Official Plan as Open Space, Residential or Industrial surrounding areas to the north and west are designated as Natural Core Area and Natural Linkage Area Surrounding area to the south and east (Port Perry) is zoned Residential, OS Open Space (Scugog Soccer Fields), CF Community Facility (Baseball Diamonds, Dog Park, Schools, Arena and Heritage Centre) 	<ul style="list-style-type: none"> Surrounding area is designated as Industrial, Environmental Protection and Hazard Land. To the South is an area designated as Special Policy Area which has a past use as a landfill the surrounding area is zoned as Agricultural

Table 5 Site Review Summary Table

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
			Resource Extraction Zone, and RU Rural Zone			<ul style="list-style-type: none"> Surrounding areas to the west are zoned AG Agricultural, EP Environmental Protection, RR Rural Residential M1 Prestige Industrial, M2 General Industrial and M3 Rural Industrial Surrounding area to the north is zoned as EP Environmental Protection, AG Agricultural and RR Rural Residential 	
Transportation	Existing/ Required Transportation Infrastructure	<ul style="list-style-type: none"> Energy Drive is a paved two-way lane road with a total of 5 lanes. Megawatt Drive is a paved two-way lane road with a total of 2 lanes. No significant road upgrades required. 	<ul style="list-style-type: none"> Goodwood Road is a paved two-way lane road with a total of 2 lanes. A third lane dedicated for turning appears closer to site. Lakeridge Road is a paved two-way lane road with a total of 2 lanes. Two additional lanes dedicated for turning appear closer to site. Site entrance from either Goodwood or Lakeridge are too close to the intersection. Changes will be required to provide site access. Very high traffic volumes on both roads. Consider moving site entrance further east of property and allow left turn into site from Goodwood only, not a right turn. Left turn lane will need to be widened down Goodwood Rd. A traffic impact study is required. 	<ul style="list-style-type: none"> Woodley Road is a paved one-way lane road with only one lane. Woodley Road is the existing site access road from Durham Regional Road #20. Woodley Road requires upgrades to provide for a two-way lane road. Upgrades to existing road would be required to support traffic volume and loads. Durham Regional Road #20 is a two-way lane with a total of 2 lanes. Depending on traffic volumes on Regional Road 20, there may be a need to add left and right turn lanes in the east and west bound direction respectively. This would require local widening of RR20 and modifications to Woodley Rd south. 	<ul style="list-style-type: none"> Ritson Road is a paved two-way lane road with a total of 3 lanes. Ritson Road requires no significant road upgrades. Entrance and exit at Ritson Road will require significant upgrades given most traffic will come from south and have to turn left. Traffic leaving site will want to head south turning right against traffic. If transfer station function remains, there will be significant queuing issues on Ritson Rd. Unnamed site access road from Ritson Road is a one-way lane road with only one lane. The entrance seems acceptable as is, with the exception of traffic queuing on Ritson NB left turn lane. Widening and extension of the existing left turn lane may be required. 	<ul style="list-style-type: none"> Reach Street is a two-way lane road with a total of 2 lanes. A third lane dedicated for turning appears closer to site. Approaching the site from the west on Reach St, there would likely be a need to increase the left turn lane storage length. Unnamed site access road southeast of property is a paved one-way lane road with only one lane. Unnamed site access road southeast of property requires significant upgrades to provide for a two-way lane road. Unnamed site access road southwest of property is a paved two-way lane road with a total of two lanes. Unnamed site access road southwest of property requires no significant upgrades. 	<ul style="list-style-type: none"> Garrard Road is a paved two-way lane road with a total of 2 lanes. Left and Right turn lanes would be required on Garrard Rd. Conlin Road is a paved two-way lane road with a total of 2 lanes. Left and Right turn lanes would be required on Conlin Rd if used as entrance to site. Unnamed site access road has sufficient space for two lanes but there's no divider line and shoulders are not asphalted, therefore it is a one-way lane road with a total of one lane. Unnamed site access road requires Access Road likely requires widening to one side, possibly both.
	Neighbourhood Traffic Impacts	<ul style="list-style-type: none"> Little existing traffic impacts as waste is currently transported to adjacent DYEC. A traffic impact study is required. 	<ul style="list-style-type: none"> High traffic volumes on both Goodwood Rd and Lakeridge Rd due to existing Scugog Depot. A traffic impact study is required. 	<ul style="list-style-type: none"> Woodley Rd. is a dead end road with no through traffic. However, some little existing traffic volume due to Long Sault Conservation Area multi-use trail north of site. A traffic impact study is required. 	<ul style="list-style-type: none"> High existing traffic volume on Ritson Rd North. Residential properties in close proximity to site entrance. A traffic impact study is required. 	<ul style="list-style-type: none"> Little existing traffic volume on Reach St. However new development on Sherrington Drive south of site may increase traffic volumes in the near future. A traffic impact study is required. 	<ul style="list-style-type: none"> High existing traffic on Garrard Rd as all recycling trucks currently go to this location. Residential properties along Garrard Rd and may be used to travel to highway 407. A traffic impact study is required.

Table 5 Site Review Summary Table

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
Visual	Buffer Zones and Visual Screening	<ul style="list-style-type: none"> Virtually no visual screening provided by existing site features 	<ul style="list-style-type: none"> Virtually no visual screening provided by existing site features 	<ul style="list-style-type: none"> Good visual screening provided by existing vegetation north of site for multi-use trail. Some visual screening provided by existing vegetation west of site. 	<ul style="list-style-type: none"> Good visual screening provided by existing vegetation, topography, and buffer distances as a result of site size 	<ul style="list-style-type: none"> Good visual screening provided by existing vegetation north and east of site. Some visual screening provided by existing vegetation west of site. 	<ul style="list-style-type: none"> Some visual screening provided by existing vegetation

Cultural

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
Archaeological	Archeologically Significant Areas	<ul style="list-style-type: none"> No known archeologically significant areas on or adjacent to site 	<ul style="list-style-type: none"> No known archeologically significant areas on or adjacent to site 	<ul style="list-style-type: none"> No known archeologically significant areas on or adjacent to site 	<ul style="list-style-type: none"> No known archeologically significant areas on or adjacent to site 	<ul style="list-style-type: none"> No known archeologically significant areas on or adjacent to site 	<ul style="list-style-type: none"> No known archeologically significant areas on or adjacent to site
Heritage	Areas of Important Cultural Heritage	<ul style="list-style-type: none"> No known areas of important cultural heritage on or adjacent to site 	<ul style="list-style-type: none"> No known areas of important cultural heritage on or adjacent to site 	<ul style="list-style-type: none"> No known areas of important cultural heritage on or adjacent to site 	<ul style="list-style-type: none"> Camp Samac - Class A (greatest historic - interest) to the north (campground/scouts) 	<ul style="list-style-type: none"> No known areas of important cultural heritage on or adjacent to site 	<ul style="list-style-type: none"> No known areas of important cultural heritage on or adjacent to site

Technical

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
Permitting/ Approvals	Feasibility and Complexity of Permitting/ Approvals	<ul style="list-style-type: none"> New waste and air/noise Environmental Compliance Approval (ECA) required Accompanying studies required (i.e., traffic, geotech, utility, etc.) 	<ul style="list-style-type: none"> New waste and air/noise ECA required Accompanying studies required (i.e., traffic, geotech, utility, etc.) 	<ul style="list-style-type: none"> Amendment to existing waste and air/noise ECA required Accompanying studies required (i.e., traffic, geotech, utility, etc.) 	<ul style="list-style-type: none"> Amendment to existing waste and air/noise ECA required Accompanying studies required (i.e., traffic, geotech, utility, etc.) 	<ul style="list-style-type: none"> Amendment to existing waste and air/noise ECA required Accompanying studies required (i.e., traffic, geotech, utility, etc.) 	<ul style="list-style-type: none"> Amendment to existing waste and air/noise ECA required Approval may be required from Ministry of Infrastructure for work under Hydro corridor Accompanying studies required (i.e., traffic, geotech, utility, etc.)
Safety	Potential Safety Risks	<ul style="list-style-type: none"> Not near airport. No nearby public trails. A railroad track runs approximately 50 metres south of site, though there is a road in between (site access road for DYEC). 	<ul style="list-style-type: none"> Proximity (10.32km shortest or 13km driving) to proposed Pickering Airport. Within Wildlife Hazard Zone as per Transport Canada's Proposed Drawings (secondary bird hazard zone) No nearby public trails. No nearby railroad tracks. 	<ul style="list-style-type: none"> Not near airport. Long Sault Conservation Area multi-use trail directly north of site and parking area No nearby railroad tracks. 	<ul style="list-style-type: none"> Proximity (2.5km shortest or 3.5km driving) to Oshawa Executive Airport, flight path (within approach Surface Slope 1:50 as per Transport Canada Oshawa Airport Zoning Regulations) No nearby public trails. No nearby railroad tracks. 	<ul style="list-style-type: none"> Proximity (4.75km shortest or 7.5km driving) to Greenbank Airport (not a municipal airport). No nearby public trails. No nearby railroad tracks. 	<ul style="list-style-type: none"> Proximity (2.28km shortest or 3.1km driving) to Oshawa Executive Airport, flight path – (within Outer Surface Elevation 180.0 ASL as per Transport Canada Oshawa Airport Zoning Regulations) No nearby public trails. No nearby railroad tracks.

Table 5 Site Review Summary Table

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
Utilities and Services	Availability and Distance from Utilities and Services	<ul style="list-style-type: none"> • Nearest gas supply line connection is 1.2km from site. • Municipal water, sanitary sewer, telecommunication, and hydro connections available on site. 	<ul style="list-style-type: none"> • Existing natural gas service available at site. • Nearest municipal water supply connection is 9km from site. • Nearest sanitary sewer connection is 9km from site. • Telecommunication and hydro connections available on site. 	<ul style="list-style-type: none"> • Nearest gas supply line connection is 11km from site. • Nearest municipal water supply connection is 11.5km from site. • Nearest sanitary sewer connection is 24km from site. There is likely an underground septic tank on site. • Hydro tower is 350m south of site. • Nearest telecommunication connection is 890m from site. 	<ul style="list-style-type: none"> • Nearest gas supply line connection is 600m from site. • Municipal water, sanitary sewer, hydro, and telecommunication connections available on site. 	<ul style="list-style-type: none"> • Nearest gas supply line connection is 2.46km from site. • Nearest municipal water supply connection is 300m from site. • Site backs onto WPCP for sanitary sewer connection. • Telecommunication and hydro connections available on site. 	<ul style="list-style-type: none"> • Nearest gas supply line connection is 500m from site. • An underground septic tank is on site. Nearest sanitary sewer connection is 1.5km from site. • Hydro tower crosses south of site with Ontario Hydro Easement. • Municipal water and telecommunication connections available on site.
Suitability	Meets Minimum Size Requirements	<ul style="list-style-type: none"> • 16 	<ul style="list-style-type: none"> • 41 	<ul style="list-style-type: none"> • 8 	<ul style="list-style-type: none"> • 34 	<ul style="list-style-type: none"> • 120 	<ul style="list-style-type: none"> • 20
	Site Layout, Topography, and Soil Conditions	<ul style="list-style-type: none"> • No major constraints - site relatively flat and almost entirely useable 	<ul style="list-style-type: none"> • No major constraints - site relatively flat and almost entirely useable (restricted by Depot site existing buildings) 	<ul style="list-style-type: none"> • Large potential area for development/ expansion • Varied topography expected due to closed landfill 	<ul style="list-style-type: none"> • Large potential area for development/ expansion • Varied topography expected due to closed landfill 	<ul style="list-style-type: none"> • Limited area for potential development/ expansion due to Nonquon River Water pollution Control Plant within north of site and Carolyn Best Memorial Diamonds east of site. • Varied topography expected due to closed landfill 	<ul style="list-style-type: none"> • Limited area for potential development/ expansion • Restricted by existing buildings • Hydro corridor crossing south of site limits development areas
	Compatibility/Synergies with Existing Infrastructure	<ul style="list-style-type: none"> • Industrial property with no existing infrastructure • Adjacent to DYEC where mixed-waste residuals would be processed. • Adjacent to WPCP which may be able to treat Facility effluent, thereby reducing costs. 	<ul style="list-style-type: none"> • No synergies with existing depot site infrastructure. 	<ul style="list-style-type: none"> • Remote closed landfill property with no existing infrastructure. 	<ul style="list-style-type: none"> • No synergies with existing WMF building as it is too small to be used for pre-sort portion of Facility. 	<ul style="list-style-type: none"> • Adjacent to WPCP which may be able to treat Facility effluent, thereby reducing wastewater treatment plant costs. 	<ul style="list-style-type: none"> • MRF building could be used for portion of Facility.

Table 5 Site Review Summary Table

Economic

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
Capital Costs (Estimated costing provided in Table 2)	Utility Connections (municipal water, sanitary sewer, hydro/electricity, telecommunication)	<ul style="list-style-type: none"> Natural gas supply line connection costs as nearest connection is 1.2km from site. All other utility connections are available on site. 	<ul style="list-style-type: none"> Natural gas supply line connection available on site. High municipal water supply and sanitary sewer connection costs as nearest connection is 9km from site. All other utility connections are available on site. 	<ul style="list-style-type: none"> High natural gas supply line, municipal water supply, and sanitary sewer connection costs as nearest connection is over 11km from site. Some hydro connection costs as Hydro tower is approximately 350m south of site. Telecommunication connection costs. 	<ul style="list-style-type: none"> Natural gas supply line connection costs as nearest connection is 600m from site. All other utility connections are available on site. 	<ul style="list-style-type: none"> Natural gas supply line connection costs as nearest connection is 2.46km from site. Some municipal water supply costs as nearest connection is 300m from site. Low sanitary sewer costs as site backs onto WPCP. All other utility connections are available on site. 	<ul style="list-style-type: none"> Nearest gas supply line connection costs as nearest connection is 500m from site. Sanitary sewer costs as nearest connection is 1.5km from site. All other utility connections are available on site.
	Transportation Infrastructure Upgrades	<ul style="list-style-type: none"> No major road improvements anticipated. 	<ul style="list-style-type: none"> Widen left turning lane on Goodwood Rd to allow room for queuing and not block intersection. 	<ul style="list-style-type: none"> Upgrade Woodley Rd to support traffic volume and loads. Vehicle turning lanes may be required in east and east bound direction of Durham Regional Road #20. 	<ul style="list-style-type: none"> Widen left turning lane on Ritson Rd northbound to allow room for queuing. 	<ul style="list-style-type: none"> Widen left turning lane when approaching site from the west on Reach St to allow room for queuing. 	<ul style="list-style-type: none"> Would likely require left and right vehicle turning lanes on Garrard Rd and Conlin Rd if used as entrance to site. Widen unnamed site access road.
	Site Remediation Costs	<ul style="list-style-type: none"> No known areas requiring remediation on-site 	<ul style="list-style-type: none"> No known areas requiring remediation on-site 	<ul style="list-style-type: none"> Closed landfill requiring extensive contaminated waste/soil removal 	<ul style="list-style-type: none"> Closed landfill requiring extensive contaminated waste/soil removal 	<ul style="list-style-type: none"> Closed landfill requiring extensive contaminated waste/soil removal 	<ul style="list-style-type: none"> No known areas requiring remediation on-site
	Site Demolition Costs	<ul style="list-style-type: none"> No known areas requiring demolition on-site 	<ul style="list-style-type: none"> Existing depot building site may need to be demolished 	<ul style="list-style-type: none"> No known areas requiring remediation on-site 	<ul style="list-style-type: none"> No known areas requiring remediation on-site 	<ul style="list-style-type: none"> No known areas requiring remediation on-site 	<ul style="list-style-type: none"> Existing MRF buildings will require to be repurposed or demolished.
Transportation / Waste Transfer Costs	From Waste Transfer Stations to Site to DYEC.	<ul style="list-style-type: none"> Approximately 44 km for one complete trip 	<ul style="list-style-type: none"> Approximately 225 km for one complete trip 	<ul style="list-style-type: none"> Approximately 178 km for one complete trip 	<ul style="list-style-type: none"> Approximately 95 km for one complete trip 	<ul style="list-style-type: none"> Approximately 229 km for one complete trip 	<ul style="list-style-type: none"> Approximately 111 km for one complete trip

Table 6 - Cost breakdown for short-listed sites

Natural Gas Pipeline info from Enbridge

No.	Geographical Region	City/Town	Address	Pipeline Connection Scope	Dist to Pipeline (m)	Pipe Dia (in)	Incoming Natural Gas Pipeline					Incoming Natural Gas Pipeline + Outgoing Renewable Natural Gas Pipeline				
							Minimum		Maximum		Ratio	Minimum		Maximum		Ratio
							Unit Cost	Total Cost	Unit Cost	Total Cost		Unit Cost	Total Cost	Unit Cost	Total Cost	
1	South Clarington	Courtice	339 Courtice Road	936.0m of NPS 8 Steel HP Pipe (New Installation) Large Reinforcement may be required + Station Upgrade	1,190	8	\$ 1,500.00	\$ 1,785,000.00	\$ 3,797.87	\$ 4,519,468.09	2.5	\$ 2,250.00	\$ 2,677,500.00	\$ 5,696.81	\$ 6,779,202.13	2.5
2	West Scugog	Courtice	#10 Regional Road No. 21	Existing Gas Service to address – May require a System Upgrade + Station Upgrade	0			\$ -		\$ -		\$ -		\$ -		
3	North Clarington	Courtice	9293 Woodley Rd	Over 11.0km from nearest gas supply. No existing gas network within proximity of address.	11,000	4	\$ 1,500.00	\$ 16,500,000.00	\$ 3,923.08	\$ 43,153,846.15	2.6	\$ 2,250.00	\$ 24,750,000.00	\$ 5,884.62	\$ 64,730,769.23	2.6
4	Oshawa	Oshawa	1640 Ritson Road North	600.0m of NPS 8 Steel HP/XHP Pipe (New Installation) Large Reinforcement may be required + Station Upgrade	600	8	\$ 1,500.00	\$ 900,000.00	\$ 3,797.87	\$ 2,278,723.40	2.5	\$ 2,250.00	\$ 1,350,000.00	\$ 5,696.81	\$ 3,418,085.11	2.5
5	East Scugog	Port Perry	1623 Reach Street	2460.0m of NPS 8 Steel XHP Pipe (New Installation) Large Reinforcement may be required + Station Upgrade	2,460	8	\$ 1,500.00	\$ 3,690,000.00	\$ 3,797.87	\$ 9,342,765.96	2.5	\$ 2,250.00	\$ 5,535,000.00	\$ 5,696.81	\$ 14,014,148.94	2.5
6	Whitby	Whitby	4600 Garrard Road	500.0m of NPS 8 Steel XHP Pipe (New Installation) Large Reinforcement may be required + Station Upgrade	500	8	\$ 1,500.00	\$ 750,000.00	\$ 3,797.87	\$ 1,898,936.17	2.5	\$ 2,250.00	\$ 1,125,000.00	\$ 5,696.81	\$ 2,848,404.26	2.5

Notes

- 1 Further detailed study required by Enbridge to ensure proper gas supply is available for each site.
- 2 No direct correlation between cost of pipeline and length of pipeline. For example, a 1km pipeline construction may cost 2-3 times higher than a 11km pipeline on a unit cost basis.
- 3 Assumed outgoing RNG pipeline costs to be 50% of incoming NG pipeline costs due to shared labour efforts.

GHD Experience with RNG Pipeline Cost Estimates with Enbridge

No.	Dist to Pipeline (m)	Pipe Dia (in)	Injection Station Cost	Total Cost	Pipeline Cost	Unit Cost	Timeline
1	940	8	\$1,000,000	\$ 4,570,000.00	\$ 3,570,000.00	\$ 3,797.87	12-18 months
3	910	6	\$1,000,000	\$ 4,570,000.00	\$ 3,570,000.00	\$ 3,923.08	12-18 months

Notes

- 1 Injection station costs of \$1 million have been removed to provide more comparable pipeline cost estimates.

GHD Experience with NG Pipeline Cost Estimates

No.	Pipeline Length (km)	Unit Cost (per km)	Total Cost
1	18	\$1,500,000	\$27,000,000

**Table 6 - Cost breakdown for short-listed sites
Other Utility Connections to Site**

No.	Geographical Region	City/Town	Address	Dist to nearest connection (m)				Minimum Cost				Maximum Cost			
				Water	Hydro	Sewer	Telecom	Water	Hydro	Sewer	Telecom	Water	Hydro	Sewer	Telecom
1	South Clarington	Courtice	339 Courtice Road	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
2	West Scugog	Courtice	#10 Regional Road No. 21	9,000	0	9,000	0	\$4,500,000	\$0	\$4,500,000	\$0	\$9,000,000	\$0	\$9,000,000	\$0
3	North Clarington	Courtice	9293 Woodley Rd	11,420	350	23,780	890	\$5,710,000	\$175,000	\$11,890,000	\$150,000	\$11,420,000	\$350,000	\$23,780,000	\$178,000
4	Oshawa	Oshawa	1640 Ritson Road North	0	0	0	0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
5	East Scugog	Port Perry	1623 Reach Street	300	0	300	0	\$150,000	\$0	\$150,000	\$0	\$300,000	\$0	\$300,000	\$0
6	Whitby	Whitby	4600 Garrard Road	0	0	1,360	0	\$0	\$0	\$680,000	\$0	\$0	\$0	\$1,360,000	\$0

Description	Min Unit Price (\$/m)	Max Unit Price (\$/m)
Water	\$500	\$1,000
Electricity	\$500	\$1,000
Sanitary Sewer	\$500	\$1,000
Telecommunication	\$100	\$200

Note

- 1 Telecommunication cable installation costs are from Brenda Lagassie (GHD).
- 2 Rogers has noted that there are no coax or fiber internet options available at these locations. Rogers is launching a new service at the end of February 2020 called a Fixed Wireless Internet solution. The concept will work off of the cell phone wireless network. Equipment would need to be installed on the building.

**Table 6 - Cost breakdown for short-listed sites
Contaminated Soil Removal for Landfill Sites**

Scenario	Scope	Site Size	Building Footprint	Depth	Volume	Mass	Unit Cost for Removal & Replacement of Contaminated Soil	Total Costs
	Units	ha	m ²	m	m ³	tonne	\$/tonne	\$
	Total/Maximum Soil Excavated Below Ground Surface	8	80,000	1	80,000	144,000	\$120	\$17,280,000
Minimum	Predicted Soil Excavated Below Ground Surface (based on 30% building footprint)	2.01	20,100	1	20,100	36,180	\$120	\$4,341,600
Maximum	Predicted Soil Excavated Below Ground Surface (based on actual building footprint)	6.7	67,000	1	67,000	120,600	\$120	\$14,472,000
	Building	3.7	36,609	1	36,609	65,896	\$120	\$7,907,544
	Tanks	1.4	14,400	1	14,400	25,920	\$120	\$3,110,400
	Ancillary Facilities	1.6	15,561	1	15,561	28,010	\$120	\$3,361,176

Notes

- 1 Based on experience, roughly 30% of site size contained buildings requiring soil excavation for foundation, piling, etc. (minimum scenario)
- 2 Assumed soil removal depth of 1m but can be greater. Further geotech studies required to determine extent of waste and depth to reach soil.
- 3 Assumed soil density of 1.8 tonnes/m³ of soil which is similar to compacted waste.
- 4 Costs are to remove waste pile in order to reach ground surface.
- 5 Used 11199994-MEM-1-Sizing Calculations spreadsheet for Durham specific numbers.
- 6 Unit cost for removal and replacement of contaminated soil varies between \$100-\$120/tonne based on GHD experience.

Table 6 - Cost breakdown for short-listed sites
Demolition Costs for Pre-Developed Non-Landfill Sites

No.	Description	2012	Inflation	2020	Units	Whitby - 4600 Garrard Road				West Scugog - #10 Regional Road No. 21			Notes
		Unit Cost		Unit Cost		Quantity	Units	Total Cost	Notes	Quantity	Units	Total Cost	
Former MRF													
1	Building Demolition (with equipment re-sale)	\$0	12.54%	\$0	LS	1	LS	\$0	Existing building components can be sold, therefore costs for demolition can be negligible.	1	LS	\$0	
2	Building Demolition (no equipment re-sale)	\$100,000	12.54%	\$112,540	LS	1	LS	\$112,540	Existing concrete slab, steel structure to be removed. No resale value of existing building components.	902	m3	\$68,100.30	
3	Demolish Existing Scalehouse	\$67	12.54%	\$76	m3	24.384	m3	\$1,842	remove existing 80 foot scalehouse	0	m3	\$0	
4	Demolish Existing Portable Buildings	\$67	12.54%	\$76	m3	253.98	m3	\$19,183	remove 3 portable style buildings	0	m3	\$0	
5	Remove and Dispose Existing Asphalt (building footprint only)	\$60	12.54%	\$68	m3	1,490	m3	\$100,611	Removal and disposal of asphalt and some subgrade material from new construction areas. Depths vary depending on grading. Includes loading, hauling, and disposal.	902	m3	\$60,882	area for main building (742.24m2) + cone (96.42m2) + portable building (62.97m2).
6	Remove and Dispose Existing Asphalt (full site footprint)	\$60	12.54%	\$68	m3	11,856	m3	\$800,596	Removal and disposal of asphalt and some subgrade material from new construction areas. Depths vary depending on grading. Includes loading, hauling, and disposal.	19,601	m3	\$1,323,558	
7	Remove and Dispose Existing Septic System	\$400,000	12.54%	\$450,160	LS	1	LS	\$450,160	Includes excavation and disposal of existing tank, piping, and weeping field. Assumes approximately 10,000 tonnes of material.	0	LS	\$0	
8	Remove and Dispose Existing Concrete Saw-Tooth	N/A	N/A	N/A	LS	1	LS	\$154,315	Budget was derived from RS Means Facilities Construction Cost Data 2020	0	LS	\$0	
8.1	General Requirements	N/A	N/A	\$18,000	LS	1	LS	\$18,000		0	LS	\$0	
8.2	Removal of Concrete Slabs - 10-inch Thick	N/A	N/A	\$80	m2	423	m2	\$33,840		0	LS	\$0	
8.3	Removal of Light Standards	N/A	N/A	\$3,400	each	4	each	\$13,600		0	LS	\$0	
8.4	Removal of Concrete Walls and Footings	N/A	N/A	\$275	m3	225	m3	\$61,875		0	LS	\$0	
8.5	Grading of Area	N/A	N/A	\$27,000	LS	1	LS	\$27,000		0	LS	\$0	
9	Remove and Dispose Existing Shed, Concrete Pad in Storage/Fuelling Area	N/A	N/A	\$80	m2	150	LS	\$12,000		0	LS	\$0	

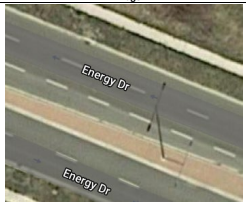













10	Remove and Relocate Excess Fill	\$20	12.54%	\$23	m3	1,768	m3	\$35,367	Removal and relocation of excess fill from cut areas. Assumes material can remain on site and be used for earthworks such as berms (non-structural). Includes loading, hauling, placement, and compaction.	902	m3	\$20,294	
Current MRF													
1	Building Demolition (with equipment re-sale)	\$0	12.54%	\$0	LS	1	LS	\$0				Minimum Total Costs	\$0
2	Building Demolition (no equipment re-sale)	\$67	12.54%	\$76	m3	6,289	m3	\$475,035				Minimum Total Costs (with 20% contingency allowance)	\$0
3	Demolish Existing Scalehouse	\$67	12.54%	\$76	m3	44.63	m3	\$3,371				Maximum Total Costs	\$1,411,952
4	Remove and Dispose Existing Asphalt (building footprint only)	\$60	12.54%	\$68	m3	6,289	m3	\$424,658				Minimum Total Costs (with 20% contingency allowance)	\$1,694,342
5	Remove and Dispose Existing Asphalt (full site footprint)	\$60	12.54%	\$68	m3	19,813	m3	\$1,337,827					
6	Remove and Relocate Excess Fill	\$20.00	12.54%	\$23	m3	6,334	m3	\$126,679					
								Minimum Total Costs	\$1,328,187				
								Minimum Total Costs (with 20% contingency allowance)	\$1,593,824				
								Maximum Total Costs	\$3,528,916				
								Minimum Total Costs (with 20% contingency allowance)	\$4,234,699				



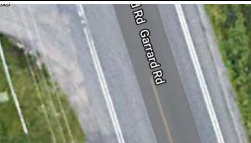

Notes

- 1 Costs inflated based on 2012 AECOM Waste Optimization Study for 4600 Garrard Road report
- 2 According to Statistics Canada consumer price index, today's prices in 2020 are 12.54% <https://www.in2013dollars.com/canada/inflation/2012?amount=100>
- 3 Reference for removal of portable buildings (\$6.5/sq ft) http://www.garlandisd.net/sites/default/files/purchasingbids/purchasing_A-TabRFP368-14PortableBuildingMovingServices-Posted_345111.pdf
- 4 Concrete Saw-Tooth Removal Costs by Brenda Lagassie (GHD)

Table 6 - Cost breakdown for short-listed sites
Road Upgrade Costs

	mile	m	Min Unit Cost (\$/mile)	Max Unit Cost (\$/mile)	Min Unit Cost (\$/m)	Max Unit Cost (\$/m)
Rural	1	1609.34	\$2,000,000	\$6,000,000	\$1,243	\$3,728.04
Urban	1	1609.34	\$3,000,000	\$10,000,000	\$1,864	\$6,213.73
City Road Widening		1000				\$2,500

No.	Site	Road Name	Road Type	# of Lanes	Image	Notes	Upgrade Required	Minimum Cost	Maximum Cost	Distance (m)	Measurement Image
1	South Clarington	Energy Dr	two-way lane	5	 aerial view of Energy Drive		no	\$0	\$0		
		Megawatt Dr	two-way lane	2	 aerial view of Megawatt Dr		no	\$0	\$0		
2	West Scugog	Goodwood Rd	two-way lane	3 close to site, otherwise 2	 aerial view of Goodwood Rd	Site entrance from either Goodwood or Lake Ridge are too close to the intersection. Changes will be required to provide site access. Very high traffic volumes on both roads. Consider moving site entrance further east of property and allow left turn into site from Goodwood only, not a right turn. Left turn lane will need to be widened down Goodwood Rd. A traffic impact study is required.	no	\$250,000	\$500,000		
		Lake Ridge Rd	two-way lane	4 close to site, otherwise 2	 aerial view of Lake Ridge Rd	Site entrance from either Goodwood or Lake Ridge are too close to the intersection. Changes will be required to provide site access.	no	\$250,000	\$500,000		
3	North Clarington	Woodley Rd	one-way lane	1	 aerial view of Woodley Rd	site access from Durham Regional Rd 20 Widen road to construct 1 additional lane. Upgrades to existing road would be required to support traffic volume and loads.	yes	\$951,011	\$1,913,125	765	 aerial view of Woodley Rd
		Durham Regional Rd 20	two-way lane	2	 aerial view of Durham Regional Rd 20	Depending on traffic volumes on Regional Road 20, there may be a need to add left and right turn lanes in the east and west bound direction respectively. This would require local widening of RR20 and modifications to Woodley Rd south.	no	\$250,000	\$500,000		
4	Oshawa	Ritson Rd	two-way lane	3	 aerial view of Ritson Rd	site access from Luple Ave and Ritson Rd	no	\$0	\$0		
		site access road	one-way lane	1	 aerial view of site access road	The entrance seems acceptable as is, with the exception of traffic queuing on Ritson NB left turn lane. Widening and extension of the existing left turn lane may be required.	yes	\$250,000	\$500,000	327	 aerial view of site access road
5	East Scugog	Reach St	two-way lane	3 close to site, otherwise 2	 aerial view of Reach St	Approaching the site from the west on Reach St, there would likely be a need to increase the left turn lane storage length.	no	\$250,000	\$500,000		
		east site access road	one-way lane	1	 aerial view of east site access road		yes	\$68,469.06	\$228,230	37	 aerial view of east site access road
		west site access road	two-way lane	2	 aerial view of west site access road		no	\$0	\$0		

6	Whitby	site access road	sufficient space for two lanes	no divider line, road shoulders not asphalted, therefore one lane		Access Road likely requires widening to one side, possibly both.	yes	\$1,207,563	\$2,429,225	972	
		Garrard Rd	two-way lane	2		Left and right turn lanes would be required on Garrard Rd.	yes	\$500,000	\$1,000,000		
		Conlin Rd	two-way lane	2		Left and right turn lanes would be required on Conlin Rd if used as entrance to site.	yes	\$500,000	\$1,000,000		

Notes

- 1 Constructing a two-lane, undivided road in a rural locale will set you back somewhere between \$2 and \$3 million per mile — in urban areas, that number jumps to between \$3 and \$5 million. <https://blog.midwestind.com/cost-of-building-road/>
- 2 And if you want wider roads, the costs understandably go up: for the production of a 4-lane highway, the cost per mile will run between \$4 and \$6 million in rural or suburban areas, and between \$8 to \$10 million in urban areas.
- 3 Adding right and left turn lanes to an existing road can cost between \$500,000 to \$1,000,000. (Graham Sled - GHD)
- 4 Widening and extending an existing turn lane can cost between \$250,000 to \$500,000. (Graham Sled - GHD)
- 5 City Road Widening Cost Estimates: https://www.vaughan.ca/projects/projects_and_studies/transportation_master_plan/General%20Documents/Appendix%20K%20-%20Capital%20Cost%20Estimates.pdf

Table 6 - Cost breakdown for short-listed sites
Transportation Costs - \$/Tonne/Kilometre

No.	Transport Route	2012 Unit Cost	Inflation	2020 Unit Cost	
				min	max
1	Squires Beach to DYEC	\$0.40	12.54%	\$0.45	\$0.50
2	Pebblestone to DYEC	\$0.40	12.54%	\$0.45	\$0.50
3	Courtice to DYEC	\$0.40	12.54%	\$0.45	\$0.50

Notes

- "\$0.40/tonne/km was developed by dividing the average of the distances from the three private sector transfer stations (15 km one-way) into \$6.43/tonne private sector transfer haul fee"
- 1 \$0.40/tonne/km based on GHD experience.
- 2 \$0.50/km based on GHD experience.

No.	Geographical Region	City/Town	Address	Round-Trip Distance (km)				Transportation Costs (\$/truck)				Total	Ratio	
				Squires Beach to Site to DYEC	Pebblestone to Site to DYEC	Courtice to Site to DYEC	Total	Squires Beach to Site to DYEC	Pebblestone to Site to DYEC	Courtice to Site to DYEC	Total			
				1220 Squires Beach Road, Pickering, ON L1W 3S3	2000 Wentworth St, Whitby, ON L1N 8W9	1 McKnight Rd, Courtice, ON L1E 2T3		1220 Squires Beach Road, Pickering, ON L1W 3S3	2000 Wentworth St, Whitby, ON L1N 8W9	1 McKnight Rd, Courtice, ON L1E 2T3				
1	South Clarington	Courtice	339 Courtice Road	27.43	13.58	2.40	43.41	\$13.72	\$6.79	\$1.20	\$21.71	1.00		
2	West Scugog	Courtice	#10 Regional Road No. 21	71.39	71.4	81.66	224.45	\$35.70	\$35.70	\$40.83	\$112.23	5.17		
3	North Clarington	Courtice	9293 Woodley Rd	70.11	58.46	49.22	177.79	\$35.06	\$29.23	\$24.61	\$88.90	4.10		
4	Oshawa	Oshawa	1640 Ritson Road North	39.00	26.38	29.98	95.36	\$19.50	\$13.19	\$14.99	\$47.68	2.20		
5	East Scugog	Port Perry	1623 Reach Street	80.45	71.68	76.73	228.86	\$40.23	\$35.84	\$38.37	\$114.43	5.27		
6	Whitby	Whitby	4600 Garrard Road	41.12	30.69	39.33	111.14	\$20.56	\$15.35	\$19.67	\$55.57	2.56		
											Minimum Transportation Cost	\$21.71	1.00	
											Maximum Transportation Cost	\$114.43	5.27	

Table 6 - Cost breakdown for short-listed sites

Total Site Remediation Capital Costs

No.	Description	South Clarington		West Scugog		North Clarington		Oshawa		East Scugog		Whitby	
		Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
1	Connection to Natural Gas & Renewable Natural Gas Pipeline	\$3,000,000	\$7,000,000	\$0	\$0	\$25,000,000	\$65,000,000	\$1,000,000	\$3,000,000	\$6,000,000	\$14,000,000	\$1,000,000	\$3,000,000
2	Water Utility	\$0	\$0	\$5,000,000	\$9,000,000	\$6,000,000	\$11,000,000	\$0	\$0	\$0	\$0	\$0	\$0
3	Hydro Utility	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
4	Sewer Utility	\$0	\$0	\$5,000,000	\$9,000,000	\$12,000,000	\$24,000,000	\$0	\$0	\$0	\$0	\$1,000,000	\$1,000,000
5	Telecommunications	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
6	Contaminated Waste Removal	Minimal	Minimal	Minimal	Minimal	\$4,000,000	\$14,000,000	\$4,000,000	\$14,000,000	\$4,000,000	\$14,000,000	Minimal	Minimal
7	Site Demolition	\$0	\$0	\$0	\$2,000,000	Minimal	Minimal	Minimal	Minimal	Minimal	Minimal	\$2,000,000	\$4,000,000
8	Road Infrastructure Upgrades	\$0	\$0	\$1,000,000	\$1,000,000	\$1,000,000	\$2,000,000	\$0	\$1,000,000	\$0	\$1,000,000	\$2,000,000	\$4,000,000
Total Costs		\$3,000,000	\$7,000,000	\$10,000,000	\$21,000,000	\$48,000,000	\$117,000,000	\$6,000,000	\$18,000,000	\$10,000,000	\$30,000,000	\$6,000,000	\$13,000,000

Table 7 - Comparative Evaluation of Short-listed Sites

Environment

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
Air Quality, Odour, Noise	Number of off-site sensitive receptors potentially affected (residential properties, public facilities, businesses, and institutions)	<ul style="list-style-type: none"> Wind direction is away from off-site sensitive receptors. No off-site sensitive receptors within 500 metres of the site. Application of Dust, Odour, and Noise BMPs will mitigate effects for off-site sensitive receptors. 	<ul style="list-style-type: none"> Wind direction is away from off-site sensitive receptors. Seven off-site sensitive receptors within 500 metres of the site. Application of Dust, Odour, and Noise BMPs will mitigate effects for off-site sensitive receptors. 	<ul style="list-style-type: none"> Wind direction is toward some off-site sensitive receptors. Two off-site sensitive receptors within 500 metres of the site. Application of Dust, Odour, and Noise BMPs will mitigate effects for off-site sensitive receptors. 	<ul style="list-style-type: none"> Wind direction is toward some off-site sensitive receptors. Significant amount of off-site sensitive receptors and residential developments within 500 metres of the site. Application of Dust, Odour, and Noise BMPs will mitigate effects for off-site sensitive receptors. 	<ul style="list-style-type: none"> Wind direction is away from off-site sensitive receptors. Significant amount of off-site sensitive receptors and a residential development within 500 metres of the site. Application of Dust, Odour, and Noise BMPs will mitigate effects for off-site sensitive receptors. 	<ul style="list-style-type: none"> Wind direction is toward some off-site sensitive receptors. One off-site sensitive receptor within 500 metres of the site. Application of Dust, Odour, and Noise BMPs will mitigate effects for off-site sensitive receptors.
Terrestrial	Potential removal of vegetation	<ul style="list-style-type: none"> Limited existing vegetation 	<ul style="list-style-type: none"> Existing vegetation to south would be avoided 	<ul style="list-style-type: none"> Limited existing vegetation on-site (closed landfill cap would be disturbed) 	<ul style="list-style-type: none"> Limited existing vegetation on-site (closed landfill cap would be disturbed) 	<ul style="list-style-type: none"> Limited existing vegetation on-site (closed landfill cap would be disturbed) 	<ul style="list-style-type: none"> Existing vegetation on site would be avoided
	Affected Greenbelt & Oak Ridges Moraine (ORM) Land Use	<ul style="list-style-type: none"> No Greenbelt or ORM designations on site 	<ul style="list-style-type: none"> No Greenbelt designation ORM Conservation Plan designation on site – Countryside Area 	<ul style="list-style-type: none"> No Greenbelt designation ORM Conservation Plan designation on site - Natural Core Area 	<ul style="list-style-type: none"> No Greenbelt or ORM designations on site 	<ul style="list-style-type: none"> Greenbelt area – protected countryside 	<ul style="list-style-type: none"> No Greenbelt or ORM designations on site
	Species At Risk (SAR) habitat potentially affected	<ul style="list-style-type: none"> SAR Habitat to be confirmed (if any) and avoided as required. 	<ul style="list-style-type: none"> SAR Habitat to be confirmed (if any) and avoided as required. 	<ul style="list-style-type: none"> SAR Habitat to be confirmed (if any) and avoided as required. 	<ul style="list-style-type: none"> SAR Habitat to be confirmed (if any) and avoided as required. 	<ul style="list-style-type: none"> SAR Habitat to be confirmed (if any) and avoided as required. 	<ul style="list-style-type: none"> SAR Habitat to be confirmed (if any) and avoided as required.
	Wildlife Habitat Network (i.e. core wildlife habitat and landscape corridor)	<ul style="list-style-type: none"> No core wildlife habitat or landscape corridor on site. 	<ul style="list-style-type: none"> No core wildlife habitat or landscape corridor on site. 	<ul style="list-style-type: none"> Site is covered by core habitat within CLOCA regulated area. Wildlife Habitat to be confirmed and avoided as required. 	<ul style="list-style-type: none"> West and northwest edge of site has landscape corridor and secondary habitat within CLOCA regulated area. Wildlife Habitat to be confirmed and avoided as required. 	<ul style="list-style-type: none"> No core wildlife habitat or landscape corridor on site. 	<ul style="list-style-type: none"> Site is covered by core habitat within CLOCA regulated area. Wildlife Habitat to be confirmed and avoided as required.
Aquatic	Predicted impact on aquatic habitat	<ul style="list-style-type: none"> No watercourse or aquatic habitat on site. 	<ul style="list-style-type: none"> No watercourse or aquatic habitat on site. 	<ul style="list-style-type: none"> No watercourse or aquatic habitat on site. 	<ul style="list-style-type: none"> No watercourse or aquatic habitat on site. 	<ul style="list-style-type: none"> No watercourse or aquatic habitat on site. 	<ul style="list-style-type: none"> Potential aquatic habitat present within on-site wetlands would be avoided.
Surface Water	Predicted effects on surface water including Wetlands, Flood Plains (i.e. floodline and top of bank), Regulated Drainage and Water Bodies	<ul style="list-style-type: none"> No wetlands or regulated drainage areas on or near site. CLOCA regulated area covers portions of site, with small tributary of Tooley Creek running east-west through middle of north portion of site and extends to southwest portion of site. A floodline encompasses a portion of southwest part of site. Southeast portion of site remains unaffected by CLOCA regulated area. 	<ul style="list-style-type: none"> No wetlands on or near site. Not in KCA regulated area. Lack of surface water features present on-site. 	<ul style="list-style-type: none"> No wetlands or regulated drainage areas on or near site. Not in CLOCA regulated area. Lack of surface water features present on-site. 	<ul style="list-style-type: none"> CLOCA regulated area occupies west and northwest edge of property as there is an unevaluated wetland, regulated drainage, floodline and top of bank. Most of site is not impacted or within CLOCA regulated area. Site has been previously disturbed/developed and has already influenced surface water conditions on-site. Potential to site the Facility an appropriate 	<ul style="list-style-type: none"> No wetlands on or near site. Site contains Nonquon River Water Pollution Control Plant. Site is within the KCA regulated area. Potential to site the Facility an appropriate distance from on-site surface water features. 	<ul style="list-style-type: none"> Large areas of Provincially Significant Wetlands (PSW) within and adjacent to site, along with floodline and top of bank CLOCA regulated area. While PSW is present, the site is already developed and can be modified. Potential to site the Facility an appropriate distance from on-site surface water features.

Table 7 - Comparative Evaluation of Short-listed Sites

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
		<ul style="list-style-type: none"> Potential to site the Facility an appropriate distance from on-site surface water features. 			distance from on-site surface water features.		
Groundwater	Source Water Protection Area Designations	<ul style="list-style-type: none"> Minimal area of the site covered by Significant Groundwater Recharge Area (SGRA) designation under Source Water Protection Plan No effects to groundwater within source water protection area. 	<ul style="list-style-type: none"> Site covered by Highly Vulnerable Aquifer (HVA) and Significant Groundwater Recharge Area (SGRA) designation under Source Water Protection Plan HVA designation may limit potential development on the site. 	<ul style="list-style-type: none"> Majority of site covered by Highly Vulnerable Aquifer (HVA) and all of site covered by Significant Groundwater Recharge Area (SGRA) under Source Water Protection Plan. HVA designation may limit potential development on the site. 	<ul style="list-style-type: none"> Site covered by Highly Vulnerable Aquifer (HVA) under Source Water Protection Plan HVA designation may limit potential development on the site. 	<ul style="list-style-type: none"> Majority of site covered by Intake Protection Zone (IPZ), and Significant Groundwater Recharge Area (SGRA) designation under Source Water Protection Plan IPZ designation may limit potential development on the site. 	<ul style="list-style-type: none"> Site covered by Highly Vulnerable Aquifer (HVA) designation under Source Water Protection Plan HVA designation may limit potential development on the site.
Agricultural	Prime Agricultural Areas (Specialty Crop Areas, Class 1, 2, and 3 Agricultural Lands)	<ul style="list-style-type: none"> Class 1 – but previously disturbed land, designated for development (business park) No effect on approved or planned land uses as it permits proposed use of site for Facility. 	<ul style="list-style-type: none"> Class 6 No effect on approved or planned land uses. 	<ul style="list-style-type: none"> Class 6 No effect on approved or planned land uses. 	<ul style="list-style-type: none"> Class 2 – but previously disturbed land No effect on approved or planned land uses. 	<ul style="list-style-type: none"> Class 1 and 2 – but previously disturbed No effect on approved or planned land uses. 	<ul style="list-style-type: none"> Class 2 – but previously disturbed No effect on approved or planned land uses.

Social

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
Sensitive Receptors	Number and Distribution of Sensitive Receptors (e.g., residential areas, parks, recreational areas, institutions, airports) within 500m buffer zone.	<ul style="list-style-type: none"> No off-site sensitive receptors within 500 metres of the site. 	<ul style="list-style-type: none"> Seven off-site sensitive receptors within 500 metres of the site. North: 2 residential properties on north side of Regional Road No. 21 East: Tara Hills Stud stallion - horse farm operation with residence on west side of Mast Road, 3 residences on east side of Mast Road West: individual residential/farm property 	<ul style="list-style-type: none"> Two off-site sensitive receptors within 500 metres of the site. North: Long Sault Conservation Area and parking area (considered passive sensitive receptor) South: residential properties on both sides of Regional Road No. 20 	<ul style="list-style-type: none"> Significant amount of off-site sensitive receptors and residential developments within 500 metres of the site. North: Camp Samac Outdoor Pool, Oshawa Scout Shop, Chartwell Wynfield Long Term Care Residence, midrise residential building on the west side of Ritson Road North adjacent to site, and residential development South: Father Joseph Venini Catholic School, residential neighbourhoods, residential development adjacent to site, townhouses directly south of the site at the north west quadrant of the Ritson Road North and Ormond Drive intersection, medical centre at south west quadrant of Ritson Road 	<ul style="list-style-type: none"> Significant amount of off-site sensitive receptors and a residential development within 500 metres of the site. Southwest: 1 residence west of site on north side of Reach Street, 3 residential properties west of site on south side of Reach Street Southeast: baseball diamonds, new off leash dog park opposite baseball diamonds, skate park on road to baseball diamonds, 1 residential property east of site on north side of Reach Street, new residential development on south side of Reach Street, Catholic School south side of Reach Street in the new development East: Scugog Fields, 1 residential property on the west side of Old Simcoe Road, Residential neighbourhood on east side of Old Simcoe Road, Public School with YMCA 	<ul style="list-style-type: none"> One off-site sensitive receptor within 500 metres of the site. North: 2 residences on north side of Conlin Road South: residences on west side of Garrard Street south of site East: 5 residences on east side of Garrard Road, 1 residence on west side of Garrard Road recently demolished

Table 7 - Comparative Evaluation of Short-listed Sites

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
					<p>North and Ormond Drive intersection</p> <ul style="list-style-type: none"> East: Ritson Fields and baseball diamond directly adjacent to site, one residential property adjacent to site on Riston Road North (access on Luple Avenue), residential development north east of site West: Oshawa & District Shrine Club, Village Suites Oshawa, Simcoe Residence-CPPI Group Inc., residential development, Kinark Autism Services 	<p>before and after school care, Montessori School, Community Care Durham Gym</p> <ul style="list-style-type: none"> Northeast: 4 residential properties within south west quadrant of Scugog Line 8 and Old Simcoe Road adjacent to site, other residential properties along east side of Old Simcoe Road North: 4 residential properties on Scugog Line 8 directly opposite site 	
Land Use/ Zoning	Current Land Use, Zoning, Approved Development Plans, and Proposed Land Use Changes	<ul style="list-style-type: none"> Regional Official Plan designation is Employment Area Municipal Official Plan designation is Business Park Zoning designation is Industrial (M) 	<ul style="list-style-type: none"> Regional Official Plan designation is ORM Area Municipal Official Plan designation is ORM Countryside Area Zoning designation is Rural Industrial (ORM-M3) 	<ul style="list-style-type: none"> Regional Official Plan designation is ORM Area Zoning designation is ORM Natural Core 	<ul style="list-style-type: none"> Regional Official Plan designation is Living Areas/Major Open Space Municipal Official Plan designation is Open Space and Recreation surround by Residential Zoning designation is Park Open Space Zone (OSP) 	<ul style="list-style-type: none"> Regional Official Plan designation is Employment Area/Living Area Municipal Official Plan designation is within Port Perry Urban Boundary, Open Space, and Hazard Lands (small area to south) Zoning designation is Waste Disposal Industrial (M5) (majority of site), Future Development (FD) (northeast and eastern boundary), and Environmental Protection (EP) (northwest corner) 	<ul style="list-style-type: none"> Regional Official Plan designation is Employment Area/Major Open Space Municipal Official Plan designation is General Industrial/Major Open Space Zoning designation is Agricultural
	Compatibility with Existing Land Use/ Zoning Designations on Adjacent Sites	<ul style="list-style-type: none"> Adjacent Official Plan designated as Business Park Areas to the north of Highway 401 designated as light industrial Utility designation for the Courtice Water Pollution Control Plan south of the CNR railway Adjacent zoning maintains the Energy Park Light Industrial Zone, with a portion of adjacent lands zoned as Environmental Protection (EP). One development application in close proximity for the East Penn Battery Facility (warehouse and Office) 	<ul style="list-style-type: none"> Adjacent Official Plan is designated as ORM Aggregate Area and ORM Natural Core Area Township of Uxbridge Official Plan Designates the area to the west of the Site as Countryside with approved Mineral Aggregate Extraction Areas Surrounding area is zoned as ORM M4 Extractive Industrial, ORM EP Environmental Protection and ORM AG Agricultural Township of Uxbridge zones the surrounding area to the west of the Site as M3 Rural 	<ul style="list-style-type: none"> Official Plan and Zoning By-law designate the surrounding area as Environmental Protection Area and Natural Core Area Site is within the ORM . 	<ul style="list-style-type: none"> Adjacent Official Plan designation is primarily designated as Residential, Open Space and Recreation The surrounding area is primarily various Residential zones, Park Open Space (Ritson Fields), UR Urban Reserve, CIN Community Institutional (Schools) The current open area south of Ritson Fields is zoned as Residential 	<ul style="list-style-type: none"> Surrounding area to the east and south (Port Perry) is designated under the Official Plan as Open Space, Residential or Industrial Surrounding areas to the north and west are designated as Natura Core Area and Natural Linkage Area Surrounding area to the south and east (Port Perry) is zoned Residential, OS Open Space (Scugog Soccer Fields), CF Community Facility (Baseball Diamonds, Dog Park, Schools, Arena and Heritage Centre) 	<ul style="list-style-type: none"> Surrounding area is designated as Industrial, Environmental Protection and Hazard Land. To the South is an area designated as Special Policy Area which has a past use as a landfill The surrounding area is zoned as Agricultural

Table 7 - Comparative Evaluation of Short-listed Sites

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
			Resource Extraction Zone, and RU Rural Zone			<ul style="list-style-type: none"> Surrounding areas to the west are zoned AG Agricultural, EP Environmental Protection, RR Rural Residential M1 Prestige Industrial, M2 General Industrial and M3 Rural Industrial Surrounding area to the north is zoned as EP Environmental Protection, AG Agricultural and RR Rural Residential 	
Transportation	Existing/ Required Transportation Infrastructure	<ul style="list-style-type: none"> Energy Drive is a paved two-way lane road with a total of 5 lanes. Megawatt Drive is a paved two-way lane road with a total of 2 lanes. No significant road upgrades required. 	<ul style="list-style-type: none"> Goodwood Road is a paved two-way lane road with a total of 2 lanes. A third lane dedicated for turning appears closer to site. Lakeridge Road is a paved two-way lane road with a total of 2 lanes. Two additional lanes dedicated for turning appear closer to site. Site entrance from either Goodwood or Lakeridge are too close to the intersection. Changes will be required to provide site access. Very high traffic volumes on both roads. Consider moving site entrance further east of property and allow left turn into site from Goodwood only, not a right turn. Left turn lane will need to be widened down Goodwood Rd. A traffic impact study is required. 	<ul style="list-style-type: none"> Woodley Road is a paved one-way lane road with only one lane. Woodley Road is the existing site access road from Durham Regional Road #20. Woodley Road requires upgrades to provide for a two-way lane road. Upgrades to existing road would be required to support traffic volume and loads. Durham Regional Road #20 is a two-way lane with a total of 2 lanes. Depending on traffic volumes on Regional Road 20, there may be a need to add left and right turn lanes in the east and west bound direction respectively. This would require local widening of RR20 and modifications to Woodley Rd south. 	<ul style="list-style-type: none"> Ritson Road is a paved two-way lane road with a total of 3 lanes. Ritson Road requires no significant road upgrades. Entrance and exit at Ritson Road will require significant upgrades given most traffic will come from south and have to turn left. Traffic leaving site will want to head south turning right against traffic. If transfer station function remains, there will be significant queuing issues on Ritson Rd. Unnamed site access road from Ritson Road is a one-way lane road with only one lane. The entrance seems acceptable as is, with the exception of traffic queuing on Ritson NB left turn lane. Widening and extension of the existing left turn lane may be required. 	<ul style="list-style-type: none"> Reach Street is a two-way lane road with a total of 2 lanes. A third lane dedicated for turning appears closer to site. Approaching the site from the west on Reach St, there would likely be a need to increase the left turn lane storage length. Unnamed site access road southeast of property is a paved one-way lane road with only one lane. Unnamed site access road southeast of property requires significant upgrades to provide for a two-way lane road. Unnamed site access road southwest of property is a paved two-way lane road with a total of two lanes. Unnamed site access road southwest of property requires no significant upgrades. 	<ul style="list-style-type: none"> Garrard Road is a paved two-way lane road with a total of 2 lanes. Left and Right turn lanes would be required on Garrard Rd. Conlin Road is a paved two-way lane road with a total of 2 lanes. Left and Right turn lanes would be required on Conlin Rd if used as entrance to site. Unnamed site access road has sufficient space for two lanes, however there's no divider line and shoulders are not asphalted, therefore it is a one-way lane road with a total of one lane. Unnamed site access road likely requires widening to one side, possibly both.
	Neighbourhood Traffic Impacts	<ul style="list-style-type: none"> Minimal traffic impacts as material is currently transported to adjacent DYEC. 	<ul style="list-style-type: none"> High traffic volumes on both Goodwood Rd and Lakeridge Rd due to existing Scugog Depot. 	<ul style="list-style-type: none"> Woodley Rd. is a dead end road with no through traffic. However, some little existing traffic volume due to Long Sault Conservation Area multi-use trail north of site. 	<ul style="list-style-type: none"> High existing traffic volume on Ritson Rd North. Residential properties in close proximity to site entrance. 	<ul style="list-style-type: none"> Minimal existing traffic volume on Reach St. New development on Sherrington Drive south of site may increase traffic volumes in the near future. 	<ul style="list-style-type: none"> High existing traffic on Garrard Rd as all recycling trucks currently go to this location. Residential properties along Garrard Rd and may be used to travel to highway 407.

Table 7 - Comparative Evaluation of Short-listed Sites

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
Visual	Buffer Zones and Visual Screening	<ul style="list-style-type: none"> No visual screening currently provided by existing site features 	<ul style="list-style-type: none"> No visual screening provided by existing site features 	<ul style="list-style-type: none"> Good visual screening provided by existing vegetation north of site for multi-use trail. Some visual screening provided by existing vegetation west of site. 	<ul style="list-style-type: none"> Good visual screening provided by existing vegetation, topography, and buffer distances as a result of site size 	<ul style="list-style-type: none"> Good visual screening provided by existing vegetation north and east of site. Some visual screening provided by existing vegetation west of site. 	<ul style="list-style-type: none"> Moderate visual screening provided by existing vegetation

Cultural

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
Archaeological	Archeologically Significant Areas	<ul style="list-style-type: none"> Archaeological assessment completed and cleared the site for archaeological significance. 	<ul style="list-style-type: none"> No known archeologically significant areas on or adjacent to site 	<ul style="list-style-type: none"> No known archeologically significant areas on or adjacent to site 	<ul style="list-style-type: none"> No known archeologically significant areas on or adjacent to site 	<ul style="list-style-type: none"> No known archeologically significant areas on or adjacent to site 	<ul style="list-style-type: none"> No known archeologically significant areas on or adjacent to site
Heritage	Areas of Important Cultural Heritage	<ul style="list-style-type: none"> No known areas of important cultural heritage on or adjacent to site 	<ul style="list-style-type: none"> No known areas of important cultural heritage on or adjacent to site 	<ul style="list-style-type: none"> No known areas of important cultural heritage on or adjacent to site 	<ul style="list-style-type: none"> Camp Samac - Class A (greatest historic - interest) to the north (campground/scouts) 	<ul style="list-style-type: none"> No known areas of important cultural heritage on or adjacent to site 	<ul style="list-style-type: none"> No known areas of important cultural heritage on or adjacent to site

Technical

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
Permitting/ Approvals	Feasibility and Complexity of Permitting/ Approvals	<ul style="list-style-type: none"> New waste and air/noise Environmental Compliance Approval (ECA) required 	<ul style="list-style-type: none"> New waste and air/noise ECA required 	<ul style="list-style-type: none"> Amendment to existing waste and air/noise ECA required 	<ul style="list-style-type: none"> Amendment to existing waste and air/noise ECA required 	<ul style="list-style-type: none"> Amendment to existing waste and air/noise ECA required 	<ul style="list-style-type: none"> Amendment to existing waste and air/noise ECA required Approval may be required from Ministry of Infrastructure for work under Hydro corridor
Safety	Potential Safety Risks	<ul style="list-style-type: none"> Not near airport. No nearby public trails. A railroad track runs approximately 50 metres south of site, though there is a road in between (site access road for DYEC). 	<ul style="list-style-type: none"> Proximity (10.32km shortest or 13km driving) to proposed Pickering Airport. Within Wildlife Hazard Zone as per Transport Canada's Proposed Drawings (secondary bird hazard zone) No nearby public trails. No nearby railroad tracks. 	<ul style="list-style-type: none"> Not near airport. Long Sault Conservation Area multi-use trail directly north of site and parking area No nearby railroad tracks. 	<ul style="list-style-type: none"> Proximity (2.5km shortest or 3.5km driving) to Oshawa Executive Airport, flight path (within approach Surface Slope 1:50 as per Transport Canada Oshawa Airport Zoning Regulations) No nearby public trails. No nearby railroad tracks. 	<ul style="list-style-type: none"> Proximity (4.75km shortest or 7.5km driving) to Greenbank Airport (not a municipal airport). No nearby public trails. No nearby railroad tracks. 	<ul style="list-style-type: none"> Proximity (2.28km shortest or 3.1km driving) to Oshawa Executive Airport, flight path – (within Outer Surface Elevation 180.0 ASL as per Transport Canada Oshawa Airport Zoning Regulations) No nearby public trails. No nearby railroad tracks.
Utilities and Services	Availability and Distance from Utilities and Services	<ul style="list-style-type: none"> Nearest gas supply line connection is 1.2km from site. Municipal water, sanitary sewer, telecommunication, and hydro connections available on site. 	<ul style="list-style-type: none"> Existing natural gas service available at site. Nearest municipal water supply connection is 9km from site. Nearest sanitary sewer connection is 9km from site. Telecommunication and hydro connections available on site. 	<ul style="list-style-type: none"> Nearest gas supply line connection is 11km from site. Nearest municipal water supply connection is 11.5km from site. Nearest sanitary sewer connection is 24km from site. There is likely an underground septic tank on site. Hydro tower is 350m south of site. 	<ul style="list-style-type: none"> Nearest gas supply line connection is 600m from site. Municipal water, sanitary sewer, hydro, and telecommunication connections available on site. 	<ul style="list-style-type: none"> Nearest gas supply line connection is 2.46km from site. Nearest municipal water supply connection is 300m from site. Site backs onto WPCP for sanitary sewer connection. Telecommunication and hydro connections available on site. 	<ul style="list-style-type: none"> Nearest gas supply line connection is 500m from site. An underground septic tank is on site. Nearest sanitary sewer connection is 1.5km from site. Hydro tower crosses south of site with Ontario Hydro Easement. Municipal water and telecommunication

Table 7 - Comparative Evaluation of Short-listed Sites

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
				<ul style="list-style-type: none"> Nearest telecommunication connection is 890m from site. 			connections available on site.
Suitability	Meets Minimum Size Requirements	<ul style="list-style-type: none"> 16 	<ul style="list-style-type: none"> 41 	<ul style="list-style-type: none"> 8 	<ul style="list-style-type: none"> 34 	<ul style="list-style-type: none"> 120 	<ul style="list-style-type: none"> 20
	Site Layout, Topography, and Soil Conditions	<ul style="list-style-type: none"> No major constraints - site relatively flat and almost entirely useable 	<ul style="list-style-type: none"> No major constraints - site relatively flat and almost entirely useable (restricted by Depot site existing buildings) 	<ul style="list-style-type: none"> Large potential area for development/ expansion Varied topography expected due to closed landfill 	<ul style="list-style-type: none"> Large potential area for development/ expansion Varied topography expected due to closed landfill 	<ul style="list-style-type: none"> Limited area for potential development/ expansion due to Nonquon River Water pollution Control Plant within north of site and Carolyn Best Memorial Diamonds east of site. Varied topography expected due to closed landfill 	<ul style="list-style-type: none"> Limited area for potential development/ expansion Restricted by existing buildings Hydro corridor crossing south of site limits development areas
	Compatibility/ Synergies with Existing Infrastructure	<ul style="list-style-type: none"> Industrial property with no existing infrastructure Adjacent to DYEC where mixed-waste residuals would be processed. Adjacent to WPCP which may be able to treat Facility effluent, thereby reducing costs. Meets Energy Park objectives, including energy related development, employment for energy related development, and ability for district energy/ sustainable energy. 	<ul style="list-style-type: none"> No synergies with existing depot site infrastructure. 	<ul style="list-style-type: none"> Remote closed landfill property with no existing infrastructure. 	<ul style="list-style-type: none"> No synergies with existing WMF building as it is too small to be used for pre-sort portion of Facility. 	<ul style="list-style-type: none"> Adjacent to WPCP which may be able to treat Facility effluent, thereby reducing wastewater treatment plant costs. 	<ul style="list-style-type: none"> MRF building may be used for portion of proposed Facility.

Economic

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
Capital Costs (Estimated costing provided in Table 5)	Utility Connections (natural gas, municipal water, sanitary sewer, hydro/electricity, and telecommunication)	<ul style="list-style-type: none"> Natural gas supply line connection costs as nearest connection is 1.2km from site. All other utility connections are available on site. 	<ul style="list-style-type: none"> Existing natural gas service available at site. High municipal water supply and sanitary sewer connection costs as nearest connection is 9km from site. All other utility connections are available on site. 	<ul style="list-style-type: none"> High natural gas supply line, municipal water supply, and sanitary sewer connection costs as nearest connection is over 11km from site. Some hydro connection costs as Hydro tower is approximately 350m south of site. Telecommunication connection costs. 	<ul style="list-style-type: none"> Natural gas supply line connection costs as nearest connection is 600m from site. All other utility connections are available on site. 	<ul style="list-style-type: none"> Natural gas supply line connection costs as nearest connection is 2.46km from site. Some municipal water supply costs as nearest connection is 300m from site. Low sanitary sewer costs as site backs onto WPCP. All other utility connections are available on site. 	<ul style="list-style-type: none"> Natural gas supply line connection costs as nearest connection is 500m from site. Sanitary sewer costs as nearest connection is 1.5km from site. All other utility connections are available on site.
	Transportation Infrastructure Upgrades	<ul style="list-style-type: none"> No major road improvements anticipated. 	<ul style="list-style-type: none"> Widen left turning lane on Goodwood Rd to allow room for queuing and not block intersection. 	<ul style="list-style-type: none"> Upgrade Woodley Rd to support traffic volume and loads. Vehicle turning lanes may be required in east and east bound direction of Durham Regional Road #20. 	<ul style="list-style-type: none"> Widen left turning lane on Ritson Rd northbound to allow room for queuing. 	<ul style="list-style-type: none"> Widen left turning lane when approaching site from the west on Reach St to allow room for queuing. 	<ul style="list-style-type: none"> Would likely require left and right vehicle turning lanes on Garrard Rd and Conlin Rd if used as entrance to site. Widen unnamed site access road.

Table 7 - Comparative Evaluation of Short-listed Sites

Criteria	Indicator	South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
	Site Remediation Costs	<ul style="list-style-type: none"> No known areas requiring remediation on-site 	<ul style="list-style-type: none"> No known areas requiring remediation on-site 	<ul style="list-style-type: none"> Closed landfill requiring extensive contaminated waste/soil removal 	<ul style="list-style-type: none"> Closed landfill requiring extensive contaminated waste/soil removal 	<ul style="list-style-type: none"> Closed landfill requiring extensive contaminated waste/soil removal 	<ul style="list-style-type: none"> No known areas requiring remediation on-site
	Site Demolition Costs	<ul style="list-style-type: none"> No known areas requiring demolition on-site 	<ul style="list-style-type: none"> Existing depot building site may need to be demolished 	<ul style="list-style-type: none"> No known areas requiring remediation on-site 	<ul style="list-style-type: none"> No known areas requiring remediation on-site 	<ul style="list-style-type: none"> No known areas requiring remediation on-site 	<ul style="list-style-type: none"> Existing MRF buildings will require to be repurposed or demolished.
Transportation / Waste Transfer Costs	From Waste Transfer Stations to Site to DYEC.	<ul style="list-style-type: none"> Approximately 44 km for one complete trip 	<ul style="list-style-type: none"> Approximately 225 km for one complete trip 	<ul style="list-style-type: none"> Approximately 178 km for one complete trip 	<ul style="list-style-type: none"> Approximately 95 km for one complete trip 	<ul style="list-style-type: none"> Approximately 229 km for one complete trip 	<ul style="list-style-type: none"> Approximately 111 km for one complete trip

Overall Recommendation

South Clarington Site	West Scugog Site	North Clarington Site	Oshawa Site	East Scugog Site	Whitby Site
Recommended as Most Preferred Site	Less Preferred Site	Least Preferred Site	Less Preferred Site	Less Preferred Site	Less Preferred Site

Overall Rationale/Key Advantages and Disadvantages

Based on the review of the six short-listed sites and the application of evaluation criteria, it was determined that the South Clarington Site has a greater number of advantages than disadvantages when compared against all other short-listed sites. The advantages of the South Clarington site include:

- No off-site sensitive receptors within 500 metres of the site.
- No policy conflicts from a provincial policy/plan perspective (i.e. ORM, Greenbelt, etc.)
- No watercourses or wetlands on site and limited areas of Source Water Protection Plan designations (small portion of site)
- Consistent with existing, proposed and surrounding land uses and land use designations
- Road network to the site has been upgraded to accommodate volumes of traffic that would be generated for the proposed use
- Utilities and servicing are available on-site with nearest gas line in close proximity
- Synergies with existing solid waste management infrastructure, including DYEC where mixed-waste residuals would be processed, and adjacent WPCP which may be able to treat Facility effluent and utilize gas from Facility.
- The potential exists to build on the energy related character of the Energy Park through the development of this Facility and new energy production facilities, including District Energy and sustainable energy.
- The Facility fits into the Energy Park’s sustainable development and design standards, and future opportunities in the renewable and alternative energy sector.
- With respect to Employment designation, this facility will provide employment in the range of 30-40 full time positions (estimated). The zoning designation is Industrial (M).
- Low Capital costs (remediation, demolition and utilities)

Appendices

Appendix A

Photo Logs from Site Visit



Photo 1 - Development proposal for lot east of the Site on Energy Drive



Photo 2 - Durham York Energy Centre east of the Site

Site Photographs
South Clarington Site – Near DYEC
339 Courtice Rd & 1797 South Service Rd,
Courtice, Ontario





Photo 3 - South portion of the Site from eastern boundary on Energy Drive



Photo 4 - View of north portion of the Site from western boundary on Energy Drive.

Site Photographs
South Clarington Site – Near DYEC
339 Courtice Rd & 1797 South Service Rd,
Courtice, Ontario





Photo 5 - View of south portion of the Site from western boundary on Energy Drive.



Photo 6 - New Highway 401 and Highway 418 interchange.

Site Photographs
South Clarington Site – Near DYEC
339 Courtice Rd & 1797 South Service Rd,
Courtice, Ontario





Photo 7 - View of the Site from Haul Road



Photo 8 - View of the Site from eastern boundary on Megawatt Drive

Site Photographs
South Clarington Site – Near DYEC
339 Courtice Rd & 1797 South Service Rd,
Courtice, Ontario





Photo 1 - Residence on east side Mast Road



Photo 2 - Residence on west side of Mast Road associated with Tara Hills Stud horse farm

**Site Photographs
West Scugog Site – Depot
#10 Durham Regional Road No. 21,
Scugog, Ontario**





Photo 3 - View of the Site from north east corner on Regional Road 21



**Site Photographs
West Scugog Site – Depot
#10 Durham Regional Road No. 21,
Scugog, Ontario**



Photo 1 - View of the Site from Woodley Road



Photo 2 - Woodley Road looking south from the Site



Site Photographs
North Clarington Site – Closed Landfill
9293 Woodley Rd, Clarington, Ontario



Photo 3 - Long Sault Conservation Area parking lot north of the Site



Photo 4 - View of the Site from lower Long Sault Conservation Area parking lot.



Site Photographs
North Clarington Site – Closed Landfill
9293 Woodley Rd, Clarington, Ontario



Photo 1 - View of eastern boundary of the Site from Kinark Autism Services.



Photo 2 - Residential development backing directly onto the Site

Site Photographs
North Clarington Site – Closed Landfill and
Waste Management Facility
1640 Ritson Road North, Oshawa, Ontario





Photo 3 - Townhouses south of the Site on Ormond Drive



Photo 4 - North Oshawa Medical Clinic south of the Site on Ormond Drive

Site Photographs
North Clarington Site – Closed Landfill and
Waste Management Facility
1640 Ritson Road North, Oshawa, Ontario





Photo 5 - View of south east corner of the Site from Ritson Fields parking lot



Photo 6 - Mid-rise residential north of the Site on Ritson Road North

Site Photographs
North Clarington Site – Closed Landfill and
Waste Management Facility
1640 Ritson Road North, Oshawa, Ontario





Photo 7 - View of the Site from Luple Avenue



Photo 8 - Residence east of the Site on Luple Avenue

**Site Photographs
North Clarington Site – Closed Landfill and
Waste Management Facility
1640 Ritson Road North, Oshawa, Ontario**





Photo 9 - Residential Development on Luple Avenue

**Site Photographs
North Clarington Site – Closed Landfill and
Waste Management Facility
1640 Ritson Road North, Oshawa, Ontario**





Photo 1 - Scugog Soccer Fields adjacent to the Site



Photo 2 - Residences on Old Simcoe Road.



Site Photographs
East Scugog Site – Closed Landfill
1623 Reach Street, Port Perry, Ontario



Photo 3 - North east corner of the Site on Scugog Line 8



Photo 4 - Entrance to the Site on Scugog Line 8.



Site Photographs
East Scugog Site – Closed Landfill
1623 Reach Street, Port Perry, Ontario



Photo 5 - Close bridge on Scugog Line 8 west of the Site.



Photo 6 - View of the Site from baseball diamond parking lot.



Site Photographs
East Scugog Site – Closed Landfill
1623 Reach Street, Port Perry, Ontario



Photo 7 - Carolyn Best Memorial Diamonds



Photo 8 - New off leash dog park opposite baseball diamonds



Site Photographs
East Scugog Site – Closed Landfill
1623 Reach Street, Port Perry, Ontario



Photo 9 - View eastward of new residential development from south east corner of the Site on Reach Street.



Photo 10 - View of south edge of the Site on Reach Street.



Site Photographs
East Scugog Site – Closed Landfill
1623 Reach Street, Port Perry, Ontario



Photo 1 - Residence adjacent to the Site on north side of Conlin Road



Photo 2 - Durham Works Department on the Site



**Site Photographs
Whitby Site – MRF
4600 Garrard Road, Whitby, Ontario**



Photo 3 - View south of eastern boundary of the Site from Conlin Road



Photo 4 - View of the Site across field from residences on Garrard Road.



**Site Photographs
Whitby Site – MRF
4600 Garrard Road, Whitby, Ontario**



Photo 5 - Recently demolished property adjacent to the Site.



Photo 6 - Residences on Garrard Road



**Site Photographs
Whitby Site – MRF
4600 Garrard Road, Whitby, Ontario**



Photo 7 - Residence on Gerrard Road



Photo 8 - View east from end of service road on the Site



**Site Photographs
Whitby Site – MRF
4600 Garrard Road, Whitby, Ontario**



Photo 9 - North view of the Site from end of service road



Photo 10 - South west view of the Site from end of service road.



**Site Photographs
Whitby Site – MRF
4600 Garrard Road, Whitby, Ontario**



about GHD

GHD is one of the world's leading professional services companies operating in the global markets of water, energy and resources, environment, property and buildings, and transportation. We provide engineering, environmental, and construction services to private and public sector clients.

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