SEPTAGE AND LANDFILL LEACHATE DISPOSAL FEASIBILITY STUDY

Final Report

Greenland International Consulting Ltd. & Dillon Consulting Limited

Table of Contents

List of Tables

List of Appendices

1 Executive Summary

Based on recent initiatives by local Municipalities, and the Ministry of Environment and Climate Change regarding the practice of land application of untreated hauled waste, the County of Simcoe Council adopted a resolution on 25 August 2015, which states:

"THAT staff, with the assistance of the County's consultant, work with local municipal consultants to investigate how best the County is able to assist with the management of septage on a more regional basis and provide a report back to County Council."

To that end, Greenland International Consulting Ltd. (Greenland) was retained to prepare the Simcoe County Septage and Leachate Disposal Feasibility Study to address the County resolution, by completing the following tasks:

1. Review and summarize background information pertaining to existing septage generation and disposal capabilities at the local municipal level throughout Simcoe County;

2. Include an evaluation of the feasibility of treating landfill leachate from County owned landfills, where leachate is not already directed to an existing municipal sanitary sewer system;

3. Identify potential costs, and implementation steps for the range of potential opportunities identified; and

4. Review and asses any relevant legislation from the Province of Ontario and local municipalities which would impact a potential solution.

For the purposes of this report, hauled waste refers to septage, holding tank waste, leachate and portable toilet waste. At this time, septage and holding tank waste are the only types of hauled waste allowed for land application. The reason that septage deserves special attention beyond that of common sewage is that based on the 2008 Ministry of Environment guidelines for sewage design data, the chemical characteristics of septage is on average 37 times stronger than that of sewage found in any given sanitary sewer system. This additional strength is attributed to the lack of dilution found in septage effluent simply due to the functionality of septic tanks from which it is taken.

From the in-person background information gathering meetings conducted at the outset of this study, it has been estimated that there are approximately 63,000 active septic systems within the County. Based on best practices, and manufacturer's recommendations, it is suggested that septic tank clean out occur once every three (3) to five (5) years, which corresponds to septage amounts of 89,311 m^3/year and 54,985 m^3/year, respectively. For conservative estimate reasons, a three (3) year pump out frequency was assumed, and when combined with the estimated holding tank waste generation of 94,454 m^3/year, it is estimated an annual total of 183,765 m^3 of septage is generated each year.

Based on the information provided by each of the municipalities during the consultation portion of the study it has been determined that the WWTPs accept approximately 58,310 m^3/year of septage, on a County wide basis. As the treatment plants are only treating one third (33%) of the hauled waste generated, it is assumed that the vast majority of the remaining 125,455 m^3 (66%) is being applied to rural land under ECAs for land application of septage and a small fraction is taken for disposal outside the County. There is sufficient land approved to treat 231,309 m^3/year.

Although the Wastewater Treatment Plants which accept hauled waste within the County have a combined treatment potential of 233,235 m^3/year, much of the septage is still being land applied, likely due to cost savings associated with not having to pay a tipping fee at a nearby WWTP. Between both WWTP capacity

and ECA approved land for spreading, there is more than double the capacity required for the volume of septage estimated within the County.

As presented herein, hauled waste is also comprised of portable toilet waste and landfill leachate. The County already has a sufficient leachate handling system in place, where all County owned landfill leachate (except Barrie and Essa which is sent to Barrie Landfill) is collected and trucked to the Collingwood landfill, where it is slowly added to the municipal sanitary sewer system for dilution before treatment at the WWTP. The Barrie landfill uses the same process. Portable toilet waste has special consideration due to the odour reducing chemicals added which presents a risk of upsetting the biological treatment within a WWTP. The newly adopted system in the County of Simcoe for large events is for the hauling company to collect and truck portable toilet waste to private storage lagoons where it can be screened for large objects then a more refined product can be trucked one load at a time to a willing WWTP. At this time, the new portable toilet waste handling process is expected to continue.

The majority of hauling companies who operate in Simcoe County have private land in which to dispose of septage. These private land application sites are governed on a local level by the Ministry of Environment and Climate Change office in Barrie, which restricts the Environmental Compliance Approvals (ECA) for untreated septage disposal to application rates of 15L/m^2/week. These ECA's are valid for a two (2) year period before having to be renewed.

Under the present regulatory framework in Ontario, there is currently adequate ECA approved land for application of septage, as well as WWTPs accepting septage to manage the hauled waste generated in the County of Simcoe. The alternatives to enhance the current management of hauled waste in the County are presented in an effort to support coordination of stakeholders, and facilitate future management of hauled waste given the potential changes to the policy framework and the treatment capacity available over the planning period ending in 2031.

The treatment processes that may form part of proposed hauled waste management upgrades were considered as part of the development of alternatives and include:

- Septage Receiving and Pre-treatment Equipment;
- Flow Equalization;
- Chemical Process Enhancement;
- Biological Treatment Capacity Expansion;
- Biosolids Management Enhancement; and,
- Chemical Septage Stabilization.

Based upon the hauled waste generation rates characterized, treatment processes, and the facility selection considerations presented in herein, the alternatives identified included:

Alternative 1 – (Status Quo)
- Use facilities that currently accept septage and leachate only without capacity upgrades;

Alternative 2 – (Upgrade All Facilities to Minimize Transportation Requirements)
- Complete upgrades necessary for every treatment facility to provide hauled waste and municipal sewage servicing for the local community and minimize hauling requirements;

Alternative 3 – (Use Existing Hydraulic Capacity for Treatment of Hauled Waste)
- Use all existing facilities with uncommitted hydraulic reserve capacity to capture hauled waste generated, and avoid construction of new infrastructure to address hauled waste treatment needs;

Alternative 4 – (Multi-Criteria Approach to Facility Selection)
- Utilize current hauled waste acceptance capacity at existing facilities while also completing select upgrades at a small number of treatment facilities based on multiple criteria including: avoiding sensitive watersheds, identifying facilities with the largest hydraulic capacity, geographic location relative to areas with high hauled waste production, and anticipated investment required to address

population growth, in order to provide dedicated treatment for hauled waste generated over the planning period;

Alternative 5 – (Upgrade Facilities with Identified Need for Expansion to Address Population Growth)

- Include facilities for hauled waste acceptance and treatment as a standard component of treatment upgrades at facilities that require treatment capacity expansion to address population growth. This alternative is likely to provide more candidate facilities than required to manage hauled waste as most County facilities appear to require upgrades to accommodate population growth by the end of the planning period;

Alternative 6 – (New Countywide Facility)

- Construct a Countywide facility to process hauled waste separately from sanitary sewage, or combine with status quo to address future capacity needs identified for the planning period;

Alternative 7 – (Select Facilities with Largest Hydraulic Capacity For Targeted Upgrades)

- Treatment facilities selected for upgrades are focussed on those with highest rated capacity, such that the percentage of total treatment capacity allocated for hauled waste treatment is low relative to other alternatives; and,

Alternative 8 – Distributed treatment for land application as NASM

- Enhance pre-existing hauler infrastructure distributed across the county to include stabilization treatment processes in order to generate a product that can be land applied as a category 3 NASM.

The alternatives were evaluated based upon multiple criteria in three categories including:

- Technical Feasibility
  - Extent of Upgrades
  - Potential Implementation Barrier(s) to Upgrades
  - Technical Complexity
  - Risk of Overloading Existing Treatment Capacity
  - Potential for Odour Generation
  - Time Required to Implement Upgrades
- Social Feasibility
  - Impacts on Local Residents
  - Risk of Public Rejection of Alternative
  - Potential Impact of Siting on Local Residents
- Environmental Feasibility
  - Impacts on Local Environment
  - Risk to Management in the Event that More Stringent Regulations and Best-Practice Policies are Adopted
  - Waste Transportation Requirements

Three (3) preferred alternatives best satisfy the evaluation criteria, and are recommended to be carried forward to be developed in additional detail. The preferred alternatives cover the range of options from a single centralized facility to a more distributed approach across the county. The preferred alternatives identified in this study include:

- **Alternative 4:** Multi-Criteria Approach to Facility Selection;
- **Alternative 6:** New Countywide Facility; and,
- **Alternative 7:** Selection of Facilities Based Upon Rated Capacity for Targeted Upgrades

2 Introduction and Background

As a result of recent initiatives by local Municipalities to facilitate septage treatment and disposal and previous indications by the Ministry of the Environment and Climate Change (MOECC) that the permitted practice of land application disposal of untreated septage may be limited or terminated in Ontario, the County of Simcoe (County) has undertaken a Septage and Landfill Leachate Disposal Feasibility Study. The purpose of the Feasibility Study is to investigate if and how the County can provide assistance to the member municipalities with respect to treatment and disposal of septage on a county-wide basis. The Feasibility Study is the result of a resolution from County of Simcoe Council adopted on 25 August 2015, which states:

"*THAT staff, with the assistance of the County's consultant, work with local municipal consultants to investigate how best the County is able to assist with the management of septage on a more regional basis and provide a report back to County Council*."

To that end, Greenland International Consulting Ltd. (Greenland) was retained to prepare the Feasibility Study to address the County resolution, by completing the following tasks:

1. Review and summarize background information pertaining to existing septage generation and disposal capabilities at the local municipal level throughout Simcoe County;

2. Include an evaluation of the feasibility of treating landfill leachate from County owned landfills, where leachate is not already directed to an existing municipal sanitary sewer system;

3. Identify potential costs, implementation steps and financing for the range of potential opportunities identified; and

4. Review and asses any relevant legislation from the Province of Ontario and local municipalities which would impact a potential solution.

The primary objective of this Final Report is to summarize the information collected in Technical Memo #1 (TM1), Technical Memo #2 (TM2) and the Technical Workshop (June, 2016) in order to provide a concise representation as to the existing conditions and potential solutions with respect to handling hauled waste within Simcoe County.

Background information was gathered from the in-person interviews conducted with staff of each of the respective member municipalities as well as the City of Barrie, City of Orillia, The Chippewas of Rama First Nation and Beausoleil First Nation. Please note that CFB Borden was invited to participate in the Study, but as of the date of this Final Report, there has been no response from CFB Borden Staff. The Study Area is presented in the figure in **Appendix A**. A summary of the questions and answers associated with the individual interviews are presented in **Appendix B**. The assumptions used to generate cost estimates are presented in **Appendix C**.

3 Existing Hauled Waste Characteristics Within Simcoe County

3.1 Hauled Waste

3.1.1 Septage

In areas of Simcoe County lacking direct access to municipal sewer systems, on site wastewater disposal systems are used to safely treat and dispose of household sewage. It is estimated that there are almost 63,000 private or communal wastewater treatment systems in Simcoe County servicing over 150,000 people.

"Septage", also commonly referred to as **hauled waste**, is defined as both a liquid and solid material that is collected from a septic tank, cesspool, or other collection and storage system (e.g. holding tanks) after it

has accumulated over a period of time. Typical cleanout frequency for residential septic tanks for example range from 2-5 years. This range will include an element of uncertainty as it is only the recommended pump out timing and residents may wait 5+ years between pump outs or until ordered by a Chief Building Official (CBO). The chemical characteristics of septage make it a special issue for disposal as septage has extremely high concentrations of organics, grease, nutrients, hair, grit and other solids when compared to the typical sewage found in municipal sanitary sewers. Typical chemical characteristics for septage as a ratio to common sewage are outlined in **Table 1.**

Table 1: Sewage to Septage Concentration Ratios

Parameter	Ratio of Septage to Sewage	Parameter	Ratio of Septage to Sewage
TS	56:1	TKN	18:1
TVS	69:1	TAN	6:1
TSS	71:1	Total P	36:1
VSS	63:1	Alkalinity	11:1
BOD5	37:1	Grease	89:1
COD	35:1	pH	-

NOTES:
1. Table Excerpt taken from Technical Memorandum #1
2. Values adapted from 2008 MOE Design Guidelines for Sewage Works.

As shown in the above **Table 1,** treating septage significantly increases the load on both liquid and solid trains of the treatment process which can result in increases to: solids production, solids handling, disposal, maintenance and associated operating costs. Accepting septage at a Wastewater Treatment Plant (WWTP) will typically consume a greater proportion of the WWTP's capacity than equivalent volumes of normal sewage influent.

3.1.2 Holding Tank & Marina Waste

Waste generated from holding tanks differs slightly from septic tank waste with respect to the amount of liquid content. Holding tanks are commonly used where there is insufficient room for a conventional leaching system associated with septic tank installation or in sensitive environmental areas (e.g. shoreline cottages or homes). All holding tank wastewater is simply collected and held in the tank until it is full. As such, holding tanks are required to be pumped out on a much more frequent basis and are dependent on the amount of water used at the source.

3.1.3 *Portable Toilet Waste*

Portable toilet waste has proven to be extremely variable and even detrimental to WWTP processes, mainly due to the type of chemicals added to the toilets for odour control (e.g. formaldehyde). Portable toilets represent a small portion of annual hauled waste due to their small capacity as well as lower number of units regularly used. Portable toilets do however require attention due to the extreme spikes in portable toilet use during high traffic events within the County (e.g. Burls Creek Event Grounds located in Oro-Medonte as well as the Ploughing Match event held in the Township of Essa near the City of Barrie). With the large spikes in portable toilet use, there comes a rapid need for disposal and treatment which causes noteworthy short term load increases at local WWTPs.

Based on information received from the recent Technical Workshop held with the member municipalities, cities and First Nation communities, it was advised that the sole hauling company, Region of Huronia Environmental Services (ROHES), agreed to take the portable toilet waste to their storage lagoon in order to screen out large objects and act as a transfer station after major events at Burls Creek (outlined above), then slowly truck the waste to a willing near-by WWTP. The technical team followed up with the accepting WWTP during the process and was advised that the new strategy had no noticeable negative effects on day to day operations. By slowly introducing portable toilet waste to the plant, the risk for potential plant

upset was significantly reduced. The hauling companies advised they would likely continue to accept portable toilet waste in this manner going forward.

3.2 Septage Generation within Simcoe County

The majority of the land use in Simcoe County is widespread rural lands not connected to communal water or wastewater systems. As a result, there are a large number of Class 4 and 5 private wastewater systems (septic systems and holding tanks, respectively) in the County which create a high volume of septage for disposal, and/or treatment. The Ontario Building Code (OBC) governs septic systems with daily design flows under 10,000L, whereas systems over 10,000L require MOECC approval. For residential systems, the OBC is consulted for tank sizing. According to the OBC, the tank size must be twice the daily design flow but not less than 3,600 L (i.e. 3,600 L is smallest tank permitted).

For the purpose of estimating the septage generation within the County, Class 4 sewage systems (conventional septic systems) are assumed to all have a septic tank volume of 4,500L. As noted in the R.J. Burnside Class EA for Septage Management in Tiny Township, it is common practice for new septic tank installations for a three (3) bedroom dwelling to be 4,500 L. Although frequency of pump outs vary depending on water use and septic system efficiency, it is also assumed that the same Class 4 septic systems are pumped out once every three (3) years to five (5) years for the purpose of this study. Of the total private sewage systems in Simcoe County, the municipalities with a large portion of water front property around Georgian Bay, Lake Simcoe, or Lake Couchiching were assumed to have a larger percentage (5-10%) of Class 5 holding tanks. The Class 5 systems include residential holding tanks as well as Marina holding tanks. As previously discussed in **Chapter 3,** because Class 5 systems do not have leaching beds, the tanks are required to be pumped out on a much more frequent basis. For this study, it was assumed Class 5 holding tanks were pumped out three (3) times per year with a volume of 9,000L (minimum required for size as based on the OBC). The summary of septage generation for each municipality is shown in **Table 2**.

3.3 Holding Tank and Marina Waste Generation Within Simcoe County

As detailed in **Table 2** below, it is estimated that there is 94,454 m^3 of Class 5 residential holding tank waste generated each year within the County. Although, holding tanks are much less prevalent within the County, and only account for 3-5% of the onsite wastewater disposal systems in the study area, they are estimated to have a higher contribution of hauled waste due to the fact that they do not have the leaching bed associated with a septic system and must be pumped out on a more frequent basis (assumed 3 times per year). Holding tank waste is assumed to have the characteristics of common sewage with respect to the concentrations outlined in **Table 1**.

3.4 Portable Toilet Waste Generation Within Simcoe County

Portable toilet waste generates a very small amount of the annual portion of hauled waste within the County, however, due to the nature of portable toilet usage, the hauling companies and WWTP see massive spikes in portable toilet waste. As outlined in **Section 3.1.3**, portable toilet waste can cause an upset condition at a WWTP if a large bulk of the waste is added at one time. Based on discussions with the hauling company responsible for handling the waste at the Burls Creek Events Ground for the two (2) major summer events (Wayhome Music Festival and Boots & Hearts) it has been determined that these two (2) weekends generate over 1,700 m^3 of portable toilet waste.

Table 2: Septage and Holding Tank Waste Generation within Simcoe County

Member Municipality	No. of Private Systems	Annual Septage Generation (cu.m) By Pump out Frequency		Annual Holding Tank Generation (cu.m)	Projected No. of Private Systems (2031)	Annual Septage Generation (cu.m) (2031) By Pump out Frequency	
		3 Year	5 Year			3 Year	5 Year
Township of Adjala Tosorontio*	3,818	5,555	3,333	3,093	3,865	5,624	3,374
Town of Bradford West Gwillimbury*	2,080	3,026	1,816	1,685	3,755	5,464	3,278
Township of Clearview*	3,200	4,656	2,794	2,592	3,333	4,850	2,910
Town of Collingwood**	159	227	139	215	159	227	139
Township of Essa*	4,311	6,273	3,764	3,492	4,324	6,291	3,775
Town of Innisfil**	7,000	9,975	6,111	9,450	7,202	10,263	6,287
Town of Midland**	676	963	590	913	676	933	590
Town of New-Tecumseth*	2,731	3,974	2,384	3,687	2,831	4,119	2,471
Township of Oro-Medonte**	7,867	11,210	6,868	10,620	10,991	15,662	9,595
Town of Penetaguishene**	600	855	524	810	600	855	524
Township of Ramara**	4,426	6,307	3,861	5,975	4,555	6,491	3,977
Township of Severn**	5,200	7,410	4,540	7,020	5,331	7,597	4,654
Township of Springwater**	6,000	8,550	5,238	8,100	6,191	8,822	5,405
Township of Tay**	3,000	4,275	2,619	4,050	3,048	4,343	2,661
Township of Tiny***	9,500	12,825	8,294	25,650	10,897	14,711	9,513

Table 2: Septage and Holding Tank Waste Generation within Simcoe County

Member Municipality	No. of Private Systems	Annual Septage Generation (cu.m) By Pump out Frequency		Annual Holding Tank Generation (cu.m)	Projected No. of Private Systems (2031)	Annual Septage Generation (cu.m) (2031) By Pump out Frequency	
		3 Year	5 Year			3 Year	5 Year
Town of Wasaga Beach*	927	1,349	809	751	927	1,349	809
City of Barrie*	550	800	480	446	550	800	480
City of Orillia **	275	392	240	371	275	392	240
The Chippewas of Rama First Nation	264	149	230	4,455	284	405	248
Beausoleil First Nation***	400	540	349	1,080	400	540	349
Total	**62,984**	**89,311 m^3/year**	**54,985 m^3/year**	**94,454 m^3/year**	**70,194**	**99,767 m^3/year**	**61,279 m^3/year**

NOTES:

1. * Assumed 97% Class 4 Sewage Systems & 3% Class 5 Holding Tank.
2. ** Assumed 95% Class 4 Sewage Systems & 5% Class 5 Holding Tank.
3. *** Assumed 90% Class 4 Sewage Systems & 10% Class 5 Holding Tanks.
4. Unless otherwise advised directly from the municipality, the Future number of Private Systems are based on 2031 projections for units outside settlement areas taken from Simcoe County New Land Budget Table 2015 (no additional Class 5 systems assumed).
5. Rama FN has a greater ratio of holding tanks to septic systems > 60%

Table 2 includes a range of septage generation rates based on either a three (3) year or five (5) year pump out frequency. For comparative purposes the 3 year pump out frequency septage generation rate was used as the base rate (for conservative purposes) for this Final Report to estimate annual septage volumes generated in the study are. As indicated in **Table 2** it is estimated that 89,311 m^3 of septage and 94,454m^3 of holding tank waste is currently being generated each year within Simcoe County. **Figure 1** (**Appendix A**) illustrates each municipality's septage generation rate per year based on information presented in **Table 2**.

3.5 Leachate Generation within Simcoe County

Surface water and groundwater contamination has become a growing concern in the years since Walkerton water supply contamination. One identified risk of groundwater contamination under Ontario's Service Water Protection Legislation is the potential for septage and leachate contamination of a water supply. To mitigate this risk with respect to leachate, leachate drainage and collection systems have become standard within all municipally owned and operated landfill sites in Ontario. There are five (5) landfill sites that are owned by Simcoe County (see **Table 3**). **Table 3** also presents the average volume of leachate generation by landfill per year and the location and cost of disposal.

The landfills in Collingwood and Barrie are the only landfills that have a leachate collection system and is connected directly to the municipal sewer. The leachate is collected or trucked in from other landfills and directed past a flow meter before it flows into the municipal system where it mixes with the sanitary sewer contents. The flow meter tracks the amount of leachate contributed to the sanitary system and the municipality/ city charges the landfill on a fixed rate plus cubic meter rate basis for the additional treatment of leachate by the WWTP. **Figure 2** (**Appendix A**) identifies the locations of the Simcoe County Owned Landfills.

After the issuance of Technical Memo #1, the County of Simcoe has since re-directed the majority leachate treatment from the Barrie WWTF to the Collingwood WWTP representing a cost savings of **$362,934.40.** The landfill site at Angus is only Simcoe County owned landfill which still directs it's leachate to the Barrie landfill. Similar to the Barrie system, the leachate is deposited at the Site 2 Landfill in Collingwood and slowly added to the municipal sanitary system.

In terms of future leachate quantity, it is generally assumed that the amount of leachate generated at each landfill is directly related to the amount of precipitation (snow melt + rain) during each calendar year, with the majority of leachate being generated from January to May (based on historical records). Despite the increase in the overall County population from 2011 (~5% increase) and the resulting increase of landfill waste over that time, based on historical records, the leachate generation fluctuates year to year indicating that population does not appear to be a major contributing factor to leachate generation.

Table 3: Simcoe County Owned Landfills and Associated Leachate Generation

Landfill	Location	2013 Leachate Generation m^3	2014 Leachate Generation m^3	2015 Leachate Generation m^3	Disposal Costs per year	Disposal Site
Collingwood (Site 2)	470 10th Line, Collingwood	8,315	11,699	10,422	$7,235	Collingwood
Angus (Essa) (Site 4)*	6815 Concession Rd 4, Township of Adjala-Tosorontio	2,161	2,869	3.408	$21,257	Barrie (25 km)
Nottawasaga (Site 10)	5715 30-31 Sideroad, Stayner	15,558	15,289	11,448	$75,315	Collingwood (18 km)

Table 3: Simcoe County Owned Landfills and Associated Leachate Generation

Landfill	Location	2013 Leachate Generation m^3	2014 Leachate Generation m^3	2015 Leachate Generation m^3	Disposal Costs per year	Disposal Site
Oro (Site 11)	610 Old Barrie Road West, Edgar	22,300	18,484	15,328	$200,946	Collingwood (70 km)
Adjala-Tosorontio (Site 13)	6815 Concession Road 4, Everett	8,581	7,533	5,211	$46,433	Collingwood (50 km)
Wasaga Beach (Site 15)*	Part Lot 21, Concession 9, Wasaga Beach	7,483	7,826	5,086	$37,447	Collingwood (34km)
Total		64,398	63,700	**50,903**	**$388,633**	
Notes: Site 4 and Site 15 Landfills are currently closed.						

4 Existing Hauled Waste Treatment within Simcoe County

In the County and throughout Ontario, there are two (2) methods commonly used to dispose of hauled waste. The first option for disposal is to spread the untreated waste on rural or agricultural lands (septage, holding tank waste only). Land application has become a concern due to the untreated nature of the waste having the potential to runoff into watercourses during or after a precipitation event and the potential for the untreated waste to impact sources of drinking water, including groundwater. It is estimated that in Simcoe County, land application of hauled waste accounts for more than 50% of hauled waste disposal (See **Section 3.2**). This method is preferred by hauling companies as many haulers have their own land for application permitted by a MOECC Environmental Compliance Approval (ECA), which is less expensive than hauling waste to a WWTP. The lower costs are reflected back onto the customer and because land application can only be done during non-snow periods, most residents choose to have their tanks (septic or holding) pumped in the spring, summer and fall months. These cost savings encourage the land application rates to increase during these months. The second option is to haul the waste to a WWTP that has the ability and capacity to accept the hauled waste for treatment. This option is typically more expensive to the hauling companies as the municipalities with WWTPs that accept septage charge a fee per cubic meter of hauled waste received to accept the waste. The increase in price is reflected back to the customer (usually twice as expensive when compared to Land Application hauler rates).

4.1 WWTPs

The number and capacity of WWTPs varies greatly throughout Simcoe County. With the exception of Oro-Medonte, Tiny Township and Beausoleil First Nation (Christian Island) every member municipality or City has some type of municipally owned wastewater treatment facility and in many cases, more than one. **Figure 3** (**Appendix A**) presents the locations of WWTPs throughout Simcoe County. The majority of the WWTPs either do not have adequate receiving facilities to accept septage, or lack the treatment capacity to accept septage. As a result, the majority of the septage is directed to five (5) of the large capacity WWTP's within the Study Area. With respect to the WWTP's that do accept septage, some plants restrict the incoming septage to sources from within their own municipality, usually due to past experiences with haulers bringing in unknown and volatile material and claiming it as septage.

Table 4 provides a technical summary of municipally owned, City Owned, and First Nation Owned WWTPs within Simcoe County including their daily hydraulic rated capacity, whether or not septage is accepted and uncommitted reserve capacity (if any). Based on the information provided by each of the municipalities during the consultation portion of the study (See **Appendix B** for details), it has been determined that the

WWTPs accept approximately 58,310 m^3/year of septage, on a County wide basis. Using the volumes provided in **Table 2,** it is estimated that 89,311 m^3 of septage and 94,454 m^3 of holding tank waste is generated each year within Simcoe County. As the treatment plants are only treating 31.7% of the hauled waste generated, it is assumed that the vast majority of the remaining 125,455 m^3 (68.3%) is being applied to rural land under ECAs for land application of septage and a small fraction is taken for disposal outside the County. **Figure 4** depicts the locations of the wastewater treatment plants which accept septage as well as the septage generation locations (municipality, City or FN) by volume.

Based on the current septage receiving capabilities of each WWTP that currently accepts septage, it is estimated that at the current time, the combined total of WWTP septage receiving treatment and disposal capacity is 233,235 m^3 each year. This figure was estimated by assuming that plants with equalization tanks can accept a full tank of septage each day. For example, the Town of Innisfil has a tank able to receive 140 m^3/day of septage and assuming that tank can be filled each day, the WWTP can potentially accept up to 51,100 m^3 per year. Although septage has a larger load capacity as discussed in **Chapter 3** the septage receiving potential of the plant in Innisfil would only account for 0.01% of the total rated capacity of the plant in a given year. As such, it is anticipated that there is currently enough treatment potential from the combined WWTPs in the study area to treat all hauled waste generation within the County. Although the treatment potential exists, land application continues to be the dominant method of hauled waste disposal solely for the cost savings it represents. A resident with a private wastewater system can save up to half the cost by having a septic tank pump-out during months when land application practices are permitted.

Several future WWTPs have been proposed to service planned developments in the Townships of Adjala-Tosorontio, Springwater, Midhurst and Oro-Medonte. It is our understanding that these projects are driven by planned developments and the WWTP is sized around committed capacity allocations. For newer facilities where final design requirements have not been established, the inclusion of additional septage handling and treatment capacity may be considered.

4.2 Land Application

Land application as it relates to hauled waste, is the spreading of untreated septage on rural lands under an ECA (formerly Certificate of Approval (C of A)) as approved by the MOECC. The MOECC regulates the land application of untreated septage under Part V of the Environmental Protection Act. **Table 5** summarizes information provided by the MOECC for the active land application sites, restrictions as well as the locations of each site as directed by the ECAs. Land application is usually limited by the following factors (see **Figure 5** for Land Application Locations within the County):

- Restricted to zero during times when the ground is frozen, ice covered, or snow covered;
- Spreading is suspended during the period when run-off conditions are such that the Hauled Sewage may run off the site;
- Spreading of Septage is prohibited at times where there is water ponded or running off the field;
- Application rate of hauled sewage on land not to exceed ECA limits; and,
- Proximity (setbacks) from public road way (30m), water wells (90m), lakes, streams, swamps, and seasonally wet areas including swales and intermittent streams (120m).

Table 5 indicates that there are currently ten (10) approved land application sites for septage within the County. All sites vary in size and have a combined spreading area of 59.31 hectares, which at an application limit of 15 litres per square meter per week (standard across all sites) allows 231,309 m^3 of septage to be land applied each year.

Table 4: Summary of WWTP within Simcoe County

Member Municipality	Name	ECA Rated Capacity (cu.m/d)	Accepts Hauled Waste	Amount of Septage Accepted		Amount of Leachate Accepted (cu.m/year)	Uncommitted Hydraulic Reserve Capacity (cu.m/d)	Septage Acceptance Potential [1,2]		Comments
				(cu.m/day)	(cu.m/year)			(cu.m/day)	(cu.m/year)	
WWTPs ACCEPTING HAULED WASTE										
Town of Bradford West Gwillimbury	Bradford West Gwillimbury WCPC	19,400	Y	7.5	2,750	N/A	0	-	-	Only accepts residential septage from inside own municipality.
Town of Collingwood*	Collingwood WWTP	24,548	Y	36.1	13,188	10,430	7,000	189	68,985	Accepts S.C Leachate which is discharged directly into the Municipal Sewer System from landfill.
Township of Essa	Angus WWTP	5,511	Y	0.0	0	N/A	1,378	37	13,505	Septage receiving inlet is elevated requiring haulers to pressurize trucks.
Town of Innisfil	Lakeshore WWTP	14,370	Y	20.5	7,500	N/A	0	140	51,100	Plant has ability to accept 51,100 cu.m/year but only received 7,600 cu.m in 2015.
Town of Midland	Midland WWTP	15,665	Y	6.6	2,400	N/A	4,873	132	48,180	Midland has two (2) 135 cu.m equalization tanks but only 1 was assumed to be filled each day for capacity estimates of this study.
Town of New-Tecumseth	Regional WWTP	11,400	Y	22.0	8,035	N/A	1,900	51	18,615	Accepts Septage but not Leachate.
Town of Ramara	Lagoon City WWTP	2,273	Y	0.6	234	N/A	780	-	-	
Town of Wasaga Beach	Wasaga Beach WWTP	15,433	Y	2.9	1,070	N/A	772	-	-	WWTP only accepts septage from within Wasaga Beach. Restrictions exist due to plant location.
City of Orillia (See Note 3)	Orillia WWTP	27,300	Y	51.0	18,598	N/A	4,736	90	32,850	In process of feasibility study for the addition of a septage equalization tank to increase septage handling capability.
The Chippewas of Rama First Nation	Rama WWTP	2,100	Y	12.4	4,535	N/A	945	-	-	WWTP currently only accepts septage from community members only.
Total		**138,000**		**160**	**58,310**	**10,430**	**22,384**	**630**	**233,235**	
WWTPS NOT ACCEPTING HAULED WASTE										
Township of Adjala Tosorontio	New Horizons	175	N		-	N/A	N/A			

Table 4: Summary of WWTP within Simcoe County

Member Municipality	Name	ECA Rated Capacity (cu.m/d)	Accepts Hauled Waste	Amount of Septage Accepted		Amount of Leachate Accepted (cu.m/year)	Uncommitted Hydraulic Reserve Capacity (cu.m/d)	Septage Acceptance Potential [1,2]		Comments
				(cu.m/day)	(cu.m/year)			(cu.m/day)	(cu.m/year)	
Township of Clearview	Creemore WWTP	1,400	N		-	N/A	N/A			
	Stayner WWTP	2,500	N		-	N/A	N/A			
Town of Innisfil	Cookstown WWTP	825	N		-	N/A	N/A			
Town of New-Tecumseth	Alliston WWTP	5,681	N			N/A	N/A			
	Tottenham WWTP	4,082	N			N/A	N/A			
Township of Oro-Medonte	No WWTP in Municipality	-	-			N/A	-			-
Town of Penetanguishene	Phillip H Jones WWTP	5,250	N			N/A	N/A			
	Fox St WWTP	1,500	N			N/A	N/A			
Town of Ramara	Bayshore Village WWTP	400	N			N/A	N/A			
Township of Severn	Westshore WWTP	1,390	N			N/A	N/A			
	Coldwater WWTP	921	N			N/A	N/A			
	Washago lagoons	227.5 (over 180 d)	N			N/A	N/A			
Township of Springwater	Elmvale WWTP	1,800	N			N/A	N/A			
	Snowvalley WWTP	180	N			N/A	N/A			
	Royal Oaks WWTP	130	N			N/A	N/A			
Township of Tay	Port McNicoll WWTP	1,918	N			N/A	441			Currently no septage accepted in Tay due to previous problems with haulers. Discussion have been in works to upgrade screening & possibly start accepting septage again.
	Victoria Harbour WWTP	2,364	N			N/A	0			
Township of Tiny	No WWTP	-	-			N/A	-			-
Beausoleil First Nation	No WWTP	-	-			N/A	-			-
City of Barrie* (Note 3)	Barrie WWTF	76,000	N			N/A	N/A			Temporarily no longer accepts septage due to plant performance issues upon receiving portable toilet waste.

Notes: 1) Septage Acceptance Potential was estimated using the size of the WWTP equalization tanks (if applicable) and assuming they could be completely filled, once per day.

2) If no Equalization Tank was present, Septage Acceptance Potential is a 37:1 Ratio of Available Hydraulic Capacity to account for the additional strength of septage in relation to common sewage with respect to BOD_5 (See Table 1 for ratios)

3) City of Barrie and City of Orillia are not member municipalities of Simcoe County but are their own independent settlements.

* Only Barrie WWTF and Collingwood WWTP treat leachate within the County.

Table 5: ECA Approved Land Applications Sites of Hauled Waste in Simcoe County

Hauling Company Name	Location of Spreading Site	Size of Spreading Site (ha)	Application Limit ($L/m^2/wk$)	Application Limit per year (cu.m)	ECA Approval Date	ECA Expiry Date
Ewart Ball (1)	Pt. Lot 79 Con. 2 Tay Township	2.5	15	9,750	Mar 31 2015	Mar 31 2017
Ewart Ball (2)	Pt. E ½ Lot 54, Range 1 Springwater	3.45	15	13,455	Mar 31 2015	Mar 31 2017
Epsey Septic Services	Pt. E ½ Lot 54, Range 1 Springwater	6.76	15	26,364	Mar 31 2015	Mar 31 2017
Regional Sanitation Inc.	Pt. N Lot 5, Conc. 16. Tiny	6.4	15	24,960	Mar 31 2015	Mar 31 2017
Ritchie Septic	3211 Usher Rd Springwater	1.57	15	6,123	Feb 13 2015	Feb 13 2017
Georgian Bay Sanitation	Pt. N Lot 9, Conc. 14 East Tiny	10.56	15	41,184	Apr 20 2015	Apr 20 2017
Swaffield Septic Services Inc.	Pt. W ½ Lot 32, Conc. 3 Adjala-Tosorontio	8.7	15	33,930	Apr 1 2015	Apr 1 2017
Swaffield Septic Services Inc.	Pt. E ½ Lot 32, Conc. 2 Adjala-Tosorontio	3.51	15	13,689	Apr 1 2015	Apr 1 2017
Bullack Septic	1927 Conc. Road 1 (Mara) Ramara	8	15	31,200	Feb 13 2015	Feb 13 2017
Bullack Septic	2309 Conc. Road 6 West Ramara	4.83	15	18,837	Feb 13 2015	Feb 13 2017
Pepi's Septage	1630 Old Coach Road Tay	3.03	15	11,917	May 19 2015	May 19 2017
Total		**59.31**		**231,309**		

Notes: Application limit timeline assumes potential application window of April 1-October 1 (26wks)

5 Legislation

Throughout Simcoe County wastewater treatment is an extremely important component of protecting public health as well as our natural environment. Several acts have been implemented on a Provincial Level (i.e. Environmental Protection Act, Nutrient Management Act) and on a local level (i.e. Lake Simcoe Protection Plan and Ontario Building Code Regulation 315/10) that all address wastewater management.

WWTPs produce two (2) types of by-product from the treatment of wastewater. First is the liquid effluent that is discharged to a receiving surface waterbody or subsurface into the groundwater. In either case, the treated effluent chemical concentrations must adhere to the limits set forth by the corresponding ECA for that WWTP. The other by-product is biosolids from the sludge digestion. Biosolids are commonly land applied to rural lands, potentially as a form of nutrient conditioning for the soil on agricultural fields. Biosolids that meet quality criteria can be managed as a Category 3 Non-agricultural source material (NASM) under the NMA, which is subject to an appropriate Nutrient Management Plan for the site of application. Biosolids and other materials containing human waste that do not meet the minimum quality requirements are

regulated by the provincial government and require an ECA (formerly C of A) for agricultural land application purposes. As soon as the biosolids are being sold for fertilizer purposes, they fall under the Canadian Food Inspection Agency (CIFA) which administers the Fertilizers Act and Regulations. Similar to biosolids, septage use in agriculture is not regulated on a federal level, and again the provincial governments enact their own governing laws. Although septage falls under Part V of the Environmental Protection Act, it is the Province that authorizes land application of septage.

Currently, Ontario, Alberta and Manitoba are the only provinces that allow the land application of untreated septage, where all other provinces do not allow land application of untreated septage and require septage to be treated such that it meets provincial standards. In Ontario, untreated septage can be land applied within the rates and location as directed by the ECA for each specific site. The local MOECC office handles the approvals for land application of hauled waste. The ECA's are usually restricted to low application rates of 6-15 L/m^2 in a seven (7) day period. In addition, the approvals are only valid for a two (2) year period, where the application must be renewed. Recent discussions with the local MOECC indicated that the regulations allowing the land application of untreated septage is being re-visited in the near future.

On a municipal level, there are no by-laws within any of the member municipalities that directly deals with the handling, treatment or land application of septage. All municipalities that operate a municipal system have standard sewer use by-laws which generally restrict the contents that the homeowner can discharge into the municipal sewer system. As of 01 January 2011, the Ontario Building Code (OBC) Reg. 315/10 was implemented in support of the Clean Water Act 2006 and requires each municipality to carry out a septic system re-inspection program for all septic systems located within 100m of a waterbody as well as septic systems identified in source water protection zones. The inspection program is to run on a five (5) year cycle according to the Regulation. The result of this change to the OBC is that septic tanks will be cleaned out on a regular basis and in accordance with the approximate schedule presented in the septage generation rate section of this document.

6 Alternative Solution Evaluation Criteria

6.1 WWTP Design Basis

The following sections provide a summary of the waste strength expected from the main sources of non-sewer flows. The existing wastewater treatment plants are rated on the basis of inflow volumes; however design concentrations are used for typical sewage to set the treatment capacity. Therefore, each of the waste sources has been characterized on the basis of equivalent volume as compared to typical municipal sewage. It is recognized that wastewater strength may vary from the published waste quality guidelines. Where possible, loads are estimated on a population or mass basis which is less sensitive to water conservation-related reductions in wastewater volume. For these equivalencies the ratio of hauled waste to typical sewage for the biological treatment load is evaluated (i.e., the constituents that require oxygen addition for treatment including BOD5, COD, and TKN). In this manner the treatment capacity required to manage hauled waste can be evaluated against the design capacity of the wastewater treatment facilities to avoid overloading WWTPs.

6.1.1 *Septage Design Requirements for WWTPs*

The MOECC Design Guidelines for Sewage Works (MOECC, 2008) reports a comparison of septage to typical sewage concentrations for parameters of interest as presented in **Table 1.** As indicated in **Table 1** the concentrations of parameters in septage may be substantially greater than domestic sewage. The organic strength (BOD5) of septage relative to domestic wastewater has been used to assign a 37:1 volume equivalency ratio between septage and typical sewage. Holding tank waste is assumed to be the same strength as typical sewage.

6.1.2 *Leachate Design Requirements for WWTPs*

Leachate quality information is obtained through grab samples collected at a regular frequency at County landfills. Concentrations of contaminants in leachate collected during 2015 were generally low, possibly reflecting the operation of older landfill cells with less organic leachate content. A design concentration of leachate has been established using the maximum grab concentrations from 2015 which is considered conservative as it represents a reasonable worst-case, as per **Table 6**. The maximum concentration of total TKN has been used to establish a 12:1 volume equivalency ratio between leachate and typical sewage.

Table 6: Leachate Waste Quality

Parameter	Common Sewage Concentration (mg/L)[1]	Maximum Grab Concentration (Design Value)[2]	Ratio of Leachate to Sewage
BOD_5	190	510	3:1
TKN	40	480	12:1
TAN	25	490	20:1
TP	7	57	8:1

[1]MOECC 2008
[2]County of Simcoe 2015 Landfill Sampling Summary

6.1.3 *Portable Toilet Design Requirements for WWTPs*

The quality of portable toilet waste produced within the County has not been characterized. The estimated quality of this material has been identified from a literature study (Howes and Joy, 2005). The organic strength (BOD5) of portable toilet waste relative to domestic wastewater, presented in **Table 7**, has been used to assign a 20:1 volume equivalency ratio between portable toilet waste and typical sewage. Preservatives or other chemicals present in portable toilet waste are not directly addressed using the mass ratio approach, and the potential for toxicity in the biological treatment system must be confirmed through sampling and detailed operational assessment.

Table 7: Portable Toilet Waste Quality

Parameter	Sewage[1] (mg/L)	Portable Toilet[2] Waste (mg/L)	Ratio of Septage to Sewage
TS	720	-	-
TVS	360	-	-
TSS	210	1,400	7:1
VSS	160	-	-
BOD5	190	3,800	20:1
COD	430	-	
TKN	40	800	20:1
TAN	25	-	-

Table 7: Portable Toilet Waste Quality

Parameter	Sewage[1] (mg/L)	Portable Toilet[2] Waste (mg/L)	Ratio of Septage to Sewage
Total P	7	63	9:1
Alkalinity	90	-	-
Grease	90	-	-
pH	-	-	-

[1]MOECC 2008
[2] Howes and Joy, 2005

6.1.4 *Loading Design Requirements for WWTPs*

Based on overall hauled waste volumes presented in **Section 4.1**, the total daily volume of material requiring management, including hauled waste that is currently land applied, may be estimated. Total daily volumes are estimated from annual totals using the following assumptions:

- The majority of septic tanks and holding tanks will be emptied during the warmest six (6) months;
- We understand that portable toilet waste from major festivals is presently stored temporarily in waste hauler's lagoon prior to shipping offsite for treatment. Following collection at vendor lagoons, waste is transported to WWTPs for treatment at a rate of approximately 91 m^3/d. It is estimated that WWTPs would receive material for approximately 21 days per year.
- Leachate will not be discharged for processing during winter and will only be treated during the warmest eight (8) months of the year.

Table 8 provides an estimate of the total annual and daily volumes of hauled waste, with a strength-based adjustment to estimate the equivalent volume of typical sewage for comparison with treatment capacity required to reflect the relative concentration of the hauled waste and leachate relative to typical sewage. An estimate of total hauled waste volumes at the 2031 design horizon is also provided. This estimate reflects the adjusted volume of septage accounting for the planned increase in private septic systems over the planning period. Based on volume projections in **Table 2**, leachate and holding tank waste generation rates are held constant through the planning period. Portable toilet waste volume is related to special events based upon the peak daily treatment capacity required to accommodate the events, and is also assumed to remain the same over the planning period. It is important to recognize that estimates at the 2031 design horizon contain some uncertainty and a more detailed assessment of hauled waste volumes, and available WWTP capacities should be conducted on a case-by-case basis as individual upgrade projects are completed.

Table 8: Current and Future Hauled Waste Volumes

Total Waste Volume	Strength Multiplier	2015				2031			
		Volume (m^3/ year)	Volume (m^3/ day)	Equivalent Sewage Volume (m^3/year)	Equivalent Sewage Volume (m^3/day)	Volume (m^3/ year)	Volume (m^3/ day)	Equivalent Sewage Volume (m^3/year)	Equivalent Sewage Volume (m^3/day)
Septage[1]	37	89,311	489	3,304,507	18,107	99,767	547	3,691,379	20,227
Holding Tank Waste[2]	1	94,454	518	94,454	518	94,454	518	94,454	518
Portable Toilet Waste[3]	20	1,927	91	38,548	1,820	1,927	91	38,548	1,820
Leachate[4]	12	50,903	209	610,836	2,510	50,903	209	610,836	2,510
Total		236,595	1,307	4,048,345	22,955	247,051	1,364	4,435,217	25,075

NOTES:

1. Septage tanks are assumed to be emptied during the warmest six months of the year to estimate average daily volume
2. Holding tanks are assumed to be emptied during the warmest six months of the year to estimate average daily volume
3. Portable toilet waste volume is estimated based on information provided by vendors following 2016 festivals.
4. Leachate daily average flow is estimated to be discharged for treatment during the warmest eight months of the year only.

6.1.5 *Effluent Quality Requirements for WWTPs*

ECA limits for County treatment facilities were reviewed to identify effluent quality ranges for treatment. **Table 9** presents the range of effluent limits presently required in ECAs for County facilities.

Table 9: Anticipated Effluent Requirements

Parameter	Monthly Average Effluent Limit (mg/L)[1]
$CBOD_5$	6-15
TSS	5-15
TP	0.05-0.3
NH3-N (Summer)	0.5-7
NH3-N (Winter)	1-10
E.Coli (counts/100mL)	80-200

Notes:
1 Monthly average effluent limits presented are collected from ECAs provided as part of information collection for Technical Memo 1

Many local watersheds in Simcoe County are sensitive and mass loading limits, in addition to effluent concentration limits that are applied to the majority of WWTPs. Suitable treatment for removal of contaminants, particularly organics, ammonia and total phosphorus, will be necessary to properly manage hauled wastes at these locations.

6.2 Summary of Treatment Technologies

The following section provides a high-level descriptive overview of treatment processes that may form part of hauled waste management alternatives identified in this study.

6.2.1 *Septage Receiving and Pre-treatment Equipment*

Hauled waste receiving equipment, may consist of a number of components designed to facilitate the delivery of hauled waste to a treatment facility and minimize negative impacts of hauled waste on the treatment process. Septage receiving equipment may include:

- Access/authentication terminals for septage haulers to access and deliver waste independently;
- Piped connections to receive waste from septage haulers while minimizing the potential for odour release;
- Metering of septage delivered;
- Appropriate containment of the receiving area;
- Rock trap and coarse screening to remove large foreign objects from waste material and grinders to break down larger solids, and;
- Fine screens to remove solids and grit.

Septage receiving equipment may also be integrated with septage equalization/storage and pumping stations to distribute septage into liquid or solids treatment process train.

Properly implemented, a septage receiving system may reduce the impact of inert solids and foreign material on the treatment process and may also reduce BOD load of septage through the removal of large organics in the screening stage.

6.2.2 *Flow Equalization*

Flow equalization is a basic component of hauled waste handling that should be considered for all treatment facilities accepting this material. The purpose of equalization is to distribute peak loading from hauled waste, reducing the maximum hydraulic and contaminant mass loads applied to the system. Flow equalization/storage of hauled waste is recommended to prevent shock-loading to the biological treatment process which may result in process upsets, or poor effluent quality. Properly implemented, flow equalization should allow hauled waste receiving capacity to be maximized.

The MOECC design guideline recommends equalization volume for twice the anticipated peak daily hauled waste receiving volume (MOECC, 2008). Mixing is also necessary to provide uniform strength of material added to the treatment system. Odour control is a critical aspect, because hauled waste has the potential to be very odorous. Pre-aeration in the equalization tank could be considered for both mixing and odour mitigation.

6.2.3 *Chemical Process Enhancement*

Chemical process enhancement may be used to increase the contaminant removal efficiency of a treatment process, within the existing process footprint. Chemically enhanced primary treatment (CEPT), chemically enhanced secondary clarification (CESC), and chemical addition for nutrient removal all may be considered. In each approach the addition of chemical flocculants and/or coagulants is used to accelerate the solids separation within the existing equipment footprint. In addition, chemical enhancement may allow for improved removal of nutrients such as total phosphorous. Chemical process enhancement is intended to increase the efficiency and treatment capacity of process units within existing footprints and tankage and may be considered in some situations as an alternative to new treatment process construction.

6.2.4 *Biological Treatment Capacity Expansion*

Biological treatment capacity expansion may be required in certain circumstances where the addition of hauled waste increases hydraulic or contaminant loading beyond the capacity of existing unit processes. Capacity expansion often consists of the construction of new aeration tanks and clarifiers. In some instances where treatment of additional organic and ammonia loads are the primary concerns, capacity expansion may be achieved by retrofitting existing tanks with attached growth carrier media or membrane bioreactor cassettes. These retrofits may increase biomass inventory in treatment tanks and improve the overall treatment capacity of the system.

Facility expansion or modification of the process configuration may also be required in situations where treatment for certain contaminants cannot be achieved through existing process configurations. One example is high ammonia or TKN loading from hauled waste which may require process modifications to achieve nitrification required to meet ECA effluent concentration limits and effluent toxicity requirements for the receiving water body.

6.2.5 *Biosolids Management Enhancement*

The addition of hauled waste to treatment facilities is anticipated to result in an increase in the loading of solids and therefore additional biosolids management process. Biosolids process enhancements required as a result of additional loading may include expansion of:

- Digester capacity, in the case of facilities with aerobic or anaerobic digestion processes;
- Increased processing such as dewatering or stabilization technology;
- Biosolids storage capacity; and,
- Process modifications such as thickening prior to digestion.

Depending on the solids processing technology available at each facility, hauled waste can be added directly to the solids processing train to mitigate the impact on the liquid processing capacity. Facilities with excess capacity for digestion or solids stabilization would be more suited to accepting septage at solids processing.

6.2.6 *Chemical Septage Stabilization*

Chemical stabilization may be used to improve the quality of hauled waste or sludge to permit land application for use as a Non-Agricultural Source Material (NASM). The NASM framework permits land application of NASM, provided quality criteria including maximum pathogen and metals content is met. Chemical stabilization is often achieved through lime addition and may potentially be performed more cost-effectively than treatment using existing processes at WWTPs. This may be considered as an alternative to biological treatment for centralized hauled waste management, or selectively used for hauled waste that cannot be practically transported to County WWTPs for co-treatment with municipal sewage.

7 Identification of Alternatives

The alternatives developed as part of this memo are meant to support management of leachate and hauled waste on a countywide basis from the present conditions until the end of the planning period in 2031. Considerations for hauled waste management alternatives include:

- Available treatment capacity, which for the purpose of this memo is considered as;
  - hydraulic capacity compared with equivalent sewage volume contributed by hauled waste at individual treatment facilities, and
  - limiting the percentage of total treatment capacity dedicated for hauled waste;
- Hauled waste treatment capacity requirements, considered as equivalent sewage volume contributed by hauled waste under three (3) loading conditions;
  - current load with land application,
  - current load with no land application of raw septage, and
  - 2031 planning estimates with no land application.
- Relative hauling requirements to transport waste within the County to treatment, where limiting transportation distance is preferred;
- Potential suitability of receiving water body, where facilities with less stringent effluent quality limits, or discharge to receivers with potentially greater assimilative capacity (e.g. Georgian Bay) may be better suited to receive additional loading from high-strength hauled waste;
- Maintaining protection of receiving waters downstream of WWTPs by meeting ECA requirements for effluent quality, and;
- Providing cost effective management of hauled waste at WWTP sites, by limiting the number of facilities that require upgrades, and limiting the complexity of proposed upgrades.

One alternative considered for this study was the co-processing of hauled waste with solids waste at the proposed Organic Processing Facility (OPF). The County's consultant GHD provided a memorandum on this topic (GHD, 2015) which did not recommend co-composting of septage at the OPF. Supporting rationale for the recommendation included:

- Increased need for amendment materials, and therefore increased operating costs in order to balance moisture content;
- Financial risk in terms of potential lost revenue, because Category AA compost quality provides the highest potential for revenue, most flexible end uses, and does not allow septage as a feedstock;
- Operational risks, primarily, increased potential of odour emissions from operations at the proposed facility; and
- Increased cost of planning and potential risks to implementation timeline given an adjustment in the proposed facility to include septage at this stage of project development.

The analysis presented by the County's consultant was considered prudent and therefore co-processing at the OPF is not considered further for this study.

Managing septage at existing wastewater treatment facilities is the focus of the alternatives presented. Planned facilities could also be considered as potential locations for hauled waste treatment including the Everett Wastewater Treatment Plant (WWTP) in Adjala- Tosorontio, the Midhurst WWTP to accommodate implementation of the secondary plan in the Township of Springwater, and the planned treatment plant in the Craighurst – Horseshoe Valley corridor in the Township of Oro-Medonte.

It is also acknowledged at this stage of planning that many of these alternatives will require agreement between multiple stakeholders potentially including: multiple municipalities within the County, separated Cities and First Nation communities. The governance structure including logistics and cost sharing, will be key aspects of the implementation of a preferred alternative. For the purpose of this study the evaluation criteria simply identify whether the complexity of the governance structure is anticipated to be high or low.

Based upon these considerations, the following "long-list" alternatives were identified for further screening:

Alternative 1 – (Status Quo)
- Use facilities that currently accept septage and leachate only without capacity upgrades;

Alternative 2 – (Upgrade All Facilities to Minimize Transportation Requirements)
- Complete upgrades necessary for every treatment facility to provide hauled waste and municipal sewage servicing for the local community and minimize hauling requirements;

Alternative 3 – (Use Existing Hydraulic Capacity for Treatment of Hauled Waste)
- Use all existing facilities with hydraulic reserve capacity to capture hauled waste generated, and avoid construction of new infrastructure to address hauled waste treatment needs;

Alternative 4 – (Multi-Criteria Approach to Facility Selection)
- Utilize present hauled waste acceptance capacity at existing facilities while also completing select upgrades at a small number of treatment facilities based on multiple criteria including: avoiding sensitive watersheds, identifying facilities with the largest hydraulic capacity, geographic location relative to areas with high hauled waste production, and anticipated investment required to address population growth, in order to provide dedicated treatment for hauled waste generated over the planning period;

Alternative 5 – (Upgrade Facilities with Identified Need for Expansion to Address Population Growth)
- Include facilities for hauled waste acceptance and treatment as a standard component of treatment upgrades at facilities that require treatment capacity expansion to address population growth. This alternative is likely to provide more candidate facilities than required to manage hauled waste as most County facilities appear to require upgrades to accommodate population growth by the end of the planning period;

Alternative 6 – (New Countywide Facility)
- Construct a Countywide facility to process hauled waste separately from sanitary sewage, or combine with status quo to address future capacity needs identified for the planning period;

Alternative 7 – (Select Facilities with Largest Hydraulic Capacity for Targeted Upgrades)
- Treatment facilities selected for upgrades are focussed on those with highest rated capacity, such that the percentage of total treatment capacity allocated for hauled waste treatment is low relative to other alternatives.

Alternative 8 – Distributed treatment for land application as NASM
- Enhance pre-existing hauler infrastructure distributed across the county to include stabilization treatment processes in order to generate a product that can be land applied as a category 3 NASM.

7.1 Description of Alternatives

The evaluation of alternatives is based upon the management of current and future septage, portable toilet and leachate wastes without long term reliance upon land application for disposal of untreated material.

Each of the "long-list" alternatives is described in greater detail within this chapter. It is assumed that leachate treatment would remain at the facilities currently providing treatment, given that this approach has been recently evaluated and selected as a cost effective approach. Specifically leachate will primarily be transferred to the Collingwood WWTP from the Collingwood landfill via forcemain.

7.1.1 *Alternative 1 (Status Quo)*

This alternative involves the continued management of hauled waste through the current distribution between WWTP treatment and land application with limited coordination between facilities.

Location and Hauled Waste Material Distribution

Hauled waste treatment would occur only at the ten (10) existing WWTPs currently receiving this material with no treatment facility upgrades provided specifically for the treatment of hauled waste. Without the construction of additional WWTP treatment capacity for hauled waste, population growth in serviced areas is anticipated to consume treatment capacity during the planning period and require a greater fraction of hauled waste to be land-applied.

Process Features

No specific modifications to receiving WWTP processes. Potential construction of flow equalization and pre-treatment capacity if required to utilize existing treatment capacity for hauled waste processing. A site-by-site review of existing equipment may be required to assess potential environmental risks associated with facilities currently accepting hauled waste.

Effluent quality considerations

In order to meet requirements within existing ECAs for process effluent at receiving facilities, the volume and loading from hauled waste accepted should not be allowed to exceed the current treatment capacity based upon contaminant loading, not hydraulic load. Nevertheless there is a potential for increased risk of non-compliance as an increasing fraction of the capacity at some facilities would be dedicated to high-strength waste, such as the Collingwood, Midland and Orillia facilities. This scenario increases the required percentage contaminant removal through the treatment process to meet ECA limits. Effluent mass discharges should also be reviewed to confirm limits can be met where present.

7.1.2 *Alterative 2 (Upgrade All Facilities to Minimize Transportation Requirements)*

This alternative involves the construction, where necessary, of upgrades to allow hauled waste receiving and treatment at each of the 28 WWTPs within the County.

Location and Distribution of Hauled Waste Material

Facilities would be responsible for the collection and management of hauled waste generated within their serviced areas or surrounding townships. Trucking requirements to transport hauled waste from generation locations to WWTP treatment would be minimized.

Process features

Required process features may vary across WWTPs. At a minimum, each WWTP would require:

- A septage receiving station with basic features to allow for septage hauler off-loading and treatment process protection.
- Flow equalization to allow controlled addition of hauled waste to the treatment process

Effluent Quality Considerations
Treatment facilities with effluent mass discharge limits, or where local hauled waste could represent a substantial fraction of treatment capacity, may require additional upgrades to allow for treatment to achieve effluent quality criteria. Pressure on process effluent quality is anticipated at facilities with lower rated capacity, and the most stringent effluent quality criteria.

7.1.3 *Alterative 3 (Use Existing Hydraulic Capacity for Treatment of All Hauled Waste)*

This alternative involves using the available capacity in the ten (10) WWTPs currently treating hauled waste to treat material currently disposed of through land application.

Location and Hauled Waste Material Distribution
Waste would be distributed across facilities, with the majority of new material directed to the Orillia, Midland, Innisfil and Collingwood WWTPs which collectively provide the majority of uncommitted hydraulic capacity at facilities currently accepting hauled waste. The availability of WWTP capacity under this alternative has considered the strength of hauled waste relative to sewage and is unlikely to require short term liquid or solids treatment process expansions or chemical enhancement prior to competition with population growth in serviced areas. This alternative provides a near-term solution for complete treatment of hauled waste in the event of provincial regulatory policy change, or change in local County acceptable disposal practices. The waste transportation between generation and treatment locations is likely to be moderate to high for this alternative relative to others, because although it includes a number of facilities distributed geographically, the selection of treatment facilities is not based upon the generation location.

Process features
WWTPs receiving hauled waste should be reviewed to confirm they are equipped with necessary facilities to accommodate additional loading. Process upgrades for consideration may include:

- Enhancement or expansion of septage receiving facilities (e.g. increased pumping or screening capacity to accommodate a greater number of hauled waste loads per day); and,
- Addition or expansion of hauled waste storage and equalization tanks.

Effluent Quality Considerations
This alternative considers the relative strength of hauled waste and in the short term is not anticipated to result in an exceedance of overall design organic loading to each treatment process. A change in policy that would not allow land application of hauled waste may cause the demand for treatment capacity to exceed the design capacity of existing facilities currently receiving hauled waste on peak days that include the maximum portable toilet generation rate. The approach implemented for special events this summer, where portable toilet waste from large events is stored in hauler's lagoons for treatment over a longer period, mitigates some risk of this peak demand for treatment capacity. There is also a potential for increased risk of non-compliance at individual facilities as the fraction of treatment capacity dedicated to hauled waste increases, which is particularly relevant to the Collingwood, Midland and Orillia facilities. Increased high strength hauled waste processing increases the required percentage contaminant removal through the treatment process to meet ECA limits. Effluent mass discharges should also be reviewed to confirm limits are met where present.

7.1.4 *Alterative 4 (Multi-Criteria Approach to Facility Selection)*

This alternative would involve the continued distribution of hauled waste to facilities currently accepting hauled waste with targeted upgrades to a small number of facilities.

Location and Waste Material Distribution

This alternative would involve the continued distribution of hauled waste to facilities currently accepting hauled waste with targeted upgrades to facilities identified as promising candidates for upgrades based upon multiple selection criteria including:

- Avoiding sensitive watersheds;
- Identifying facilities with the largest hydraulic capacity;
- Geographic location that limits transportation due to proximity relative to areas with high hauled waste production; and,
- Anticipated investment required to address population growth.

Based upon consideration of these factors the following upgrades and approach are proposed:

1. Improved septage handling facility in Angus to serve the Township of Essa and Township of Adjala-Tosorontio;
2. Take advantage of improved septage handling facility at the Lakeshore WWTP in the Town of Innisfil to service Innisfil and the eastern portions of the Township of Essa and potentially the Town of New Tecumseth and Bradford West Gwillimbury;
3. Improved septage facilities as required at the Orillia WWTP to service the Townships of Oro-Medonte, Severn and Ramara;
4. New or improved septage handling facilities in the Townships of Tiny, Springwater and / or Clearview that would discharge to the Wasaga Beach WWTP collection system; and
5. New or improved wastewater system or septage handling facilities in the Town of Midland to service the Town of Penetanguishene, Township of Tiny and Township of Tay

Hauled waste currently applied to land and future generation would be included in the capacity allocated to the WWTPs selected above for treatment, with a small fraction continuing to be delivered to facilities that presently accept hauled waste. Four of five facilities identified presently accept hauled waste, with the Angus WWTP being the only location with no current septage acceptance in 2015 (although the ECA for the Angus WWTP permits septage handling. The Orillia WWTP has completed some upgrades to septage facilities recently, and design of a new equalization tank for hauled waste is underway.

It is understood that the existing facility in Wasaga Beach may accommodate hauled waste from the Townships above, but that consideration should be given to the need to avoid truck traffic to the facility through the possible construction of a remote hauled waste receiving and pumping facility.

Construction of the upgrades identified above would provide for hauled waste management that is well distributed throughout the County.

Process features

Each process would feature the following:

- Construction of septage receiving and pre-treatment equipment; and,
- Construction or expansion of hauled waste storage and equalization capacity with potential for pre-aeration.

Based on population growth projections, the Lakeshore WWTP, Orillia WWTP and Wasaga Beach WWTPs are anticipated to require treatment capacity expansion within the 2031 planning horizon. Midland and Angus WWTPs may not require treatment capacity expansion due to population growth and may also potentially be able to accommodate hauled waste generated within their catchment areas through 2031.

Facilities requiring treatment capacity expansion would require:

- Biological treatment process expansion and / or chemical enhancement; and,
- Potential enhancement of biosolids processing equipment.

Effluent quality considerations
Mass loading limits for total phosphorus are likely to drive the effluent quality considerations for the WWTPs identified. The overall strength of influent entering the treatment process (including hauled waste) and efficiency of removal of contaminants of a concern must be reviewed. Additional enhancements to treatment process to meet concentration and mass limits may be required.

7.1.5 *Alterative 5 (Upgrade Facilities with Identified Need for Expansion to Address Population Growth)*

This alternative would focus facility upgrades required for enhanced hauled waste management on WWTPs that are anticipated to require expansions based upon population growth during the planning period in an effort to make construction more efficient.

Location and Waste Material Distribution
The County is expected to experience significant growth through the 2031 planning horizon resulting in a number of anticipated facility expansions. Capacity expansions present an opportunity to integrate hauled waste receiving facilities and processing capability into overall facility design capacity. Several WWTPs currently receiving hauled waste are anticipated to require expansions within the 2031 planning horizon. Current loading to facilities not receiving hauled waste was not provided by municipalities as part of the background in **Table 4** and the potential need for upgrades at these facilities has not been evaluated as part of this alternative. Facilities presently receiving hauled waste with anticipated expansion requirements and also identified as part of Alternative 4 (Multi-Criteria Approach to WWTP Selection) are highlighted below:

- Bradford West Gwillimbury WCPC (Town of Bradford West Gwillimbury) – ECA capacity: 19,400m^3/d
- Lakeshore WWTP (Town of Innisfil) – ECA Capacity: 14,370m^3/d
- Regional WWTP (Town of New Tecumseth) – ECA Capacity: 11,440 m^3/d
- Wasaga Beach WWTP (Town of Wasaga Beach) – ECA Capacity: 15,433 m^3/d
- Orillia WWTP (City of Orillia) – ECA Capacity: 27,300 m^3/d

Expansion of the above listed facilities is the proposed strategy as part of this alternative to concentrate hauled waste treatment within a few dedicated processing centres and minimize facility upgrade requirements. This would require these facilities to accept hauled waste from a relatively large area potentially outside municipal borders, which would require a governance structure acceptable to the WWTPs identified. Alternatively, treatment capacity for hauled waste may be built into all facility upgrades as they are required in the County. Expansion of facilities not presently accepting hauled waste is anticipated to be required for most WWTPs, and septage receiving could be incorporated in these facilities at the time of expansion such that additional WWTPs could be included in this alternative. Although a distributed approach would reduce waste transportation cost, it is not the proposed strategy as a result of the anticipated increased capital construction costs.

Process features
Each process would feature the following:

- Construction of enhanced septage receiving and pre-treatment equipment; and,
- Construction or expansion of hauled waste storage and equalization capacity with potential for pre-aeration.

Facilities requiring treatment capacity expansion would require:

- Biological treatment process expansion and / or chemical enhancement of existing systems; and,
- Potential enhancement of biosolids processing equipment.

For the purposes of this study, only construction through 2031 is considered. Additional study would be required to review needs over a longer-term planning horizon.

Effluent quality considerations

The majority of treatment plants with suspected need for expansion will also discharge to sensitive waterways and/or are subject to contaminant mass discharge limits. Effluent quality will be a consideration in each case. The relative distribution of loading from hauled waste should be refined based on overall facility flow rate and anticipated process performance and may include distributing waste to facilities with the greatest potential to provide dilution with existing flows.

7.1.6 *Alterative 6 (New Countywide Facility)*

This alternative would provide a new Countywide centralized treatment facility with capacity to treat all hauled waste generated in the county in order to reduce pressure on the WWTP treatment capacity.

Location and distribution of sources

A new countywide hauled waste management facility could be constructed as an alternative to integrating hauled waste co-treatment with municipal sewage at WWTPs. As indicated in **Table 8**, **1,307 m^3/d** of hydraulic capacity will be required to treat 2015 hauled waste volumes (including portable toilet waste leachate). This is equivalent to **25,220m^3/d** of domestic sewage when corrected for waste strength. The total treatment demand is anticipated to increase to **1,478 m^3/day** in 2031 which is equivalent to **27,339 m^3/d** of typical domestic sewage. Since the facility will handle high-strength waste, if a process discharging to surface water is preferred, selection of a location where mass discharge limits on discharges (particularly phosphorous or ammonia) are less likely to be applied may be necessary. Alternatives may include siting the facility where discharges could be directed to Georgian Bay rather than a more sensitive watershed such as Lake Simcoe. Selecting receiving water with greater assimilative capacity could reduce concerns related to discharge of nutrients.

This alternative may consider utilizing existing septage hauler lagoons to provide decentralized collection and temporary storage of material. This could address some of the logistical challenges associated with transport for centralized treatment. Details of this would need to be confirmed with haulers as part of a more in-depth review of this alternative.

This alternative would need to consider the flow through cost considerations associated with increased transport of material from areas in the County farther from the selected centralized treatment site.

Construction of a centralized facility presents an opportunity for the consolidation of treatment of other waste materials such as source separated organics (SSO) within a single facility. As described earlier in this report, co-treatment of hauled with organic solids waste was not recommended. Co-location of a stand-alone hauled waste treatment facility with the OPF was recommended for consideration during consultation with municipalities; however no location has been selected as part of this Study, and many factors must be considered for site selection if this alternative were developed in greater detail.

Process Features

This alternative would require a treatment process capable of accommodating high-strength wastewater. Typical waste characteristics for septage suggest that if treatment for surface discharge is desired, high concentrations of ammonia may be present in wastewater which may be toxic to a biological process. Treatment may require a sophisticated biological treatment system designed for high strength waste. Alternatively, a simpler system could be designed to stabilize hauled waste to meet requirements of a Category 3 NASM for land application with no surface water discharge.

A biological treatment process for surface water discharge may include:

- Septage receiving and pre-treatment equipment;

- Inlet flow equalization and pumping;
- Fine screen filtration;
- Biological Process (Membrane Bioreactor or similar including pre-anoxic and post-anoxic treatment zones);
- UV Disinfection; and,
- Biosolids processing system (including solids dewatering and stabilization).

A waste stabilization process for land application may include:

- Septage receiving and pre-treatment equipment;
- Inlet flow equalization and pumping;
- Stabilization process (e.g. lime addition, or vendor specific process); and,
- Treated waste storage and offloading facility.

Effluent quality considerations

Effluent quality is a significant concern for a County wide treatment facility solution and must take into account receiver assimilative capacity and process limitations. A countywide treatment facility employing a stabilization process must take into account quality requirements for land application of material as a NASM.

7.1.7 *Alterative 7 (Select Facilities with Largest Hydraulic Capacity for Targeted Upgrades)*

Treatment facilities selected for upgrades under this alternative would be focussed on those with highest rated capacity, such that the percentage of total treatment capacity allocated for hauled waste treatment is low relative to other alternatives. This approach tends to mitigate the risk of process upsets and effluent quality issues when compared with treatment at WWTPs with lower rated capacity.

Location and distribution of sources

Potential target WWTPs based upon hydraulic capacity while considering reasonable distribution across the County include:

- Collingwood WWTP;
- Midland WWTP (Town of Midland);
- Orillia WWTP;
- Barrie WWTF;
- Bradford West Gwillimbury WCPC; and,
- Lakeshore WWTP (Town of Innisfil).

Process Features

WWTPs upgraded as part of this alternative emphasize minimizing the requirement for short term increases to biological treatment capacity to accommodate hauled waste, independent of population growth. Facilities not presently offering septage receiving would require the following upgrades:

- Construction of enhanced septage receiving and pre-treatment equipment or stations if simultaneous truck unloading is required; and,
- Construction or expansion of hauled waste storage and equalization capacity with potential for pre-aeration.

Effluent quality considerations

Effluent quality is a consideration for all Simcoe County WWTPs. This alternative would aim to minimize the number of facilities receiving significant quantities of septage that are subject to low effluent limits or restrictive receiver mass discharge limits. Where discharge mass limits are unavoidable, consideration would be given to the current performance of the system in meeting effluent targets and the anticipated impact of additional high-strength waste.

7.1.8 *Alterative 8 (Use of Private Hauler Facilities for Distributed Storage and Treatment)*

For this alternative, treatment of hauled waste would be achieved through existing collection and storage infrastructure managed by 3rd party haulers presently servicing septage, holding tank and portable toilet waste generators within Simcoe County. Use of pre-existing hauler infrastructure allows sites distributed within the county currently handling hauled waste to continue operating with minimal construction of new infrastructure and at potentially lower cost relative to upgrades at municipal treatment facilities.

Location and distribution of sources

Candidate sites for storage and treatment would be identified through engagement with companies currently providing servicing within the county. We have assumed that the updated vendor storage facilities would operate a relatively simple process designed to stabilize hauled waste for land-application disposal as a Category 3 NASM.

Process Features

This alternative would require the construction or re-purposing of existing hauled waste lagoons to provide storage of raw and treated hauled waste, as well as chemicals

A waste stabilization process for land application may include:

- Septage receiving and pre-treatment equipment, removing materials such large solids or foreign; objects not suitable for land application. This process may be pre-existing at some locations;
- Inlet flow equalization incorporated through repurposing of existing lagoon volume;
- Stabilization process (e.g. lime addition, or vendor specific process); and,
- Treated waste storage providing stabilization contact time and flow equalization prior to offsite disposal.

Effluent quality considerations

The use of a distributed facility employing a stabilization process is not anticipated to include discharge to receiving water; however the process must take into account quality requirements for land application of material as a NASM.

8 Evaluation of Alternatives

8.1 Evaluation Methodology

Each alternative were screened based on the criteria identified below in **Table 10.** The evaluation was qualitative (low, medium, high). Quantitative cost estimation of alternatives was not completed at this level of review.

Table 10- Evaluation Criteria

Criteria	Indicator
Technical Feasibility	
Extent of Upgrades	Relative magnitude of upgrades to facility/facilities to allow hauled waste collection (Low/Medium/High)
Potential Implementation barrier to Upgrades	Constructability of upgrades considering factors such as additional land requirements or changes to existing process type
Technical Complexity	Relative complexity of proposed system upgrades
Risk of Overloading Existing Treatment Capacity	Risk that the alternative will result in existing treatment capacity being exceeded by the hauled waste load requiring treatment
Environmental Feasibility	
Impacts on Local Residents	Potential for offsite impacts such as odour, aesthetics and noise, including impacts related to increased hauled waste vehicle traffic
Impacts on Local Environment	Potential impacts to receiving water quality
Waste Transportation Requirements	Relative distance to treatment facility from source of waste generation and potential for environmental impacts related to trucking

8.2 Evaluation Summary

The evaluation of alternatives is based upon the management of current and future septage, portable toilet and leachate wastes without long term reliance upon land application for disposal of untreated material. Each of the “long-list” alternatives is described in greater detail below. It is assumed that leachate treatment would remain at the facilities currently providing treatment.

A comparative assessment of each of the above alternatives is provided below in **Table 11**. Each alternative is evaluated qualitatively from low to high concern with respect to the alternative (with low being desirable). The most desirable alternative(s) with respect to each criteria are identified in green.

Cost sharing in municipal governance structure is beyond the scope of this Study, but some considerations are highlighted herein.

Highly distributed management of hauled waste presents the potentially simplest governance and funding structure as material will typically be generated and managed within a single local municipality, which may manage funding and governance locally.

More centralized treatment alternatives involving a smaller selection of treatment facilities selected for upgrades will require a distributed governance structure with agreements and funding considerations to account for the movement of material between municipalities to a shared treatment location. Similar arrangements would be required in the event that facilities in separated cities of Barrie and Orillia are used to process waste from County sources.

Centralized treatment is likely to require the most complex structure as the facility must consider contributions from each of the source municipalities within the County and also potentially account for variations in cost of treatment associated with variations in transportation distances.

Waste management facilities have been candidates for public-private-partnership (P3) funding and governance arrangements in the past.

Table 11: Evaluation of Alternatives

Criteria/Indicator	Alternative 1: Status Quo	Alternative 2: Upgrade All Facilities to Minimize Transportation Requirements	Alternative 3: Use Existing Hydraulic Capacity to Treat Current Flows	Alternative 4: Multi-Criteria Approach	Alternative 5: Upgrade Facilities Identified for Future Population Growth	Alternative 6: Construct New Countywide Facility	Alternative 7: Select Facilities with Largest Hydraulic Capacity For Targeted Upgrades	Alternative 8: Use of Private Hauler Facilities for Distributed Storage and Treatment
Technical Feasibility								
Extent of Upgrades	○ Low	● High	⭘ Moderate	⭘Moderate/High	⭘ Moderate/High	⭘ Moderate (if chemical stabilization only)	⭘ Moderate	○ Low – upgrades to 3rd party facilities only
Potential Implementation barrier to Upgrades	○ Low	● High– large number of projects – not all facilities well suited	○ Low– study required to confirm process suitability	⭘ Moderate – Substantial effort to implement proposed infrastructure upgrades	● High –not all upgrade facilities well suited to for application	⭘ Moderate (if chemical stabilization only)	⭘ Moderate – Substantial effort to implement all targeted upgrades	⭘ Moderate vendor facilities may not be suited to process or storage increases required
Technical Complexity	○ Low – no/minimal upgrades required to maintain existing operation	● High – site-to-site complexity may vary; many individual upgrades	⭘ Moderate – construction of additional storage volume and/or receiving stations likely	⭘ Moderate – dedicated upgrades for waste handling at several facilities	⭘ Moderate – Construction of septage receiving at each facility may vary in complexity	⭘ Moderate (if chemical stabilization only)	⭘ Moderate – dedicated upgrades for waste handling at several facilities	⭘ Low/Moderate – Simple chemical stabilization process required
Risk of overloading Existing Treatment Capacity	○ Low – little/no changes to complete	○ Low	● High	○ Low	○ Low	○ Low	○ Low	⭘ Moderate – treatment facility capacity may be required in the event sufficient winter storage is not available
Potential for Odour Generation	○ Low	⭘ Moderate – Some odour generation anticipated at all facilities with more significant offsite impacts in some locations	⭘ Moderate/High – Relatively large volume of hauled waste diverted to a small number of treatment facilities	⭘ Moderate – Mitigation of odour generation may be considered through upgrade design	⭘ Moderate – Mitigation of odour generation may be considered through upgrade design	⭘ Moderate – High potential for odour generation. Centralized facility likely to include a more comprehensive odour control system	⭘ Moderate/High – Relatively large volume of hauled waste diverted to a small number of treatment facilities	● High – large quantity of hauled waste diverted to relatively unsophisticated storage and treatment facility
Time required to Implement Upgrades	○ Low – little/no changes to complete	⭘ Moderate – Substantial facility upgrades but no new site identification process	○ Low – limited construction of new equipment at existing facilities	⭘ Moderate – Substantial facility upgrades but no new site identification process	⭘ Moderate – Substantial facility upgrades but no new site identification process	● High – lengthy approvals, siting and construction process anticipated	⭘ Moderate – Substantial facility upgrades but no new site identification process	● High – Equipment and process implementation is relatively simple; however coordination of many vendors is required and many facilities would require permitting
Social Feasibility								
Impacts on Local Residents	○ Low – existing operation maintained	⭘ Moderate – some impacts due to truck traffic. Limited truck volume due to distributed treatment	⭘ Moderate – substantial increase in truck traffic at selected facilities	⭘ Moderate – substantial increase in truck traffic at selected facilities	⭘ Moderate – substantial increase in truck traffic at selected facilities	○ Low – Flexibility in Site Selection to Minimize Resident Impacts	⭘ Moderate – substantial increase in truck traffic at selected facilities	⭘ Moderate – Potential for substantial impacts on residents neighboring lagoons

Criteria/Indicator	Alternative 1: Status Quo	Alternative 2: Upgrade All Facilities to Minimize Transportation Requirements	Alternative 3: Use Existing Hydraulic Capacity to Treat Current Flows	Alternative 4: Multi-Criteria Approach	Alternative 5: Upgrade Facilities Identified for Future Population Growth	Alternative 6: Construct New Countywide Facility	Alternative 7: Select Facilities with Largest Hydraulic Capacity For Targeted Upgrades	Alternative 8: Use of Private Hauler Facilities for Distributed Storage and Treatment
Risk of Public Rejection of Alternative	⭘ Low/Moderate – limited disruption to existing practices. Risk of greater public reluctance to accept short term changes in response to changing regulations	⭘ Moderate/High – Potential resistance to waste acceptance at some facilities based on siting and location of nearby residents	⭘ Low/Moderate – use of existing facilities but some potential impacts due to increased truck traffic	⭘ Moderate – use of existing facilities but some potential impacts due to increased truck traffic	⭘ Moderate – use of existing facilities but more substantial increases in hauled waste expected in select locations	⭘ Moderate/High – potential for high-localized impact on residents. Potential resistance to increased trucking/disposal costs for residents far from facility.	⭘ Moderate – use of existing facilities but more substantial increases in hauled waste expected in select locations	⭘ Moderate – Simple alternative but low treated waste quality relative to other alternatives may raise public concern
Potential Impact of Siting on Local Residents	○ Low – existing operation maintained	⭘ Moderate – Use of existing facilities sited near residents may be a concern. Use of all facilities increases risk of impact in some locations	⭘ Moderate/High – Facilities with greatest available capacity may not be ideally sited for septage acceptance	⭘ Low/Moderate – Location of some facilities selected to receive material may impact residents. Approach to consider impacts as part of implementation	⭘ Moderate – Use of facilities identified for expansion but sited near residents may be a concern.	● High – potential for significant resistance by residents near site of proposed facility	⭘ Low/Moderate – less impact anticipated from providing treatment at existing large facilities with siting impacts previously considered	⭘ Low/Moderate – Low impact anticipated provided existing facility siting not a concern
Environmental Feasibility								
Impacts on Local Environment	○ Low – Compliance maintained by preserving existing operation	⭘ Moderate – Potential impacts due to upsets in systems with little capacity /experience accepting septage	⭘ Moderate – some concern with upsets in systems potentially accepting a large fraction of hauled waste	○ Low – Selection of facilities mitigates impacts to sensitive areas to the extent practical	⭘ Low/Moderate – waste distributed to many locations; not all facilities well suited to septage treatment	○ Low – Chemical stabilization treated product distributed to land application sites across County	○ Low – Selection of facilities to minimize impacts	⭘ Low – Chemical stabilization treated product followed by land application following NASM requirements with no effluent discharge to surface water.
Risk to Management in the Event that More Stringent Regulations and Best-Practice Policies are Adopted	●High – does not achieve CCME objectives for septage management	○ Low	⭘ Moderate – Option provides near term solution to divert wastes only	○ Low	○ Low	○ Low	○ Low	●High – Compliance with regulations and other future conditions may trigger business decisions by vendors that reduce hauled waste management capacity
Waste Transportation Requirements	⭘ Moderate – off-season transportation may still be substantial	○ Low – maximum number of available receiving WWTPs well distributed through county	● High – distribution of facilities does not consider location relative to sources	⭘ Low/Moderate – Substantial number of facilities – distribution may vary	⭘ Low/Moderate – Large number of receiving WWTPs; initial facility distribution may vary	● High – trucking to single location for all sources	⭘ Low/Moderate - Substantial number of facilities – distribution may vary	⭘ Low/Moderate – Transportation similar to existing arrangement. Requirement for all waste to be treated prior to application may increase transport requirement in some areas

9 Description of Preferred Alternatives

Based on the evaluation illustrated in **Table 9**, three (3) alternatives have been carried forward for further assessment:

- Alternative 4 – Multi-Criteria Approach to Facility Selection;
- Alternative 6 – New Countywide Facility; and,
- Alternative 7 - Select Facilities with Largest Hydraulic Capacity for Targeted Upgrades.

Each of these alternatives provides the potential to treat both current and future hauled waste production. Alternative 1 (Status Quo) rates highly in a number of categories; however we suggest that this alternative be removed from future consideration as it does not address the potential risk of overloading existing treatment capacity, given the anticipated regulatory context by the end of the planning period. A description of each alternative with benefits and disadvantages is provided herein.

The cost estimates in this section are presented as ranges of probable capital cost representing +/- 40 % for comparison of alternatives only. All costs are presented in 2017 dollars. Additional effort is required to refine the infrastructure required at each treatment facility, and therefore additional effort is required for budget purposes. The cost of additional / upgraded receiving infrastructure and the approximate cost of treatment capacity, and solids management dedicated to hauled waste have been included. The cost of procuring new lands, permitting and other aspects of project planning for infrastructure implementation have not been included. Additional assumptions related to the cost estimates provided are included in **Appendix C.**

9.1.1 *Alternative 4: Multi-Criteria Approach to Facility Selection*

This alternative would consist primarily of constructing or enhancing existing dedicated septage receiving infrastructure (receiving equipment and equalization tanks) at the five (5) locations identified using a multi-criteria approach, while continuing the treatment of some hauled waste at WWTPs presently accepting this material. Process optimization and / or expansion may be necessary to accommodate additional hauled waste generation prior to expansions required to accommodate to population growth.

Benefits

- Leverage available capacity for continued treatment at existing facilities accepting hauled waste;
- Selection of facilities for upgrades aligns with previous recommendations of the *County of Simcoe Water and Wastewater Visioning Strategy* report in 2012 with updates to current conditions, and;
- Distributed treatment capacity limits trucking requirements while targeting processing on five main centres.

Disadvantages

- Requires the ongoing use of existing septage receiving capacity prior to build out of upgrades, and;
- Large total number of facilities if all current facilities continue to accept hauled waste.

Alternative 4 will require the construction of new hauled waste processing facilities at identified WWTPs and the necessary timeline for construction may not align with capacity expansion required to accommodate population growth. The range of estimated probable capital cost based upon +/- 40% accuracy of the upgrades associated with this alternative is $4,900,000 - $11,400,000.

See **Figure 6** in **Appendix A** for an example process schematic of an upgraded process handling hauled waste. The locations of facilities to be upgraded are presented in **Figure 9** in **Appendix A.**

9.1.2 *Alternative 6: New Countywide Facility*

A Countywide treatment system would provide a centralized location for the management of hauled waste and reduce concerns about process upsets related to hauled waste acceptance such as those expressed by the City of Barrie and Township of Tay. We have assumed that this facility would operate a relatively simple process designed to stabilize hauled waste for land-application disposal as a Category 3 NASM only and would not provide treatment to standards required for surface water discharge of treated liquid waste. Onsite storage capacity would allow the facility to collect, store and process waste for re-distribution of material for land application in accordance with the regulatory framework for NASMs.

Benefits

- Treatment capacity at County WWTPs is conserved for sewage in serviced areas;
- Removes concerns related to process upsets caused by high-strength hauled waste containing inappropriate material for disposal;
- Stabilization process alternative is simple with less complexity than modifications to biological treatment at County WWTPs for hauled waste treatment; and,
- Potential capital and operating cost savings through centralized construction in a common facility.

Disadvantages

- Potential environmental impacts related to long-term trucking of waste to facility for treatment and away from facility for land application following stabilization;
- Local impacts of truck traffic (dust, noise and odour) near the location of the facility;
- Potential for large land inventory requirements to accommodate application of treated waste as a NASM within the application limits of 22 dry tonnes per 5 years;
- Potential competition with biosolids from existing WWTPs and agricultural source material (e.g. manure) for available land areal; and,
- Potential challenges to approval of facility by MOECC, particularly dependent on how hauled waste stabilization for land application is incorporated into updated septage management policy.

Two alternative process block-flow schematics for facilities providing hauled waste treatment are provided as **Figures 7 and 8** in the **Appendix A**. The potential complexity of a biological wastewater treatment facility that would discharge to surface water is illustrated as **Figure 7** in **Appendix A**. The complexity and cost anticipated for this system are the main reasons that a chemical stabilization process is proposed for a County-wide facility.

A chemical stabilization process is presented as **Figure 8** and would contain the Receiving/Metering Station, Pre-treatment, Equalization tank with Pump Station, and Stabilization process with stabilized product storage. A potential candidate area for a Countywide Facility is presented in **Figure 10**. The range of estimated probable capital cost based upon +/- 40% accuracy to implement a facility capable of producing treated septage to align with Category 3 NASM is $5,900,000 - $13,700,000. This estimate does not include the cost of procuring land, which may be a substantial contributor to the cost of this alternative.

9.1.3 *Alternative 7: Selection of Facilities Based Upon Rated Capacity for Targeted Upgrades*

This alternative would consist primarily of constructing or expanding dedicated hauled waste receiving infrastructure (receiving equipment and storage tanks) at targeted locations identified based upon rated capacity of the WWTP. As required, process optimization expansion may be necessary to accommodate additional waste material prior to expansions related to population growth.

Benefits

- Focus hauled waste treatment towards a small number of centres, which can make construction costs more efficient;
- Mitigates the risk of process upsets and effluent quality issues when compared with treatment at WWTPs with lower rated capacity; and
- Facilities with highest rated capacities are distributed relatively well through the County.

Disadvantages

- Requirement for construction of new hauled waste processing facilities at identified WWTPs;
- The necessary timeline for construction may not align with the capacity expansion requirements related to population growth; and
- Receiver characteristics may require stringent effluent criteria.

See **Figure 6** in **Appendix A** of this report for an example process schematic of an upgraded process for handling hauled waste. **Figure 11** in **Appendix A** presents the locations of treatment facilities included in this alternative. The range of estimated probable capital cost based upon +/- 40% accuracy of the upgrades associated with this alternative is $6,100,000 - $14,100,000. The cost associated with this alternative is highest primarily because there is no uncommitted hydraulic reserve capacity at the end of the planning period for a number of WWTPs in this alternative, and the level of process upgrades is anticipated to be greater than alternative 4.

10 Study Summary and Conclusions

The following chapter provides a summary of the study findings and associated conclusions.

Throughout the background information gathering and in person meetings conducted with each individual Municipality, City and First Nation communities in the Simcoe County Study Area, the following information is provided:

- An estimated 62,984 private wastewater systems are active within Simcoe County and generate an estimated 183,765 $m^3$of hauled waste each year, assuming a 3 year clean out frequency.
- Based on WWTP records, 58,310 m^3 of the generated hauled waste has been treated by the ten (10) combined WWTP's that currently accept septage in the study area.
- It is assumed the remaining 125,455 m^3 of hauled waste is being land applied within Simcoe County, or being transported to WWTPs / land application sites outside of the County.
- There are ten (10) hauled waste land application sites within Simcoe County with the ability to handle 231,309 m^3 of hauled waste (residential septage and holding tank waste only) per year.
- It is estimated that the existing ten (10) WWTPs that currently accept septage can potentially accept up to 233,235 m^3 of hauled waste per year.
- Leachate generated at Simcoe County from the five (5) landfills is treated at the Collingwood WWTP (conveyed by forcemain from the Collingwood landfill) and the Barrie WWTP.
- Based on discussions with the septage/waste hauling companies, it is evident that during times of restricted land application (snow covered, wet weather conditions) the haulers are required to bring the hauled waste to a WWTP for disposal. The cost charged to dispose of the hauled waste at the WWTPs is charged to the resident and a pump out can be nearly double the cost of a regular septic pump out when compared with land application disposal. Due to the nature of this cost increase, it is expected that residents generally wait until the spring/summer/fall months (unless an emergency pump out is required) to have their septic tanks pumped to realize the cost savings.

In conclusion, under the present regulatory framework in Ontario, there is currently adequate ECA approved land for application of septage, as well as WWTPs accepting septage to manage the hauled waste generated in the County of Simcoe.

The alternatives to enhance the current management of hauled waste in the County are presented in an effort to support coordination of stakeholders, and facilitate hauled waste management given the potential changes to the policy framework and the treatment capacity available over the planning period.

The three (3) preferred alternatives of this study should be considered in further detail to address the future of hauled waste management in Simcoe County. The preferred alternatives identified in this study include:

Alternative 4: Multi-Criteria Approach to Facility Selection;

- This alternative would involve the continued distribution of hauled waste to facilities currently accepting hauled waste with targeted upgrades to a small number of facilities.

Alternative 6: New Countywide Facility; and,

- This alternative would provide a new Countywide centralized treatment facility with capacity to treat all hauled waste generated in the County in order to reduce pressure on the WWTP treatment capacity.

Alternative 7: Selection of Facilities Based Upon Rated Capacity for Targeted Upgrades.

- Treatment facilities selected for upgrades under this alternative would be focused on those with highest rated capacity, such that the percentage of the total treatment capacity allocated for hauled waste treatment is low relative to other alternatives.

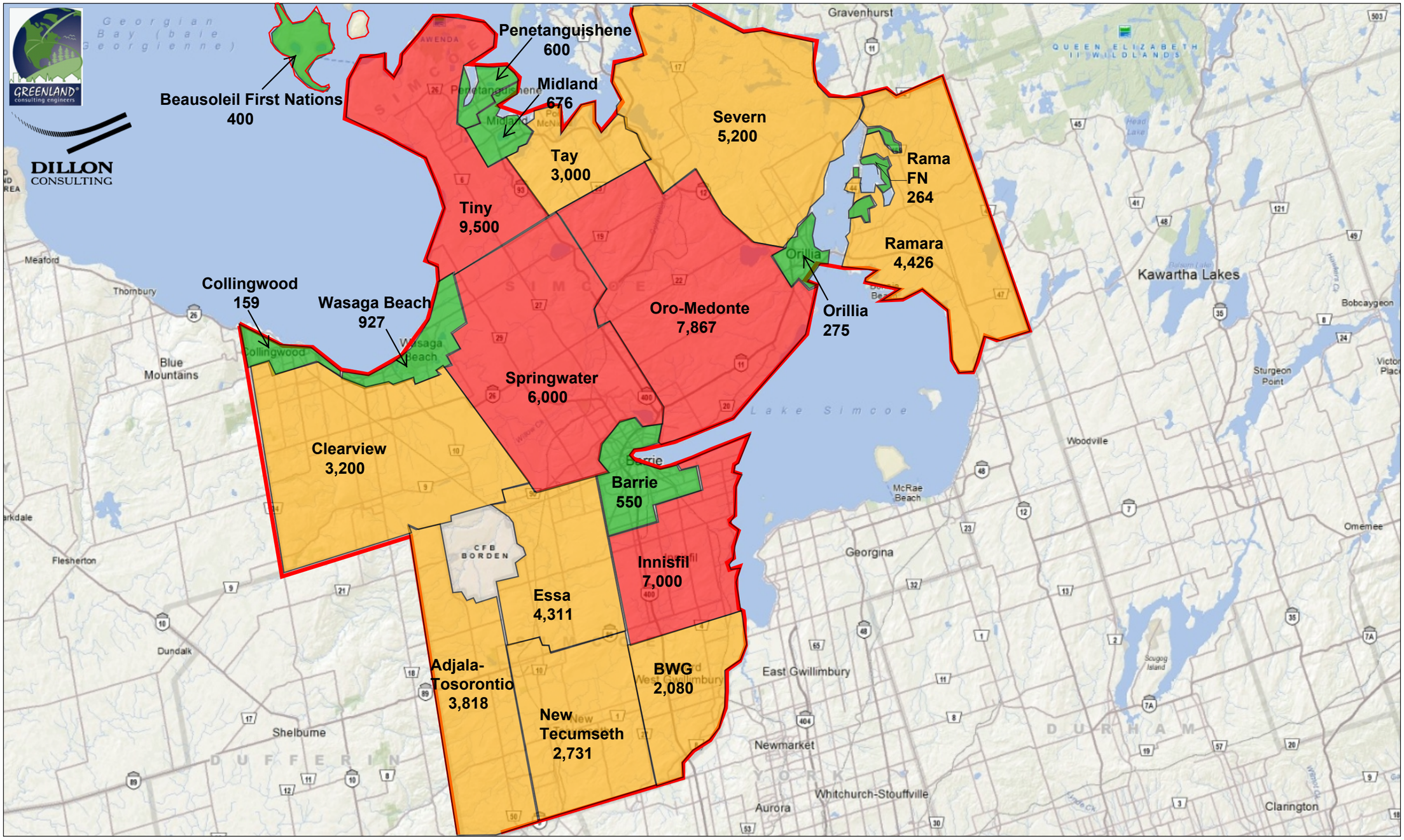
--- ***Greenland International Consulting Ltd. & Dillon Consulting Ltd.*** ---

APPENDIX A

Figures

Simcoe County Septage & Landfill Leachate Disposal Feasibility Study

Figure 1- Septage Generation by Location



Legend

Septage Generation Rates per Year

- 0 - 1,500 cu.m
- 1,501 - 8,000 cu.m
- 8,000 cu.m +
- -

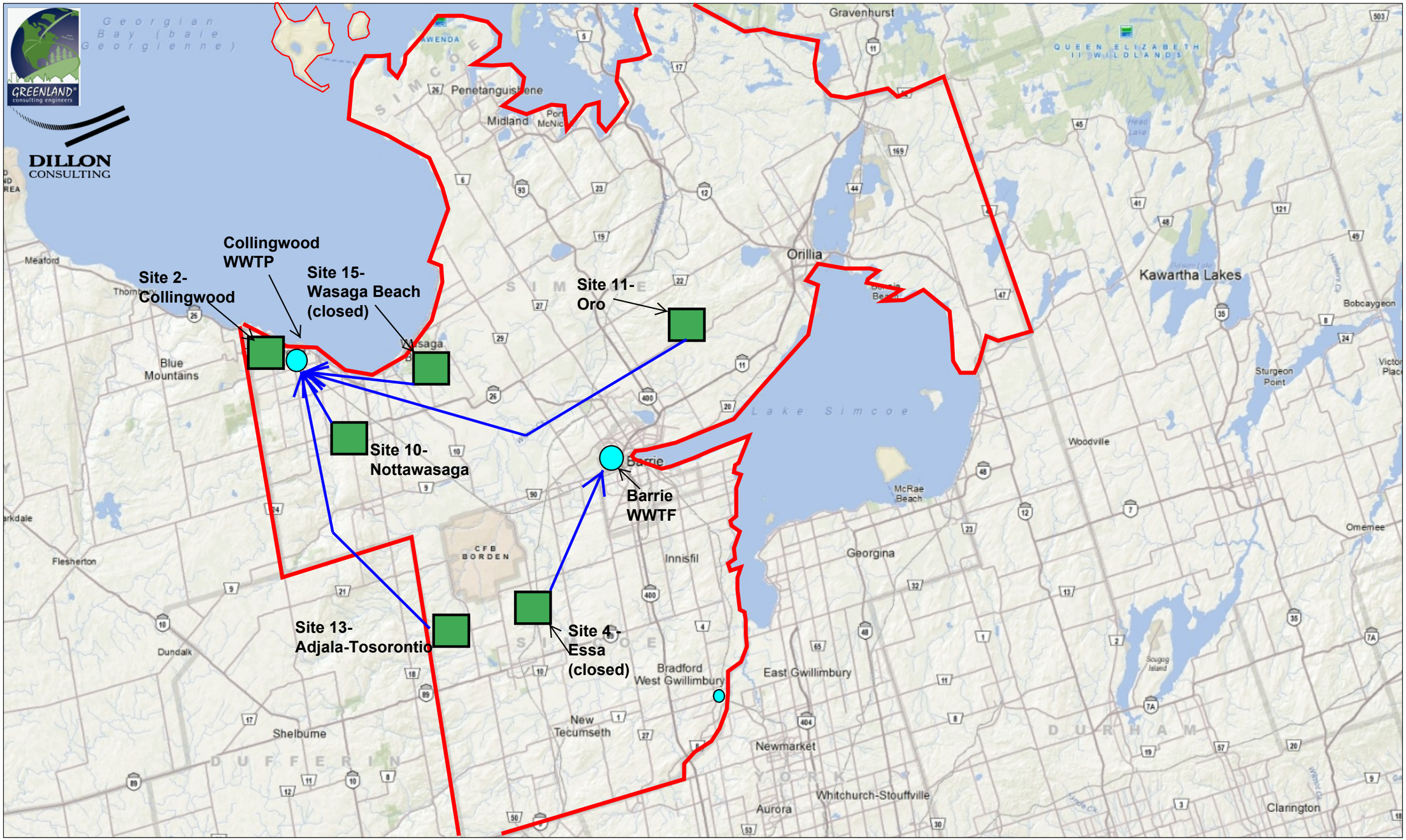
Note: Number indicated under each Municipality represents No. of septic systems within each area.

23.6 0 11.82 23.6 km

Scale: 1 : 465,430

Simcoe County Septage & Landfill Leachate Disposal Feasibility Study

Figure 2- Location of Simcoe County Owned Landfills



Legend

- Landfill Location
- WWTP Location

-

Notes: 1. S.C Landfill Leachate is accepted at the Barrie Landfill and bled into the sanitary system for treatment at the Barrie WWTF.

-

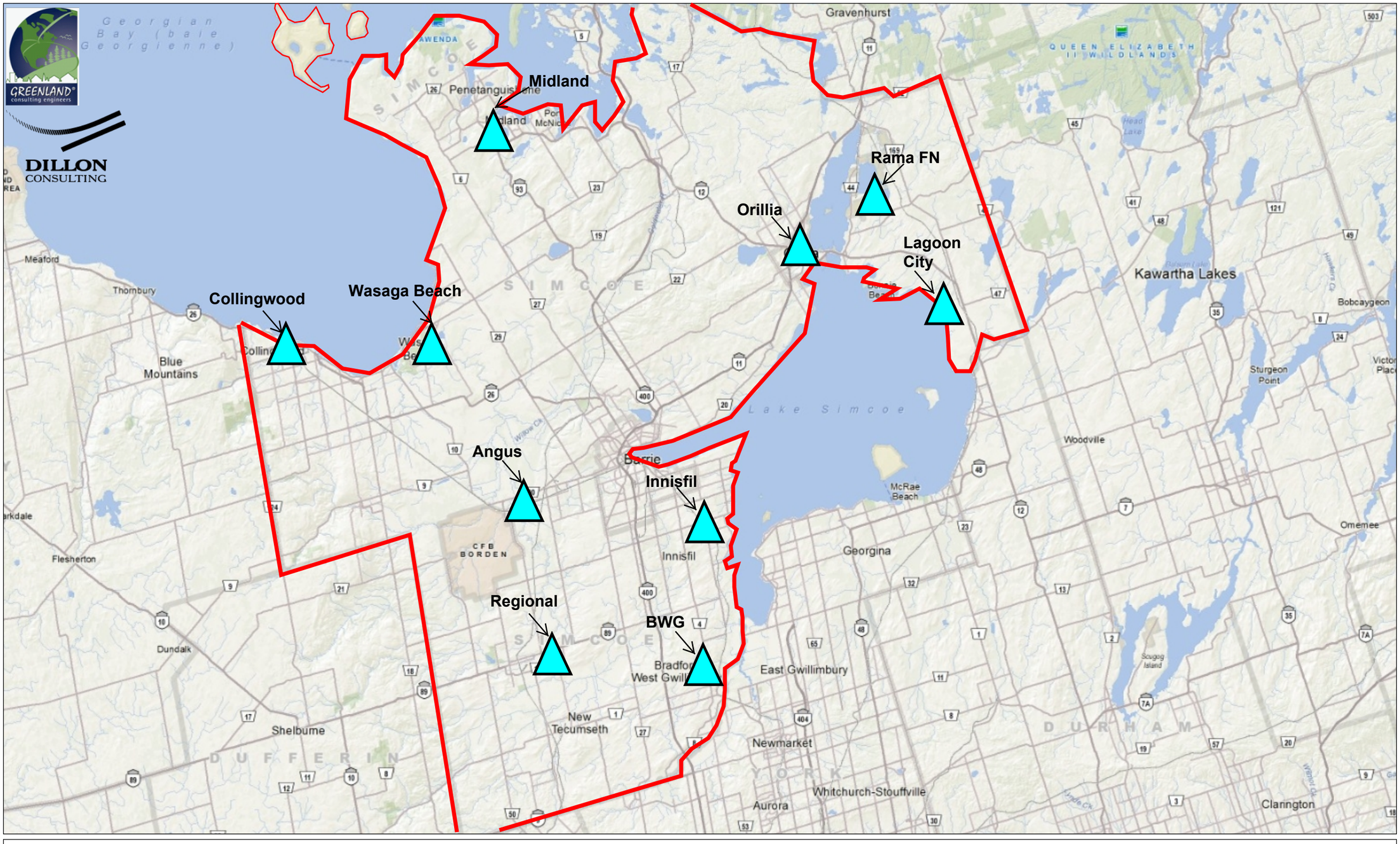
2. Leachate from Site 10 and Site 15 are transported outside the County to Blue Mountain WWTP.

23.6 0 11.82 23.6 km

Scale: 1 : 465,430

Simcoe County Septage & Landfill Leachate Disposal Feasibility Study

Figure 3- Locations of WWTPs that Accept Septage



Legend

Septage Received By WWTP (cu.m/year)

1. Orillia- 18,598
2. Collingwood- 13,188
3. Regional- 8,035
4. Innisfil - 7,500
5. Wasaga Beach - 5,924
6. BWG- 2,750
7. Midland - 2,400
8. Ramara - 234
9. Rama FN-
10. Angus- 0

-

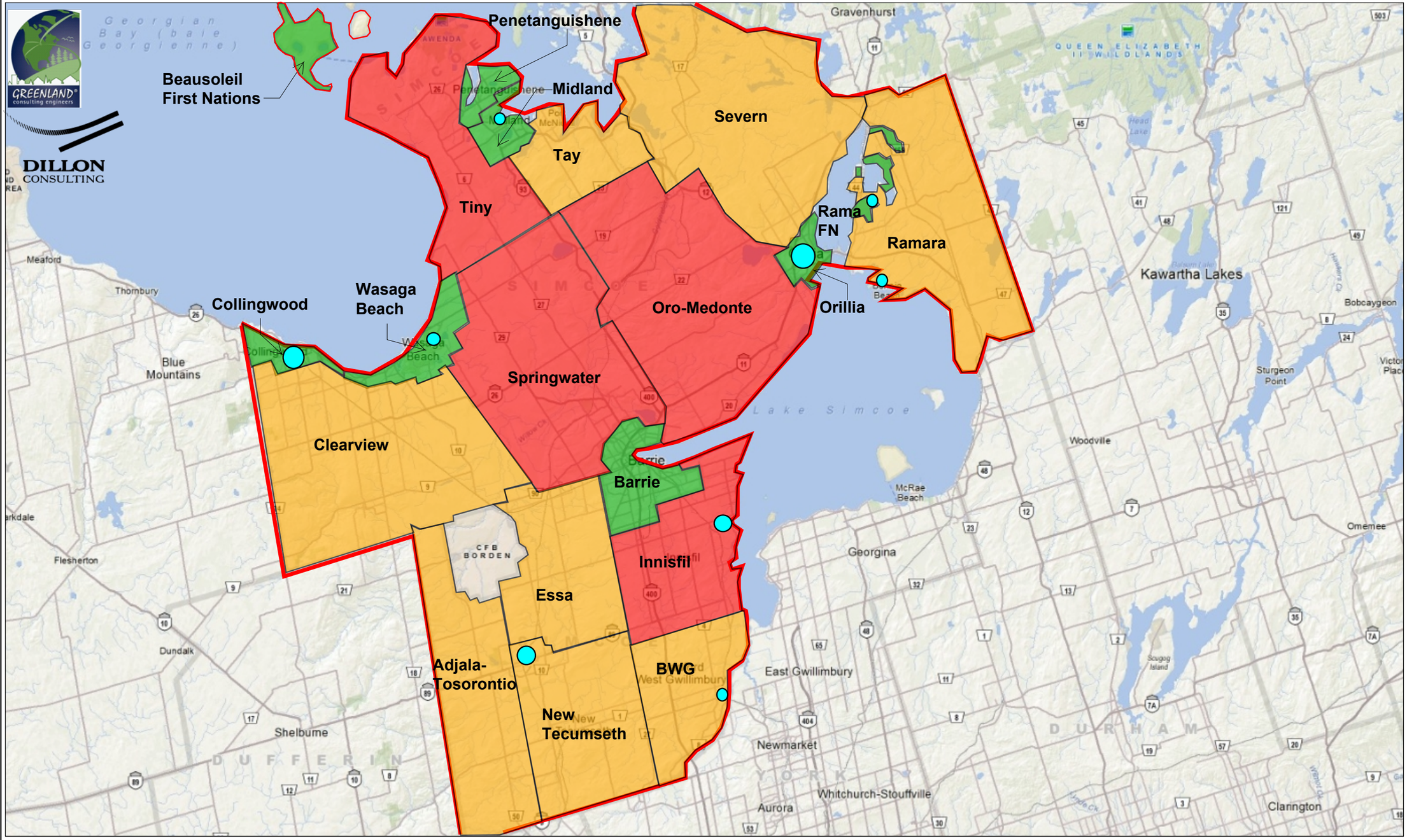
Notes: 1. Wasaga Beach, Rama FN & BWG only accept septage from within their communities.

23.6 0 11.82 23.6 km

Scale: 1 : 465,430

Simcoe County Septage & Landfill Leachate Disposal Feasibility Study

Figure 4- Septage Generation & WWTP Location



Legend

- WWTP Location

Septage Generation Rates per Year
- 0 - 1,500 cu.m
- 1,501 - 8,000 cu.m
- 8,000 cu.m +

Septage Received By WWTP (cu.m/year)
- Orillia- 18,598
- Collingwood- 13,188
- New Tech- 8,035
- Innisfil - 7,500
- Wasaga Beach - 5,924
- Rama FN-
- BWG- 2,750
- Midland - 2,400
- Ramara - 234
- Essa- 0

Note: Wasaga Beach, Rama FN & BWG only accept septage from within own municipality.

23.6 0 11.82 23.6 km

Scale: 1 : 465,430

Simcoe County Septage & Landfill Leachate Disposal Feasibility Study

Figure 5- MOECC Approved Land Application Sites

GREENLAND consulting engineers

DILLON CONSULTING

Regional Sanitation
6.4 ha

Georgian Bay Sanitation
10.56 ha

Pepi Septage
3.03 ha

Ewart Ball (1)
2.5 ha

Ritchie Septic
1.57 ha

Ewart Ball (2)
3.45 ha

Epsey Septic
6.76 ha

Swaffield Septic (1),(2)
8.7 ha & 3.51 ha

Bullack Septic (1)
8 ha

Bullack Septic (2)
4.83 ha

Burls Creek
Event Grounds

Tay

Tiny

Springwater

Ramara

Adjala-
Tosorontio

Georgian Bay (baie Georgienne)

Lake Simcoe

Gravenhurst

Midland

Penetanguishene

Orillia

Barrie

Kawartha Lakes

Bobcaygeon

Sturgeon Point

Woodville

McRae Beach

Omemee

Georgina

Innisfil

Bradford West Gwillimbury

East Gwillimbury

Newmarket

Whitchurch-Stouffville

Aurora

Clarington

New Tecumseth

Collingwood

Wasaga Beach

Blue Mountains

Meaford

Thornbury

Flesherton

Dundalk

Shelburne

CFB BORDEN

QUEEN ELIZABETH II WILDLANDS

Scugog Island

Legend

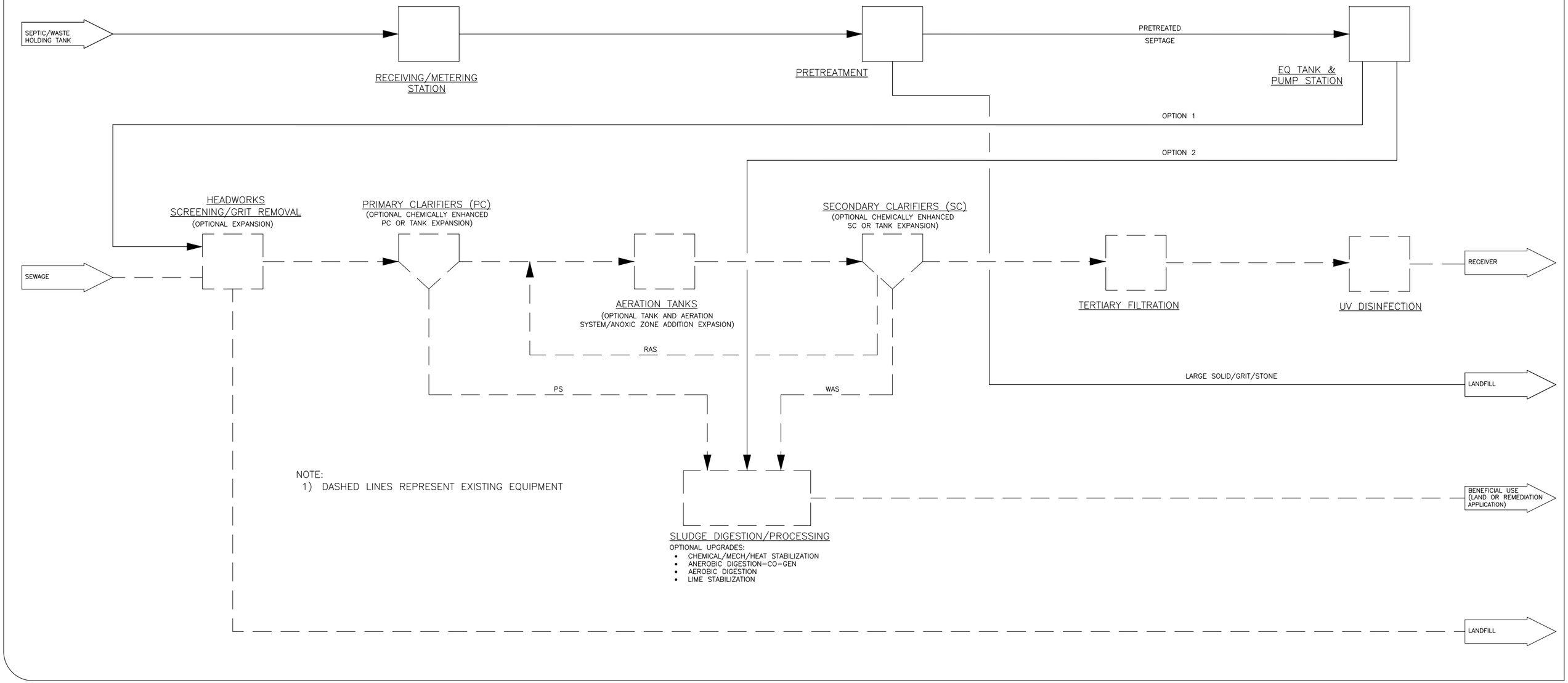
- Location of land with ECA for Land Application of untreated residential septage & holding tank waste

COUNTY OF SIMCOE
For the Greater Good

23.6 0 11.82 23.6 km

Scale: 1 : 465,430

ONTARIO



WAS – WASTE ACTIVATED SLUDGE SC – SECONDARY CLARIFICATION

RAS – RETURN ACTIVATED SLUDGE

PC – PRIMARY CLARIFICATION

File Location:
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September, 23, 2016 2:43 PM

SCALE: NTS

CREATED BY: HJF
CHECKED BY: LT
DESIGNED BY: BMB

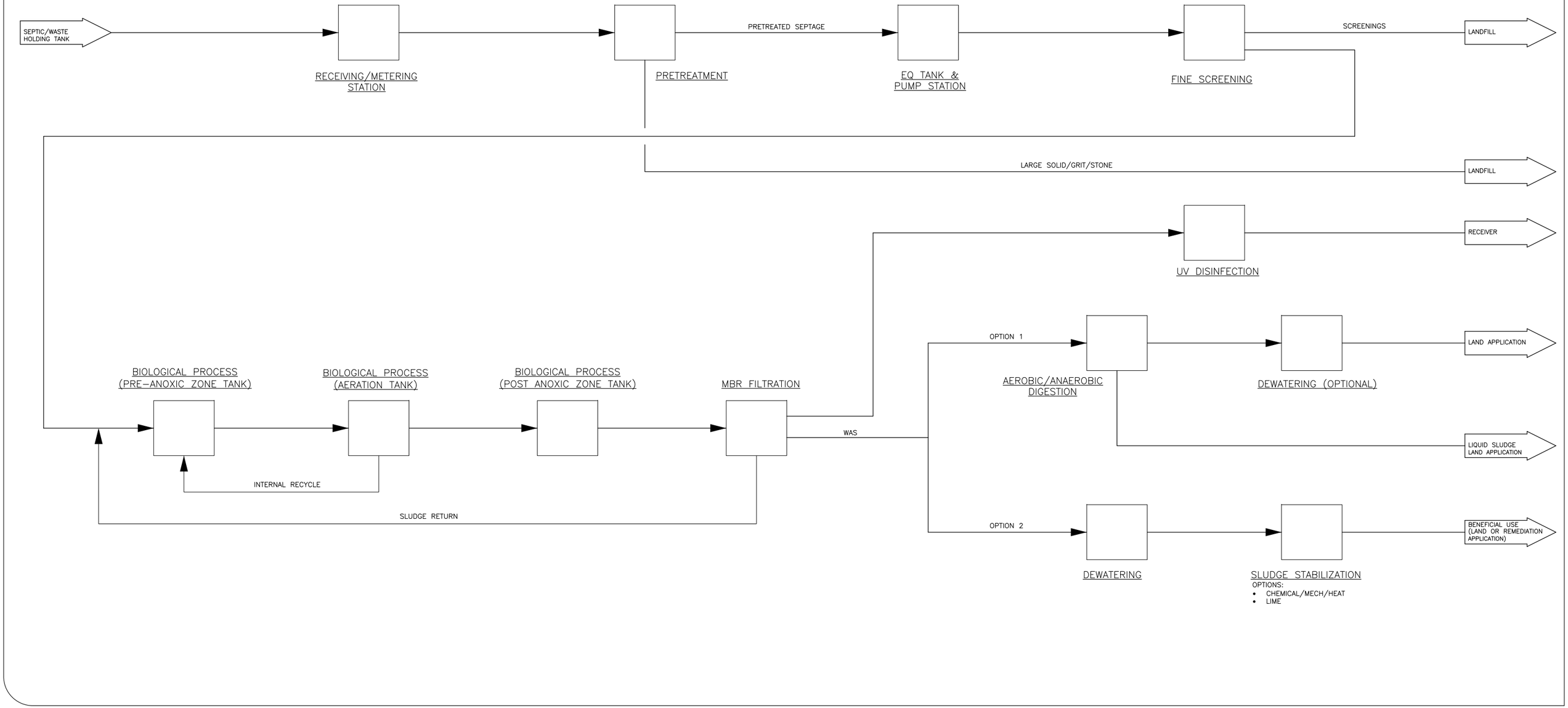
DILLON CONSULTING

GREENLAND consulting engineers

PROJECT: 16 3242
STATUS: DRAFT
DATE: SEPTEMBER 2016

SIMCOE
FEASABILITY STUDY

SEPTAGE/HANDLED WASTE TREATMENT AT EXISTING PLANTS
FIGURE 6



WAS – WASTE ACTIVATED SLUDGE

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SCALE: NTS

CREATED BY: HJF
CHECKED BY: LT
DESIGNED BY: BMB

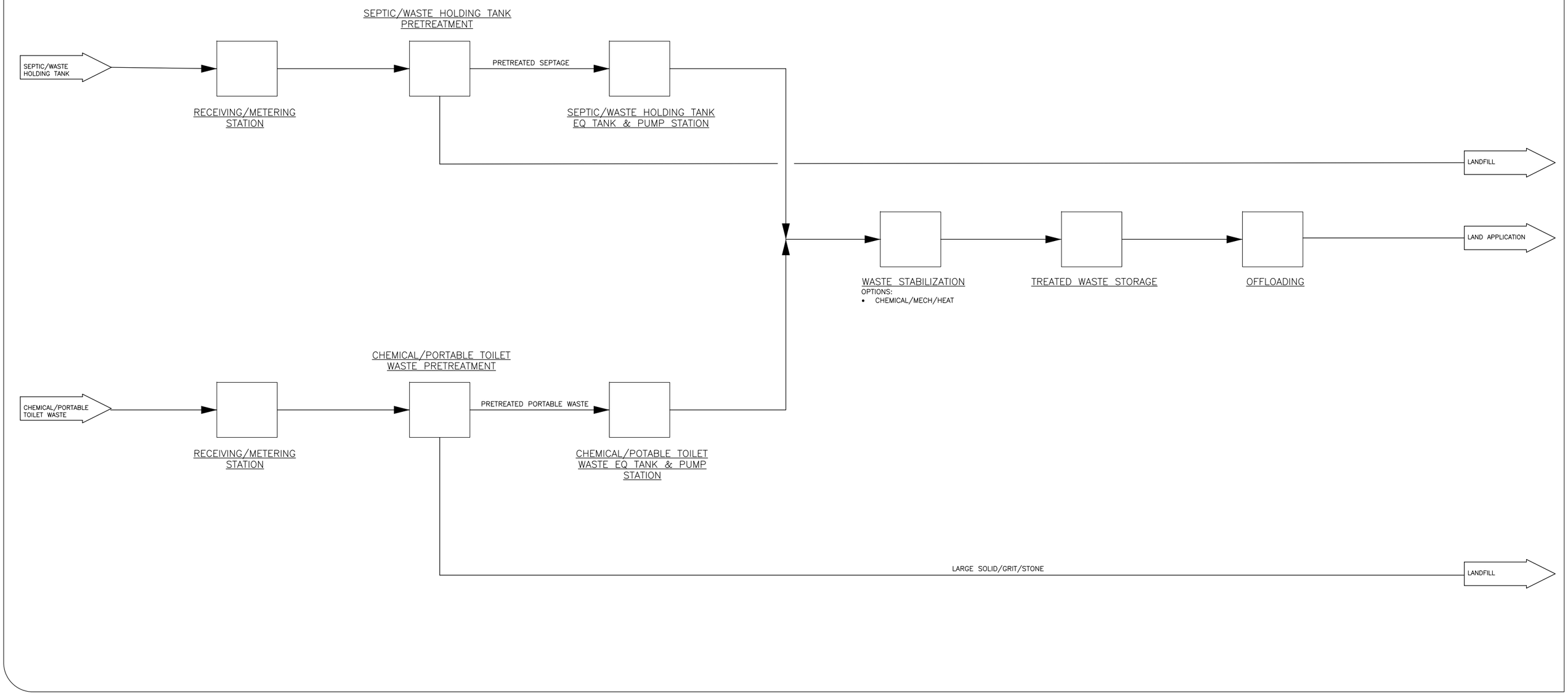
DILLON CONSULTING

GREENLAND consulting engineers

PROJECT: 16 3242
STATUS: DRAFT
DATE: SEPTEMBER 2016

SIMCOE
FEASABILITY STUDY

NEW REGIONAL FACILITY
BIOLOGICAL TREATMENT
FIGURE 7



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SCALE: NTS

CREATED BY: HJF
CHECKED BY: LT
DESIGNED BY: BMB

DILLON CONSULTING

GREENLAND consulting engineers

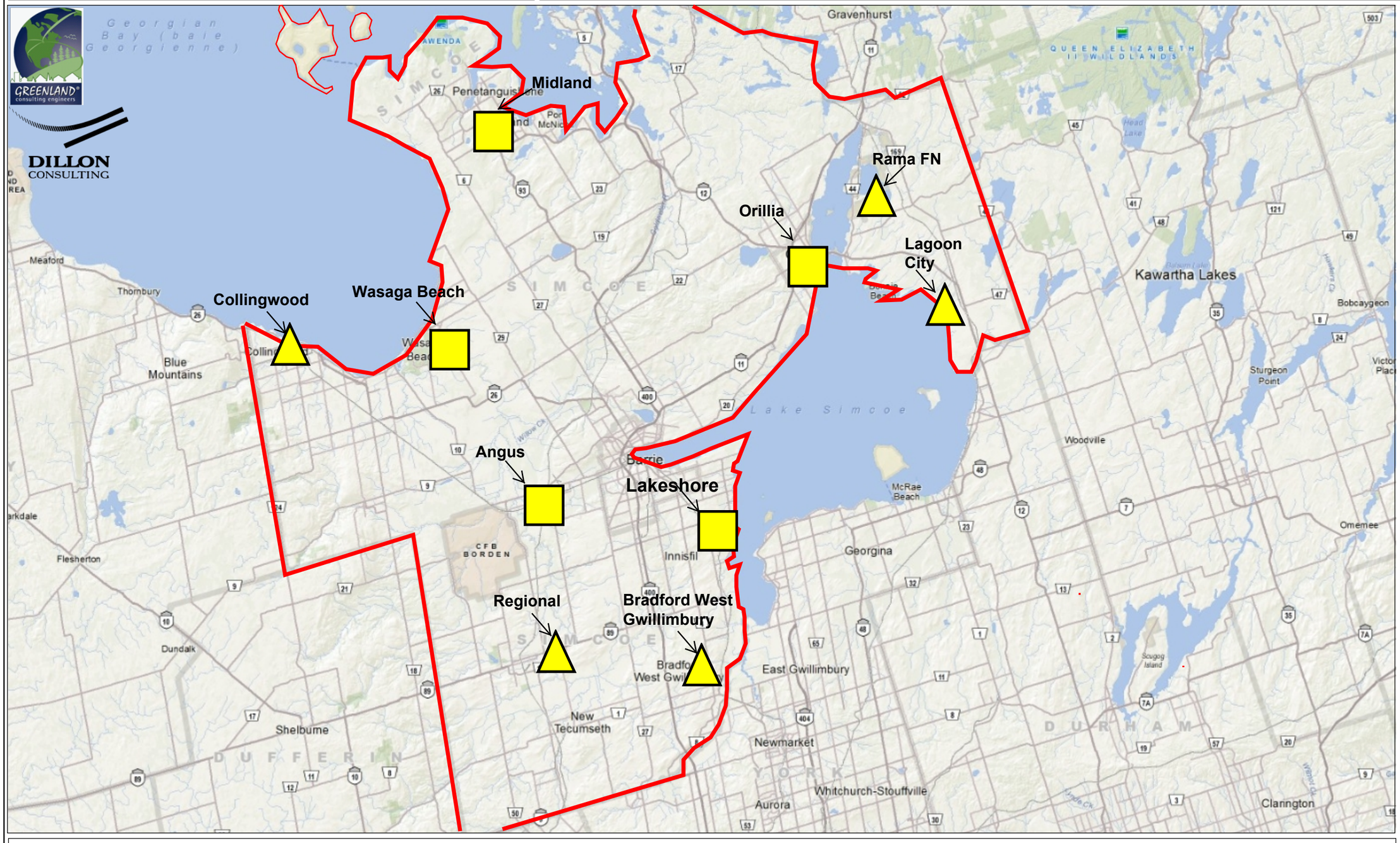
PROJECT: 16 3242
STATUS: DRAFT
DATE: SEPTEMBER 2016

SIMCOE
FEASABILITY STUDY

NEW REGIONAL FACILITY
CHEMICAL WASTE STABILIZATION
FIGURE 8

Simcoe County Septage & Landfill Leachate Disposal Feasibility Study

Figure 9 - Alternative 4: Multi-Criteria Approach



Legend

- Existing Facilities Accepting Hauled Waste
- Facilities Selected for Targeted Upgrades

GREENLAND consulting engineers

DILLON CONSULTING

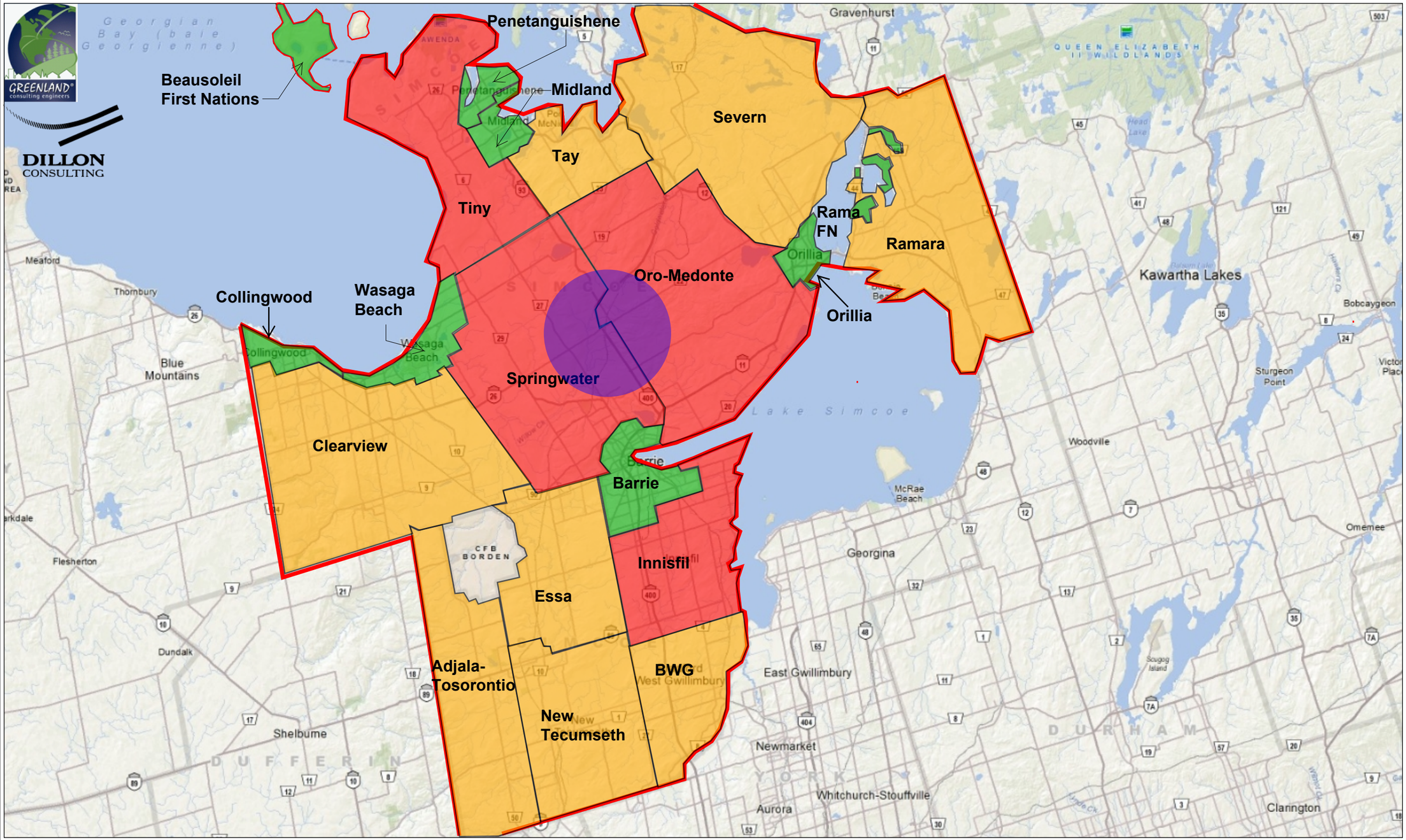
COUNTY OF SIMCOE For the Greater Good

23.6 0 11.82 23.6 km

Scale: 1 : 465,430

Simcoe County Septage & Landfill Leachate Disposal Feasibility Study

Figure 10 - Alternative 6: New Regional Treatment Facility



Legend

Septage Generation Rates per Year

- 0 - 1,500 m^3/d
- 1,501 - 8,000 cu.m
- 8,000 cu.m +

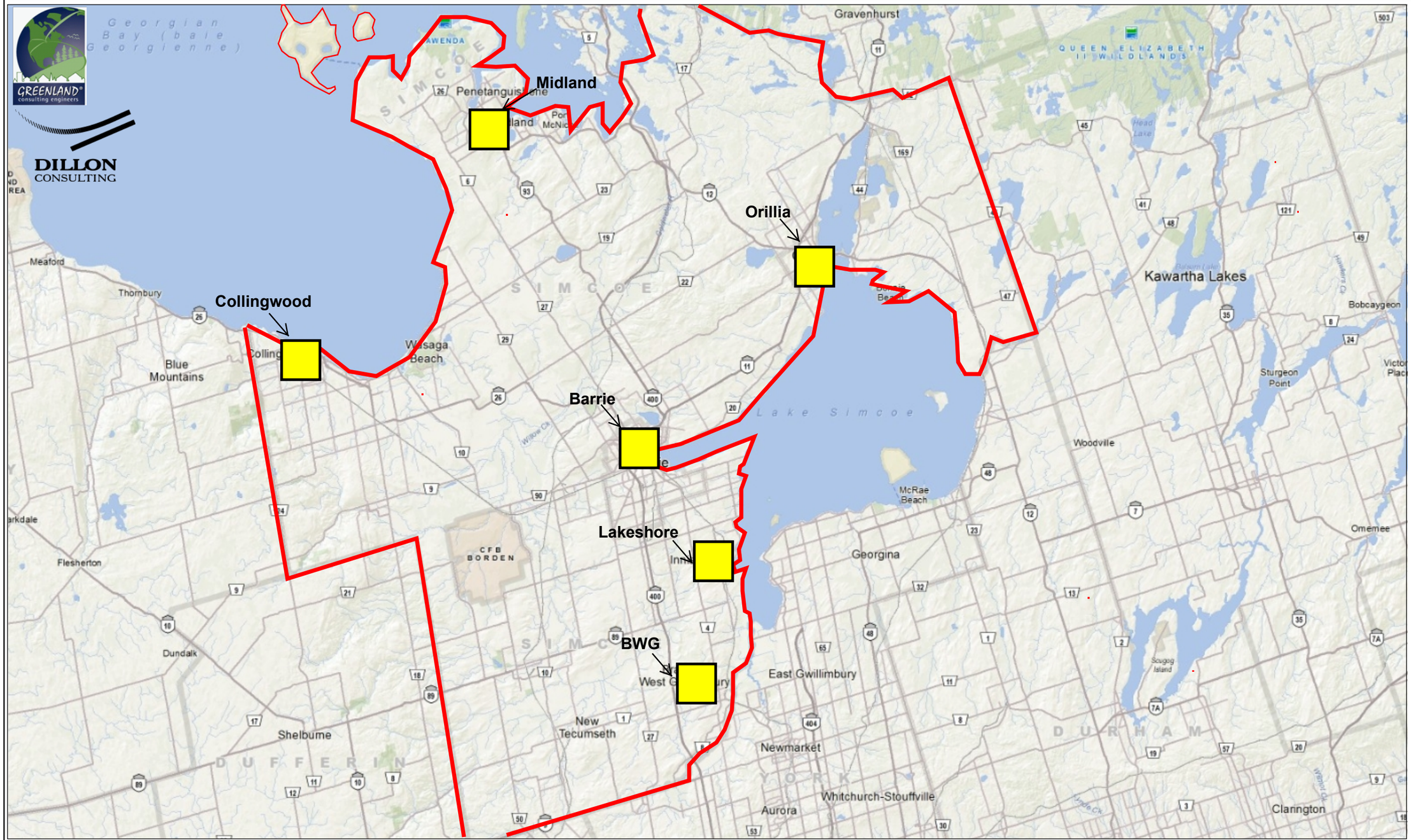
Approximate area appropriate to locate a countywide facility

23.6 0 11.82 23.6 km

Scale: 1 : 465,430

Simcoe County Septage & Landfill Leachate Disposal Feasibility Study

Figure 11 - Alternative 7: Treatment Capacity Based Selection of Facilities



Legend

Facilities Selected for Targeted Upgrades

23.6 0 11.82 23.6 km

Scale: 1 : 465,430

APPENDIX B
Municipal Summary Information

DILLON CONSULTING

GREENLAND®

Simcoe County Septage & Landfill Leachate Feasibility Study
Township of Adjala-Tosorontio March 15th 2016

Dear Mr. Moss,

The following document is summary of information from the February 3rd meeting between the Township of Adjala-Tosorontio, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information package provided. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

New Horizons WWTP is an RBC treatment facility and has a rated capacity of 175 cu.m/d with subsurface disposal - services 100 units in New Horizons Subdivision

Effluent Limits	
Parameter	***Concentration Limit Objective (mg/L)***
$CBOD_5$	10
TSS	10
NH_3	5.0

***2.* Confirmation of the number of septic systems and landfills in the municipality;**

An Estimated 3,818 septic Systems are located in the Township and there is also one landfill site
Minimal communal systems –
Colgan School (to be taken off septic as part of EA/WWTP build);
Adjala-Central, Christian School on 10th Line;
Tos School;
Camparina - 2nd Concession North of 5th Sideroad; and,
2 other campgrounds: CR 50, 5th Conc. below 25th SR

There are two (2) landfill sites in Adj-Tos. The landfill located at Concession 4 in Adjala is no longer active however, the second landfill also located on Concession 4 in Tosorontio is open.

***3.* Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

No septage accepted at current WWTP

Septic generation estimated to be 17,000 cu.m/yr (based on pump out of all tanks on 4 year rotation)

***4*. Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

The New Horizons WWTP has subsurface Disposal but is experiencing some issues.

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

Total annual O&M for New Horizons is approximately $130,000

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

New Horizons TP has no septage receiving.

Number of land application sites located within Township - "Region of Huronia" Haulers, bringing septage from Tottenham and have own lagoon.

7. Cost charged to waste haulers to accept septage or leachate;

Swaffield takes septage to Tottenham for $16.22/cu.m
The annual costs to dispose of sludge are $15k from New Horizons

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

New WWTP required in Everett to service existing residents and proposed development.

***9.* Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

There is minimal hydraulic capacity at the New Horizons plant in Everett, approximately enough for 75 additional units to connect, however there are subsurface bed issues preventing the additional flow potential.

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

Colgan & Everett MSP's & Schedule C's for Wastewater (Colgan Sched. C to be completed by development community in 2016)

11. Municipal population projections and annual growth information for the 20 year horizon; and,

5,000 additional population over next 20 years (mostly Everett & Colgan)

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

Source water protection threats in Everett (92) and elsewhere in form of aging septic systems located in well capture zone and near watercourses.

EA's being completed to develop municipal servicing for future development and to get existing residents off septic systems - 152 required for re-inspection this year (2016) alone.

Simcoe County Septage & Landfill Leachate Feasibility Study
City of Barrie February 23rd 2016

Dear Mr. Coulter,

The following document is summary of information from the January 29th meeting between City of Barrie, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information package provided. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

The City of Barrie WWTF has a rated capacity of 76,000 cu.m/day.

Effluent Limits		
Parameter	***Concentration Limit Objective (mg/L)***	***Concentration Limit Compliance (mg/L)***
$CBOD_5$	10	15
TSS	10	15
TP	0.12	0.18
NH_3	3.0 (Jun 1- Oct31) 8.0 (Nov 1- May31)	4.0 (May 1- Nov 30) 10 (Dec 1- Apr 30)
pH	6.5-8.5	

As part of the Lake Simcoe Protection Plan the Lake Simcoe Phosphorus Reduction Strategy reduced compliance limit of the Total Phosphorus (TP) for the plant effluent to 0.1 mg/L effective June 2nd 2015.

***2.* Confirmation of the number of septic systems and landfills in the municipality;**

Barrie currently has approximately ~500-600 septic systems. The City of Barrie would permit the continued use of properly operating septic systems. As areas of the city are upgraded to full urban standards residents that are using septic systems would receive information about the newly available services.

***3.* Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

Plant has ability to accept septage but currently does not accept any. Barrie used to accept septage, however, the plant accepted large volumes of portable toilet waste and the chemical used in the portable toilets killed the organisms within the plant and thus severely hindered the plants ability to treat wastewater.

Plant uses a land application program for Bio solids (strongly rely on rural land)
Policy may change based on land application program success (residential waste only)

The WWTF have a septage receiving facility which is digitally monitored. Haulers are required to register with Barrie and deposit septage to tanks

***4*. Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

WWTF discharges to Kempenfelt Bay, Lake Simcoe via submerged staged diffuser.
Bio-solids are land applied in rural areas outside Barrie limits as a soil conditioner for agricultural lands adhering to the requirements set forth in the Nutrient Management Act.

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

N/A

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

WWTF has a 30,000 L tank for receiving septage. The Septage is bled into the process. Septage receiving system is automated for convenience of both haulers and WWTF staff.

7. Cost charged to waste haulers to accept septage or leachate;

Previous charge to haulers (24.50/cu.m for septage)

Received 28 000 L of leachate from SC landfills under an agreement ($6/cu.m for cost recovery purposes only). The leachate is accepted at the Barrie Landfill, not at the WWTF (leachate does not come from all landfills)

It was advised that the leachate is not overly strong and it is transported to WWTF via discharge to the sanitary sewer system.

No leachate terms in C of A limits

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

N/A

***9.* Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

N/A

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

Barrie constantly under growth

11. Municipal population projections and annual growth information for the 20 year horizon; and,

~202,000 in 2031 for full buildout

Future growth likely will not be on septic systems

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

Source water protection (groundwater + surface water) but no issues stemming from septic systems, Lake Simcoe Protection Act.

Standard sewer use by law 2012-172

Sewer exemption by-law – Barrie has a sewer cost exemption program for septic systems (i.e. water is taken from municipal system but not returned to the sewer and resident only pays for water and not sewer charges)

Simcoe County Septage & Landfill Leachate Feasibility Study
Beausoleil First Nations February 23rd 2016

Dear Mr. Trimble,

The following document is summary of information from the January 21st meeting between Beausoleil First Nation, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information provided after the meeting. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

No WWTP - septic pump outs come to Christian Island for spreading

Some band members in Tiny Twp. also receive pump outs

***2.* Confirmation of the number of septic systems and landfills in the municipality;**

Waterfront is on holding tanks - everything else uses septics
Waste is hauled out to Orillia currently, one landfill on Island was just turned into transfer station - monitoring well shows contamination only in the landfill itself, which is being decommissioned / capped and closed.
380 houses/schools etc.
270ish cottages
Campsites with portable toilets

***3.* Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

94,000 - 100,000 gal/yr, some is from boat/ferry pump outs (13,000)
10,000-15,000 gallon storage tank for winter, field spreading on 50 acre parcel in warmer months - also pumping from Springwater Park
94000/2000 tank = number of units pumped out per year

***4*. Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

N/A

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

$150/pump out (Band Members)

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

N/A

7. Cost charged to waste haulers to accept septage or leachate;

N/A

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

N/A

***9.* Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

N/A

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

None at the moment, Tiny Study looked at building facility to adapt to cancellation of field spread licesnses - field spreading licenses were never cancelled and as such no further progress on the Tiny facility.
Band council had planned to piggyback with Tiny solution if it proceeded.

11. Municipal population projections and annual growth information for the 20 year horizon; and,

700 Annual population, +1500 in summer months (more with festivals)

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

Band public works do their own inspections and verify everything is to code (national or Ontario, whichever is higher)

Federally regulated - no issues with septage spreading (timing etc.)

Band plans to work with County if a viable communal solution is developed and adhere to regulations.

Simcoe County Septage & Landfill Leachate Feasibility Study
Town of Bradford West Gwillimbury February 23rd 2016

Dear Mr. Sullivan,

The following document is summary of information from the January 22nd meeting between Bradford West Gwillimbury, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information provided after the meeting. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

The ECA for the Bradford West Gwillimbury WPCP is # 9725-8W4Q5G and has a rated Capacity of 19, 400 cu.m/day

Effluent Limits	
Parameter	*Objective Concentration (mg/L)*
$cBOD_5$	*10*
TSS	*10*
TP	*0.098*
NH_3	*0.8 (April 1-Oct 31)*
pH	*6.0-9.5*

***2.* Confirmation of the number of septic systems and landfills in the municipality;**

BWG has approx. 2,080 septic systems and no landfill.

There was potential to take some septic systems offline (approx 30) through the green Valley area but nothing has been completed as of yet.

All of Bonhead settlement is currently on septic with additional development planned for Bonhead increasing the population by 4000-5000 people, however it would not be mandatory to connect to the municipal system.

***3.* Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

No leachate accepted at the WPCP.

BWG does accept septage but only residential septage from within the municipality. (2,500-3,000cu.m/year)

Septage is accepted year round but 90% of septage is received between March 15 & November 15th

The septage is introduced to the WPCP by means of hourly 5 minute pump cycle intervals

No septage accepted from outside municipality

The WWTP services a population of 26,523 people.

***4*. Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

BWG WWTP discharges to West Holland River (old Schomberg River)

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

BWG has a $200,000 /year budget and it is estimated that the revenue and expenses break even. BWG does not accept septage for revenue.

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

90 cu.m tank with 2 ABS contra bloc lift pumps, miltronic level sensors and SCADA control. Septage is slowly introduced 5 minutes at a time, each hour.

7. Cost charged to waste haulers to accept septage or leachate;

Residential septage only - $55.00/1000 gallons plus a monthly $50.00 admin fee

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

BWG has no current intentions to increase the capacity for septage.
Brad Sullivan indicated that haven't seen an increase in septage so no plans have been made to increase capacity.
Current method is a small septage capacity receiving tank and the septage is slowly added to the plant with little to no impact on routine activities.

***9.* Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

At the current time BWG has no reserve capacity that is uncommitted. The plant is currently running 50% capacity, but the remainder is already committed and 'pre-paid' for by the developers.

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

Class EA for Phase 2 Expansion WPCP, BY Ainley & Associates, dated November 29, 2010

11. Municipal population projections and annual growth information for the 20 year horizon; and,

Approximate service population 26.5K (combined) and projected growth to 50,500 by 2031.

Development planned for Bonhead area, 4000-5000 people extra.

As noted above, the development would not likely be required to extend to the municipal system and could generate additional septage

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

Standard Sewer use by law

Dear Mr. Price,

The following document is summary of information from the January 29th meeting between the Town of Collingwood, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information package provided. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

Collingwood WWTP

The Town of Collingwood WWTP has a rated capacity of 24,548 cu.m/d. The treatment plant unlike many others in the county uses anaerobic sludge digestion as a process as opposed to aerobic digestion. The plant is currently running at 66% of it's daily rated capacity.

Effluent Limits		
Parameter	***Concentration Limit Objective (mg/L)***	***Concentration Limit Compliance (mg/L)***
$CBOD_5$	15	25
TSS	15	25
TP	0.8	1.0
pH	6.0-9.5	

Creemore WWTP

Creemore WWTP has a rated capacity of 1,400 cu.m/day. The plant is currently running at 27% of its daily rated capacity.

Effluent Limits	
Parameter	***Concentration Limit (mg/L)***
$CBOD_5$	10
TSS	10
TP	0.2
NH_3	2.0 (May 1- Nov 31) 4.0 (Dec 1- April 30)
pH	

Stayner WWTP

Stayner WWTP has a rated capacity of 2,500 cu.m/day complete with effluent lagoons out letting to Lamont Creek. The plant is currently running at 65% of its daily rated capacity. It was advised that once

the Stayner WWTP reaches full capacity, the additional sewage will be sent to wasaga beach facility for treatment.

Effluent Limits		
Parameter	***Concentration Limit Objective (mg/L)***	***Concentration Limit Compliance (mg/L)***
$CBOD_5$	5	10
TSS	10	15
TP	0.3	0.4
pH	6.5-9.0	

2. **Confirmation of the number of septic systems and landfills in the municipality;**

There are approximately 159 active septic systems in Collingwood (from visioning strategy) and approximately 3,200 in Clearview (visioning strategy)

3. **Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

The WWTP currently accepts septage (of any kind) of about 12,900 cu.m in 2014 and leachate (2,000cu.m in 2014). The septage is received directly at the plant and dumped into the influent process. WWTP does not have storage tank, mixing or pre-treatment for septage.

Leachate from the Collingwood landfill is connected directly into the sewer system. A pipe from the landfill complete with a flow meter is connected to the sewer and volumes are recorded and charged accordingly. The leachate is not overly strong and is diluted within the regular sewer.

Neither Creemore nor Stayner Treatment plants accept septage or leachate.

4. **Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

Collingwood WWTP Surface discharge to Collingwood harbour

Creemore discharges to the Mad River

Stayer treatment plant has a lagoon system that outlets to Lamont Creek

All three Treatment facilities spread bio solids on licensed agricultural lands as nutrient and soil conditioner.

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

Collingwood- Current WWTP costs are around 4 million /year and future plans will be set with the completion of an upcoming Master Servicing Plan.

Stayner Not available

Creemore Not available.

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

7. Cost charged to waste haulers to accept septage or leachate;

$78/1000 gallons (17.10/cu.m)

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

There are currently no plans in place up upgrade Collingwood for increased septage/leachate receiving.

9. **Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

The current uncommitted reserve capacity at the Collingwood WWTP is 7,000cu.m/d (30%) of the plant's capacity.

Creemore uncommitted reserve capacity is not available

Stayer uncommitted reserve capacity is not available

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

Collingwood ECA completed in 2011

11. Municipal population projections and annual growth information for the 20 year horizon; and,

No major population growth anticipated in Creemore.

Collingwood is projected for a population within the range 24,800-28,422 by 2031.

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

Standard sewer use by law

Simcoe County Septage & Landfill Leachate Feasibility Study
Essa Township February 23rd 2016

Dear Mr. Perrault,

The following document is summary of information from the February 1st meeting between Essa Township, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information package provided. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

Angus WWTP

The Angus WWTP has a rated capacity of 5,511 cu.m/day which outlets to the Nottawasaga River.

Effluent Limits		
Parameter	***Concentration Limit Objective (mg/L)***	***Concentration Limit Compliance (mg/L)***
$CBOD_5$	5.0	10
TSS	5.0	10
TP	0.2	0.5
NH_3	0.4 (Jun 1- Oct 31) 2.5 (Nov 1- May 31)	0.6 (Jun 1- Oct 31) 3.1 (Nov 1- May 31)-
pH	6.5-9.0	

***2.* Confirmation of the number of septic systems and landfills in the municipality;**

Visioning strategy estimates approximately 4,000 septic systems

***3.* Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

Can accept septage but haulers do not bring septage to the plant

Handling system requires the septage to be fed at inlet ~25ft in the air and would require the truck to be pressurized to feed uphill to the inlet (plant is gravity fed). This limitation deters haulers from the plant and they usually take the septage to Alliston where it can be directly dumped.

***4*. Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

Angus WWTP discharges to Nottawasaga River and bio solids are land applied.

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

Bio solids produced: 5,323 cu.m/year (average over last 3 years) @ $10.20/cu.m
The proposed works (sludge thickening - with rotary drum thickener) will cause a decrease in the current volumes of bio solid production.
If land application of bio solids were to be stopped – costs to dewater and landfill would increase three fold based on budgetary costs in 2013

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

Angus WWTP doesn't have any specialized receiving system for septage. Treatment facility has an elevated inlet that fed directly into the screening chamber.

7. Cost charged to waste haulers to accept septage or leachate;

$21/cu.m

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

Pre-treatment facilities, upgrade to digesters as they are small

***9.* Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

Capacity of plant is currently around ~50% possibly up to 75% committed, therefore there is possible 25% uncommitted reserve capacity.

Rainbow campground is currently planning on upgrading development and connecting to municipal system

hodo park is planning on communal system

Shamrock (trailer park) is also looking into connecting to municipal system (preliminary discussions).

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

Baxter EA has preferred solution to run a forcemain to Angus (10km for ~250 homes which does not seem to be feasible)

11. Municipal population projections and annual growth information for the 20 year horizon; and,

Large growth increase has occurred within the last few years ~120 building permits issued where normal volume is ~50 permits.

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

Standard sewer use by-law

Ontario regulation 338/09 and Nutrient Management Act.

Simcoe County Septage & Landfill Leachate Feasibility Study
Township of Innisfil February 23rd 2016

Dear Mr. Fiddy,

The following document is summary of information from the January 29th meeting between Innisfil, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information package provided. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

Lakeshore WWTP-

Lakeshore WWTP is located at the northwest corner of St. Johns Road and Concession 6. The plant has a rated capacity of 14,370 cu.m/d. The plant is scheduled for an upgrade in 2020 with the addition of 2,100 cu.m/day of capacity increase (total of ~16,470 cu.m/day)

Effluent Limits (prior to substantial completion)	
Parameter	***Concentration Limit Objective (mg/L)***
$CBOD_5$	10
TSS	15
TP	0.3
NH_3	5
pH	6.0-9.5

Cookstown WWTP

The Cookstown WWTP is an extended aeration lagoon style treatment facility with a rated capacity of 825 cu.m/day. In 2014 the plant had an ADF of 496cu.m/day or 60% of the plant's capacity. There is an EA almost completed for the Cookstown WWTP and recommended solution is to make upgrades to the plant to increase capacity to ~ 1,100 cu.m/day.

Effluent Limits (prior to substantial completion)	
Parameter	***Concentration Limit Objective (mg/L)***
$CBOD_5$	25
TSS	25
TP	1.0 (300kg/yr)
NH_3	4.0
pH	6.0-9.5

***2*. Confirmation of the number of septic systems and landfills in the municipality;**

It is estimated that there are approximately 7,000 septic systems in the Town of Innisfil with around 1,500 required in the re-inspection program.

3. **Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

Lakeshore plant accepts septage around 7,500 cu.m/year.

4. **Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

Lakeshore Discharges to Lake Simcoe
Cookstown Discharges to Innisfil Creek

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

There are no definitive calculations to determine if costs breakeven point for the municipality.
The Town will be looking at doing a cost analysis for septage.
A rate study was completed and the all costs are being covered.

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

The WWTP contains a 280cu.m concrete septage chamber with 2 chopper style dosing pumps to deliver septage to the existing headworks. The system also contains 2 process rooms, one containing a rock trap and the other a magnetic flow meter valves and electrical equipment.

7. Cost charged to waste haulers to accept septage or leachate;

$16/cu.m to haulers. It was indicated that this would be re-calculated in the next year with all the capital works being done.

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

N/A

9. **Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

Mostly all reserve capacity is committed to development purposes.
Plant has capacity to accept additional septage (~140cu.m/day-- 51,000 cu.m/year) but at the current time the WWTP only treats 7,600cu.m/year.

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

Ongoing EA in Cookstown (expected to be completed July/August of 2016)

11. Municipal population projections and annual growth information for the 20 year horizon; and,

Innisfil has a currently population of 33,345 and expects the population to significantly increase to 58,266 by 2031.

Unknown amount of growth in Innisfil that will not be connected to Municipal System.

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

Standard Sewer Use by-law

Currently no plans to take septic systems offline with respect to deficient systems (100m source water protection)

Simcoe County Septage & Landfill Leachate Feasibility Study
Township of Midland February 23rd 2016

Dear Mr. Berriault,

The following document is summary of information from the January 21st meeting between Township of Midland, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information provided after the meeting. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

Midland WWTP has a rated capacity of 15,665 cu.m/d. 2014 average daily flow of 9,273 cu.m/d (~59% of design capacity)

Effluent Limits	
Parameter	***Concentration Limit (mg/L)***
BOD_5	10 (annual avg)
TSS	10 (annual avg)
TP	0.4 (yearly avg) 0.3 (monthly avg)
NH_3	10 (Jun-Aug) 15 (Sept-May)

Approximately 13,528 cu.m of biosolids were generated in 2014, where:

During winter/spring and wet periods of the year, biosolids are currently stored in the Region of Huronia Lagoon systems (CofA 740057). At any time, biosolids are stored for no longer than 1 week.

***2* Confirmation of the number of septic systems and landfills in the municipality;**

It is estimated that 676 septic systems are present in Township, mostly located in Midland Point and Sunnyside areas.

***3.* Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

WWTP has 2 square tanks for hauled septage storage (135cu.m each), equipped with mixing and odour control. The contents of tank are introduced into the system during low flow times.

Generated 13,528 cu.m of biosolids in 2014

Accepted a total of 2,400cu.m of septage

Accepted 8.3 cu.m (2,181 gallons) of RV waste disposal.

***4*. Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

Midland WWTP - surface discharge to Georgian Bay (anaerobic digester)

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

Rates charged by haulers

Domestic Septic Tank- $205

Domestic Holding Tank- $25

Commercial Septic Tank $205

Commercial Holding Tank $25

Portable Toiletss & Marine Waste -$82

Grease Traps $205

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

Midland WWTP does currently accept Setpage (local + other) as well as some leachate which is brought from RSI transfer station.

In 2015, WWTP accepted 2,400 cu.m of septage from Midland (36%), Tiny (34%), Penetang (15%), Tay (10%) and various (5%). The total amount of septage received only contributed 0.08% from a volume perspective.

7. Cost charged to waste haulers to accept septage or leachate;

Rate study is currently being completed to verify current rates for costs to handle and treat septage - rates study will be available in next month.

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

Receiving facility would need to be upgraded to handle more septage. Currently haulage is scheduled to ensure proper loading/dosage to treatment system.

***9.* Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

Growth management strategy projects a population of 22,500 by 2031 and an equivalent domestic wastewater flow of 10,648cu.m/d. Including the increase in septage, the treatment plant expect to have a reserve capacity of approx.. 4,873 cu.m/d.

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

Burnside (XCG) study re: Septage Handling

11. Municipal population projections and annual growth information for the 20 year horizon; and,

Town of Midland Official Plan Review and Upgrade Project- Growth Management Strategy projects a population of 22,500 by 2031.

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

Sewage Use By-Law

Sourcewater Protection - 100m distance from any water body (Georgian Bay)

Simcoe County Septage & Landfill Leachate Feasibility Study
Township of New-Tecumseth February 23rd 2016

Dear Mr. Vatri,

The following document is summary of information from the January 22nd meeting between New Tecumseth, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information package provided. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

Tottenham WWTP –

At the Current time, the Tottenham WWTP is undergoing an upgrade to the treatment process however the rated Capacity of 4,082 cu.m/d will remain the same. While the WWTP is under construction, there are provisional and final effluent limits based on the phase of construction.

Effluent Limits (prior to substantial completion)		
Parameter	***Concentration Limit Objective (mg/L)***	***Concentration Limit Compliance (mg/L)***
$CBOD_5$	5.0	6.0
TSS	10	15
TP	<0.3 (Nov1-Mar31) <0.2 (Apr1-Apr30) <0.1 (May1-Sept30) <0.2 (Oct 1-Oct30)	0.35 (Nov1-Mar31) 0.2 (Apr1-Apr30) 0.1 (May1-Sept30) 0.2 (Oct 1-Oct30)
NH_3	3.0 (Nov 1-Mar 31) 1.0 (Apr1-Apr30) 0.35 (May1-Sept30) 1.0 (Oct 1-Oct30)	3.3 (Nov 1-Mar 31) 1.2 (Apr1-Apr30) 0.5 (May1-Sept30) 1.2 (Oct 1-Oct30)
pH	6.5-8.5	

Effluent Limits (Upon substantial completion)	
Parameter	***Concentration Limit (mg/L)***
$CBOD_5$	5.0
TSS	10
TP	0.07
NH_3	3.0 (Nov 1-Mar 31) 1.0 (Apr1-Apr30) 0.35 (May1-Sept30) 1.0 (Oct 1-Oct30)
pH	6.5-8.5

Alliston WWTP

Capacity 5,681 m3/d

Effluent Limits		
Parameter	***Concentration Limit Objective (mg/L)***	***Concentration Limit Compliance (mg/L)***
$CBOD_5$	10	15
TSS	10	15
TP	0.3	0.5
NH_3	2.0 (Dec 1-Mar 31) 0.8 (Apr 1-Nov 30)	3.0 (Dec 1-Mar 31) 1.0 (Apr 1-Nov 30)
pH	6.5-8.5	

Regional WWTP

The regional plant has a current rated capacity of 7,595cu.m/day and a future rated capacity of 11,400 cu.m/d

Effluent Limits				
Parameter	***Concentration Limit Objective (mg/L) 7,595***	***Concentration Limit Compliance (mg/L) 7,595***	***Concentration Limit Objective (mg/L) 11,400***	***Concentration Limit Compliance (mg/L) 11,400***
$CBOD_5$	10	15	6.7	10
TSS	10	15	6.7	10
TP	0.1	0.15	0.07	0.1
NH_3	0.35 (May 1-Nov 30) 3.0 (Dec 1-April 30)	0.5 (May 1-Nov 30) 3.3 (Dec 1-April 30)	0.35 (May 1-Nov 30) 3.0 (Dec 1-April 30)	0.5 (May 1-Nov 30) 3.3 (Dec 1-April 30)
pH	6.5-8.5	6.0-9.5	6.5-8.5	6.0-9.5

2. **Confirmation of the number of septic systems and landfills in the municipality;**

Township Estimated 2,731 septic systems online within the Municipality with the following breakdowns:

Alliston-124
Beeton- 66
Tottenham-2
Rural Areas-2539

3. **Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity**

expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);

Septage is received at the Regional Plant only. The plant has received the following volumes of septage since 2012
2012- 7,210 cu.m
2013- 10,213 cu.m
2014- 15,367 cu.m
2015- 8,035 cu.m
No leachate is accepted.
NT has no current plans to take a significant amount of septic systems offline with development expansions

***4*. Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

Tottenham WWTP- Surface Discharge to Beeton Creek
Alliston WWTP- Surface Discharge to Boyne River, Sludge sent to Regional WWTP via FM
Regional WWTP- Surface Discharge to Nottawasaga River, receives sludge from Alliston & all sewage from Beeton via FM

Biosolids from the all the treatment plants are land applied.

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

Treatment costs Municipality $1.18/cu.m

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

The Regional plant has one 90cu.m receiving tank connected to a 1.5cu.m/min capacity in-line 100mm grinder and two receiving pumps each rated for 22.5 L/s. The magnetic flowmeter records the amount of septage running through the system.

7. Cost charged to waste haulers to accept septage or leachate;

Regional WWTP charges $15.96/cu.m to haulers.

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

N/A

***9.* Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

The Regional WWTP is calculated to have 1,900 cu.m/day reserve capacity for septage receiving purposes.

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

Tottenham Class EA (Plant is currently under construction)

11. Municipal population projections and annual growth information for the 20 year horizon; and,

Based on the Growth Plan for the Greater Golden Horseshoe the Townships projected population forecast for 2031 is 56,000. The municipality will begin the review of their official plan in the upcoming months.

Over the past 10 years, the Town has issued an avg. of 350 building permits/year, however in the last 5 years the average was 460.

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

Standard Sewer Use by-law

Simcoe County Septage & Landfill Leachate Feasibility Study
City of Orillia February 23rd 2016

Dear Mr.Schell,

The following document is summary of information from the February 3rd meeting between the City of Orillia, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information package provided. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

The Orillia WWTP has a rated capacity of 27,300 cu.m/day and discharges to Lake Simcoe.

Effluent Limits		
Parameter	***Concentration Limit Objective (mg/L)***	***Concentration Limit Compliance (mg/L)***
$CBOD_5$	10	15
TSS	15	15
TP	0.3	0.3
pH	6.5-8.5	6.0-9.5

The Lake Simcoe Phosphorus Reduction strategy limits the phosphorus in the effluent to an annual average of 0.1 mg/L.

***2.* Confirmation of the number of septic systems and landfills in the municipality;**

275 Total Systems (Residential), 2 Commercial, 2 Industrial
Most located on east side of Lake Couchiching

***3.* Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

In 2015 Orillia WWTP accepted 18,598 cu.m of septage from several haulers and municipalities. The WWTP also accepts leachate but it is separated from the septage.

***4*. Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

The Orillia WWTP Discharges to an outlet channel which joins Ben's Ditch stormwater channel and discharges to Lake Simcoe.

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

Orillia's current costs are approximately $6 million per year, including capital expenditure. Costs are recovered through the City's water and sewer rates. Projected needs are addressed through the City's water and wastewater reserve.

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

The James St pumping station has a receiving tank which can handle 90cu.m/hr. The septage receiving system is automated and the hauler can control the entire procedure by use of a swipe card and monitor the flow. The septage is diluted immediately at the pumping station with the other incoming sewer influent and directed to the WWTP.

Haulers carry an ECA for disposal of WWTP sludge.

7. Cost charged to waste haulers to accept septage or leachate;

Orillia WWTP charges $30 per cu.m and received a total of $582,754 from 2014 for septage receiving and treatment. In 2015 the total increased to $607,546.

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

The City is seeking to establish an Equalization Tank in order to be able to accept more septage.

Tertiary Treatment to be added to WWTP for Phosphorous Compliance due to the Lake Simcoe Protection Plan, Aqua disc filters (996 kg/y, TP <0.1 mg/L).

9. **Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

At the current time the Orillia WWTP has 4,736 cu.m/d of uncommitted reserve capacity. This was evaluated on an annual basis usage. The capacity likely won't be surpassed before 2031.

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

2012 Wastewater System Master Plan Update- Septage

Study being completed in 2016 year re: Equalization Tank requirements for larger acceptance of septage (i.e. Burls Creek Campground/other events)

11. Municipal population projections and annual growth information for the 20 year horizon; and,

Orillia projects a population of around 41,000 by 2031 and 46,000 by 2041. All new development will be serviced and connected to the Municipal System.

No concrete plan to implement program to connect existing septic systems

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

Sewer Discharge By-law

No Land Application

Municipal Act / Local Improvement - if sewer line available, monthly fee charged, no consumption fee for Sewage

Most septics have been inspected in accordance with Sourcewater Protection - Council Report by CBO In December 2011 re: SWP

Simcoe County Septage & Landfill Leachate Feasibility Study
Township of Oro-Medonte February 23rd 2016

Dear Mr.Ball,

The following document is summary of information from the January 22nd meeting between Oro-Medonte, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information provided after the meeting. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

Oro has no municipally owned WWTP within its limits. There are 2 privately owned WWTP's, 1 at Horseshoe Valley (Skyline) and the other at Big Cedar Estates Trailer Park (lagoon system with spray program).

***2.* Confirmation of the number of septic systems and landfills in the municipality;**

Township Estimated 7800-8000 septic systems within the municipality.

***3.* Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

Landfill located in Oro is owned and operated by Simcoe County.
No information regarding amount of septage generated, but it is likely the septage is hauled to midland, Orillia, and other surrounding municipalities.
No knowledge of land applications within Oro-Medonte and thus it is assumes haulers take Septage outside municipal boundaries.

***4*. Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

N/A

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

N/A

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

N/A

7. Cost charged to waste haulers to accept septage or leachate;

N/A

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

N/A

9. **Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

N/A

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

Horseshoe EA (ongoing). Some of septic, such as horseshoe and craighurst will connect to that system

Edgar will be building a plant and asking municipality to operate and maintain

11. Municipal population projections and annual growth information for the 20 year horizon; and,

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

CBO is currently doing septic inspections but has no current plans as far as de-commissioning the systems posing a danger to source water protection.

No by-laws

Simcoe County Septage & Landfill Leachate Feasibility Study
Town of Penetanguishene February 23rd 2016

Dear Mr. Murray,

The following document is summary of information from the January 22nd meeting between the Town of Penetang, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information provided after the meeting. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

Phillip H Jones WWTP (Main St. WWTP)

Main St WWTP has a rated capacity of 5,250 cu.m/d and operated at 82% of its rated capacity in 2014. The treatment plant services residential and all industrial and commercial flows (except super jail→ fox st). The WWTP is currently undergoing upgrades including a new headworks, new UV disinfection systems and new auto-thermal aerobic digestion.

Effluent Limits		
Parameter	*Objective Concentration (mg/L)*	*Compliance Concentration (mg/L)*
$cBOD_5$	*5*	*13*
TSS	*5*	*13*
TP	*0.1*	*0.13*
NH_3	*10*	*-*
pH	*6.0-9.5*	*-*

Fox St WWTP

Fox St WWTP has a rated capacity of 1,500 cu.m/day. The plant uses contact stabilization/ modified extended aeration with tertiary treatment.

Effluent Limits		
Parameter	*Objective Concentration (mg/L)*	*Compliance Concentration (mg/L)*
$cBOD_5$	*5*	*15*
TSS	*5*	*15*
TP	*0.1*	*0.2 (Monthly avg.)* *0.15 (annual avg.)*
NH_3	*10*	*-*
pH	*6.0-9.5*	*-*

2. **Confirmation of the number of septic systems and landfills in the municipality;**

Penetang has approx. 500-700 septic systems. Generally located east side of fuller near the bay, and Champlain road area. Marina waste produced by the 5 marinas located in the Harbour.

3. **Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

Currently doesn't service septage or leachate. It is currently estimated that the plant is operating at 83% or higher capacity and as such, the treatment plant is operating above typical design guideline values for MLSS and secondary clarifier SLR. The liquid treatment train does not have capacity to accept additional high strength septage.

Estimated quantities produced each year (XCG, R.J Burnside PIC)

Source	Annual Quantity	Daily Quantity
Holding Tank	272.8 cu.m/yr	1.5 cu.m/day
Marina	421.6 cu.m/yr	2.3 cu.m/day
Septage	554.2 cu.m/yr	3.1 cu.m/day
Portable Toilet	62.7 cu.m/yr	0.4 cu.m/day

4. **Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

Both WWTP discharge effluent to Georgian Bay (Penetang Harbour)

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

Town of Penetang has a budget of 2.1 million for 2015 regarding Wastewater services.

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

N/A

7. Cost charged to waste haulers to accept septage or leachate;

N/A

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

The Main St WWTP is currently undergoing upgrades but doesn't not take into account Septage receiving. Additional preliminary screening devices would be required (i.e. pre-treatment)

9. **Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

Main St plant has uncommitted capacity of 1,035 cu.m/d
Fox St has uncommitted capacity of 426cu.m/day
Penetang would require the capacity for the 2031 projects but there is no draft plan for the capacity as of right now.

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

Management of Hauled Sewage Class EA (2015)

11. Municipal population projections and annual growth information for the 20 year horizon; and,

Simcoe county allocated a population growth of 2,600 people between 2006-2031, which would bring the population from 9,700 (2006) to approximately 12,300 (2031). The 2008 growth management study conducted by Hemson Consulting Ltd has similar projection of 3,050 person increase for the same period.

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

Standard Sewer use by law

Simcoe County Septage & Landfill Leachate Feasibility Study
The Chippewas of Rama First Nation February 23rd 2016

Dear Mr. Barber,

The following document is summary of information from the February 1st meeting between The Chippewas of Rama First Nation, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information package provided. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

The rated capacity for the Rama Wastewater Treatment plant 2,100 cubic meters. All septage and leachate collected within the Band territory is blended into the wastewater stream for the treatment plant.

***2.* Confirmation of the number of septic systems and landfills in the municipality;**

The number of private systems in Rama is 264 (majority of systems are holding tanks)

***3.* Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

Total leachate from the Rama Landfill in 2014 was 3,052 cubic Meters.

Total hauled received at the Rama WWTP for 2014 was 4,535 cubic meters.

***4*. Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

The plant consists of two trains of Sequential Batch Reactors with an aerated sludge disposal system and an ultra violet treatment system for the effluent. The treated effluent is discharged subsurface.

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

The 2014 Wastewater Treatment budget was $1,381,000 which included treating sewage from the community, leachate and septage. The percentage of leachate flow was 0.80 percent, and the percentage of septage flow was 1.19 percent.
Engineering has been undertaken to expand the WWTP in the future when additional capacity is required.

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

All septage and leachate is streamed in to the WWTP at Rama. The plant consists of two trains of Sequential Batch Reactors with an aerated sludge disposal system and an ultra violet treatment system for the effluent.

Rama hauls its own septage ($50 to its own residents to pump septic tanks) and delivers to its own WWTP

Rama has own landfill and pumps leachate 3 times a week from landfill.

Rama could possibly be interested in accepting additional septage for increase revenue.

7. Cost charged to waste haulers to accept septage or leachate;

The Rama WWTP does not accept septage or leachate outside the Rama boundaries

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

There are no improvements required to treat leachate or septage at the present time or for the foreseeable future

9. **Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

The current remaining capacity of the Rama WWTP is greater than 45 percent

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

There have not been any Class Environmental Assessment in the period since 2010 and none are anticipated at this time.

11. Municipal population projections and annual growth information for the 20 year horizon; and,

The current population of the Rama area is 715. It is anticipated there w

Projected a 5 percent growth each year in the population over the next 20 years

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

There are existing by-laws pertaining to the treatment of leachate and septage at the Rama WWTP. There is no Sewer Use By-law at this time

Simcoe County Septage & Landfill Leachate Feasibility Study
Township of Ramara February 23rd 2016

Dear Mr. Stephen,

The following document is summary of information from the January 29th meeting between the Township of Ramara, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information package provided. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

Lagoon City WWTP

The Lagoon City WWTP has a rated capacity of 2,273 cu.d/day and outlets to a wetland which ultimately flows to Lake Simcoe. In 2014 the plant was operating at 72% of its rated capacity which was a 20% increase from the flows in 2013.

Effluent Limits		
Parameter	***Concentration Limit Objective (mg/L)***	***Concentration Limit Compliance (mg/L)***
$CBOD_5$	8	10
TSS	12	15
TP	0.15	0.3
pH	6.0-9.5	

Bayshore Village WWTP

WWTP has a rated capacity of 400 cu.m/day. The plant is a lagoon type facility and outlets subsurface to the groundwater.

***2.* Confirmation of the number of septic systems and landfills in the municipality;**

There are approximately 4,426 private septic systems in Ramara.

***3.* Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

The Lagoon city plant receives some septage from haulage truck to a flow splitter box (234 cu.m/year avg.). The septage is then conveyed to the holding tanks and pumped into the grit channels with the other influent. The septage volume pumped in is manually controlled and does not exceed 5% of the ADF.

Bayshore Village WWTP does not treat septage.

***4*. Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

Lagoon City WWTP discharges to a wetland which drains to Lake Simcoe.

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

Ramara has adopted a cost recovery model for septage treatment where costs incurred for treatment and disposal are offset by incoming revenue charged from waste haulers (not for profit system). The estimated costs associated with septage treatment are around $6,000/year.

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);
7. Cost charged to waste haulers to accept septage or leachate;

$90/1000 gallons or $25/cu.m

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

There are currently no plans in place up upgrade Lagoon City TP for increased septage receiving.

***9.* Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

The current uncommitted reserve capacity at the Lagoon City WWTP is 780cu.m/d

The Bayshore Village Treatment facility has a reserve capacity of 37 cu.m/day.

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

A Class EA for the Bayshore Village Treatment Facility is currently underway however this are no expected plans to expand capacity of the sewage works or begin accepting septage.

11. Municipal population projections and annual growth information for the 20 year horizon; and,

Simcoe County Official Plan projects a population increase from 9,275 in 2011 to 13,000 in 2031.

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

Standard sewer use by law

Sewer and Water works connection by-law

Sump pump discharge method pre sale property inspections by law.

Dear Ms. Smit,

The following document is summary of information from the January 21st meeting between Severn Township, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information package provided. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

Westshore WWTP

Rated capacity of 1,390 cu.m/day with a Class EA underway to increase the plant overall capacity by 50%.

Effluent Limits	
Parameter	*Concentration (mg/L)*
$CBOD_5$	*10*
TSS	*10*
TP	*0.15*
NH_3	*3.0 (May-Nov)* *7.0 (Dec-Apr)*

Coldwater WWTP

Rated capacity of 921 cu.m/d

Effluent Limits	
Parameter	*Concentration (mg/L)*
$CBOD_5$	*10*
TSS	*10*
TP	*0.3*
NH_3	*1.0 (May15-Oct15)* *3.0 (Oct16-May14)*

Washago

Rated Capacity for the Two cell Lagoon system is 227.5 cu.m/d over 180 days. Effluent quality is monitored before, during and after treatment to verify compliance. Only Cell No.1 is permitted to discharge into the Green River while Cell No.2 is utilized for retention and storage of incoming sewage.

Effluent Limits		
Parameter	*Objective Concentration (mg/L)*	*Compliance Concentration (mg/L)*
BOD_5	*15*	*25*
TSS	*20*	*25*
TP	*1.0*	*1*

***2* Confirmation of the number of septic systems and landfills in the municipality;**

5,200 septic systems estimated, including seasonal and permanent systems - Growth Study (Planning) notes permanent vs. seasonal population (as of 2011), approx. 70/30 permanent to seasonal ratio. Growth Study projects a permanent population of 16,300 and seasonal population of 6,855.

***3.* Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

No septage taken currently within Severn, most discharge goes to Orillia via Haulers

***4*. Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

3 WWTP's, all Surface Discharge
Westshore WWTP discharges to Lake Couchiching
Coldwater WWTP discharges to Coldwater River
Washago (Lagoon only, seasonal discharge) - Severn River
Some Private Systems - Silver Creek Trailer Park (Lagoon, recently upgraded), Orillia Square Mall (Small Pumphouse with discharge to swamp), Various other small private Systems (Trailer Parks)

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

Flat rate charged across Township for wastewater treatment and disposal - no septage fees because no septage accepted

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

Not Applicable

7. Cost charged to waste haulers to accept septage or leachate;

Not Applicable

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

Pre-EA completed for Westshore WWTP - looking at 5 years for expansion including EA time
The Municipality is not anticipating looking at septage as an option for any future plant expansions at this time. Inclusion of septage was investigated in the past but daily flows are not sufficient to provide adequate dilution.

9. **Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

Washago does not have reserve capacity.

Westshore has growth proposed and is in process of starting expansion EA processes etc.

Westshore WWTP is operating at ~50% capacity, however remaining capacity has been allocated to future development (EA process is development driven)

Coldwater is at 70-80% capacity - most of whats left is allocated.

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

Westshore in process of starting EA for expansion (50% capacity upgrade), developer driven

11. Municipal population projections and annual growth information for the 20 year horizon; and,

Growth Study projects a permanent population of 16,300 and seasonal population of 6,855 for a total 2031 population of 23,155

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

No source water protection issues associated with Septic systems (other than Coldwater WWTP)

If on septic in a serviced area with connection available, when home changes owners they must connect

Simcoe County Septage & Landfill Leachate Feasibility Study
Township of Springwater March 1st 2016

Dear Mr. Archer,

The following document is summary of information from the January 21st meeting between Township of Springwater, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information provided after the meeting. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

Elmvale WWTP

Rated capacity of 1,800 cu.m/day and had a 2014 average daily flow of 1,156 cu.m/d (~64% of capacity)

Effluent Limits		
Parameter	***Objective Concentration (mg/L) annual or monthly conc.***	***Compliance Concentration (mg/L)***
$CBOD_5$	-	10.0
TSS	-	5.0
TP	0.1	0.13 (annual avg.) 0.17 (monthly avg.)
pH	6.5-8.5	6.0-9.5

Snow Valley Lowlands WWTP (Royal Oakes)

Rated Capacity for the Snow Valley Lowlands WWTP is 260 cu.m/d.

Rated capacity of 130 cu.m/d (four non-compliance events in 2014, where Total Nitrogen and loading limits were exceeded in March and April, $CBOD_5$ exceeded in May and total nitrogen for year of 2014 was exceeded.

Effluent Limits		
Parameter	***Objective Concentration (mg/L)***	***Compliance Concentration (mg/L)***
$CBOD_5$	12	15
TSS	12	15
TP	0.7	1.0
$NH_3 + NO_3$	-	7.0

Snow Valley Highlands WWTP

Rated Capacity for the Snow Valley WWTP is 180 cu.m/d. The plant averaged 40% operating capacity in 2014.

Effluent Limits		
Parameter	***Objective Concentration (mg/L)***	***Compliance Concentration (mg/L)***
$CBOD_5$	12	15
TSS	12	15
TP	-	-
Nitrates	5.6	7.0

Snow Valley Lowlands WWTP

Rated Capacity for the Snow Valley Lowlands WWTP is 260 cu.m/d.

There are multiple private systems located in Springwater Township namely, Wasaga Pines, Snow Valley Resort and various campgrounds

2 **Confirmation of the number of septic systems and landfills in the municipality;**

Simcoe County Visioning Strategy estimates approximately 5,700 septic systems in the Township. The Township indicates the estimate appears to be realistic and comprised primarily of Class 4 sewage system. Class 2, 3 and 5 systems are also prevalent around Orr Lake

3. **Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

No septage taken currently Springwater WWTP's. Haulers likely land apply or take septage to midland, Orillia, Collingwood or other outside municipality. Disposal method is not generally known.

4. **Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

Elmvale WWTP uses surface discharge to Wye River and biosolids are hauled and land applied to fields by ROHES under NASM plans.
Snow Valley WWTP has subsurface discharge
Snow Valley Lowlands also has subsurface discharge
Stone Manor is not currently online.

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

Flat rates (table below) charged across Township for wastewater treatment and disposal - no septage fees because no septage accepted

0 to 15 m3/unit	$1.883 per m3/month
16 to 30 m3/unit	$1.978 per m3/month
31 to 45 m3/unit	$2.471 per m3/month
Over 45 m3/unit	$3.460 per m3/month

Commercial

Based on consumption during previous one (1) month period, the following rate shall apply:
Fixed rate: $35.67 per meter per month

Consumption Charge:
$1.883 per m3/month

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

Not Applicable

7. Cost charged to waste haulers to accept septage or leachate;

Not Applicable

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

Some discussion about Tiny TWP potentially paying for upgrades to provide treatment.

9. **Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

Elmvale has some infiltration issues and is near rated capacity / committed to development (first come first served).

Based on 2014 Annual Report Elmvale WWTP is running at 64% of rated capacity and current un-committed capacity is around 780m3/d (~44% of total capacity), after ultimate development, reserve capacity is 255m3/d (~14% of total capacity)

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

Midhurst - Phosphorous loading/drainage plan provided Dec 2015, ongoing EA process (Master Plan) - PIC's in fall of 2016. There is no intention for WWTP to handle septage

11. Municipal population projections and annual growth information for the 20 year horizon; and,

Projected population of 24,000-26,500 by 2031. Growth based on Provincial allocation and Simcoe County Official Plan

Anten Mills development - private septics & wells (78 Units)

Spring Lakes - private communal wells potentially (800 Units)

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

Standard Township Sewer use By-Law (2015-009)

Septic System Re-Inspection Program By-Law 2015-034

98 properties are identified in the Source Water Plan with Septic system. An additional 299 properties are being included in the septic re-inspection program around Orr Lake in addition to approx. 60 properties with private treatment units throughout the Township.

Simcoe County Septage & Landfill Leachate Feasibility Study
Tay Township March 28, 2016

Dear Mr. Dance,

The following document is summary of information from the February 1st meeting between Tay Township, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information package provided. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

Victoria Harbour WWTP

The Victoria Harbour WWTP has a rated capacity of 2,364 cu.m/day. The treatment plant discharges to Sturgeon Bay. The WWTP has a brand new ECA amendment which was issued Feb 1 2016. The headworks and filters are scheduled for an upgrade as well as replacing the chlorination and disinfection stage.

Effluent Limits		
Parameter	***Concentration Limit Objective (mg/L)***	***Concentration Limit Compliance (mg/L)***
$CBOD_5$	10	15
TSS	10	15
TP	0.3	0.5
NH_3	8.0 (May 1- Oct 31) 10.0 (Nov 1- Apr 30)	-
pH	7.0-9.0	

Port McNicoll WWTP

Port McNicoll WWTP has a rated capacity of 1,918 cu.m/day. The plant is a MBR type facility and the evaluation of the capacity of the plant is ongoing. The plant was recently upgraded however the C of A was not changed. Port McNicoll has a limited septage receiving ability with a 3 cu.m tank.

Effluent Limits		
Parameter	***Concentration Limit Objective (mg/L)***	***Concentration Limit Compliance (mg/L)***
$CBOD_5$	7.0	15
TSS	7.0	15
TP	0.15	0.25
NH_3	2.0 (May 1-Oct 15)	5.0 (May 1- Oct 15) 15 (Sept 1- May 31)
pH	6.0-9.5	

2. **Confirmation of the number of septic systems and landfills in the municipality;**

There are approximately 3,000 private septic systems with the potential for 300 additional septic lots.

3. **Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

Currently no septage accepted in Tay. The Township was having problems with haulers (where they were coming from) rocks and large objects being fed into the Port McNicoll WWTP. Peter Dance explained there was approved room in the new budget to implement a rock trap so the plant could potentially start to accept septage again.

4. **Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

Victoria Harbour Treatment facility has surface discharge to Sturgeon Bay

Port McNicoll Treatment facility has surface discharge to Hogg Bay (Severn Sound)

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

Approved budget of $70,000 (see below)

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

Septage receiving was discontinued at the Township of Tay site due to damage to the receiver system by septage load contents. In late 2015 Tay Township Council approved $70,000.00 to upgrade the septage receiver system at the Port McNicoll Wastewater Treatment Plant site. A request for proposals will be sent out in the spring for the supply and installation of the necessary equipment for that upgrade. The work should be in 2016 and the septage limit will be determined when the system is back in operation. Leachate processing capabilities has not been included in the upgrade.

Port McNicoll does have a small receiving tank ~3 cu.m

7. Cost charged to waste haulers to accept septage or leachate;

Currently doesn't accept septage but would set costs similar to other municipalities

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

Adding a rock trap for large objects, possible grinder for a sort of a 'pre-treatment' before the septage enters the main process.

9. **Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

Port McNicoll-WWTP ~ 23% reserve capacity

Victoria Harbour WWTP - 0%

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

NA

11. Municipal population projections and annual growth information for the 20 year horizon; and,

10,000 current population and projected 11,400 as of 2031 (most expansion (95%) will be urban based and conected to municipal system)

No major plans to take residents off Septic systems, some current development (Grandview Beach, Paradise Point) will take ~300 septic systems (and holding tanks) offline and also add 80 more to the municipal system.

In next 10 years Tay is planning to take water and possibly sewage pipes to St Marie among the Hurons + Wye Marsh)

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

possible sewer use by-law

Remedial action plan for Severn Sound-- Tay has been delisted

Tay only holds standards for when a system was implemented (i.e. if system from 1970 fails, the owner is only required to replace the system to the same standards as the one set in 1970)

Simcoe County Septage & Landfill Leachate Feasibility Study
Tiny Township February 23rd 2016

Dear Mr. McNulty,

The following document is summary of information from the February 1st meeting between R.J Burnside (on behalf of Tiny Township), Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information package provided. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

Tiny Township does not have any sewage treatment systems in the Township, entire Township is on Septic Systems.

***2.* Confirmation of the number of septic systems and landfills in the municipality;**

9,500 Septic systems, of those 9,500 ~10% (950) are estimated to be Class 5 holding tanks.
The remaining 90% are Class 4 Septic Systems

***3.* Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

Existing Septage- 8,200 cu.m/year

Future Projections-- 10,225 cu.m/year

Holding Tank Waste-- 25,650 cu.m/year

Future Holding Tank Projections- 27,000 cu.m/year

***4*. Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

Approximately 90% of septage generated in Tiny is disposed of through land application at the two major application sites within the Township, the remaining 10% is hauled to other WWTPs in nearby municipalities.

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

NA

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

NA

7. Cost charged to waste haulers to accept septage or leachate;

NA

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

NA

***9.* Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

NA

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

Septage Management Class EA is ongoing (RJ Burnside) EA was started in 2013, Burnside completed Phases 1-2. In 2013 work was undertaken to advance Phase 3 of the Class EA study (the evaluation of alternative technologies + location) but in the fall of 2013 the EA was placed on hold. Where it was put to the County Council for SC to help with a solution. R.J Burnside is now re-visiting phase 2 of the EA

11. Municipal population projections and annual growth information for the 20 year horizon; and,

Future projections to 13,900 in 2031

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

By-Law associated with septic re-inspection programs

Notes:

Mr. McNulty stated that EA stemmed from political pressure from neighbours beside the septage land application locations (not the government policy change).

Tiny wanted a long-term sustainable solution, not one where septage could just be hauled to a different municipality.

When the file was picked up again after the new council in 2014, Tiny re-visited Phase 2 of the EA to determine a possible solution that wasn't 'made in Tiny'.

RJ Burnside is reporting back to Tiny on the 29th of February on current findings, where some more direction will be clear for the study.

Simcoe County Septage & Landfill Leachate Feasibility Study
Township of Wasaga Beach March 1st 2016

Dear Mr. Lalonde,

The following document is summary of information from the January 29th meeting between Wasaga Beach, Simcoe County and Greenland International Consulting Ltd. The information presented herein has been recorded during the meeting as well as the information package provided. Please review and confirm that the information presented here is accurate to the best of your knowledge.

***1*. Present Rated Capacity and Effluent Quality Criteria and Receiver for each of the wastewater treatment systems within your municipality including any Ministry of the Environment Climate Change (MOECC) Environmental Compliance Approvals (formerly Certificate of Approval) Permit Information (ECAs and/or CofAs) and annual reports (2012-2015) with the above information included;**

Wasaga WWTP has a rated capacity of 15,433 cu.m/day. In 2014 the treatment plant had an ADF of 5,686 cu.m which is 36% of the plants operating capacity.

Effluent Limits		
Parameter	***Concentration Limit Objective (mg/L)***	***Concentration Limit Compliance (mg/L)***
$CBOD_5$	5	10
TSS	5	10
TP	0.15	0.5
NH_3	1.0 (May 1- Nov 30) 4.0 (Dec 1- Apr 30)	1.1 (May 1- Nov 30) 5.0 (Dec 1- Apr 30)
pH	6.5-8.5	

***2*. Confirmation of the number of septic systems and landfills in the municipality;**

The Town of Wasaga Beach has estimated 927 septic systems active within the boundaries. This estimate is currently under review by the building department.

***3*. Please provide current septage and leachate quantities generated in the Municipality as well as the quantity accepted at Municipal wastewater treatment facilities, as well as a future projected quantity expected to be generated/treated in the Municipality (i.e. Historical (2012-2014) Average Daily Flow (ADF) Rates and percentage used for each treatment plant in the Municipality);**

Wasaga beach only receives septage from inside the municipality. Has accepted an average of 1,070 cu.m/ year since 2012.

Wasaga Beach has one (1) landfill site (Site 15) within the limits located at Part Lot 21, Concession 9. The landfill generated 5,086 cu.m of leachate in 2015 and an average of 7,757 cu.m/year since 2010.

***4*. Please provide the municipalities current disposal methods for each treatment plant in the municipality;**

WWTP effluent has surface discharge to the Nottawasaga River.

Bio solids are land applied

5. Please present the municipalities current costs for wastewater disposal and future plans to meet projected needs;

Wasaga Beach operating costs are currently under review

6. Please provide a description of septage and/or leachate handling/treatment system and municipal treatment processes including unit process description along with current and future limit for septage or leachate (if any);

Wasaga WWTP does not have special Septage handling, the haulers hook up directly to the inlet building and discharge into the inlet system.

Wasaga Beach does not accept Leachate at the WWTP.

7. Cost charged to waste haulers to accept septage or leachate;

1-9 cu.m --$25
10-18cu.m--$30
19-27cu.m--$35

8. Improvements required to current wastewater treatment facilities to accept septage and/or leachate if any or known;

N/A- Wasaga only accepts septage from inside own municipality.
No Leachate accepted at WWTP.

9. **Current uncommitted reserve capacity (based on MOECC Procedure D-5-1 Calculation provided by the municipality);**

Currently 36% operational capacity but over 90% (likely higher as new developments has been approved) is currently committed to the WWTP. This includes a commitment of 5,000 cu.m/d of capacity reserved for the treatment of sewage from Clearview Township, specifically Stayer area.

Mr. Lalonde explained that the reason for only accepting septage from inside the municipality is mainly due to the location of the WWTP as it is in a residential area where traffic, road allowance and odour can become major issues if many hauling trucks are trying to access the plant at the same time.

At a staff level, Wasaga Beach was in discussion with Tiny Township regarding a technical review of alternatives if any. A study was completed to determine the extent of Wasaga Beach's possible involvement in the project and the study is currently with Tiny Township for review, however Tiny is awaiting the results of the County Study.

10. Any relevant on-going or recently completed Class Environmental Assessments (after 2010);

N/A

11. Municipal population projections and annual growth information for the 20 year horizon; and,

County of Simcoe has a projected 2031 population of 27,000 people, an increase of 8,957 people from the 2011 census.

12. Lastly, please include any relevant legislation in the Municipality (e.g. by-laws) regarding wastewater treatment, septage and leachate handling, treatment and disposal, etc.

Standard Sewer Use by-law

No new development is permitted without municipal connections within Wasaga Beach's existing settlement areas that have been serviced with sewer and water. (I.e. must connect to municipal systems). In areas where municipal services do not exist, well and septic systems may be permitted in accordance with the Ontario Building Code on a lot by lot basis. New residential developments require full service extensions to service development.

APPENDIX C

Assumptions for Cost Estimates

DILLON CONSULTING

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The probable cost estimates presented in this document are based upon the following information and assumptions:

- The cost of acquiring land to accommodate new infrastructure has not been included.
- The cost of a robust hauled waste receiving station was included for each facility identified in each alternative to allow incorporation of best management practices as hauled waste receiving intensity increases.
    - For facilities that have relatively new hauled waste receiving infrastructure such as the Lakeshore WWTP, the station may not be needed; however the reduction in capital cost is anticipated to remain within the minus 40% lower bound of the cost range presented.
    - The cost of a septage equalization tank was included for facilities where existing infrastructure was not present, or was not sufficient to accommodate new hauled waste loading. New tankage (where required) was sized at two times the anticipated daily hauled waste loading following the MOECC design guidelines
- Hauled waste requiring management was allocated to treatment facilities in each alternative as a function of rated capacity (i.e. A WWTP representing 10% of the rated capacity in the alternative was allocated 10% of the hauled waste)
    - The need for biological treatment upgrades was determined based upon the amount of hauled waste allocated to each facility, less the uncommitted hydraulic reserve capacity presented for the end of the planning period (2031) at each WWTP.
    - Conventional activated sludge process capacity expansions were sized based upon the following parameters:
        - Organic mass loading to the facility, considering the blended strength of the combined portable toilet, holding tank and septage sources;
        - A food to microorganism (F:M) ratio of 0.1;
        - A waste sludge yield of 0.75kg per kg BOD_5 hauled waste mass load
        - MLVSS concentration of 3,000 mg/L; and
        - Oxygen demand of 1kg O_2/kg BOD_5, 4.6 kg O_2/kg TKN, with aeration occurring in a 5m deep tank equipped with fine-bubble diffusers.
- Given the relatively low volume and high strength hauled waste being managed, capital upgrades to solids separation unit processes such as clarifiers, and tertiary treatment such as filtration for TP were not included in the cost estimates. It was assumed that the additional hydraulic load can be accommodated by existing infrastructure in order to maintain effluent quality.
- Process equipment associated with upgrades has been assumed to include:
    - Packaged hauled waste receiving equipment enclosed in a building that includes:
        - Access/authentication terminals for septage haulers to access and deliver waste independently;
        - Piped connections to receive waste from septage haulers while minimizing the potential for odour release;
        - Metering of septage delivered;
        - Appropriate containment of the receiving area;
        - Rock trap and coarse screening to remove large foreign objects from waste material and grinders to break down larger solids, and;
        - Fine screens to remove solids and grit.

- New tankage (where required) was sized at two times the anticipated daily hauled waste loading following the MOECC design guidelines, and mixing was included.
- Biological process equipment upgrades where anticipated included:
    - Return activated sludge pumps;
    - Aeration tankage;
    - Aeration diffusers;
    - Aeration blowers; and
    - Flow control valves.
- Biosolids management was considered where biological process upgrades are anticipated, using the means of sludge digestion (aerobic or anaerobic) currently in place on the site. This may include:
    - Digester tanks;
    - Covers (for anaerobic digestion);
    - Aeration diffusers and blowers (common to biological process for aerobic digestion);
    - Mixers; and
    - Heat exchangers (for anaerobic digestion).
- An allowance for activated carbon canisters to control odours from receiving and equalization.

- The centralized facility to treat hauled waste to produce category 3 NASM cost estimate was developed based upon an alkaline stabilization process using lime to maintain pH between 12 and 12.5 for a period of 30 minutes including the following infrastructure:
    - A robust receiving station the same as described for WWTPs;
    - Hauled waste transfer pumps;
    - Raw hauled waste storage;
    - Storage tank mixers;
    - 2 alkaline chemical storage silos (lime silos);
    - Chemical metering equipment;
    - Reaction tank (30 min HRT);
    - Curing tank (1 day HRT);
    - Curing tank mixing;
    - Product storage lagoon with approximately 200 days of capacity to account for the restricted period for land application; and
    - Product storage lagoon mixers.

- Buildings were included as \$1500 / m^3 and the approximate area required for equipment housed indoors.

- For each alternative the following allowances were included:
    - Equipment cost mark-up of 20% for installation, 15% subcontractor mark-up and 5% general contractor profit mark-up;
    - Yard and process piping was incorporated as 15% of equipment;
    - Integration with plant instrumentation and control was included as 15% of equipment;
    - Electrical power distribution was included as 10% of equipment;
    - Building mechanical was included as 15% of equipment;
    - Contractor Mobilization and Demobilization are included as 3% of the total equipment and construction allowances;

    - Insurance and Bonding included as 3.5% of the total; and
    - Start-up included as 1% of the total.

- Contingency was included as 20% of the total estimated cost.
- A total probable cost was estimated for each alternative, and the + / - 40 % range associated is presented in the text of the report.