

Scoped Environmental Impact Study

Proposed Environmental Resource Recovery Center
Springwater, Ontario

County of Simcoe



Executive Summary

The County of Simcoe (County) adopted a Solid Waste Management Strategy (Strategy) in 2010 that provides the framework for the County's waste disposal options and diversion programs. Guided by the Strategy, and following further recommendations from Council, the County initiated a siting process in 2014 to identify a site for the development of an Organics Processing Facility (OPF) for the long-term processing of source-separated organics (SSO). The siting process was subsequently expanded to also identify a site for the development of a Materials Management Facility (MMF) for the transfer of garbage, recyclables, and SSO. Collectively, these facilities are referred to as the Environmental Resource Recovery Centre (ERRC). The proposed ERRC is located at 2976 Horseshoe Valley Road West, Springwater (Study Area).

The Study Area is comprised of Freele County Forest tract, an approximately 65 year old mixed species plantation managed by County foresters. It represents approximately 84 hectares (ha) of a greater than 475 ha contiguous woodland area. Wetlands are present in both the northeast and southeast corners of the Study Area. There are no Areas of Natural or Scientific Interest or Significant Ecological Areas identified within the Study Area.

The Terms of Reference (TOR) for the scoping of the EIS were prepared in consultation with Simcoe County (County), Township of Springwater, Nottawasaga Valley Conservation Authority (NVCA), and the Ministry of Natural Resources and Forestry (MNR). The Scoped EIS was completed in accordance with the requirements of the Simcoe County Official Plan (OP) as approved in 2016 by the Ontario Municipal Board (OMB).

Secondary source natural heritage information was collected and used to guide field activities. Field investigations were conducted in 2016 and included wetland boundary delineation, verification of watercourse presence, vegetation inventory, calling amphibian surveys, breeding bird surveys, and incidental wildlife observations. NVCA verified wetland boundary delineations were field delineated and mapped. The field data was used to assign Ecological Land Classification (ELC) units to the vegetation units present, and describe the available habitats and natural features of the Study Area for a total of seven upland and four wetland ELC units. Unique within the Study Area is an older-growth hemlock stand, which is present in the southeast corner.

Based on the determination of Study Area habitats, targeted surveys for Species at Risk (SAR) were conducted for forked three-awned grass (*Aristida basiramea*). However, suitable habitat was not present within the Study Area for whip-poor-will or Hine's emerald dragonfly, SAR that secondary source information indicated may be present in the area. Therefore, targeted surveys for presence of these species were not conducted. Two bird species with provincial Special Concern status were observed within the Study Area. No SAR were observed.

A watercourse, identified on mapping layers as a west – east feature in the south end of the Study Area was determined not to be present through multiple site visits in 2016.

As woodland of the Study Area is mapped as Greenlands, and is part of a greater than 10 ha woodland in the Simcoe Uplands, it meets the criteria for definition of a significant woodland under the Simcoe County Official Plan (OMB approved 2016). Environmental protection of natural heritage



features in the Township of Springwater Official Plan is classified as Category 1 (most protective) or Category 2 (lesser protective) lands. The northeast portion of the Study Area associated with the northeast wetlands is designated Category 2 lands; the balance of the Study Area does not have a natural heritage designation under the Township of Springwater Official Plan.

The Natural Heritage Reference Manual (MNR, 2010) provides guidance for the implementation of the natural heritage considerations associated with the Provincial Policy Statement (PPS). Based on the criteria of evaluation for significance under the PPS the Study Area is part of a Significant Woodland. The Study Area does not satisfy the test for Significant Wildlife Habitat as the majority of the Study Area is comprised of plantation trees that are actively managed and harvested, and is not a natural forest. Development within a Significant natural heritage feature can be approved under the PPS if it can be demonstrated that it has been demonstrated that there will be no negative impact on the natural features or their ecological functions.

The proposed ERRC is a 4.5 ha development that will encompass the OPF, MMF, an administration building, and associated stormwater management facilities. All process water generated from the ERRC will be isolated from stormwater, temporarily stored on site and pumped out for off-site treatment and disposal. Stormwater management controls will be employed to mitigate the increase of surface runoff from the impervious areas, maintain existing water quality and quantity conditions, and address the water balance deficit. Components of the facility include: vegetative filter strips, a vegetated swale, a stormwater management pond (SWMP), and a drainage ditch along the access road to convey any overflow from the SWMP. The ERRC entrance from Horseshoe Valley Road is proposed to be located east of the existing entrance; the balance of the access roads within the Study Area will utilize existing paths/access roads.

Negative impact, as defined in the PPS and applicable to this scoped EIS, is defined as degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities.

A number of direct and indirect potential impacts from the construction and/or operation of the proposed ERRC on the vegetation, wildlife and habitat are identified, along with measures to mitigate these impacts. While the development of the proposed ERRC will result in the loss of approximately 4.5 ha of the Freele County Forest tract, this conservatively represents a less than 1% loss of total contiguous woodland feature. Further, it is the most natural areas of the Study Area (wetlands to the northeast, old growth hemlock stand to the southeast) that will first and foremost be avoided and will therefore remain undisturbed and not be impacted by the development of the ERRC. The mitigation measures provided herein are protective of a range of vegetation and wildlife species.

The development of the ERRC will not result in a negative impact, which is defined under the PPS as “degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities”. This is based on the proposed location of the ERRC, the plantation history of the Site, the actively managed nature of the Study Area and the implementation of the recommended mitigation measures, which adequately avoid, compensate and replace natural features (i.e. vegetation/plantings) within the wider woodlot feature. No net environmental impacts on the larger woodlot feature are anticipated from the development of the proposed ERRC.



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1. Introduction

1.1 Introduction

GHD Ltd. has been retained by Simcoe County (County) to complete a Scoped Environmental Impact Study (Scoped EIS) for the proposed co-located development of a Materials Management Facility (MMF), an Organics Processing Facility (OPF), and related support activities, which will collectively be referred to as the Environmental Resource Recovery Centre (ERRC). The proposed ERRC is located at 2976 Horseshoe Valley Road West, Springwater (Study Area) and the Scoped EIS was completed in accordance with the requirements of the Simcoe County Official Plan (OP; OMB approved 2016), which designates the property as County Greenlands.

The proposed development is located within Freele County Forest. Freele County Forest is roughly 84 hectares (207 acres) in area, and rectangular in shape, with approximate dimensions of 625 metres (m) wide and 1,370 m long (2,050 feet by 4,500 feet). The Study Area features established mixed plantation and an unevaluated wetland in the north-east corner. This forest is managed by the County for timber harvest, and is currently used as a community walking and snowmobiling trail. It is expected that the ERRC will comprise a footprint of around 5.5% of the overall Study Area, covering an area of approximately 4.5 hectares (11 acres), and is proposed to be situated on an elevated area north-west of the Study Area mid-point. A Study Area Location Map is attached as Figure 1 and outlines the limits of the Study Area.

The Terms of Reference (TOR) for this Scoped EIS was developed on April 1, 2016 in consultation with the Nottawasaga Valley Conservation Authority (NVCA), the Ministry of Natural Resources and Forestry (MNRF), Simcoe County, and the Township of Springwater to include an evaluation of all relevant natural features and species present within the Study Area.

In accordance with Schedule 5.1 of the Simcoe County OP, the entire Study Area is designated as County Greenlands as the property supports a forested area greater than 10 hectares (ha). This report has been prepared to address the requirements stipulated in the Simcoe County OP to satisfy the requirements of Provincial and County OP policies, as well as other relevant legislation.

1.2 Project Team

The following individuals contributed to the development of this Scoped EIS report.

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2. Existing Conditions, Natural Features and Resources

2.1 Background Review

2.1.1 Secondary Sources

Available secondary sources of information were obtained and reviewed to determine existing Natural Environment conditions within the Study Area. The sources reviewed are outlined in **Table 2.1**.

Table 2.1 Secondary Source Information Reviewed

Source	Information Reviewed
MNRF	<ul style="list-style-type: none"> Species at Risk (SAR) Natural Heritage Features data layers from Land Information Ontario Regionally Rare Vegetation Lists
County of Simcoe	<ul style="list-style-type: none"> County of Simcoe Official Plan Freele County Forest management documents
Government of Canada	<ul style="list-style-type: none"> The Atlas of Canada - Toporama
Ontario Reptile and Amphibian Atlas	<ul style="list-style-type: none"> Species records for Study Area
Ontario Butterfly Atlas	<ul style="list-style-type: none"> Species records for Study Area
eBird	<ul style="list-style-type: none"> Avian species records in vicinity of Study Area

2.1.2 Previous Studies

The Study Area is currently a County managed forest and routine tree inventories and tree health surveys are conducted. Relevant documents were obtained from the County and reviewed prior to field activities. The materials received and reviewed included a forest inventory and stand health evaluations. No additional environmental studies are known to have been completed within the Study Area.



2.2 Field Investigations

An initial field reconnaissance was conducted by a GHD ecologist on January 27, 2016. Observations made were limited to general vegetation communities, incidental wildlife, and likely location of a mapped watercourse due to the season and snow covered ground, with a focus on the proposed facility footprint and associated development (e.g. access road). An in-depth characterization of the property could not be completed at this time due to the time of year and extensive snow cover. As per the requirements of the County OP and stipulations established in the TOR, extensive field surveys (outlined in **Table 2.2**) were conducted during the appropriate field season to confirm relevant habitat features and species presence.

Table 2.2 Field Investigations

Field Investigation	Dates
Study Area Reconnaissance	January 27, 2016
Ecological Land Classification (ELC)	Collected and refined during all Study Area visits (April – August 2016)
Watercourse Verification	May 10, 2016
Wetland Delineation	May 31, 2016; July 4, 2016
Species at Risk Habitat Verification	Collected during all Study Area visits Forked Three Awned Grass: August 23, 2016; September 28, 2016
Amphibian Surveys	April 18, 2016; May 10, 2016; June 16, 2016
Breeding Bird Survey	May 31, 2016; June 17, 2016
Incidental Species Observations	Collected during all Study Area visits

2.2.1 Physiography and Soil Conditions

Physiography of the Study Area is shown on Figure 2. The Study Area is dominated by Sand Plains, with Till Plains present in the northwest portion. Based on available mapping resources (Simcoe County, 2015), the Study Area features low to medium vulnerability groundwater recharge areas, particularly in areas that coincide with wetlands.

2.2.2 Natural Heritage Features

Available natural heritage mapping from MNRF NRVIS data layers were used to screen for the presence of natural heritage features within and adjacent to the Study Area. These layers are presented on Figure 3 along with site delineated features. There are no Areas of Natural or Scientific Interest (ANSI) or Significant Ecological Areas (SEA) identified as occurring within the Study Area. Unevaluated wetlands are mapped in the northeast portion of the Study Area, and an isolated wetland to the west of the Study Area. A watercourse is also shown to occur within the southern portion of the Study Area. These identified features were examined during field investigations. Verification of the presence of the watercourse was conducted on May 10, 2016, and no watercourse was found to be present in this area (discussed in Section 2.2.4). The boundaries of Study Area wetlands were verified and refined during visits with GHD and NVCA biologists and are discussed in greater detail in Section 2.2.5.



In 2008, the County's OP was updated and adopted by County Council, which altered policies and mapping related to County Greenlands. The most recent version of the "Proposed Modified County of Simcoe OP" is current up to a decision made by the Ontario Municipal Board (OMB) in April, 2016. The Simcoe County Motion record (dated September 28th, 2016) was recently submitted to the OMB to finalize the consolidation and approval of the County's OP. The County's OP identifies the entire property as Greenlands (Schedule 5.1). In relation to the Greenlands designation, the criteria for significant woodland which pertain to the Study Area include the following:

- A minimum of 10 hectares in the Simcoe Uplands
- Interior forest is any part of a patch that is 100 m or more from all edges of the patch

Based on the size and attributes of the forested area on and adjacent to the property, the characteristics of this forest comply with the criteria of the OP significant woodland definition, and therefore under the County Greenlands designation.

Under the 2015 Township of Springwater OP, environmental protection of natural heritage features is classified under one of two designations: Category 1 – primarily undeveloped natural areas of high environmental quality and significance or sensitivity; or Category 2 – areas of lesser environmental significance or sensitivity (e.g. lands adjacent to Category 1 lands), previously altered lands or water or impacted and developed areas which exhibit a variety and mix of existing uses. The northeast corner of the Study Area is designated Category 2 Lands, while the balance of the Study Area does not have a natural heritage designation, as per Schedule B of the Township of Springwater OP.

2.2.3 Ecological Land Classification (ELC)

As specified in the County OP requirements, a detailed vegetation inventory following standard ELC protocols is required to document vegetation. A current Freele County Forest tract management unit tree inventory was provided to GHD by the County. Field verification was completed and refined by qualified GHD ecologists over multiple Study Area visits to confirm the expected vegetation communities. ELC mapping of the Study Area was prepared following Ecological Land Classification for Southern Ontario: A First Approximation (Lee et al., 1998), the results of which are presented on Figure 4.

Twelve ecological land classification community classes are represented within the Study Area and include swamp, marsh, meadow, forest, plantation, naturalized plantation and transportation. Each of these communities are characterized by sandy soils.

The majority of the Study Area has been disturbed in the past, with plantation tree plantings introduced approximately 65 years ago across the Study Area. The natural vegetation units are present in the northeast and southeast corners of the Study Area, and generally associated with the wetland features. As the plantation is maturing, it is developing some characteristics of a naturalized woodlot and is used as such. It is however a managed woodlot that is routinely assessed for harvest and harvested. As such, the distinctions of natural, naturalizing plantation, and plantation are used herein to describe the treed units within the Study Area.

Further characteristics of each of the identified community types are provided in the following paragraphs. The vegetation inventory is presented in **Appendix B**.



Upland communities

FOCM6: Naturalized Coniferous Plantation

The origin of the Study Area as a conifer plantation is evident in the southern portions where various planted conifer species such as white spruce (*Picea engelmanni*), eastern white pine (*Pinus strobus*) and red pine (*Pinus resinosa*) dominate the canopy and sugar maple characterizes the subcanopy. Some red oak (*Quercus rubra*) and American beech (*Fagus grandifolia*) are also present throughout this unit. This portion of the Study Area exhibits evidence of disturbance with areas that have Manitoba maple (*Acer negundo*) and staghorn sumac (*Rhus typhina*) present. The shrub layer is sparse and composed of red raspberry (*Rubus ideaus*), while garlic mustard (*Alliaria petiolata*) dominates the sparse ground cover layer.

FOCM6-2: Dry-Fresh Red Pine Naturalized Coniferous Plantation

The origin of the Study Area as a conifer plantation is also evident in this community where red pine dominates the canopy and sugar maple characterizes the subcanopy. The understory is patchy to absent with sugar maple saplings in some areas, and small patches of brambles (*Rubus spp.*) are present throughout this community, particularly along the margins of any pathways/logging roads and where openings in the canopy exist. Other species present include fern spp., red trillium (*Trillium erectum*), jack-in-the-pulpit (*Arisaema triphyllum*), and garlic mustard.

FODM5: Dry-Fresh Sugar Maple Naturalized Deciduous Plantation

The entire Study Area is managed as a coniferous plantation but a combination of less conifers planted and harvesting activities in the middle portion of the Study Area has allowed successional species to colonize the area and create this community. This community occurs within an area that is generally characterized by gently sloping topography, with limited areas of steeper grades. The canopy is dominated by sugar maple with red oak, American beech, and black locust (*Robinia pseudoacacia*) occurring in varying quantities throughout. Limited amounts of red and white pine are also present. The understory is almost exclusively sugar maple (*Acer saccharum*) and the ground layer is characterized by heavy leaf litter and minimal vegetation. Blue cohosh (*Caulophyllum thalictroides*), baneberry (*Actaea sp.*), jack-in-the-pulpit, ostrich fern (*Matteuccia struthiopteris*), herb Robert (*Geranium robertianum*), jewelweed (*Impatiens capensis*), wild sarsaparilla (*Aralia nudicaulis*) and wild leek (*Allium tricoccum*) comprise the herbaceous and ground layer vegetation in a patchy distribution.

FOMM6-2: Fresh-Moist Hemlock-Hardwood Mixed Forest

This community exists in the south east corner of the Study Area and is primarily composed of eastern hemlock (*Tsuga canadensis*) with some yellow birch (*Betula alleghaniensis*) and red maple (*Acer rubrum*) in the canopy; American beech is present in the subcanopy. The ground cover is minimal and consists mainly of fern species with some Canada mayflower (*Maianthemum canadense*). This community is unique to the Study Area as it represents the oldest vegetation community within the Study Area (trees older than 80 years) and one of the least disturbed. This unit appears to continue eastward onto the adjacent property.



FOMM9-2: Fresh-Moist White Pine Hardwood Mixed Forest

This community is present in the northeast corner of the Study Area and borders the two larger wetlands within the Study Area. The canopy is primarily composed of white pine and red maple. Both the understory and groundcover are limited and patchy. The groundcover is composed of starflower, partridgeberry (*Mitchella repens*), sarsaparilla and red trillium, while the understory is dominated by red maple saplings.

MEMM3: Dry-Fresh Mixed Meadow

This vegetation community is linear as it occurs along the pathways/logging trails and margins of the access road, and is characterized by exposed sandy substrates. The community is highly disturbed and patchy in areas as a result of its proximity to the pathways. Rubus species dominate the shrub layer while the ground layer is characterized by patches of exposed sand and herbaceous species such as garlic mustard, common plantain (*Plantago major*), thimbleweed (*Anemone cylindrical*), goldenrod species (*Solidago spp.*), grass species, ox eye daisy (*Leucanthemum vulgare*), northern willowherb (*Epilobium septentrionale*), common blue eyed grass (*Sisyrinchium angustifolium*) and rough fruited cinquefoil (*Potentilla recta*).

TAGM1: Coarse Mineral Coniferous Plantation

This community is present in the northwest portion of the Study Area, and is dominated by planted conifer species such as Norway spruce (*Picea abies*), European larch (*Larix decidua*) and red pine. The understory and groundcover is generally absent with few sugar maple saplings throughout.

CVI-1: Transportation

A well-traveled gravel/sandy access road is present through the approximate centre of the Study Area, connecting Rainbow Valley Rd. East to the north with Horseshoe Valley Rd. to the south. Vegetation is near absent, with patchy areas dominated by opportunistic species such as common plantain.

Wetland Communities

SWCM2-1: White Pine-Hemlock Mineral Coniferous Swamp

This community is present in the northeast portion of the Study Area and as a small inclusion in the southeast corner. It is characterized by complex microtopography that promotes vernal pools. The substrate is a shallow layer of organic material underlain by sand. The canopy is composed of red maple, eastern hemlock, white pine, silver maple (*Acer saccharinum*) and some poplars (*Populus sp.*). The groundcover is dominated by sensitive fern (*Onoclea sensibilis*) and partridgeberry. Other species present include goldthread (*Coptis trifolia*), peat moss (*sphagnum sp.*), jack-in-the-pulpit, fringed sedge (*Carex crinita*) and blue flag (*Iris versicolour*). This community appears to be connected with the same or similar vegetation communities adjacent to, but outside of the Study Area in both the northeast and southeast occurrences.

SWMM2-1: Red Maple-Conifer Mineral Mixed Swamp

This wetland community is located on the north side of the Study Area and is present as parts of two polygons adjacent to Rainbow Valley Rd. East. A small ephemeral channel is connecting the



southern and northern portions of the largest occurrence of this unit within the Study Area. The community is characterized by complex microtopography and sandy soils overlain by a thin layer of organic material.

The canopy is dominantly red maple, white pine, with some white spruce. The ground layer is characterized by drier bracken fern (*Pteridium aquilinum*) and Canada mayflower, and wetter partridgeberry. Other herbaceous species of note include pink lady's slipper (*Cypripedium acaule*).

MASM1: Graminoid Mineral Shallow Marsh

This community exists as an inclusion within SWMM2-1 (red-maple conifer mixed swamp) on the north portion of the Study Area. The substrate is characterized by a fine later of organic material that is underlain by coarse sandy soils. The vegetation is characterized sedge species, goldthread, and sphagnum moss.

MASM1-2: Bulrush Mineral Shallow Marsh

This community exists as an inclusion in SWCM2-1 (white pine-hemlock mineral coniferous swamp) on the northeast portion of the Study Area. The substrate is characterized by a fine layer of organic material underlain by coarse sandy soil. Willows (*Salix* spp.) are present in low densities around the margin and scattered throughout this community; however, the dominant vegetation layer is the groundcover which is characterized by bulrush sp. (*Schoenoplectus*), fringed sedge, bladder sedge (*Carex intumescens*), beggarticks (*Bidens* sp.), and water parsnip (*Sium suave*).

2.2.4 Watercourse Verification

A small watercourse was indicated on NVCA regulation and NHIC mapping in the southern extent of the Freele County Forest property. GHD staff investigated the vicinity of the mapped watercourse but did not find evidence of an existing feature in the location indicated. This was confirmed over the course of site visits throughout 2016, including the SWCM2-1 wetland boundary verifications with NVCA staff in spring 2016.

2.2.5 Wetland Delineation

NVCA regulated areas mapping and the NHIC natural heritage features mapping indicate the presence of wetlands within and adjacent to the Study Area. Delineations of wetlands within the Study Area took place on May 31, 2016 and July 4, 2016 with an NVCA representative, following the Ontario wetland Evaluation System: Southern Manual methods (3rd Edition – 1993, with updates). Wetland boundaries were flagged and the location recorded with handheld Garmin® global positioning system (GPS) by both GHD and NVCA, and provided good correlation between the duplicate positioning data sets. These field verification activities resulted in a refinement and reduced wetland areas within the Study Area from that of the existing NVCA and MNR mapping layers. Wetland boundaries based on these field verifications are shown on Figures 4 and 5; wetland vegetation communities are described in Section 2.2.3.

2.2.6 Wildlife

To determine the potential for wildlife presence within the Study Area, a desktop review was completed and incidental wildlife observations were collected at each visit.



A desktop review of eBird observations in the vicinity of the Study Area (Copeland Forest to the east) noted the potential for many forest-interior bird species, as well as several SAR birds. The results of the breeding bird survey and the SAR screening are discussed in Sections 2.2.6.2 and 2.2.7, respectively. Review of the Ontario Reptile and Amphibian Atlas noted the presence of 18 species of reptiles and amphibians, and 9 species of butterflies (Ontario Butterfly Atlas), in the greater area surrounding the Study Area.

Throughout all Study Area visits, observations of incidental wildlife species encountered were recorded, and are presented in Table 2.3. In addition, calling amphibian and breeding bird surveys were conducted, the results of which are discussed in the following sections.

2.2.6.1 Amphibian Surveys

Calling amphibians were surveyed according to the Great Lakes Marsh Monitoring Protocol at five stations placed in suitable habitat within the Study Area. Note that four stations were surveyed during the first visit, but subsequent field investigation indicated additional amphibian habitat, and a fifth station was created.

Three visits were conducted between April and June, 2016. At each station, all calling frogs and toads were recorded. Direction of call, distance of call, species and numbers of individuals were documented. When too many individuals of one species were calling, making it difficult to detect separate individuals and make an accurate estimate of their number, they were recorded as a chorus.

Five species of calling amphibians were detected during the amphibian surveys: chorus frog (*Pseudacris triseriata*), spring peeper (*Pseudacris crucifer*), wood frog (*Lithobates sylvaticus*), American toad (*Anaxyrus americanus*), and gray tree frog (*Hyla versicolor*). Calling amphibian detection rates during the surveys are shown in Table 2.4, and are displayed as the number of stations that each species was detected at, out of the total of five (or four) stations surveyed. Two additional species were detected outside the calling amphibian surveys: northern leopard frog (*Lithobates pipiens*) and green frog (*Lithobates clamitans*). Both the green frog and the northern leopard frog were detected immediately north of Rainbow Valley Road, outside of the Study Area. A complete list of calling amphibians detected during field investigations can be found in Table 2.3.

2.2.6.2 Breeding Bird Surveys

Breeding bird surveys were conducted on May 31 and June 17, 2016, during the breeding bird season when most birds are on their territories engaged in breeding activities. Surveys were conducted between 5:00 and 11:00 a.m. A point count methodology was utilized, where a point count location was surveyed for 5 minutes and all species seen and heard were recorded. Breeding evidence was recorded to determine if the species was a possible, probable or confirmed breeder following protocols of the Ontario Breeding Bird Atlas (Cadman et al., 2007). Point count locations were situated to ensure representation of the predominant habitat types within the Study Area. Incidental species observations, including those of birds, were also collected on all Study Area visits.

In total, 49 species of birds have been observed within and in the vicinity of the Study Area by GHD ecologists (see Table 2.3). Three of these species are Species at Risk (SAR): eastern wood-pewee



(*Contopus virens*), wood thrush (*Hylocichla mustelina*), and red-shouldered hawk (*Buteo lineatus*). Species at Risk are discussed in greater detail in Section 2.2.7.

2.2.6.3 Wildlife Habitat Features

Habitat features that were encountered during field investigations were mapped using a handheld GPS and are shown on Figure 5. Snags that had the potential to provide roosting habitat for bats were encountered throughout the Study Area. As this is a managed forest, there are not many snags within the plantation areas; the majority of snags within the Study Area are situated within the older growth FOMM6-2 hemlock stand in the southeast corner of the property.

Vernal pools were also encountered throughout the wetland portions of the Study Area. On May 31, 2016, an isolated pool containing spotted salamander (*Ambystoma maculatum*) egg masses was observed within the SWMM2-1 wetland unit (**Figure 5**). Spotted salamanders are typically found in moist mixed hardwood forests or in swamps/near water (Crowley, 2016). During migration salamanders can travel up to 250 m from pond edges to their terrestrial homes but average travel distance is approximately 115 m (Savage and Zamudio, 2016).

Based on the Study Area size and that it is entirely forested, interior forest habitat is present within the Study Area. This provides habitat for a variety of interior forest breeding birds. Interior forest habitat is defined as occurring at least 200 m from forest edge habitat (MNR, 2015b).

2.2.7 Species at Risk and Regionally Rare Species

GHD determined the potential for SAR within the Study Area through a combination of secondary source review, agency consultation with MNR Midhurst District Office and NVCA, and field investigations. Provincially tracked species and SAR records for the Study Area are presented on Figure 6. SAR identified through these sources as having the potential to occur within or in the vicinity of the Study Area summarized in Table 2.5 below.

Table 2.5 Species at Risk Summary

Species		Observed within Study Area	Conservation Status	
Common Name	Scientific Name		SARO	SARA
Birds				
Canada warbler	<i>Cardellina pusilla</i>	No	Special Concern	Threatened
Eastern whip-poor-will	<i>Caprimulgus vociferus</i>	No	Threatened	Threatened
Eastern wood-pewee	<i>Contopus virens</i>	Yes	Special Concern	No Status
Red-shouldered hawk	<i>Buteo lineatus</i>	Yes	No Status	Special Concern
Wood thrush	<i>Hylocichla mustelina</i>	Yes	Special Concern	No Status
Reptiles				



Table 2.5 Species at Risk Summary

Species		Observed within Study Area	Conservation Status	
Common Name	Scientific Name		SARO	SARA
Blanding's turtle	<i>Emydoidea blandingii</i>	No	Threatened	Threatened
Snapping turtle	<i>Chelydra serpentina</i>	No	Special Concern	Special Concern
Milksnake	<i>Lampropeltis triangulum</i>	No	Special Concern	Special Concern
Plants				
Butternut	<i>Juglans cinerea</i>	No	Endangered	Endangered
Fork three-awned grass	<i>Aristida basiramea</i>	No	Endangered	Endangered
Mammals				
Little brown myotis	<i>Myotis lucifugus</i>	Unknown*	Endangered	Endangered
Northern long-eared myotis	<i>Myotis septentrionalis</i>	Unknown*	Endangered	Endangered
Insects				
Hine's emerald	<i>Somatochlora hineana</i>	No	Endangered	No Status
Note:				
* single bat observed during two separate nocturnal Study Area visits; not identified to species				

Incidental species observations, including observations of any SAR, were collected at each Study Area visit. Furthermore, the presence of suitable habitat for the identified SAR was investigated over the course of multiple Study Area visits. Habitat verification was also undertaken for the Hine's emerald dragonfly and eastern whip-poor-will. Suitable habitat was not found to exist for the Hine's emerald, due to the presence of a closed canopy and the lack of cattails (*Typha sp.*) which this species is often associated with. Habitat for the eastern whip-poor-will was also determined to not be present within the Study Area due to the presence of a relatively closed forest canopy throughout the Study Area.

Furthermore, additional habitat features identified in the Study Area have the potential to be used by other SAR, in particular bat species. The potential for bat roosting habitat was raised for consideration during the pre-consultation meeting on April 1, 2016. In response to this and incidental sighting of two bats within the Study Area on two separate visits, GHD documented any snags that were encountered (Figure 5). Snags were considered potential roosts and documented if they exhibited cavities or crevices and possessed ≥ 25 centimetre (cm) diameter at breast height (dbh).

As part of the field investigations, joint Study Area visits with NVCA biologists noted the higher habitat potential for the forked three-awned grass, and recommended that survey for this species were warranted. As it flowers late in the growing season, surveys for forked three-awned grass were conducted on August 23, 2016 and September 28, 2016. Suitable habitat (i.e., sandy edges of



roads and trails) was surveyed systematically along the access road and parking area, with a focus on non-shaded sandy areas with little tree/canopy cover. Forked three-awned grass was not detected during either of the surveys.

Other vegetation species of interest detected during field activities are ox eye sunflower (*Heliopsis helianthoides*), tall goldenrod (*Solidago altissima*), and running strawberry bush (*Euonymus obovatus*). Ox eye sunflower and tall goldenrod were observed in the MEMM3 meadow community and the running strawberry bush was noted in the FODM5 forest community. These species are considered regionally rare in Simcoe County. Although documented as rare in Simcoe County (Riley, 1989), all three of these plants have a provincial rank of S5 (very common) and none are tracked by MNRF under the Natural Heritage Information Centre (NHIC).

3. Preliminary Development Plan

The ERRC has been proposed to be situated on an elevated area approximately north-west of the Study Area mid-point. This location was suggested based on a review of similar facilities as the location is large enough to accommodate required infrastructure and potential future expansion areas. The footprint is generally rectangular to provide flexibility in design. General descriptions of each sub-facility at the ERRC are as follows:

- MMF (also known as a transfer station) – a location for the consolidation of waste (garbage, recyclables, and organics) from multiple collection vehicles into larger, higher-volume transfer vehicles for more economical shipment to other disposal or processing locations. The MMF will likely be a multi-storey building approximately 10 to 15 m high and consist of a pre-engineered steel frame structure with exterior walls constructed of concrete and steel sheeting.
- OPF – a location where source-separated organics (i.e., green bin material) and potentially materials such as leaf and yard waste, pet waste, and diapers are processed under controlled conditions and converted into other valuable products, such as compost or fertilizer. The County's procurement process for the OPF will be open to all types of aerobic composting and anaerobic digestion technologies. Both are engineered biochemical conversion processes involving the decay of organic materials, but involve different conditions and produce different outputs, and have differing cost factors.
- Truck Servicing Facility – a location for servicing the County's fleet of Solid Waste Management vehicles.
- Administrative Facility – a location for administrative staff and resources including administrative facility will include offices, meeting spaces, washroom and change room facilities, a lunchroom/kitchen, and potentially a public education area.
- Materials Recovery Facility (MRF) – a location for the processing and separating of commingled recyclable material into its core components (e.g., paper, glass, metals, plastic) for marketing and shipping to end-user manufacturers.
- Process water – all process water generated from the ERRC will be isolated from stormwater. Process water will be temporarily stored on site and pumped out for off-site treatment and disposal.



- Stormwater management facility – a location for proposed stormwater management controls that will mitigate the increase of surface runoff from the impervious areas, maintain existing water quality and quantity conditions, and address the water balance deficit. Components of the facility include: vegetative filter strips, a vegetated swale, a stormwater management pond (SWMP), and a drainage ditch along the access road to convey any overflow from the SWMP. These components are further discussed in Section 5.2.2.

Additional details of the proposed development are available in GHD's Facility Characteristics Report, provided under separate cover.

4. Regulatory/Policy Framework

4.1 Township of Springwater

As per the Township of Springwater OP, all development is required to adequately demonstrate that no negative impact to significant/sensitive natural heritage features or ecological functionality will occur due to development planning. Specifically outlined in the OP, the significance of a natural feature will be determined based on provincial guidelines, existing information, municipal criteria and other agency approaches. Lands can be classified as either Category 1 (schedule A) or Category 2 (schedule B), with Category 1 lands being the most sensitive and occur on undeveloped areas and feature any of the following: PSWs, ANSIs, SAR, or significant watercourses or ravines. Category 2 lands feature any of the following: lands situated adjacent to Category 1 lands, unique and/or significant wildlife habitat (such as woodlots or forests), linkage features between core habitats, groundwater recharge areas, or natural fish habitat.

Since Freele County Forest harbours several key components listed under the Category 2 designation, all development planning within the forest boundaries must be subject to development requirements as set out in the Springwater OP. Under Township development regulations, no development is permitted within 120 m of a wetland feature unless subjected to a complete Environmental Impact Assessment (EIA) to determine no negative impacts. Similarly, development within 50 m of significant wildlife habitat (deer wintering yards, fish spawning/nursery areas, and waterfowl staging areas) as determined through available MNRF habitat information is also restricted based on an EIA. Forests or Woodlot areas and/or significant forest habitat are determined based on features such as size, shape, age and composition and require an EIA within 50 m and 15 m respectively. Further restrictions apply to PSWs, fish habitat, core areas, movement corridors, valleylands, rare/specialized habitats, headwater areas, shorelines, ANSIs, lakes and significant landform features but are not applicable to this Study Area based on mapping results.

4.2 Simcoe County

The Simcoe County OP was consulted to determine any specific land use designations within the Study Area. During the initial evaluation process, GHD utilized County Greenlands mapping that was approved under the previous OP, as well as the 2008 Draft Simcoe County Greenlands Designation/ Mapping, which altered policies and mapping related to County Greenlands. The revised Simcoe County OP was partially approved in April, 2013. This approval included Schedule 5.1 (Land Use Designations). Under current policies, the entirety of the Study Area falls



within County Greenland designation, due to the size of the contiguous forest habitat present within the Study Area.

4.3 Nottawasaga Valley Conservation Authority

Although the proposed development is not within an NVCA regulated feature, it is in proximity to the wetlands in the northeast corner of the Study Area, which are a regulated feature. As such, development should proceed in accordance with O. Reg 172/06: Nottawasaga Valley Conservation Authority Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses.

An additional regulated area is identified as crossing the south end of the property in west/east fashion. Based on Site investigations by GHD staff and in conjunction with NVCA staff, it was confirmed that the watercourse feature that dictates the presence of a regulated area is in fact not present within the Study Area. There is, however, a small wetland present in this vicinity which appears to drain to the east to what may represent the upstream extent of the mapped watercourse feature.

The NVCA is also mandated through the *Conservation Authority Act* to regulate lands that are subject to five types of natural hazards:

- Flood
- Erosion
- Hazardous Soil
- Karst
- Dynamic Beach

Based on the *Natural Hazards Technical Guide (December 2013)*, the *NVCA Planning and Regulation Guidelines*, the *MOECC Stormwater Management and Design Manual*, and the *MNRF Natural Technical Guides*, the natural hazards either do not apply to the Study Area or any potential risk can be mitigated. The natural hazards were further described and assessed in relation to the Study Area under separate cover in the Hazard Land Assessment memorandum (Appendix D).

As such, the NVCA regulated areas within the Study Area are limited to the wetlands present in the northeast corner of the Study Area. As these wetlands are unevaluated, a conservative approach of 120 m off-set for assessment of impacts has been applied in this Scoped EIS.

4.4 Species at Risk Legislation

SAR in Ontario may be protected by one of or both provincial and federal SAR legislation. This includes the federal *Species at Risk Act* (SARA), and provincial *Endangered Species Act* (ESA). As the Study Area is not on federal lands, and aquatic features are absent from the Study Area, SARA is not applicable to this review.

The ESA and ON Reg. 242/08 are provincial regulatory tools that prohibit the harm and harassment of provincially listed Threatened and Endangered species, and include habitat protection. No ESA



Threatened or Endangered species were observed within the Study Area during the course of this study.

Should an ESA protected species be encountered, there are a number of avenues that may apply to facilitate development proceeding while being protective of the species. These include avoidance (through design, timing, and methodologies), adherence to an applicable Notice of Activity, or by obtaining an Overall Benefit Permit. No direct impacts are anticipated for the proposed development but mitigation of SAR and their habitat is further discussed in Section 5.0.

4.5 Provincial Policy Statement

The Natural Heritage Reference Manual (MNR, 2010), provides guidance for implementation of the natural heritage considerations associated with the Provincial Policy Statement (PPS). This guidance document addresses the considerations for evaluation of significance of natural features, a designation that ascribes development constraints under the PPS. When one or more of the criteria for Significance of a particular attribute are satisfied, the feature should be considered Significant. Those attributes present within the Study Area that based on the proposed ERRC development warrant consideration for evaluation of Significance as defined by the PPS include Significant woodlands and Significant wildlife habitat.

The four criteria related to the evaluation of Significance as pertains to woodlands include: size, ecological function, uncommon characteristics, and economic and social functional values. The tests for these criteria are detailed in the Natural Heritage Reference Manual (MNR, 2010).

As noted throughout this report, the Study Area is predominantly comprised of mixed tree plantation, with limited natural woodland communities in the northeast and southeast corners. Conservatively, these natural woodlands within the Study Area comprise less than 25% of the Study Area, but are associated with contiguous communities on adjacent lands to the East. Overall, the proposed ERRC footprint of 4.5 ha represents an extremely small disturbance to a greater than 475 ha contiguous woodland of the 32,000 ha Simcoe County Forest (less than 1% and 0.01%, respectively).

The Study Area is at a functional boundary of the contiguous wooded area, with an agricultural field located to the west. One criterion for assessment of ecological function associated with woodlands is the presence of interior forest size of 20 ha or greater where woodland cover is greater than 60%. Based on the size of the wooded area, the Study Area contributes to an interior forest habitat that meets this minimum size criterion. The proposed ERRC footprint starts approximately 100 m from the western edge of the Study Area. Therefore by size of the contiguous woodland feature, the minimum ecological functions criteria of interior forest size of 20 ha or more where forest cover is 60% or greater is satisfied, and **Significant Woodland is by definition present within the Study Area**. While this may be the initial limit for consideration of interior forest habitat, this function is temporary as the proposed ERRC footprint is part of a managed and actively-harvested woodlot. Ecological function is further considered under assessment as Significant wildlife habitat.

As an actively managed and harvested plantation woodlot, the proposed ERRC footprint and immediately adjacent areas does not exhibit uncommon characteristics or economic and social functional values as defined in the Natural Heritage Reference Manual (MNR, 2010). The older



growth FOMM6-2 unit present in the southeast corner of the Study Area is the one unit that exhibits some uncommon characteristics based on the age of the trees. The proposed development is located greater than 30 m from this unit, and will not directly impact this unit.

With respect to Significant wildlife habitat, the habitat of particular consideration relates to area-sensitive breeding bird habitat. According to the 'Significant Wildlife Habitat Criteria Schedules for Ecoregion 6E, Woodland Area-Sensitive Breeding Bird Habitat is specialized habitat defined by large, natural blocks of mature woodland habitat within the settled areas of Southern Ontario (MNR, 2015b). Characteristics of Woodland Area-Sensitive Breeding Bird Habitat include presence of breeding birds (13 species in particular), an area of 30 ha or greater than 60 years old, and FOC, FOM, FOD, SWC, SWM or SWD ELC communities. Notwithstanding, the rationale for assignment of significance of specialized wildlife habitat pertains to 'large, natural blocks of mature woodland'. As natural blocks of mature woodland within the Study Area are limited to the northeast and southeast corners, the area of the proposed ERRC footprint **does not satisfy the considerations as candidate Significant Wildlife Habitat** for Woodland Area-Sensitive Breeding Bird Habitat.

Therefore, the Study Area meets the test for Significant Woodland, but does not meet the test for Significant Wildlife Habitat. In accordance with PPS policies 2.1.4 and 2.16, site alteration [includes development] is not permitted unless it has been demonstrated that there will be no negative impact (as defined by the PPS) on the natural features or their ecological functions. The identification of impacts, mitigation and net impact are explored in Section 5.

5. Potential Environmental Impacts and Mitigation

5.1 Impact Assessment Process

The proposed ERRC is located within a complex Study Area that functions in part as a managed tree plantation and as a naturalized forest. Extensive surveys and Study Area investigations were completed to describe the habitat, species present and potential species use. The results of surveys and investigations have been considered to identify potential effects in a landscape and local scale context for both the construction and operation stages of the ERRC.

Negative Impact is defined in the PPS as:

- a) In regard to policy 2.2, degradation to the quality and quantity of water, sensitive surface water features and sensitive ground water features, and their related hydrologic functions, due to single, multiple or successive development or site alteration activities.
- b) In regard to fish habitat, the harmful alteration, disruption or destruction of fish habitat, except where, in conjunction with the appropriate authorities, it has been authorized under the Fisheries Act, using the guiding principle of no net loss of productive capacity.
- c) In regard to other natural heritage features and areas, degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities.



Impacts to surface water quality are addressed in this report, while surface water quantity, groundwater features and hydrologic function are assessed under separate cover in the Study Area Hydrogeological Assessment Report (GHD, November 16, 2016). As the mapped watercourse is not present in the Study Area, fish habitat is not present and therefore not assessed for impact as a result of the development. An overview of the identified potential effects, impacts and mitigation for each of the natural features and ecological functions is provided in **Table 5.1**.



Table 5.1 Ecosystem Component Impact and Mitigation Summary

Ecosystem Component	Potential Effects	Impacts	Mitigation
Vegetation Communities (Including Wetlands)	Development and operation of the ERRC	<ol style="list-style-type: none"> 1. Removal of vegetation 2. Introduction of non-native or invasive species 	<ol style="list-style-type: none"> 1. Minimize removal of vegetation where possible. 2. Clearly delineate development footprint. 3. Avoid operating heavy equipment outside development footprint. 4. Evaluate if there are any vegetation species within the ERRC footprint that there is value in relocating for enhancement of either on site areas or other local public lands. 5. Complete site preparation/vegetation clearing activities in the fall. 6. Clearly define ERRC boundaries. 7. Implement afforestation efforts within the County that improve contiguous woodland area by at least 4.5 ha. 8. Ensure post-construction planting and landscaping efforts include native vegetation species.
	Changes to runoff water quality and quantity	<ol style="list-style-type: none"> 1. Contamination of wetlands due to increased erosion potential 2. Alteration of hydrologic regime 	<ol style="list-style-type: none"> 1. ERRC is located over 120 m away from wetland features. 2. ESC measures in place during construction and until vegetation is fully established in disturbed areas. 3. Storm water management in place to capture site run-off and ensure post-development conditions do not exceed pre-development conditions peak discharge flowrate. 4. Series of stormwater management controls to allow for distribution of stormwater to features as appropriate.
Wildlife and Habitat	Noise (during construction and operation)	<ol style="list-style-type: none"> 1. Interruption and potential deterrent to wildlife 	<ol style="list-style-type: none"> 1. Limit daily construction and facility operation hours to 6 am – 7 pm.
	Light pollution	<ol style="list-style-type: none"> 1. Interruption and potential deterrent to wildlife 	<ol style="list-style-type: none"> 1. Limit facility hours of operation to 6 am – 7 pm to minimize night time site use and associated artificial lighting. 2. Review ERRC lighting needs; minimize site-associated lighting to the extent possible while achieving user safety requirements. 3. Utilize down-cast, low-wattage lights only. Implement the use of motion-activated lights where possible.



Table 5.1 Ecosystem Component Impact and Mitigation Summary

Ecosystem Component	Potential Effects	Impacts	Mitigation
	ERRC operational odour	1. Potential wildlife attractant	1. Fence the ERRC perimeter. 2. Store and manage ERRC materials using best management practices.
	Habitat removal	1. Decreased available habitat for breeding birds, bats, mammals, etc.	1. Optimize ERRC facility footprint and locate as close to the west or southwest Study Area boundary as feasible and minimize removal of vegetation as possible.
	Road improvement	1. Collision mortalities 2. Loss of connectivity/ increased fragmentation	2. Vegetation removal to take place outside of the breeding bird timing window, preferably between late September – December. 3. Stop work to allow wildlife to passively move out of the construction zone. 4. Implement conservative speed limits during construction and operation. 5. Install amphibian tunnels with drift nets to facilitate salamander crossings beneath ERRC access road. 6. Install bat boxes in the Study Area. 7. Implement afforestation efforts within the County that improve contiguous woodland area by at least 4.5 ha.

Each of the potential impacts identified and associated mitigation measures are discussed in Section 5.2 or 5.3.

An Environmental Management Plan (EMP) should be prepared and implemented during the construction period to clearly outline the mitigation and monitoring programs appropriate for the development. ERRC facility operations manual(s) can provide an equivalent function during the long-term operational stage of the facility. An adaptive management approach should be applied to the mitigation and monitoring components of these documents to adapt to changing conditions if and as identified.



5.2 Vegetation Communities (Including Wetlands)

5.2.1 Potential Impacts

Vegetation will be lost during construction activities, with the loss being restricted to the proposed facility footprint and entrance. The vegetation communities that will be directly affected are Dry-Fresh Sugar Maple Naturalized Deciduous Plantation (FODM5), Dry-Fresh Mixed Meadow (MEMM3), Naturalized Coniferous Plantation (FODM6), and Dry-Fresh Red-Pine Naturalized Coniferous Plantation (FOCM6-2). The Fresh-Moist Hemlock Hardwood Mixed Forest (FOMM6-2) may be indirectly affected by the proposed activities based on proximity to the proposed ERRC entrance off Horseshoe Valley Road.

The proposed works include construction of the ERRC greater than 120 m away from any identified wetlands within the Study Area, therefore no direct loss of wetlands is anticipated. Contamination of wetlands from construction activities is a potential impact if appropriate mitigation measures are not maintained to mitigate runoff and increased erosion potential. Permanent alteration of wetland habitat may also occur through alteration of the hydrologic regime of the local wetland features due to the increase of surface runoff from the addition of impervious areas within the Study Area.

5.2.2 Mitigation

The vegetation communities that will be altered as part of the proposed ERRC development are not unique areas within the Study Area or locally rare/significant. The areas that will be disturbed represent small percentages of the total community area present within the Study Area, and has considered the locations of previous disturbance (i.e. on logging roads/pathways). Enhancement opportunities of plantation areas may also mitigate the loss of the facility footprint habitat. This may include felling of some non-native species from the TAGM1 unit (e.g. Norway spruce, European larch), to open the canopy and facilitate growth opportunities of the sugar maple understory. The impacts of vegetation removal can be further mitigated through afforestation efforts within the County that will increase available contiguous woodland vegetation by a minimum of 4.5 ha. One element of this may include the restoration and afforestation of the existing Study Area access road/parking area off of Horseshoe Valley Road.

The ERRC facility entrance off Horseshoe Valley Road has been situated with consideration given to driver safety, while maintaining a minimum 30 m buffer from the limit of disturbance associated with the access road to mitigate direct or indirect impacts to the natural, old-growth FOMM6-2 community.

To mitigate impacts to vegetation an ecologist should be present on-site during project start-up to participate in the clear delineation of the construction area and flag any high sensitivity areas for avoidance around the ERRC footprint. Staging areas will be kept to a minimum to reduce unnecessary vegetation clearing, and situated in existing disturbed areas (e.g. existing entrance from Horseshoe Valley Road or within ERRC footprint). Vegetation to be removed from this footprint should be reviewed to identify if there any species within the footprint that have value in relocation for enhancement of other on site areas or other local public lands.



Mitigation of the potential impacts on wetlands as a result of siltation and altered flow during construction will occur through installation and maintenance of heavy duty erosion and sediment controls, such as large diameter siltsoxx. Impacts to wetland communities will be mitigated by maintaining existing Study Area hydrology function through an appropriately designed stormwater management facility that includes infiltration elements.

Temporary ESC measures and a stormwater management plan will be implemented to provide short and long term controls, respectively. The temporary ESC measures are intended to provide controls for the construction period until the long term stormwater management measures are in place, fully functional and exposed areas have established vegetative cover. The ERRC includes post-development conditions that are designed to match pre-development conditions for peak discharge flow rate, and all runoff from within the proposed footprint will be contained within the limits of the footprint and infiltrated into the ground surface. There will be no collected runoff discharging overland towards the wetland. The temporary ESC measures proposed include the following:

- Implement construction Best Management Practices when handling material to minimize siltation and erosion potential.
- Vegetate disturbed areas with native seeds and plants as soon as practical to reduce erosion potential.
- Installation and maintenance of enhanced erosion and sediment controls. Enhanced heavy duty silt fence with straw bales and biodegradable coir logs or large diameter siltsoxx will be included as part of the erosion and sediment control protection measures around the working perimeter (including access road).
- Vehicle fueling, storage, and maintenance should occur outside of the Study Area (off site).
- ESC measures should be kept in place and be routinely inspected, modified as required, and maintained during the construction and vegetation establishment period.

The stormwater management plan includes the following measures which will also serve to mitigate impacts to hydrology and water quality:

- Surface runoff will drain overland from the facility footprint to a proposed vegetated filter strip along the east side of the facility footprint which will filter sediment discharging from the ERRC.
- Once through the vegetated filter strip, surface runoff will discharge into an enhanced vegetated swale to convey the runoff to the downstream SWMP. Rock check dams will be spaced accordingly to further dissipate sediment within the surface runoff and encourage infiltration.
- The proposed SWMP will be sized to capture, store, and infiltrate all rainfall events, up-to and including the 100-year storm event (excluding events greater than the 100-year storm event and large concurrent storm events). Since the underlying soil conditions consist of highly infiltrative soils (sand to sandy silt) and that existing land conditions consist of heavily forested area, pre-development peak flows are assumed to be minimal.
- The proposed drainage ditch along the access road will convey overflow from the proposed SWMP and access road drainage swale to the existing drainage ditch along Horseshoe Valley Road West. The proposed ditch will also be vegetated with appropriate native species and fitted



with rock check dams to further dissipate sediment within the surface runoff and encourage infiltration.

5.3 Wildlife and Habitat

5.3.1 Potential Impacts

Equipment noise during construction and operational noise will likely deter and interrupt wildlife such as large mammals (bear, deer, etc.), small mammals (rodents, raccoons, etc.) birds, amphibians, and reptiles.

Odours generated from the ERRC will be mitigated through proper handling and storage of materials, however may prove to attract some wildlife. Light pollution of the area immediate area surrounding the ERRC may disrupt wildlife using those near-facility areas.

Vehicular traffic will increase during and after construction of the ERRC, and may increase the incidence of vehicular related mortality. Increased traffic may also have an impact on general species dispersal. Noise related to traffic may discourage use by migratory bird species as they typically prefer secluded areas.

Complex micro-topography within the Study Area supports vernal pooling and provides suitable salamander habitat. Although the ERRC is proposed to be located approximately 180 m away from a known spotted salamander breeding pond, the development may decrease the available area for salamander dispersal.

Permanent alteration due to decreased connectivity may occur during construction and operation. The footprint of the facility and entrance will result in the permanent loss of herbaceous and wooded upland habitat. Connectivity across the Study Area will be impacted between the east and west portions of forested areas as a result of the entrance, roadway and facility.

Removal of vegetation will decrease the available nesting habitat for breeding birds and available cover for mammals and insects.

Bat maternity roosts are also a habitat consideration due to incidental sightings of bats and documented snags within the Study Area. Snag concentration was highest in the Fresh-Moist Hemlock Hardwood Mixed Forest. This community has the highest habitat potential for bats and subsequent potential for negative impacts. In terms of maternity roosts, both the little brown (*Myotis lucifugus*) and northern long-eared bats (*Myotis septentrionalis*) typically occupy cavities in old growth and mature trees within their home range which are selected based on temperature, shelter availability, and are usually close to a water source for insect foraging. Both the little brown and northern long-eared myotis show high nest fidelity and will return to specific areas and trees (Kunz, et. Al., 2010; USFWS, 2014); therefore, disturbance/impacts to any roosts during the breeding season may result in abandonment.

5.3.2 Mitigation

Wildlife incidentally encountered during ERRC construction and operation activities will not be knowingly harmed and will be allowed to move away passively, where possible. The EMP should



address the procedures for who to contact should in the event wildlife is encountered (e.g. Site Supervisor will contact MNRF).

The proposed ERRC will be open for operation from 6:00 am until 7:00 pm, thereby providing 11 hours per day without operations noise. These work hours will also mitigate the risks of light pollution. This can be further mitigated by optimizing the lighting needs to a scenario that provides the minimum user visibility requirements while reducing artificial light to the extent reasonable. Utilizing down-cast, low-wattage, and motion-activate lights will further mitigate any impacts of light pollution.

To address odour pollution, storage and handling of the materials should include storage of materials under cover and/or management of materials within buildings as appropriate. Other mitigative design features may include operation under negative pressure, or fast-acting doors. All construction traffic and Study Area contractors will be advised to stop/pause work to allow any encountered wildlife to move passively out of the construction area and conservative speed limits will be recommended during construction and operation. Restricted operation hours (6:00 am - 7:00pm) will allow wildlife to freely move within the Study Area when the ERRC is closed.

The existing portion of the north access road is intended to be retained as emergency access only. A terrestrial buffer zone should be established from ponds/wetlands to protect amphibians. To encompass most salamander species, terrestrial buffer zones of breeding ponds should extend approximately 160 m from the edge of the pond; this distance represents the movements of 95% of the adults in a population (Savage and Zamudio, 2016). Provision of permanent amphibian tunnels north of the ERRC, beneath the emergency access road, with associated drift nets along the perimeter of the emergency access road should mitigate loss of connectivity and collision mortalities of amphibians under increased road traffic. The enhancement of TAGM1, outlined in Section 5.2.2 can also provide habitat enhancement for salamanders if some of the felled logs are laid down within the unit, providing cover and hibernation habitat for the salamanders known to be in the area.

The ERRC footprint is located approximately 190 m from the documented salamander pool. All construction operators and delivery contractors should be notified of the possible presence of reptiles and amphibians in the surrounding areas. This will include visual identification tools in the form of a handout and instructions in case of an encounter. Initial perimeter works (e.g. construction fence installation to isolate access to work area) will be completed when dispersal is anticipated to be minimal (between late October and February thaw/ice-off) where possible. Individuals conducting the perimeter works should be advised to stop work immediately if any of the reptiles or amphibians identified in the provided handout are found, inform the Site Supervisor, and resume perimeter works only after the animal has passively moved out of the work area.

Clearing, grubbing, and tree removal works should be conducted in a manner to avoid nesting birds and wildlife where possible. Development of site specific tree protection measures and a Wildlife Management Plan will assist in the mitigation of impacts to Study Area habitats and wildlife by providing recommendations for protection and contingency measures for these ecosystem components. Vegetation removal should take place in the fall (September – December) to avoid the breeding bird timing window, the bat maternity roost timeframe, and limit disturbance to terrestrial fauna. The EMP and Wildlife Management Plan should include alternate protection and mitigation measures should the clearing works not be conducted in the recommended fall season. Ecologists,



arborists, and the County forester should be involved in the development and implementation of these plans to provide wholesome mitigation of the potential impacts to habitats and wildlife in the vicinity.

The potential bat habitat within the Study Area exists in the Fresh-Moist Hemlock Hardwood Mixed Forest in the southeast of the property. Maintenance of a 30 m buffer between this unit and any development or construction activities should mitigate impact to any maternity roosts present. One snag was documented within the proposed ERRC footprint. Removal of this snag during the hibernation season (i.e. between October – March) should mitigate the risk of disturbing any potential roosting activity. Installation and maintenance of bat boxes in proximity to the northeast wetland area may provide the opportunity to further enhance bat roosting habitat within the Study Area.

In a similar manner to mitigation to the impacts of removal of vegetation, the impacts of habitat availability can be further mitigated through afforestation efforts within the County that will increase available contiguous woodland habitat by a minimum of 4.5 ha, and preferably 9 ha. Afforestation of One element of this may include the restoration and afforestation of the existing Study Area access road/parking area off of Horseshoe Valley Road.

With consideration given to the plantation nature and management of almost the entire Study Area and the impacts and mitigation measures detailed in Section 5, negative impacts to the identified natural features and ecological function are not anticipated.

6. Conclusions

The Freele County Forest tract (Study Area) is a woodlot that is actively managed and harvested by Simcoe County. The Study Area is composed of active plantation, hardwood forest, wetland, meadow, and a sandy gravel access road. As part of a contiguous landscape-level woodland feature, the Study Area satisfies the conditions of woodland Significance under the Simcoe County Greenlands designation and the Provincial Policy Statement. However, as an actively managed and harvested forest tract, the ecologic function associated with the PPS Significance (interior forest habitat) is temporary as trees from the Study Area, and ERRC footprint specifically, are scheduled to be harvested as part of on-going management of this tract.

While the development of the proposed ERRC will result in the loss of approximately 4.5 ha of the Freele County Forest tract, this conservatively represents a less than 1% loss of total contiguous woodland feature. Further, it is the most natural areas of the Study Area (wetlands to the northeast, old growth hemlock stand to the southeast) that will first and foremost be avoided and will therefore remain undisturbed and not be impacted by the development of the ERRC. The mitigation measures provided herein are protective of a range of vegetation and wildlife species.

The development of the ERRC will not result in a negative impact, which is defined under the PPS as “degradation that threatens the health and integrity of the natural features or ecological functions for which an area is identified due to single, multiple or successive development or site alteration activities”. This is based on the proposed location of the ERRC, the plantation history of the Site, the actively managed nature of the Study Area and the implementation of the recommended



mitigation measures, which adequately avoid, compensate and replace natural features (i.e. vegetation/plantings) within the wider woodlot feature. No net environmental impacts on the larger woodlot feature are anticipated from the development of the proposed ERRC.

7. References

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All of Which is Respectfully Submitted,
GHD

A handwritten signature in blue ink that reads "Laura Lawlor". The signature is written in a cursive, flowing style.

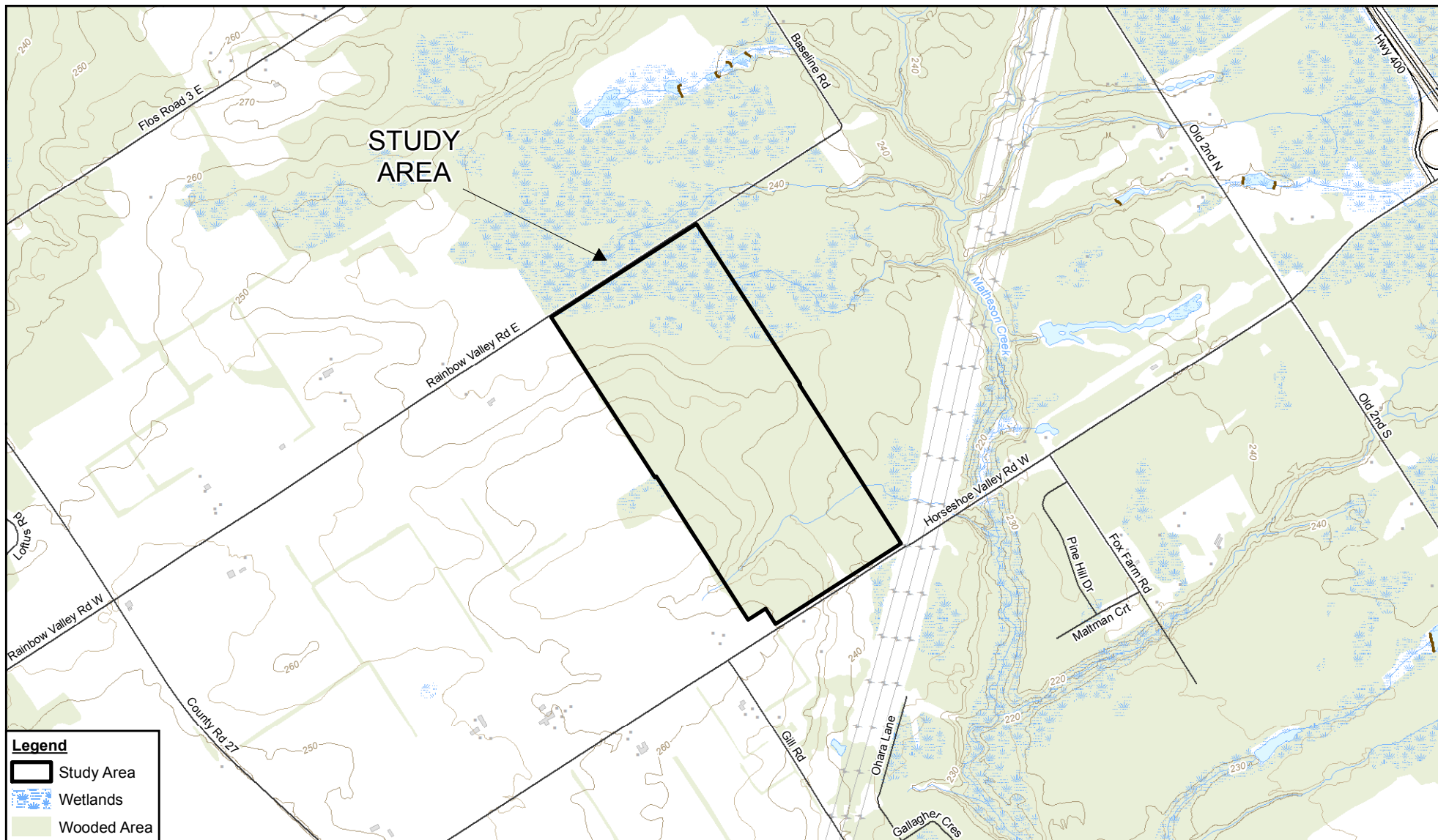
Laura Lawlor, M.Sc., C.E.



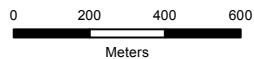
A handwritten signature in blue ink, appearing to be "Blair Shoniker". The signature is written in a stylized, cursive font.

Blair Shoniker, M.A., RPP

Figures



Source: MNRF NRVIS, 2014. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2016



Coordinate System:
NAD 1983 UTM Zone 17N

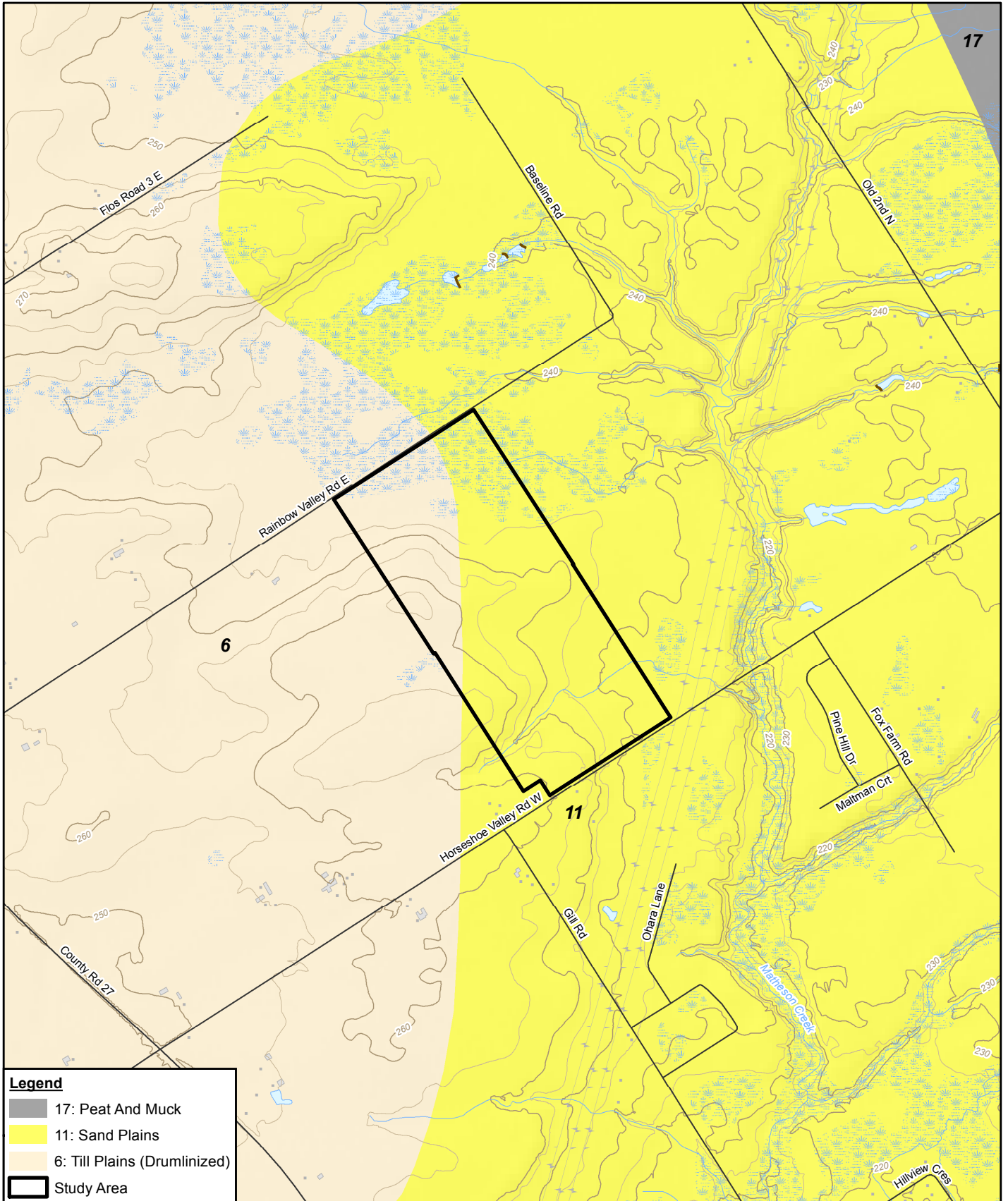


ENVIRONMENTAL RESOURCE RECOVERY CENTRE
SPRINGWATER, ONTARIO
SCOPED ENVIRONMENTAL IMPACT STUDY

STUDY AREA LOCATION MAP

086822-00
Nov 7, 2016

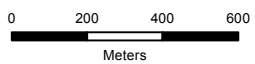
FIGURE 1



Legend

- 17: Peat And Muck
- 11: Sand Plains
- 6: Till Plains (Drumlinized)
- Study Area

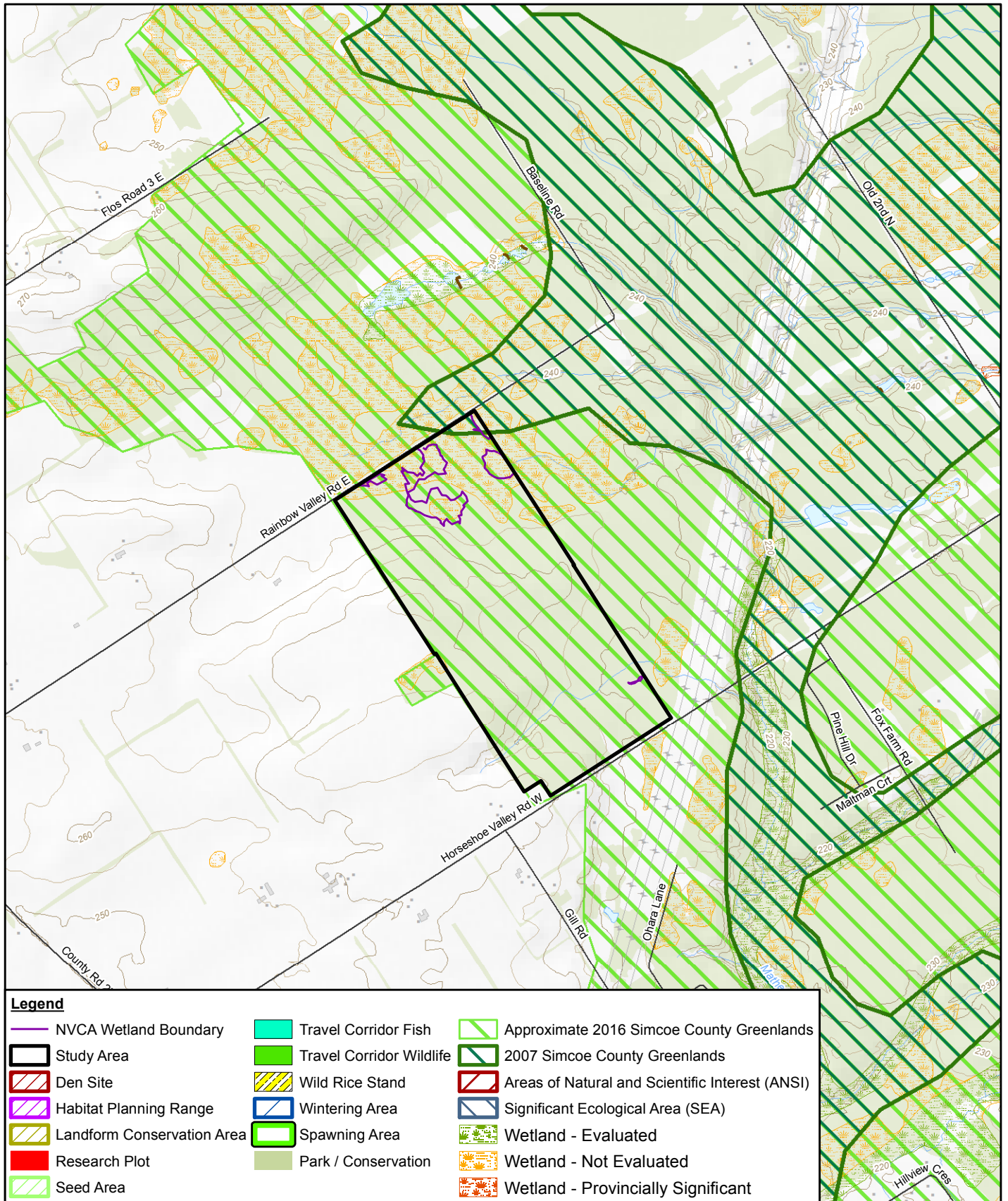
Source: MNRF NRVIS, 2015. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2016; Chapman, L.J. and Putnam, D.F. 2007. Physiography of southern Ontario; Ontario Geological Survey, Miscellaneous Release—Data 228.



Coordinate System:
NAD 1983 UTM Zone 17N



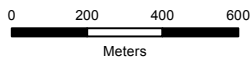
ENVIRONMENTAL RESOURCE RECOVERY CENTRE (ERRC) 086822-00
 2976 HORSESHOE VALLEY ROAD WEST, SPRINGWATER Nov 4, 2016
 SCOPED ENVIRONMENTAL IMPACT STUDY
 PHYSIOGRAPHY **FIGURE 2**



Legend

- | | | |
|----------------------------|--------------------------|---|
| NVCA Wetland Boundary | Travel Corridor Fish | Approximate 2016 Simcoe County Greenlands |
| Study Area | Travel Corridor Wildlife | 2007 Simcoe County Greenlands |
| Den Site | Wild Rice Stand | Areas of Natural and Scientific Interest (ANSI) |
| Habitat Planning Range | Wintering Area | Significant Ecological Area (SEA) |
| Landform Conservation Area | Spawning Area | Wetland - Evaluated |
| Research Plot | Park / Conservation | Wetland - Not Evaluated |
| Seed Area | | Wetland - Provincially Significant |

Source: MNRF NRVIS, 2015. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2016;



Coordinate System:
NAD 1983 UTM Zone 17N



ENVIRONMENTAL RESOURCE RECOVERY CENTRE | 086822-00
SPRINGWATER, ONTARIO
SCOPED ENVIRONMENTAL IMPACT STUDY

Nov 8, 2016

NATURAL HERITAGE FEATURES FIGURE 3



Legend

Wetland Communities

- MASM1-2, Bulrush Mineral Shallow Marsh
- SWCM2-1, White Pine-Hemlock Mineral Coniferous Swamp
- MASM1, Graminoid Mineral Shallow Marsh
- SWMM2-1, Red Maple-Conifer Mineral Mixed Swamp

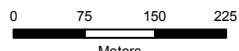
Upland Communities

- FODM5, Dry-Fresh Sugar Maple Naturalized Deciduous Plantation
- MEMM3, Dry-Fresh Mixed Meadow
- FOCM6-2, Fresh-Moist Hemlock-Hardwood Mixed Forest
- TAGM1, Coarse Mineral Coniferous Plantation

- FODM9-2, Fresh-Moist White Pine Hardwood Mixed Forest
- FOCM6, Naturalized Coniferous Plantation
- FOCM6-2, Dry-Fresh Red Pine Naturalized Coniferous Plantation
- CVI-1, Transportation

- Field Verified Wetland Boundary
- Access Road
- Facility Footprint
- Study Area

Source: MNRF NRVIS, 2016. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2016



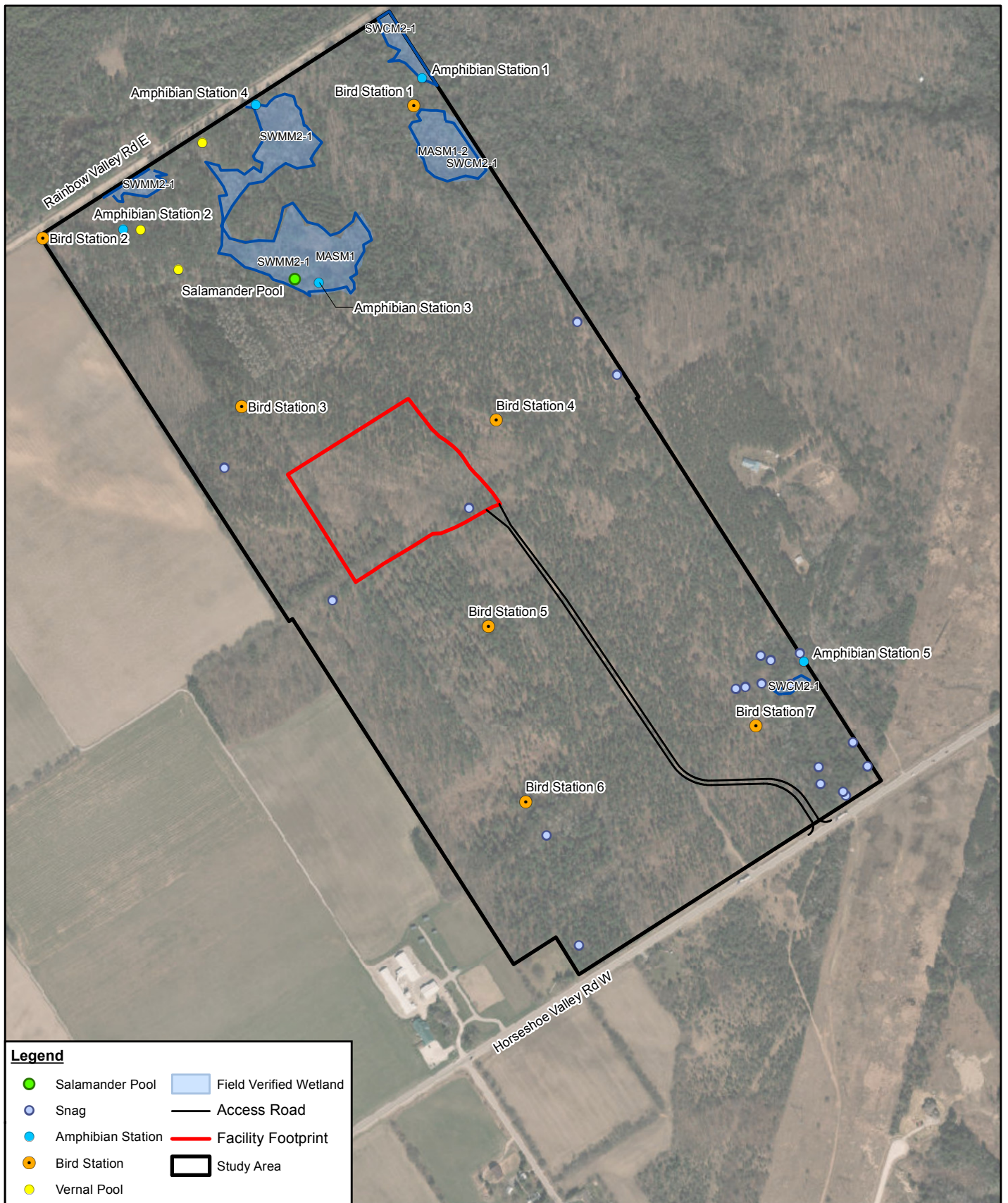
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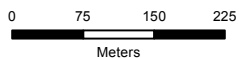
ENVIRONMENTAL RESOURCE RECOVERY CENTRE
SPRINGWATER, ONTARIO
SCOPED ENVIRONMENTAL IMPACT STUDY

086822
Nov 17, 2016

ECOLOGICAL LAND CLASSIFICATION FIGURE 4



Source: MNRF NRVIS, 2016. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2016



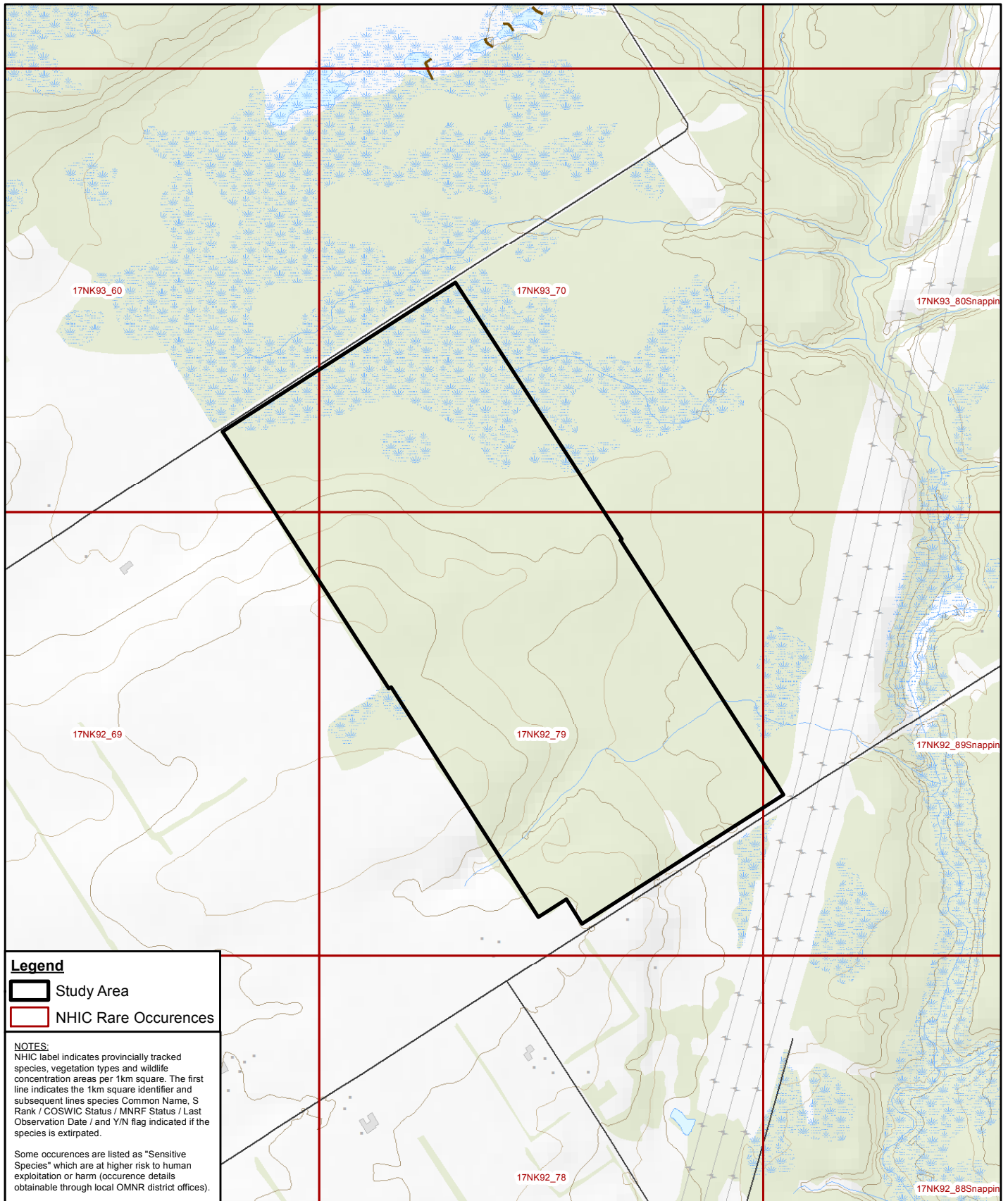
Coordinate System:
NAD 1983 UTM Zone 17N



ENVIRONMENTAL RESOURCE RECOVERY CENTRE
SPRINGWATER, ONTARIO
SCOPED ENVIRONMENTAL IMPACT STUDY

086822
Nov 7, 2016

WILDLIFE AND HABITAT FEATURES FIGURE 5



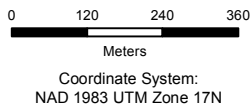
Legend

- Study Area
- NHIC Rare Occurrences

NOTES:
 NHIC label indicates provincially tracked species, vegetation types and wildlife concentration areas per 1km square. The first line indicates the 1km square identifier and subsequent lines species Common Name, S Rank / COSWIC Status / MNR Status / Last Observation Date / and Y/N flag indicated if the species is extirpated.

Some occurrences are listed as "Sensitive Species" which are at higher risk to human exploitation or harm (occurrence details obtainable through local OMNR district offices).

Source: MNR NRVIS, 2015. Produced by CRA under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2016; NHIC Rare Occurrences - updated 2012/02/29



ENVIRONMENTAL RESOURCE RECOVERY CENTRE
 SPRINGWATER, ONTARIO
 SCOPED ENVIRONMENTAL IMPACT STUDY

086822-00
 Nov 7, 2016

SPECIES AT RISK

FIGURE 6

Tables

**Wildlife Observations
Scoped EIS
County of Simcoe
Springwater, ON**

Species		Provincial Status	Conservation Status	
Common Name	Scientific Name		SARO	SARA
Birds				
American crow	<i>Corvus brachyrhynchos</i>	S5B		
American goldfinch	<i>Spinus tristis</i>	S5		
American redstart	<i>Setophaga ruticilla</i>	S5B		
American robin	<i>Turdus migratorius</i>	S5B		
Baltimore oriole	<i>Icterus galbula</i>	S4B		
Barred owl	<i>Strix varia</i>	S5		
Blackburnian warbler	<i>Setophaga fusca</i>	S5B		
Black-capped chickadee	<i>Poecile atricapillus</i>	S5		
Black-throated blue warbler	<i>Setophaga caerulescens</i>	S5B		
Black-throated green warbler	<i>Setophaga virens</i>	S5B		
Blue jay	<i>Cyanocitta cristata</i>	S5		
Blue-headed vireo	<i>Vireo solitarius</i>	S5B		
Broad-winged hawk	<i>Buteo platypterus</i>	S5B		
Brown creeper	<i>Certhia americana</i>	S5B		
Brown thrasher	<i>Toxostoma rufum</i>	S4B		
Chestnut-sided warbler	<i>Setophaga pensylvanica</i>	S5B		
Chipping sparrow	<i>Spizella passerina</i>	S5B		
Common grackle	<i>Quiscalus quiscula</i>	S5B		
Common yellowthroat	<i>Geothlypis trichas</i>	S5B		
Downy woodpecker	<i>Picoides pubescens</i>	S5		
Eastern wood-pewee	<i>Contopus virens</i>	S4B	Special Concern	No Status
Great crested flycatcher	<i>Myiarchus crinitus</i>	S4B		
Gull sp.	<i>Laridae sp.</i>	-		
Hairy woodpecker	<i>Picoides villosus</i>	S5		
Hermit thrush	<i>Catharus guttatus</i>	S5B		
House wren	<i>Troglodytes aedon</i>	S5B		
Indigo bunting	<i>Passerina cyanea</i>	S4B		
Magnolia warbler*	<i>Setophaga magnolia</i>	S5B		
Mourning dove	<i>Zenaida macroura</i>	S5		
Mourning warbler	<i>Geothlypis philadelphia</i>	S4B		
Northern flicker	<i>Colaptes auratus</i>	S4B		
Northern parula	<i>Setophaga americana</i>	S4B		
Ovenbird	<i>Seiurus aurocapilla</i>	S4B		
Pileated woodpecker	<i>Dryocopus pileatus</i>	S5		
Pine warbler	<i>Setophaga pinus</i>	S5B		
Red-shouldered hawk	<i>Buteo lineatus</i>	S4B	No Status	Special Concern
Red-breasted nuthatch	<i>Sitta canadensis</i>	S5		
Red-eyed vireo	<i>Vireo olivaceus</i>	S5B		
Rose-breasted grosbeak	<i>Pheucticus ludovicianus</i>	S4B		
Ruffed grouse	<i>Bonasa umbellus</i>	S4B		
Scarlet tanager	<i>Piranga olivacea</i>	S4B		
Song sparrow	<i>Melospiza melodia</i>	S5B		
Veery	<i>Catharus fuscescens</i>	S4B		
Vesper sparrow*	<i>Poocetes gramineus</i>	S4B		
White-breasted nuthatch	<i>Sitta carolinensis</i>	S5		
White-throated sparrow	<i>Zonotrichia albicollis</i>	S5B		
Winter wren	<i>Troglodytes troglodytes</i>	S5B		
Wood thrush	<i>Hylocichla mustelina</i>	S4B	Special Concern	No Status
Yellow warbler	<i>Setophaga petechia</i>	S5B		

**Wildlife Observations
Scoped EIS
County of Simcoe
Springwater, ON**

Species		Provincial Status	Conservation Status	
Common Name	Scientific Name		SARO	SARA
Birds				
Reptiles and Amphibians				
American toad	<i>Anaxyrus americanus</i>	S5		
Chorus frog	<i>Pseudacris triseriata</i>	S4		
Gray tree frog	<i>Hyla versicolor</i>	S5		
Green frog*	<i>Lithobates clamitans</i>	S5		
Northern leopard frog*	<i>Lithobates pipiens</i>	S5		
Spotted salamander	<i>Ambystoma maculatum</i>	S4		
Spring peeper	<i>Pseudacris crucifer</i>	S5		
Wood frog	<i>Lithobates sylvaticus</i>	S5		
Mammals				
Bat sp.	<i>Chiroptera sp.</i>	-		
Coyote*	<i>Canis latrans</i>	S5		
Eastern gray squirrel	<i>Sciurus carolinensis</i>	S5		
Red squirrel	<i>Tamiasciurus hudsonicus</i>	S5		
White-tailed deer	<i>Odocoileus virginianus</i>	S5		
Insects				
Common whitetail	<i>Plathemis lydia</i>	S5		
Eastern tiger swallowtail	<i>Papilio glaucus</i>	S5		
Eight-spotted forester	<i>Alypia octomaculata</i>	S5		
Mourning cloak	<i>Nymphalis antiopa</i>	S5		
Red-spotted purple	<i>Limenitis arthemis astyanax</i>	S5		
Silver-spotted skipper	<i>Epargyreus clarus</i>	S4		
Viceroy	<i>Limenitis archippus</i>	S5		

Notes:

All species observed within the Study Area unless otherwise noted
*observed outside of, but adjacent to, the immediate Study Area

SARA: Species at Risk Act

SARO: Species at Risk in Ontario

S4: Common in Ontario; apparently secure with over 80 occurrences in the province

S5: Demonstrably secure; species is widespread in Ontario

- : Indicates no information available

Rank qualifiers (e.g. S1B,S2N) are used for some migratory or transitory species to indicate different conservation statuses at specific times of the year, such as during the breeding (B) and non-breeding (N) seasons.

Table 2.4

**2016 Amphibian Survey Results and Detection Rates
 Scoped Environmental Impact Study
 County of Simcoe
 Springwater, ON**

Common Name	Scientific Name	Detection Rate		
		18-Apr	10-May	16-Jun
Chorus frog	<i>Pseudacris triseriata</i>	0/4	0/5*	0/5
Spring peeper	<i>Pseudacris crucifer</i>	4/4	4/5	0/5
Wood frog	<i>Lithobates sylvaticus</i>	3/4	2/5	0/5
American toad	<i>Anaxyrus americanus</i>	0/4	2/5	0/5
Gray tree frog	<i>Hyla versicolor</i>	0/4	0/5	3/5

Notes:

-Four amphibian stations were surveyed during the first visit, but subsequent field investigation indicated additional amphibian habitat, and a fifth station was created

-Detection rate displayed as the number of stations that each species was detected at, out of the total of five (or four) stations surveyed.

*detected outside of the protocol time limit

Appendices

Appendix A

Environmental Impact Study Terms of Reference



Memorandum

To: Stephanie Mack (Simcoe County)

Ref. No.: 086822

From: Laura Lawlor/aj/3

Date: May 10, 2016

CC: Brian Dermody (GHD)
Blair Shoniker (GHD)

**Re: Simcoe Organics Facility – Site Natural Features and
Scoped EIS Terms of Reference
2976 Horseshoe Valley Road West, Springwater, ON**

The following has been prepared for the purpose of outlining the Terms of Reference for the Scoped Environmental Impact Study (EIS) pertaining to the Organics Processing Facility (OPF) and Materials Management Facility (MMF) proposed at 2976 Horseshoe Valley Road West, Springwater. It has been prepared based out our review of the Simcoe County Official Plan EIS requirements, Nottawasaga Valley Conservation Authority (NVCA) Planning and Regulations Guidelines, and the April 1, 2016 meeting with representatives of the County, Township of Springwater, NVCA, and Ministry of Natural Resources and Forestry (MNRF).

Task 1: Pre-Consultation Meeting

Attended by the County, Township of Springwater, NVCA, MNRF, GHD at the County Administration Center on April 1, 2016. The objective of this meeting was to verify the Terms of Reference for the Scoped EIS.

Task 2: Desktop Review

Using resources such as the MNRF database, NVCA, County and Township records (including forestry management records), and eCommunal sources (e.g., eBird, iNaturalist, etc.), GHD will document the existing conditions of the entire property at 2976 Horseshoe Valley Road West (208 acres), with a focus on the proposed facility location (11 acres). Existing conditions of adjacent properties will also be documented as they relate to the subject property. Features will include:

- Available natural feature mapping (e.g., wetlands, significant woodlands, significant natural features etc.)
- Surface water features and NVCA regulated areas
- Species at Risk (SAR) data
- Municipal natural heritage, forestry, and wildlife records or applicable management plans
- Wildlife databases and records

Connectivity of natural features identified on or adjacent to the site will be mapped and identified as part of Task 2.

The desktop review is expected to be completed in April 2016.

Task 3: Field Investigation

GHD initially conducted a preliminary Site reconnaissance to review woodlot composition and presence of natural features within the Study Area (January 27th, 2016). Additional field investigations will verify all previously collected information and characterize the natural features present on the property. The focus of the field investigation will include:

- Ecological Land Classification (ELC) – document forest/vegetation communities
 - Two events (May and July)
 - In accordance with the MNR First Approximation methods (1998)
- Watercourse verification
 - Two events (April and July)
 - Visual observation
- Incidental Wildlife Observations
 - Two events (May and July)
 - Visual and auditory observations
- Wetland delineation
 - Two events (May and July)
 - Will be conducted with NVCA and GHD staff, and in accordance with the Southern Ontario Wetland Evaluation System and ELC methodologies
- Breeding Bird Survey
 - Two spring events (early June and late June or early July)
 - In accordance with industry standard monitoring methods (e.g., Marsh Monitoring Protocol, Toronto Region Conservation Authority EIS Guidelines, Parks Canada Forest Bird Monitoring Program, many MNRF SAR survey protocols)
- Amphibian Survey
 - Three events (April, May, early June)
 - In accordance with the Marsh Monitoring Program protocol guidelines (Bird Studies Canada)
- Species specific habitat verification (Hine's emerald dragonfly, eastern whip-poor-will, bat roosting)
 - Two events (May and July)
 - Initial review of records indicate that these species are not known to be present on-site. Using known habitat requirements for these species (MNRF and Committee on the Status of Endangered Wildlife in Canada), the presence of suitable on-site habitat will be reviewed

All field investigations are expected to be carried out concurrently (where possible) in Spring/Summer 2016, and as appropriate for the survey type. Timing of the field investigations will be determined by weather, seasonal climate, and site conditions. No fall surveys are planned as part of this workplan based on GHD's initial assessment of the site. At the April 1, 2016 meeting, it was suggested by NVCA that there may be the potential for a SAR grass (forked three-awned grass; *Aristida basiramea*) to be present on-site. Should it be determined through the spring and summer field investigations that there may be suitable habitat for this species, GHD will notify the County as surveys for the presence/absence of this species will require a single fall survey event.

Task 4: Analysis and Reporting

Based on the results from the desktop review and field investigations, an assessment of impacts on identified natural features and recommended mitigation strategies will be presented. A detailed description of the proposed site development will be included, and provide the basis for assessment of impacts. As this scoped EIS is being prepared as the supporting documentation for a zoning and Official Plan amendment application to the Township of Springwater, the scoped EIS report will include a discussion of the proposed site development with respect to municipal natural heritage planning policies.

GHD anticipates providing the County with a draft of the scoped EIS for review in August 2016. The final report will be provided to the County within one week of receipt of the County's review of the draft scoped EIS report. GHD anticipates that the final report will be issued by mid-September 2016, in advance of the proposed Planning application deadline in late September 2016.

Should it be determined through the spring and summer investigations that a fall survey is required, the schedule for the draft and final scoped EIS reports will be revised accordingly.

Appendix B

Vegetation Inventory

**Vegetation Inventory
Scoped EIS
County of Simcoe
Springwater, ON**

Common Name	Scientific Name	Wetness Index	Provincial Rank	Regional Significance
American basswood	<i>Tilia americana</i>	3	S5	-
American beech	<i>Fagus grandifolia</i>	3	S5	-
Beech drops	<i>Epifagus virginiana</i>	5	S5	-
Bellflower	<i>Campanula rapunculoides</i>	5	SNA	-
Bird's-foot trefoil	<i>Lotus corniculatus</i>	1	SNA	-
Bitter dock	<i>Rumex obtusifolius</i>	-3	SE5	-
Bittersweet nightshade	<i>Solanum dulcamara</i>	0	SNA	-
Black ash	<i>Fraxinus nigra</i>	-4	S4	-
Black cherry	<i>Prunus serotina</i>	3	S5	-
Black locust	<i>Robinia pseudoacacia</i>	4	SE5	-
Black raspberry	<i>Rubus occidentalis</i>	5	S5	-
Black walnut	<i>Juglans nigra</i>	3	S4	-
Blue cohosh	<i>Caulophyllum thalictroides</i>	5	S5	-
Blue flag iris	<i>Iris versicolour</i>	-5	S5	-
Blue spruce	<i>Picea pungens</i>	-	SNA	-
Blue vervain	<i>Verbena hastata</i>	-4	S5	-
Bracken fern	<i>Pteridium aquilinum</i>	3	S5	-
Bunchberry	<i>cornus canadensis</i>	0	S4	-
Canada blue joint	<i>Calamagrostis canadensis</i>	-5	S5	-
Canada mayflower	<i>Maianthemum canadense</i>	0	S5	-
Canada thistle	<i>Cirsium arvense</i>	3	SNA	-
Catnip	<i>Nepeta cataria</i>	1	SE5	-
Chicory	<i>Cichorium intybus</i>	5	SNA	-
Cinnamon fern	<i>Osmundastrum cinnamomeum</i>	-3	S5	-
Common cinquefoil	<i>Potentilla simplex</i>	4	S5	-
Common dock	<i>Rumex sp.</i>	-	-	-
Common hawkweed	<i>Hieracium vulgatum</i>	5	SNA	-
Common milkweed	<i>Asclepias syriaca</i>	5	S5	-
Common ragweed	<i>Ambrosia artemisiifolia</i>	3	S5	-
Common reed	<i>Phragmites australis</i>	-4	SNR	-
Common speedwell	<i>Veronica officinalis</i>	5	SE5	-
Cow vetch	<i>Vicia cracca</i>	5	SNA	-
Curled dock	<i>Rumex crispus</i>	-1	SNA	-
Curly wood sedge	<i>Carex rosea</i>	5	S5	-
Daisy fleabane	<i>Erigeron annuus</i>	1	S5	-
Common dandelion	<i>Taraxacum officianale</i>	3	SNA	-
Deptford pink	<i>Dianthus armeria</i>	5	SNA	-
Eastern hemlock	<i>Tsuga canadensis</i>	3	S5	-
Eastern white cedar	<i>Thuja occidentalis</i>	-3	S5	-
European buckthorn	<i>Rhamnus cathartica</i>	3	SNA	-
European larch	<i>Larix decidua</i>	5	SE2	-
False solomon's seal	<i>Maianthemum racemosum</i>	3	S5	-
Feathermoss	<i>Ptilium sp.</i>	-	-	-
Fowl blue grass	<i>Poa palustris</i>	-4	S5	-
Fowl manna grass	<i>Glyceria striata</i>	-5	S5	-
Fringed sedge	<i>Carex crinita</i>	-4	S5	-
Garlic mustard	<i>Alliaria petiolata</i>	0	SNA	-
Geranium sp.	<i>Geranium sp.</i>	-	-	-
Goldenrod species	<i>Solidago spp.</i>	-	-	-
Goldthread	<i>Coptis trifolia</i>	-3	S5	-
Grass species	<i>Panicum sp.</i>	-	-	-
Heal-all	<i>Prunella vulgaris</i>	5	S5	-
Herb-robert	<i>Geranium robertianum</i>	5	S5	-
Horsetail sp.	<i>Equisetum sp.</i>	-	-	-
Ironwood	<i>Ostrya virginiana</i>	4	S5	-

**Vegetation Inventory
Scoped EIS
County of Simcoe
Springwater, ON**

Common Name	Scientific Name	Wetness Index	Provincial Rank	Regional Significance
Jack-in-the-pulpit	<i>Arisaema triphyllum</i>	-2	S5	-
Lily of the valley	<i>Convallaria majalis</i>	5	SNA	-
Little blue-eyed grass	<i>Sisyrinchium montanum</i>	-1	S5	-
Manitoba maple	<i>Acer negundo</i>	-2	S5	-
Marginal wood fern	<i>Dryopteris marginalis</i>	3	S5	-
New York fern	<i>Thelypteris noveboracensis</i>	-1	S4S5	-
Nipplewort	<i>Lapsana communis</i>	5	SE5	-
Nodding smartweed	<i>Polygonum lapathifolium</i>	-4	S5	-
Northern willowherb	<i>Epilobium ciliatum</i>	3	S5	-
Orchard grass	<i>Dactylis glomerata</i>	3	SNA	-
Ostrich fern	<i>Matteuccia struthiopteris</i>	-3	S5	-
Ox eye sunflower	<i>Heliopsis helianthoides</i>	5	S5	R-4 Simcoe County
Oxeye daisy	<i>Leucanthemum vulgare</i>	5	SNA	-
Partridgeberry	<i>Mitchella repens</i>	2	S5	-
Pigweed	<i>Chenopodium album</i>	1	SNA	-
Pin cherry	<i>Prunus pensylvanica</i>	4	S5	-
Pink lady's slipper	<i>Cypripedium acaule</i>	-3	S5	-
Poison ivy	<i>Toxicodendron radicans</i>	-1	S5	-
Prickly gooseberry	<i>Ribes cynosbati</i>	5	S5	-
Queen Anne's lace	<i>Daucus carota</i>	5	SNA	-
Red clover	<i>Trifolium pratense</i>	2	SNA	-
Red currant	<i>Ribes rubrum</i>	5	SE5	-
Red maple	<i>Acer rubrum</i>	0	S5	-
Red oak	<i>Quercus rubra</i>	3	S5	-
Red osier dogwood	<i>Cornus sericea</i>	-3	S5	-
Red pine	<i>Pinus resinosa</i>	3	S5	-
Red trillium	<i>Trillium erectum</i>	1	S5	-
Red-berried elderberry	<i>Sambucus racemosa</i>	2	S5	-
Reed canary grass	<i>Phalaris arundinacea</i>	-4	S5	-
Rough avens	<i>Geum virginianum</i>	-3	S4	-
Rough-fruited cinquefoil	<i>Potentilla recta</i>	5	SE5	-
Round lobed hepatica	<i>Anemone americana</i>	5	S5	-
Royal fern	<i>Osmunda regalis</i>	-5	S5	-
Running strawberry bush	<i>Euonymus obovatus</i>	5	S5	R-2 Simcoe County
Sedge	<i>Scirpus sp.</i>	-	-	-
Sensitive fern	<i>Onoclea sensibilis</i>	-3	S5	-
Serviceberry sp.	<i>Amelanchier spp.</i>	-	S4S5	-
Spotted jewelweed	<i>Impatiens capensis</i>	-3	S5	-
St. John's wort	<i>Hypericum perforatum</i>	5	S5	-
Staghorn sumac	<i>Rhus typhina</i>	5	S5	-
Starflower	<i>Lysimachia borealis</i>	-1	S5	-
Sugar maple	<i>Acer saccharum</i>	0	S5	-
Sweet Coltsfoot	<i>Tussilago farfara</i>	3	SNA	-
Tall buttercup	<i>Ranunculus acris</i>	-2	S5	-
Tall goldenrod	<i>Solidago altissima var. altissima</i>	3	S4?	R-4 Simcoe County
Tall thimbleweed	<i>anemone virginiana</i>	5	S5	-
Timothy grass	<i>Phleum pratense</i>	3	SNA	-
Trout lily	<i>Erythronium americanum</i>	5	S5	-
Upright wood sorrel	<i>Oxalis stricta</i>	3	S5	-
Virginia creeper	<i>Parthenocissus quinquefolia</i>	1	S4?	-
Virginia waterleaf	<i>Hydrophyllum virginianum</i>	-2	S5	-
Water parsnip	<i>Sium suave</i>	-5	S5	-
White baneberry	<i>Actaea pachypoda</i>	5	S5	-
White birch	<i>Betula papyrifera</i>	2	S5	-
White elm	<i>Ulmus americana</i>	-2	S5	-

**Vegetation Inventory
Scoped EIS
County of Simcoe
Springwater, ON**

Common Name	Scientific Name	Wetness Index	Provincial Rank	Regional Significance
White pine	<i>Pinus strobus</i>	3	S5	-
White spruce	<i>Picea glauca</i>	3	S5	-
White sweet clover	<i>Melilotus alba</i>	2	SNA	-
White trillium	<i>Trillium grandiflorum</i>	5	S5	-
Wild leek	<i>Allium tricoccum</i>	2	S5	-
Wild lettuce	<i>Lactuca virosa</i>	-	-	-
Wild oregano	<i>Origanum vulgare</i>	5	SE5	-
Wild sarsaparilla	<i>Aralia nudicaulis</i>	3	S5	-
Willow species	<i>Salix sp.</i>	-	-	-
Wood anemone	<i>Anemone nemorosa</i>	0	S5	-
Wood fern	<i>Dryopteris adans</i>	-	-	-
Wood sorrel	<i>Oxalis acetosella</i>	3	S5	-
Woodland strawberry	<i>Fragaria vesca</i>	4	S5	-
Woolgrass	<i>Scirpus cyperinus</i>	-4	S5	-
Yarrow	<i>Achillea millefolium</i>	3	S5	-
Yellow birch	<i>Betula alleghaniensis</i>	0	S5	-

Notes:

Species observations were collected over multiple site visits between January 27th and September 28th, 2016
Regional significance was assigned using the document: "Distribution and Status of Vascular Plants of Central Region"
produced by the Ministry of Natural Resources and Forestry
Provincial rank information retrieved from <http://nhic.mnr.gov.on.ca/> on October 21st, 2016

Provincial Rank Definitions

- S4** Common in Ontario; apparently secure with over 80 occurrences in the province
- S5** Demonstrably secure; species is widespread in Ontario
- SNR** Unranked, status not yet assessed
- SNA** Not Applicable; not suitable target for conservation activities
 - Indicates no information available
 - ? If following a rank, Rank Uncertain (e.g. S3?).
- R-[1-5]** Native species present and rare in Central Region; # of stations indicated

Appendix C

Study Area Photo Log



Photo 1 - FODM5 Dry-Fresh Sugar Maple Deciduous Forest



Photo 2 - FOMM6-2 Fresh-Moist Hemlock Hardwood Mixed Forest



Site Photographs



Photo 3 - FOMM9-2 Fresh-Moist White Pine Hardwood Mixed Forest



Photo 4 - MEMM3 Dry-Fresh Mixed Meadow



Site Photographs



Photo 5 - FOCM6 Naturalized Coniferous Plantation



Photo 6 - FOCM6-2 Dry-Fresh Red Pine Naturalized Coniferous Plantation



Site Photographs



Photo 7 - TAGM1 Coarse Mineral Coniferous Plantation



Photo 8 - CVI-1 Transportation



Site Photographs



Photo 9 - SWCM2-1 White Pine Hemlock Mineral Coniferous Swamp



Photo 10 - SWMM2-1 Red Maple Conifer Mineral Mixed Swamp



Site Photographs



Photo 11 - MASM1 Graminoid Mineral Shallow Marsh



Photo 12 - MASM1-2 Bulrush Mineral Shallow Marsh



Site Photographs

Appendix D

Hazard Lands Assessment



Memorandum

November 16, 2016

To: Stephanie Mack (County of Simcoe) Ref. No.: 086822

From: Brian Dermody Tel: 416-360-1600

CC: Tom Reeve (Nottawasaga Valley Conservation Authority)

**Subject: Simcoe Environmental Resource Recovery Centre
Hazard Land Assessment of 2976 Horseshoe Valley Road West**

1. Project Background

The County of Simcoe (County) adopted a Solid Waste Management Strategy (Strategy) in 2010 that provides the framework for the County's waste disposal options and diversion programs. Guided by the Strategy, and following further recommendations from Council, the County initiated a siting process in 2014 to identify a site for the development of an Organics Processing Facility (OPF) for the long-term processing of source-separated organics (SSO). The siting process was subsequently expanded to also identify a site for the development of a Materials Management Facility (MMF) for the transfer of garbage, recyclables, and SSO.

Siting work for these facilities followed a comprehensive process in keeping with the Ontario Environmental Assessment (EA) Act. Although an EA is not required under the EA Act for either facility, the County chose to follow this process to ensure a robust and thorough evaluation of candidate sites. Through a rigorous and comprehensive multi-step evaluation process, one preferred site was determined from the original list of 502 sites. It was also determined that co-locating the facilities together on one site would be advantageous from technical and financial perspectives, with the combined facility being referred to as the Environmental Resource Recovery Centre (ERRC). The ERRC will also include a truck servicing facility, an administrative facility with possible public education space, and an area reserved for a potential future materials recovery facility to sort blue box recycling.

Further details on the site selection process and the site itself are provided in the following reports:

- County of Simcoe Organics Processing Facility – Part 1 – Planning – Siting Methodology and Evaluation Criteria (Conestoga-Rovers & Associates, February 2015).
- County of Simcoe Materials Management Facility – Part 1 – Planning – Siting Methodology and Criteria (Conestoga-Rovers & Associates, February 2015).
- County of Simcoe – Organics Processing Facility, Part 2 – Long List Evaluation (GHD, July 2015).



- County of Simcoe – Materials Management Facility, Part 2 – Long List Evaluation (GHD, July 2015).
- County of Simcoe – Organics Processing Facility, Materials Management Facility, and Co-located Facility – Part 3 – Short List Evaluation (GHD, February 26, 2016).

For reference, previous staff reports, communication material from public information and consultation sessions, and minutes of Community Engagement Committee meetings can be found at www.simcoe.ca/errc.

2. Preferred Site

The siting process resulted in the identification of a preferred site for the development of the ERRC at 2976 Horseshoe Valley Road West (Site). The Site is situated on the north side of Horseshoe Valley Road West, approximately 3 kilometres west of Highway 400 (Figure 1). The Site is rectangular in shape and is described as Lot 2, Concession 1 in the Township of Springwater (Springwater), County of Simcoe. The Site is identified as the Freele County Forest Tract and is covered by a forest area with the exception of a small access road/trail. The Site is roughly 84 hectares (207 acres) in area, rectangular in shape, with approximate dimensions of 625 metres wide and 1,370 metres deep (2,050 feet by 4,500 feet). It is expected that the ERRC facility will occupy a footprint representing approximately 5.5% of the overall Site area, covering an area of approximately 4.5 hectares (11 acres), which is proposed to be situated on an elevated area of the Site to the northwest of the mid-point. Access to the Site will be established from Horseshoe Valley Road West in the south, and will generally follow the alignment of an existing trail.

The current County Official Plan (OP) designation is Greenlands (Schedule 5.1), while Springwater's OP designates the majority of the Site as Rural, with the southwest portion of the Site designated as Agricultural. The Site is currently zoned Agricultural under the Springwater's Zoning By-Law (ZBL).

Various Planning studies are required in support of amendments to the Springwater OP and ZBL, and to the County OP. Following a pre-consultation meeting with Springwater Planning staff in December 2015, a number of studies required to support these amendments were identified, including an Environmental Impact Study (EIS) and a Hazard Land Assessment (HLA) to the satisfaction of the Nottawasaga Valley Conservation Authority (NVCA). In addition, the HLA will confirm areas of the Site that are viable for the development of the ERRC, and will inform design and construction recommendations and constraints for the proposed development.

3. Hazard Land Assessment

Natural hazards are defined by the Ministry of Natural Resources and Forestry (MNRF) as:

Natural, physical environmental processes that occur near or at the surface of the earth [that] can produce unexpected events of unusual magnitude or severity.



The NVCA is mandated through the *Conservation Authority Act* to regulate lands that are subject to five types of natural hazards:

- Flood
- Erosion
- Hazardous Soils
- Karst
- Dynamic Beach

In order to assist with the evaluation of these natural hazards in support of new development, the NVCA has prepared the *Natural Hazards Technical Guide (December 2013)*. The guidelines present procedures, computation methods, and input parameters used in the evaluation, and are intended to work in conjunction with the *NVCA Planning and Regulation Guidelines*, the Ministry of the Environment and Climate Change (MOECC) *Stormwater Management and Design Manual*, and the Ministry of Natural Resources and Forestry (MNRF) *Natural Technical Guides*.

The NVCA has also prepared *NVCA Regulation Mapping* to identify areas that fall under their jurisdiction that may be affected by these natural hazards. In order to further assist in the evaluation of these natural hazards in the context of the Site, the *Regulatory Mapping* has been overlaid on top of the proposed facility footprint and access road (Figure 2). Each of the five natural hazards are described and assessed in relation to the Site in the sections that follow. Further details of the natural environment are provided under separate cover in the EIS report.

3.1 Flood

In Ontario, the extent of the Regulatory Floodplain is determined through either storm-centred events, flood frequency based events, or an observed event. The NVCA uses the “flood produced by the Timmins Storm (1961) or the 100 year flood, whichever is greater” as the flood standard to define the floodplain limits.

The NVCA identified areas that are potentially impacted due to floodplain inundation as part of the *NVCA Regulation Mapping*. The regulatory floodplain for river or stream valley systems is the area adjacent to a watercourse which would be inundated by a flood event resulting from the Timmins Storm or by the 100 year frequency based event. The regulated area includes the floodplain and a maximum 15 metre setback from the hazard for valley systems that are not apparent. Within Ontario, there are three policy concepts for floodplain management:

- **One-Zone** – In most river or stream valleys in Ontario, a one-zone concept is applied. This area encompasses the entire regulatory flood plain.
- **Two-Zone** – For areas adjacent to existing urban or built-up areas, where it can be demonstrated by the municipality that the one-zone approach is too restrictive, selective application of the two-zone concept may be considered.



- **Special Policy Area** – Where the one-zone or two-zone approaches have been demonstrated to be too stringent and would likely cause significant social and economic hardships to the community, Special Policy Areas (SPAs) may be considered.

Based on the above guidelines and the NVCA mapping, the proposed facility footprint location does not fall within the regulatory floodplain, as shown in Figure 2. The footprint is also located on an elevated area of the Site, further removing it from the areas potentially impacted by flooding.

Although the proposed access road does cross an area that falls within the regulatory floodplain, the associated watercourse was found not to exist following multiple Site visits with GHD ecologists and NVCA staff. This was also confirmed by County staff who visited the Site during the 2016 spring freshet. Further details on these visits and the existing surface water conditions at the Site are provided in the Environmental Impact Study Report.

Notwithstanding this, the existing topography of the Site and the inclusion of a stormwater ditch adjacent to the west side of the access road will allow any surface runoff to be conveyed to the roadside ditch on the north side of Horseshoe Valley Road West, mitigating the risk of any potential flooding.

3.2 Erosion

Erosion hazard assessments are requested for applications that are located within the estimated erosion hazard based on NVCA regulation mapping. Erosion hazard assessments may be one of two types:

1. Apparent (confined).
2. Not Apparent (unconfined).

3.2.1 Apparent River and Stream Valleys

Apparent river and stream valleys are ones in which the physical presence of a valley corridor containing a river or stream channel, which may or may not contain flowing water, is visibly discernible (i.e., valley walls are clearly definable) from the surrounding landscape by either field investigations, aerial photography and/or map interpretation. The location of the river or stream channel may be located at the base of the valley slope, in close proximity to the toe of the valley slope (i.e., within 15 metres), or removed from the toe of the valley slope (i.e., greater than 15 metres).

3.2.2 Not Apparent River and Stream Valleys

Not apparent river and stream valleys are ones in which a river or stream is present but there is no discernible valley slope or bank that can be detected from the surrounding landscape. For the most part, unconfined systems are found in fairly flat or gently rolling landscapes and may be located within the headwater areas of drainage basins. The river or stream channels contain either perennial (i.e., year round) or ephemeral (i.e., seasonal or intermittent) flow and range in channel configuration from seepage and natural channels to detectable channels.



3.2.3 Erosion Hazard

The erosion hazard of a river or stream valley is the furthest extent of the erosion hazard or flooding hazard plus an allowance. The regulation limit associated with the erosion hazard is generally defined as:

- The river or stream valley extending to the long term stable top of slope (Apparent); or, the maximum extent of the predicted meander belt of the river or stream (Not Apparent).
- An allowance of 15 metres from the stable top of slope (Apparent); or, an allowance of 15 metres from the edge of the predicted meander belt (Not Apparent).

Based on the above guidelines and the NVCA mapping, the proposed facility footprint location does not fall within the erosion hazard limit, as shown in Figure 2. The footprint is also located on an elevated area of the Site, further removing it from the areas potentially impacted by erosion.

Although the proposed access road does cross an area that falls within the erosion hazard limit, the associated watercourse was found not to exist following multiple Site visits with GHD ecologists and NVCA staff. This was also confirmed by County staff who visited the Site during the 2016 spring freshet. Further details on these visits and the existing surface water conditions at the Site are provided in the Environmental Impact Study Report.

Notwithstanding this, the existing topography of the Site and the inclusion of a stormwater ditch adjacent to the west side of the access road will allow any surface runoff to be conveyed to the roadside ditch on the north side of Horseshoe Valley Road West, mitigating the risk of any potential erosion.

3.3 Hazardous Soils

Hazardous soils are typically defined by unstable soil or bedrock. The potential for catastrophic failures in some areas of unstable soil and unstable bedrock warrant site specific studies to determine the extent of these hazardous lands, and therefore the appropriate limits of the hazard and regulation limits.

Unstable soil includes but is not necessarily limited to areas identified as containing sensitive marine clays (e.g., leda clays) or organic soils (Conservation Ontario & MNRF, 2005). Due to the high variability of organic soils, the potential risks and hazards associated with development in this type of hazardous land are also highly variable. As such, assessment of development potential in areas of organic soils is site specific.

GHD has undertaken hydrogeological and geotechnical investigations at the Site, including the advancement of eight boreholes (up to 8 metres deep) along the proposed access road and in the vicinity of the facility footprint, and the collection of soil samples for laboratory testing. Additional details of the subsurface conditions at the Site, including borehole logs, are provided in the Hydrogeological Assessment Report (GHD, November 2016).

The general stratigraphy below the ground cover at the borehole locations consists of surficial fill materials overlying native sand deposits that extend to the termination depth of the boreholes. As such, no hazardous soils have been identified at the Site and the subsoil conditions provide adequate stability for the development of the ERRC. Additional investigations will be carried out during the detailed design stage to further confirm that there are no hazardous soils present.



3.4 Karst

Unstable bedrock includes but is not necessarily limited to areas identified as karst formations. Karst formations may be present in limestone or dolomite bedrock, and are extremely variable in nature. Local, site-specific studies are required for identifying karst formations. Air photo interpretation of surface features such as sink holes may provide an indication of karst formations (MNRF and Conservation Ontario, 2005).

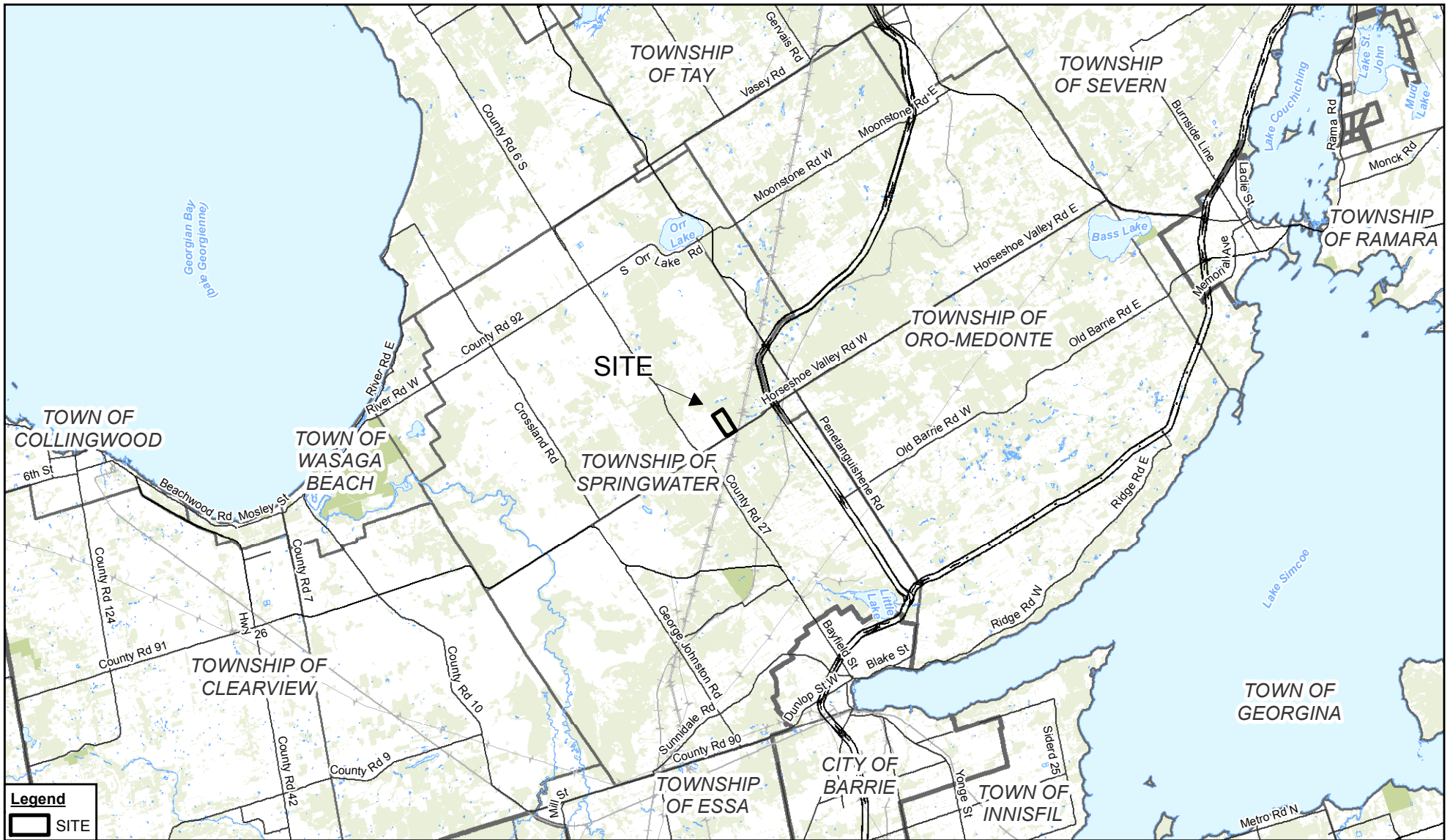
As noted in Section 3.3, the hydrogeological investigations carried out at the Site to date have not identified the presence of any karst formations, as the overburden is very thick beneath the Site, greater than 30 metres. Notwithstanding this, additional investigations will be carried out during the detailed design stage to further assess the bedrock.

3.5 Dynamic Beach

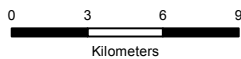
A dynamic beach is defined in the MNRF's *Great Lakes – St. Lawrence River System and Large Inland Lakes – Technical Guides* as a term used to emphasize and describe beach profiles that “undergo changes on a broad range of time scales, from hours or days to years and decades, in response to changing wave, wind and water level conditions and to changes in the rate of sediment supply to a particular section of shoreline”.

Within the NVCA jurisdiction, the application of dynamic beach principles is limited to development that is adjacent to the Georgian Bay Shoreline as well as part of the adjoining channel of the Nottawasaga River. This is not the case for the proposed Site. There are no shoreline flood or erosion hazards, or issues surrounding dynamic beaches.

Figures



Source: Source: MNRF NRVIS, 2015. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2016.



Coordinate System:
NAD 1983 UTM Zone 17N

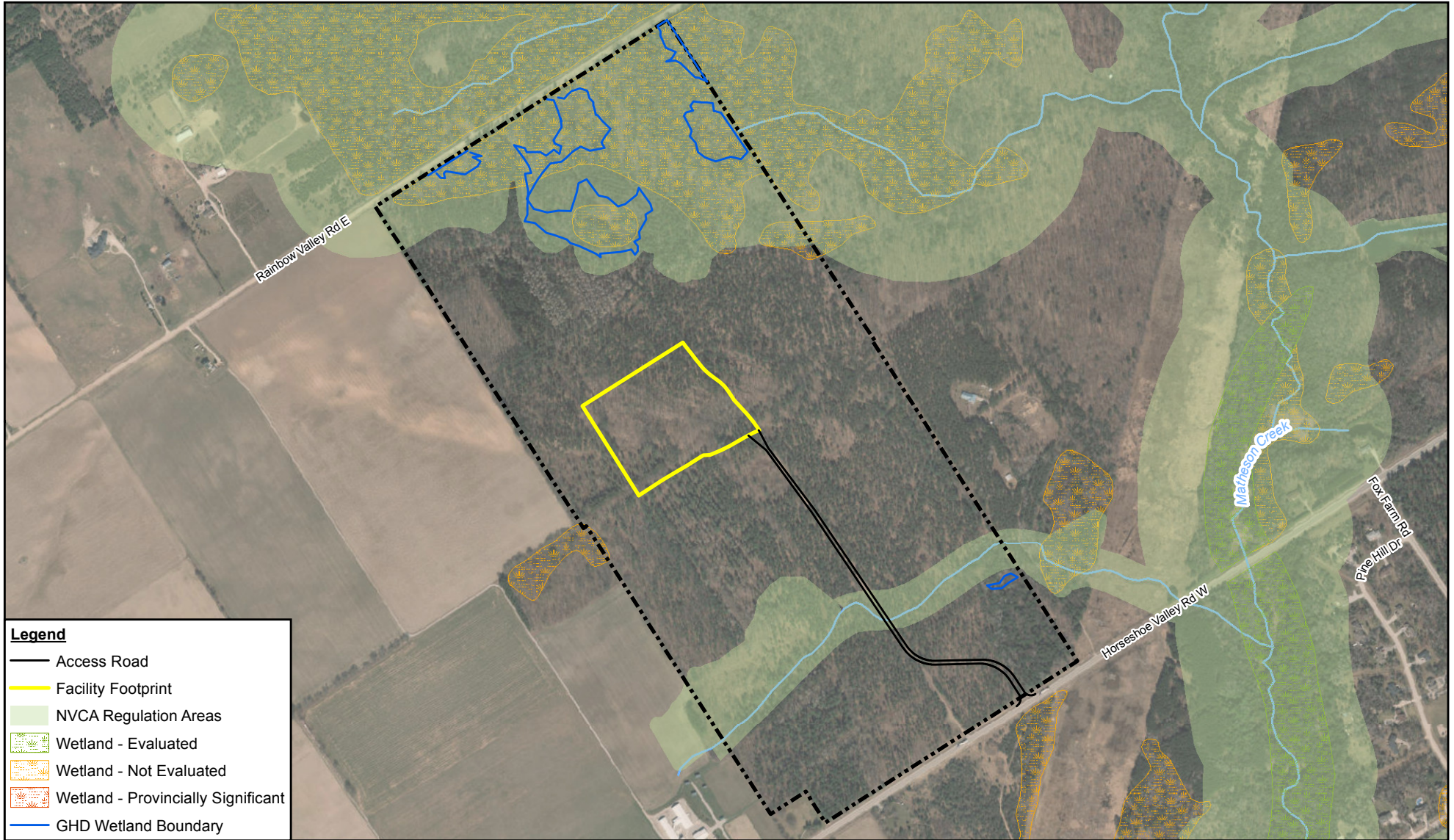


ENVIRONMENTAL RESOURCE RECOVERY CENTRE (ERRC)
2976 HORSESHOE VALLEY ROAD WEST, SPRINGWATER
HAZARD LAND ASSESSMENT

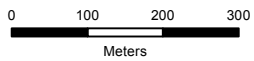
SITE LOCATION MAP

86822
Oct 27, 2016

FIGURE 1



Source: Source: MNRF NRVIS, 2015. Produced by GHD under licence from Ontario Ministry of Natural Resources and Forestry, © Queen's Printer 2016.



Coordinate System:
NAD 1983 UTM Zone 17N



ENVIRONMENTAL RESOURCE RECOVERY CENTRE (ERRC)
2976 HORSESHOE VALLEY ROAD WEST, SPRINGWATER
HAZARD LAND ASSESSMENT

NVCA REGULATION AREAS

86822
Oct 27, 2016

FIGURE 2