



2021 Annual Report

Griffith Waste Disposal Site (A412203)

**Township of Greater Madawaska
County of Renfrew, Ontario**

March 21, 2022

Greenview File: 102.21.011



13 Commerce Court
Bancroft, Ontario
613-332-0057
www.greenview-environmental.ca



Executive Summary

This report has been prepared to document the results of the 2021 environmental monitoring program for the Township of Greater Madawaska's Griffith Waste Disposal Site, located at 6 Finns Road, on part of Lots 4 and 5, Concession IV, in the geographic Township of Griffith, in the amalgamated Township of Greater Madawaska, in the County of Renfrew. The site is located approximately two kilometres south of the Hamlet of Griffith.

In 2021, the Griffith site operated as a waste and recycling transfer station approved to accept municipal waste and recycling for transfer from the Township of Greater Madawaska, in accordance with Environmental Compliance Approval A412203. The site currently consists of an approved fill area of 0.8 hectares within a total property area of 27.5 hectares. Closure activities at the Griffith site were completed in 2012.

The groundwater configuration at the site in 2021 was similar to historical interpretations, with the predominant direction of groundwater flow in the shallow overburden interpreted to flow to the northeast of the site.

Groundwater quality downgradient of the Griffith Waste Disposal Site was interpreted to be impacted from landfill-related activities, winter road maintenance of the transfer station, and by naturally-occurring conditions at select monitoring wells. Based on interpreted groundwater flow directions and documented groundwater quality results, attenuation was interpreted to be occurring with increased distance from the landfill. Monitoring well 96-9, located furthest downgradient of the site, was not interpreted to be significantly impacted by landfill-related activities. The existing monitoring well network was interpreted to be sufficient for monitoring groundwater quality at the Griffith Waste Disposal Site.

Monitoring wells 96-7D and 96-9, the most downgradient monitoring wells at the site, were used to determine Reasonable Use Concept and conformance with Guideline B-7 at the site. Since dissolved organic carbon and manganese concentrations decrease significantly between upgradient monitoring wells situated within the approved waste disposal area (91-2 and 91-4) and the downgradient monitors 96-7D and 96-9, it was extrapolated that dissolved organic carbon and manganese concentrations would meet Reasonable Use Concept criteria at the downgradient northern and eastern property boundaries. Additionally, 2021 manganese concentrations at downgradient monitoring well 96-7D was generally less concentrated than previous results from background surface water sampling location STN-1 and was less than the 75th percentile background concentration calculated from historical results from background surface water location STN-1, which indicates that high concentrations of manganese are naturally-occurring in the vicinity of the site. Downgradient monitoring wells 96-7D and 96-9 were not interpreted to be significantly impacted by landfill-related activities at the closest monitoring locations to the downgradient property boundary in 2021. The site was interpreted to meet the intent of Guideline B-7 at the downgradient northern and eastern property boundaries in 2021.

In general, and given that site closure was completed in 2012, groundwater quality results are interpreted to be generally stable and/or improving at the Griffith Waste Disposal Site.

With the inclusion of the 2021 results, surface water quality downstream of the Griffith site was not interpreted to be impacted from landfill-related activities.

Based on municipal records, approximately 5,769 vehicles visited the Griffith site in 2021, and accepted approximately 12,765 bags and 177 trailer-loads of municipal waste for transfer. Included in these totals were approximately 294 cubic metres of leaf and yard waste and 900 cubic metres of construction and demolition waste. Based on information supplied by the municipality, 85 tonnes of municipal waste were collected at the Griffith site in 2021 and transported for final disposal to the approved waste disposal facility of GFL in Moose Creek, Ontario.

Recycling tonnage records provided by the municipality indicated that 39 tonnes of Blue Box recyclables were collected from the Griffith Waste Disposal Site in 2021. Blue Box recyclable quantities contributing to this total included 17 tonnes of commingled containers, 17 tonnes of mixed fibres, and 5 tonnes of old corrugated cardboard. Approximately 2 tonnes of household organics were diverted at the Griffith site in 2021.

According to municipal records, 129 tonnes of scrap metal and 63 refrigerant appliances, 20 tonnes of waste electronic and electrical equipment, and 3,078 tires were diverted from the depots at the Norway Lake Waste Disposal Site, Mount St. Patrick Waste Disposal Site, and Griffith Waste Disposal Site. Given that landfilling ceased at the Griffith Waste Disposal Site in 2011 and closure of the waste mound was completed as of 2012, it is recommended that the Ontario Ministry of the Environment, Conservation, and Parks consider reductions in the scope of the groundwater monitoring program for future years. Recommendations for reductions in the scope of the groundwater monitoring program are included in Section 5.0 of this report.

Table of Contents

1.0	Introduction	1
1.1	Site Information	1
1.2	Background	1
1.3	Purpose and Scope	3
2.0	Site Description	4
2.1	Topography and Drainage	4
2.2	Hydrogeological Conditions	4
2.3	Land Use	4
2.4	Operational Setting	4
3.0	2021 Environmental Monitoring Program	6
3.1	Groundwater Monitoring	6
3.2	Surface Water Monitoring	7
3.3	Analytical Laboratory Accreditation	7
3.4	Landfill Gas Monitoring	7
3.5	Operational Monitoring	7
4.0	Environmental Monitoring Results	9
4.1	Groundwater Quality Assessment	9
4.1.1	Groundwater Configuration	9
4.1.2	Groundwater Quality	9
4.1.3	Reasonable Use Concept Assessment	13
4.1.4	Proposed Trigger Mechanism and Contingency Plan Assessment	15
4.2	Surface Water Quality Assessment	15
4.3	Operations Summary	18
4.3.1	Site Operations	18
4.3.2	Waste Disposal / Transfer Summary	20
4.3.3	Site Inspections and Maintenance	21
4.3.4	Complaints	21
4.3.5	Monitoring and Screening Checklist	21

5.0	Conclusions and Recommendations	22
6.0	Closing	25
7.0	References	26

List of Tables

Table 1	2021 Groundwater and Surface Water Monitoring Program
Table 2	Groundwater Monitoring Well and Surface Water Sampling Locations
Table 3	Groundwater Elevations
Table 4	Groundwater Quality
Table 5	Surface Water Quality

List of Figures

Figure 1	Regional Location Plan
Figure 2	Property Plan
Figure 3	Existing Site Conditions Plan
Figure 4	Surface Water Monitoring Location Plan
Figure 5	Environmental Monitoring Location Plan – Summer 2021

List of Appendices

Appendix A	Environmental Compliance Approval A412203 and Certificate of Requirement
Appendix B	Quarterly Inspection Logs
Appendix C	Borehole Logs
Appendix D	Field Sampling Records
Appendix E	Laboratory Certificates of Analysis
Appendix F	Monitoring and Screening Checklist
Appendix G	Statement of Service Conditions and Limitations

1.0 Introduction

1.1 Site Information

The Griffith Waste Disposal Site operates under Environmental Compliance Approval (ECA) A412203 issued on December 22, 1999, and the most recent amendment dated June 1, 2016 (Appendix A). The Griffith Waste Disposal Site is located on part of Lots 4 and 5, Concession IV, in the geographic Township of Griffith, in the amalgamated Township of Greater Madawaska (Township), in the County of Renfrew (Figures 1 and 2). The Universal Transverse Mercator (UTM) coordinates at the site entrance gate relative to the North American Datum (NAD83) are 327277.0 metres (m) East, 5012416.0 m North, in Zone 18T (Google Earth, 2013). The site is located approximately two (2) kilometres (km) west of the Hamlet of Griffith, and is accessed via Provincial Highway 41 (Figure 2).

The site currently consists of an approved fill area of 0.8 hectares (ha) within a total property area of 27.5 ha (Figure 2), which was acquired by the Township in 2002 from the Crown (Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry [MNDMNR]) for a contaminant attenuation zone (CAZ) at the site (Appendix A; Figure 2).

In 2010, the Township completed the construction of a solid waste and recycling transfer station at the Griffith site, consistent with the Township's long-term waste management plan. Currently, the Township transfers all regular municipal waste (i.e. bagged garbage) and Blue Box recycling received at the site to GFL Environmental Inc. (GFL) for disposal and processing, in Moose Creek, Ontario.

Final waste mound closure activities were completed at the Griffith site by the Township in 2011, in accordance with the ECA (Appendix A). Additional cover material was applied to the waste mound area in fall 2012 (Figure 3).

1.2 Background

In 2006, the Township submitted an application to amend the ECA for the Griffith site to recognize final closure design concepts, with supporting technical documentation entitled, *Closure Plan, Griffith Waste Disposal Site* (Closure Plan; SGS Lakefield Research Limited [SGS], 2006), which was outlined as a requirement in an Ontario Ministry of the Environment, Conservation, and Parks (MECP) Inspection Report, dated December 1, 2005. The Closure Plan (SGS, 2006) documented the requirements for closure, post-closure maintenance, and monitoring at the Griffith Waste Disposal Site; however, future waste management operations following closure of the landfill area of the Griffith site were not identified in the report.

To address future waste management operations, and given the direction of long-term waste planning in the Township which included the Griffith Waste Disposal Site being identified for the establishment and operation of a waste transfer station, an *Addendum to the Closure Plan* (Addendum) was submitted on June 29, 2007 (Greenview Environmental Management Limited [Greenview], 2007). The Addendum was submitted to the MECP Environmental Assessment and Approvals Branch (EAAB) to recognize the proposed future site operations, in conjunction with the final closure design concepts and activities to maintain service to ratepayers of the entire Township.

On June 3, 2008, an Amendment to the ECA (A412203) was issued by the MECP, recognizing the entire Township as the service area for the Griffith site, and approving the Closure Plan, recycling and transfer operations, and detailed material storage protocols (Appendix A).

In 2010, the Township completed construction of the new waste and recycling transfer station at the Griffith site, with operations commencing on May 19, 2010.

The Township commenced with final closure activities at the Griffith site in May 2011, and completed the application of final cover requirements by late summer 2011. Additional seeding of the final (vegetative) cover

at the site was completed in the spring and fall of 2012. The Griffith Waste Disposal Site is closed, in accordance with the ECA (Greenview, 2013).

The Township installed a new background groundwater monitoring well (MW12-12) in July 2012, to replace monitoring well 91-1 as the background monitor for the site. Monitoring well 91-1 was previously identified as having groundwater quality results consistent with road salt impacts, given its position downgradient of the asphalt-paved waste transfer station and documented groundwater quality following completion of the new transfer station. In addition, monitoring well 91-2 was extended based on recommendations detailed in the 2011 Annual Report (Greenview, 2012). All monitoring well work was completed by licensed drillers, in accordance with Ontario Regulation (O. Reg.) 903, as amended. However, by 2015 it was evident that the new background monitoring well MW12-12 was also impacted by road salt utilized for winter road maintenance of the transfer station and site access road (Table 4). Consistent with the recommendations of the 2015 Annual Report (Greenview, 2016), sampling of monitoring well MW12-12 was discontinued. Monitoring of well 91-1 was maintained, as it is part of the MECP-approved groundwater monitoring program for the site per the ECA (Appendix A). Further information is presented in Section 3.1 of this report.

On May 21, 2013, the Township submitted an application to amend the ECA of the Griffith site to increase the maximum storage volume of source separated organics and establish a leaf and yard waste management and burn area at the site. On October 11, 2013, the Township received approval from the MECP regarding the application to amend the ECA of the Griffith site with the receipt of the Amendment to the ECA (A412203, Appendix A).

On July 19, 2013, the Township received groundwater review comments of the 2012 Annual Report (Greenview, 2013) from the MECP Technical Support Section (TSS, Greenview, 2014). The groundwater review of the 2012 Annual Report noted that the Griffith site in 2012 was in compliance with MECP Guideline B-7, and requested that the Township propose a trigger mechanism and contingency plan for the site based on MECP Guideline B-7 to be included in the 2013 Annual Report. In accordance with the MECP TSS request, the proposed groundwater trigger mechanism and contingency plan was included in the 2013 Annual Report (Greenview, 2014) and is reviewed in Section 4.1.4 of this report.

On May 26, 2015, the Griffith Waste Disposal Site was inspected by the MECP Ottawa District Office, the results of which were provided to the Township in a *Non-Hazardous Waste Transfer Processing Inspection Report* (Inspection Report) dated July 6, 2015 (Greenview, 2016). On October 1, 2015, the Township submitted a *Proposed Compliance Action Plan* and schedule to the MECP to address the action items included in the Inspection Report (Greenview, 2016). Subsequent to the submission of the *Proposed Compliance Action Plan*, the Township prepared an application for an administrative amendment to the ECA along with supporting information (Greenview, 2016), in order to address action item #2 from the Inspection Report. Action item #2 required that all waste diversion activities occurring at the site be approved under the ECA; in the case of the Griffith Waste Disposal Site, it was required that approval for the diversion of construction and demolition (C&D) and bulky waste be included in the site's ECA. As part of the application, the Township requested that an expanded list of waste and recyclable materials be approved at the site for diversion purposes (Greenview, 2016).

On April 5, 2016, the MECP EAB issued a review letter to the Township's ECA application (Greenview, 2017). A response letter was provided to the MECP EAB on behalf of the Township by Greenview on April 28, 2016 (Greenview, 2017). In the letter, the Township provided responses to the MECP EAB's questions regarding the application and modified (reduced) the list of additional recyclable materials that had been requested for approval of acceptance at the Griffith site. Subsequent to additional discussions with the MECP EAB reviewer, the Township provided additional information to the MECP EAB regarding the ECA application electronically on May 5, 2016 (Greenview, 2017).

On June 1, 2016, the MECP EAB issued an Amendment to the ECA for the Griffith site which approved the changes to waste and recycling transfer operations at the Griffith site (Appendix A).

On February 14, 2018, the Township received MECP TSS surface water review comments to the 2016 Annual Report for the Griffith Waste Disposal Site dated February 12, 2018 (Greenview, 2018). The MECP TSS surface water review approved the reduction of the surface water monitoring program at the Griffith site to once per year, in summer, coinciding with the summer groundwater monitoring program.

On August 28, 2019, the Township received MECP TSS surface water review comments to the 2017 Annual Report for the Griffith Waste Disposal Site, dated August 19, 2019 (Greenview, 2020). No issues were noted, and no action items were required to be addressed by the Township based on the MECP TSS surface water review.

On October 16, 2019, the Township received an Inspection Report for the Griffith Waste Disposal Site dated October 9, 2019 and related to a site inspection on September 19, 2019 (Greenview, 2020). The Inspection Report required that the Township prepare an Action Plan in order to address the action items noted by the MECP. On November 26, 2019, the Township submitted an Action Plan to the MECP Ottawa District Office relative to the action items of the Inspection Report (Greenview, 2020). On December 3, 2019, the Township received confirmation and approval from the MECP Ottawa District Office regarding the Action Plan (Greenview, 2020). All action items were completed in accordance with the compliance dates identified in the Action Plan. In accordance with Action Plan, copies of the 2021 Quarterly Inspection Logs are included in Appendix B of this 2021 Annual Report.

A further request for confirmation of completion of the action items was received from the MECP dated February 6, 2020. As part of the response, the Township was required to submit photographs to the MECP in accordance with their request. The Township submitted their response to the MECP Ottawa District Office on February 14, 2020 including photographs, and the submission was approved by the MECP in electronic communication dated February 18, 2020 (Greenview, 2020).

At the time of preparation of this 2021 Annual Report, no communications from the MECP relative to the Griffith Waste Disposal Site were understood to have been received by the Township.

Greenview was retained by the Township to complete the 2021 environmental monitoring and reporting program at the Griffith Waste Disposal Site, in accordance with Condition 19 of the ECA (A412203).

1.3 Purpose and Scope

The purpose of this report is to provide an overview of the annual monitoring, environmental compliance, and operations at the Griffith Waste Disposal Site in accordance with Condition 19 of the ECA (A412203), including the following:

- Groundwater quality assessment and Reasonable Use Concept (RUC, MECP Guideline B-7) compliance (Section 4.1).
- Surface water quality assessment (Section 4.2)
- Site operational overview (Section 4.3).
- Conclusions and recommendations (Section 5.0).

2.0 Site Description

The following sections present a summary of the physical characteristics for the Griffith Waste Disposal Site. Locations of features described in this report are referenced to grid north.

2.1 Topography and Drainage

The Griffith Waste Disposal Site is located on a topographic high, with topography in the vicinity of the waste mound sloping generally towards the north and northeast, and from the vicinity of the site access gate the topography slopes gently to the southwest (Figure 3). Local relief in the area adjacent to the site is observed to slope to the north and northeast towards the Madawaska River (Figure 4). The Madawaska River is located approximately one (1) km north of the site and flows to the southeast.

A small creek, located approximately 200 metres (m) to the east of the site and which flows in a generally northeast direction towards the Madawaska River, is sampled as part of the surface water monitoring program at the site. The small creek intersects and flows under Highway 41 in the general vicinity of surface water location STN1 (Figure 4). The creek is sampled at surface water sampling location STN-1 (background), located near the outlet of the northern culvert underlying Highway 41, and at surface water station STN-4 which is located approximately 250 m downstream of STN-1 (Figure 4). A low-lying area exists, surrounded by cedar trees, between sampling locations STN-1 and STN-4 where bulrushes and tall grasses are the predominant vegetation. Sampling location STN-5 is located northeast of location STN-1, within a low-lying area of higher elevation than STN-1 and STN-4. Sampling location STN-5 is not located on the same watercourse as STN-1 and STN-4; however, during times of extensive precipitation and/or snow melt, surface water collects within the low area in the vicinity of STN-5 and can flow downhill towards the creek where STN-1 and STN-4 are located.

2.2 Hydrogeological Conditions

Overburden geology at the Griffith site is characterized typically by sand ranging in depth from 1 m to 4 m below ground surface, with an underlying bedrock unit comprised of gneiss and marble. In 2006, monitoring well MW06-11 was installed to the east of the site (Figure 2), where overburden comprised of medium-grained sand with some gravel to a depth of 3.06 m, underlain by coarse-grained sand with some silt to a depth of 3.86 m, were observed (Golder Associates Limited [Golder], 2007). Auger refusal was encountered at 3.86 m. Additionally, monitoring well MW12-12 was installed in 2012 (Figure 5). Overburden from MW12-12 comprised of fine-grained sand with minor gravel to a depth of 2.59 m, underlain by very fine-grained sand with silt to a depth of 5.33 m, underlain by silt with very fine-grained sand to a depth of 6.86 m. The borehole was terminated at 7.06 m. The borehole logs for monitoring wells MW06-11 and MW12-12 are provided in Appendix C. The available borehole logs include well construction details.

2.3 Land Use

The current land use designation for the Griffith site is “WD” Waste Disposal, per the County’s Official Plan. Adjacent land use is designated “RU” for rural.

2.4 Operational Setting

The Griffith Waste Disposal Site currently consists of an approved waste disposal area (AWDA) of 0.8 ha. The Township acquired Crown lands from the MNDMNR in 2002 for the establishment of a CAZ for the site, and the corresponding total property area of the Griffith Waste Disposal Site is recognized in the ECA as 27.5 ha (Appendix A; Figure 2). A Certificate of Prohibition (Requirement) was registered on title for the Griffith Waste Disposal Site on February 27, 2006, in accordance with Condition 15 of the ECA (Appendix A).

Currently, the Griffith site operates as a waste transfer site, and is approved to accept municipal waste and recycling from the Township (Appendix A). Construction of the transfer station was initiated in 2009 and

completed in 2010, with operations commencing on May 19, 2010.

Final closure activities at the Griffith site were completed in 2011, and are discussed in Section 4.3 of this Annual Report.

3.0 2021 Environmental Monitoring Program

The following sections present a methodology of the environmental monitoring program conducted at the Griffith Waste Disposal Site in 2021.

3.1 Groundwater Monitoring

Groundwater monitoring and sampling activities were conducted by Greenview on August 18, 2021 from the network of groundwater monitoring wells as part of the 2021 environmental monitoring program (Table 1; Figure 2). The UTM coordinates of the groundwater monitoring wells were confirmed or measured by Greenview personnel during site visits in 2021 using a handheld geographic positioning system (GPS) instrument with an anticipated accuracy of within +/- 5 m (Table 2). In 2021, groundwater elevations were measured at each monitoring well using an electronic water level tape prior to sampling (Table 3). Based on the groundwater elevations for the summer sampling event, well purge volumes equivalent to approximately three (3) borehole volumes were calculated using standard conversion factors relevant to each well diameter.

The 2021 groundwater monitoring program was conducted at monitoring wells 91-1, 91-2, 91-4, 91-5, 96-7S, 96-7D, 96-9, 96-10S, 96-10D, and MW06-11. During the summer 2021 sampling event, monitoring wells 96-7D and 96-10S were observed to pump dry during sampling, and a full purge volume was not obtained (Appendix D). Consistent with historical monitoring programs, monitoring well 96-7S was not sampled for the 2021 summer sampling event as it was observed to be dry (Table 3; Appendix D).

Given the observed impacts to groundwater quality at background monitoring well MW12-12 since its installation in 2012, it was removed from the annual groundwater monitoring program consistent with the recommendations of the 2015 Annual Report (Greenview, 2016). Groundwater elevation measurements were continued at MW12-12 as part of the 2021 groundwater monitoring program.

Groundwater samples were collected from each monitoring well using dedicated polyethylene tubing and inertial lift foot-valves. Samples were collected into appropriate sample bottles as provided by an accredited laboratory and the designated sample for metal parameters was field-filtered using a dedicated high capacity 45-micron filter to reduce the potential for turbidity induced bias in the analytical results for the metal parameters.

A duplicate groundwater sample was collected for Quality Assurance and Quality Control (QA/QC) purposes from monitoring well 91-1 for the 2021 summer sampling event (Appendix D).

All samples were submitted to an accredited analytical laboratory to be analyzed for the parameter suite listed in Table 1.

Field measurements of pH, conductivity, temperature, and dissolved oxygen (DO) were recorded at each respective groundwater well immediately following the collection of the groundwater samples. Field sampling records completed as part of the 2021 monitoring program are included in Appendix D. The groundwater samples were recorded on a laboratory Chain of Custody Form, and placed in coolers packed with contained ice for preservation during transport to the analytical laboratory.

It was recommended in the 2015 Annual Report (Greenview, 2016) that for future Annual Reports, data from monitoring well 91-1 prior to August 2010 (seven [7] previous sampling events from 2003 to 2009) should be used to calculate median background groundwater quality and the RUC, resulting in consistent (static) median background groundwater parameter concentrations and RUC values for each parameter for all future Annual Reports, until such a time as groundwater monitoring of the Griffith site is discontinued. This recommendation was proposed given the interpreted impacts related to winter road maintenance activities in both monitoring wells 91-1 (background well) and MW12-12 (background well). Comments on this proposal from the MECP have not been received by the Township as of the time of writing of this 2021 Annual Report. In the interests of using data that is understood to not be influenced by winter road maintenance activities at the new transfer station as part of the calculations of median background groundwater quality and RUC limits, Greenview has prepared Table 4

– Groundwater Quality for the Griffith site using only data from 2003 to 2009 from background monitoring well 91-1 for the purposes of the 2021 Annual Report, consistent with the recommendations of the 2015 Annual Report (Greenview, 2016). The Township will continue to review documented groundwater quality at background monitor 91-1 in future years, and if parameter concentrations are observed to decrease to pre-impacted levels, then consideration of including new data interpreted to not be impacted by winter road maintenance activities for the calculation of median background groundwater quality and the RUC is recommended to be initiated.

The results of the 2021 groundwater monitoring program are presented in Section 4.1 of this report.

3.2 Surface Water Monitoring

Surface water monitoring and sampling activities were conducted by Greenview on August 18, 2021 from the established surface water monitoring locations at the site (Table 1). The UTM coordinates of the surface monitoring locations were confirmed or measured by Greenview personnel during site visits in 2021 using a handheld GPS instrument with an anticipated accuracy of within +/- 5 m (Table 2). The surface water samples were collected by submerging a dedicated, non-preserved, sample container into the water body and decanting into preserved sample bottles so as not to displace preservative chemicals.

A duplicate surface water sample was collected for QA/QC purposes from surface water sampling location STN-1 during the summer 2021 sampling event (Appendix D).

All samples were submitted to an accredited analytical laboratory to be analyzed for the parameter suite listed in Table 1.

Field measurements of pH, conductivity, DO, and temperature were recorded at each respective surface water sampling location immediately following the collection of the surface water samples. Physical characteristics including depth, width, and flow velocity of each respective surface water location were recorded at the time of sampling. Field sampling records completed for the 2021 monitoring program are included in Appendix D. The surface water samples were recorded on a laboratory Chain of Custody Form, and placed in coolers packed with contained ice for preservation for transport to the analytical laboratory.

The results of the 2021 surface water monitoring program are presented in Section 4.2 of this report.

3.3 Analytical Laboratory Accreditation

Collected groundwater and surface water samples were submitted for analysis to the Caduceon Environmental Laboratories (Caduceon), located in Kingston, Ontario. Caduceon is accredited by the Canadian Association for Laboratory Accreditation (CALA), for specific environmental testing procedures listed in the scope of accreditation and is assessed biannually by CALA to the ISO/IEC 17025 standard. ISO/IEC 17025 is an international standard for both quality management and technical aspects of operating a testing laboratory. Caduceon is licensed by the MECP to perform analysis on drinking water in Ontario in accordance with the Safe Drinking Water Act.

3.4 Landfill Gas Monitoring

Landfill gas monitoring is not part of the current environmental monitoring program for the site. The waste mound at the Griffith site is covered with porous soil materials, allowing natural gas flux to the atmosphere. Overburden geology at and adjacent to the site is characterized by shallow, sandy materials, overlying a dense bedrock unit. These overburden and bedrock characteristics, coupled with the extended distance to the nearest residence, provide a minimal risk of landfill gases impinging off-site receivers.

3.5 Operational Monitoring

Operational monitoring at the Griffith Waste Disposal Site is conducted regularly to document waste transfer and storage activities at the site.

Closure activities were completed at the site as of 2012.

Daily waste records are completed by Township staff as part of regular operations at the site to monitor vehicular traffic and depot operations.

Quarterly Inspection Logs are prepared by the Township and are included in Appendix B.

The Township has historically submitted annual waste diversion reports in accordance with the Municipal Datacall, inclusive of the Griffith site, to the Resource Productivity and Recovery Authority (RPR).

The results of operational monitoring are presented in Section 4.3.

4.0 Environmental Monitoring Results

The following sections present a summary of the environmental monitoring results obtained during the Griffith Waste Disposal Site 2021 environmental monitoring program.

4.1 Groundwater Quality Assessment

The results of the 2021 groundwater monitoring program conducted at the site are presented as follows.

4.1.1 Groundwater Configuration

Historically, the groundwater configuration at the site was interpreted to flow towards the north and northeast, away from the waste mound (Greenview, 2021) and in the general direction of the low-lying areas northeast of the site. In 2021, the interpreted groundwater configuration at the Griffith site in the shallow overburden unit was interpreted to be consistent with historical results (Greenview, 2021), as groundwater was interpreted to flow generally to the northeast, towards the low-lying areas north of the site (Figure 5). Groundwater elevation data measured for the 2021 environmental monitoring program at the Griffith site are provided in Table 3. Average horizontal gradients in the vicinity of the Griffith site in 2021 were calculated as follows:

Location	Horizontal Gradient (Summer 2021)	Direction
Vicinity of Waste Mound	0.093	Northeast
Northeast of Waste Mound	0.028	Northeast

Using groundwater elevations measured in 2021 (Table 3), vertical hydraulic gradients were calculated at the following pairs of shallow and deep monitoring wells for the spring and summer groundwater elevation monitoring events. The vertical gradients calculated in 2021 were as follows:

Monitoring Wells	Vertical Gradient (Summer 2021)
96-7S & 96-7D	No data (96-7S = Dry)
96-10S & 96-10D	0.009

Based on the characterization of overburden geology at the Griffith site, from the borehole log of monitoring well MW06-11, the overburden sedimentology consists of medium to fine sand with some gravel, underlain by coarse-grained sand with some silt, with estimates of hydraulic conductivity ranging from 1×10^{-1} to 1×10^{-5} centimetres per second (cm/s; Bear, 1972). Based on the overburden materials at the Griffith site, typical porosity values for fine to medium sand with some gravel range from 20-35% (Fetter, 1994). As such, and using the estimates of hydraulic conductivity and horizontal groundwater gradients noted above, typical groundwater velocity at the site is estimated to be in the range of 0.1 to 0.5 m per day.

4.1.2 Groundwater Quality

The results of the 2021 groundwater monitoring program are presented in Table 4 and the accredited laboratory Certificates of Analysis are attached in Appendix E. Analytical data obtained from the groundwater samples were compared to the Ontario Drinking Water Standards (ODWS; MECP, 2006), median background groundwater quality at the site, and MECP Guideline B-7 and the RUC (MECP, 1994a). Trend analysis was completed using results from the previous five (5) years and only significant trends are discussed in this report.

The results from the blind duplicate sample collected at monitoring well 91-1 during the summer 2021 sampling event were similar to the identified sample, indicating that the results of the 2021 groundwater monitoring program can be interpreted with confidence.

A new background monitoring well, MW12-12, was installed in 2012 in an attempt to avoid impacts resultant of

winter road maintenance, which became apparent at background monitoring well 91-1 concurrent with the establishment of the transfer station operations between 2009 and 2010 (Greenview, 2015). Following installation of MW12-12, and based on documented groundwater quality results (Greenview, 2015), it was interpreted that groundwater in the vicinity of MW12-12 was impacted from winter road maintenance activities at the waste transfer station and site access road (Figure 5). Consistent with the recommendations of the 2015 Annual Report (Greenview, 2016), MW12-12 was removed from the annual groundwater monitoring program. MECP approval to remove MW12-12 from the monitoring program was not required as the well was not required to be sampled by the site's ECA and related control documents. See Section 3.1 for additional details.

Background groundwater quality at the Griffith Waste Disposal Site was historically assessed at monitoring well 91-1, located approximately 50 m south and upgradient of the southern boundary of the AWDA (Figure 5); however, based on groundwater results starting in 2010, 91-1 is no longer considered representative of background groundwater quality at the Griffith site (Table 4). Consistent with recent results (Greenview, 2021), groundwater at monitoring well 91-1 in summer 2021 was interpreted to be impacted by winter road maintenance activities at the site related to transfer station operations (Table 4; see Section 3.1 for additional discussion). In 2021, many parameter concentrations in the summer 2021 samples collected from monitoring well 91-1 were above the median background concentrations (Table 4). Non-conformances of ODWS and significant groundwater trends at groundwater monitoring location 91-1 were as follows (Table 4):

Monitoring Well	ODWS Non-Conformance	Five (5) Year Trend Analysis	
		Increasing	Decreasing
91-1	<ul style="list-style-type: none"> Iron Manganese Sodium Total dissolved solids (TDS) 	<ul style="list-style-type: none"> Sodium 	<ul style="list-style-type: none"> No significant trends

Monitoring well 91-1 was not interpreted to be impacted from landfill-related activities; however, impacts related to winter road maintenance of the transfer station remain apparent in water quality results (Table 4). Given the winter road maintenance-related impacts interpreted in groundwater results at 91-1, results from monitoring well 91-1 were not considered representative of background groundwater quality at the Griffith Waste Disposal Site in 2021.

Groundwater quality in the vicinity of the waste mound was assessed at monitoring wells 91-2 and 91-4, located along the north-eastern AWDA, and are interpreted to be most representative of leachate quality at the site (Figure 5). In 2021, most parameter concentrations in the summer 2021 samples collected from monitoring wells 91-2 and 91-4 were above the median background concentrations (Table 4). Non-conformances of ODWS and significant groundwater trends at groundwater monitoring locations 91-2 and 91-4 were as follows (Table 4):

Monitoring Well	ODWS Non-Conformance	Five (5) Year Trend Analysis	
		Increasing	Decreasing
91-2	<ul style="list-style-type: none"> Alkalinity Dissolved Organic Carbon (DOC) Hardness Iron Manganese TDS 	<ul style="list-style-type: none"> Chloride Hardness Iron 	<ul style="list-style-type: none"> Alkalinity Boron Conductivity Dissolved Organic Carbon (DOC) Manganese Sodium TDS Total Kjeldahl Nitrogen (TKN)

91-4	<ul style="list-style-type: none"> Alkalinity DOC Hardness Manganese TDS 	<ul style="list-style-type: none"> Chloride Chemical Oxygen Demand (COD) 	<ul style="list-style-type: none"> DOC Manganese
------	---	--	--

Groundwater quality results from monitoring wells 91-2 and 91-4 were interpreted to be consistent with impacts related to winter road maintenance activities at the site and former landfilling-related activities; however, the decreasing trends noted at both wells were interpreted to be representative of decreasing impacts of landfill-related activities downgradient of the closed waste mound over time (Table 4).

Monitoring well 91-5 is located approximately 45 m downgradient of monitoring well 91-2, and approximately 30 m downgradient of the north-eastern limit of the AWDA (Figure 5). In 2021, most parameter concentrations in the summer 2021 samples collected from monitoring well 91-5 were above the median background concentrations (Table 4). Non-conformances of ODWS and significant groundwater trends at groundwater monitoring location 91-5 were as follows (Table 4):

Monitoring Well	ODWS Non-Conformance	Five (5) Year Trend Analysis	
		Increasing	Decreasing
91-5	<ul style="list-style-type: none"> Alkalinity DOC Hardness Iron Manganese TDS 	<ul style="list-style-type: none"> Alkalinity Boron Calcium DOC Hardness Magnesium Sulphate 	<ul style="list-style-type: none"> Chloride COD Sodium

The non-conformances of ODWS at well 91-5 were generally consistent with historical results (Table 4). Most parameters at monitoring well 91-5 were noted to have concentrations less than those at monitoring well 91-2, located directly upgradient and in closer proximity to the waste mound (Table 4). Based on groundwater quality results in 2021, groundwater in the vicinity of monitoring well 91-5 was interpreted to be impacted by landfill-related activities at the Griffith site and winter road maintenance of the transfer station (Table 4).

Monitoring wells 96-10S and 96-10D are located downgradient / partially cross-gradient and adjacent to the north-eastern corner of the 30 m operational buffer limit which surrounds the AWDA (Figure 5). In 2021, most parameter concentrations in the summer 2021 samples collected from monitoring wells 96-10S and 96-10D were above the median background concentrations (Table 4). Non-conformances of ODWS and significant groundwater trends at groundwater monitoring locations 96-10S and 96-10D were as follows (Table 4):

Monitoring Well	ODWS Non-Conformance	Five (5) Year Trend Analysis	
		Increasing	Decreasing
96-10S	<ul style="list-style-type: none"> Alkalinity DOC Hardness Manganese TDS 	<ul style="list-style-type: none"> No significant trends 	<ul style="list-style-type: none"> Ammonia (total) Conductivity Sodium TDS
96-10D	<ul style="list-style-type: none"> Alkalinity DOC Hardness Iron Manganese TDS 	<ul style="list-style-type: none"> Iron Manganese Nitrate 	<ul style="list-style-type: none"> Chloride Conductivity Sodium Strontium TDS

All ODWS non-conformances noted at 96-10S and 96-10D were consistent with historical results at the Griffith site (Table 4). In 2021, parameter concentrations at monitoring wells 96-10S and 96-10D were generally lower than concentrations at upgradient leachate monitoring wells 91-2 and 91-4 (Table 4). Impacts from upgradient sources, including landfill-related activities and from winter road maintenance, remain apparent in the documented groundwater quality results from both monitoring wells (Table 4).

Monitoring wells 96-7S and 96-7D are located downgradient of the waste mound and approximately 110 m north of monitoring well 91-4, and were used to assess downgradient groundwater quality to the north of the site (Figure 5). Consistent with historical results, monitoring well 96-7S was observed to be dry for the summer 2021 sampling event, and no groundwater sample was obtained (Appendix D). Some parameter concentrations in the summer 2021 samples collected from monitoring well 96-7D were above the median background concentrations (Table 4). Non-conformances of ODWS and significant groundwater trends at groundwater monitoring locations 96-7S and 96-7D were as follows (Table 4):

Monitoring Well	ODWS Non-Conformance	Five (5) Year Trend Analysis	
		Increasing	Decreasing
96-7S	<ul style="list-style-type: none"> No sample (Dry) 	<ul style="list-style-type: none"> n/a 	<ul style="list-style-type: none"> n/a
96-7D	<ul style="list-style-type: none"> DOC Iron Manganese 	<ul style="list-style-type: none"> Iron Nitrate 	<ul style="list-style-type: none"> Calcium Chloride Hardness TDS

Since monitoring well 96-7S has historically been dry at the time of sampling, no trends were noted in 2021 (Table 4). Parameter concentrations noted at monitoring well 96-7D were generally lower than at upgradient monitoring wells 91-2 and 91-4, suggesting that attenuation is occurring downgradient of the waste mound. Impacts related to winter road maintenance of the transfer station appear to be occurring downgradient of the site at the northern extent of the monitoring well network. Groundwater at 96-7D may also be partially impacted from landfill-related activities.

Monitoring well 96-9 is located approximately 135 m northeast and downgradient of monitoring well 91-4, and was added to the environmental monitoring program in 2008, concurrent with monitoring wells 96-7S and 96-7D, to further assess downgradient groundwater quality to the northeast of the site (Figure 5). Few parameter concentrations in the summer 2021 samples collected from monitoring well 96-9 were above the median background concentrations (Table 4). Non-conformances of ODWS and significant groundwater trends at groundwater monitoring location 96-9 were as follows (Table 4):

Monitoring Well	ODWS Non-Conformance	Five (5) Year Trend Analysis	
		Increasing	Decreasing
96-9	<ul style="list-style-type: none"> Manganese 	<ul style="list-style-type: none"> DOC 	<ul style="list-style-type: none"> Iron Manganese TDS

Although the concentration of manganese exceeded the ODWS limit at monitoring well 96-9, high concentrations were documented in background groundwater quality results from background monitoring well 91-1 prior to 2010 (Greenview, 2011), and the concentration documented in 2021 was less than the 75th percentile background concentration calculated from historical results from background surface water location STN-1 (Table 5) and the median background groundwater concentration (Table 4), which indicates that high concentrations of manganese are naturally-occurring in the vicinity of the site (Tables 4 and 5). Similarly, the high DOC concentration documented in results at monitoring well 96-9 were expected, given historical results at the sampling location

and its position within a low-lying area. Based on 2021 results, significant impacts related to landfill-related activities were not interpreted to be occurring in the vicinity of downgradient monitoring well 96-9.

Monitoring well MW06-11 is located southeast of the Griffith site, adjacent to the north side of Highway 41 (Figures 2, 5, and 6). In 2021, some parameter concentrations in the summer 2021 samples collected from monitoring well MW06-11 were above the median background concentrations (Table 4). Non-conformances of ODWS and significant groundwater trends at groundwater monitoring location MW06-11 were as follows (Table 4):

Monitoring Well	ODWS Non-Conformance	Five (5) Year Trend Analysis	
		Increasing	Decreasing
MW06-11	<ul style="list-style-type: none"> • Chloride • Iron • Manganese • Sodium • TDS 	<ul style="list-style-type: none"> • Ammonia (total) • Nitrate • TKN 	<ul style="list-style-type: none"> • Calcium • Conductivity • Hardness • Magnesium • Potassium • Strontium • TDS

The ODWS non-conformances of chloride, sodium, and TDS were interpreted to be directly related to winter road maintenance along Highway 41 (rather than landfill-related activities), while high concentrations of iron and manganese were attributed to naturally-occurring conditions in the vicinity of the site and also to winter road maintenance activities (i.e. solubility of iron and manganese related to high salt concentrations in groundwater). Monitoring well MW06-11 was not interpreted to be impacted from landfill-related activities in 2021.

4.1.3 Reasonable Use Concept Assessment

In an effort to assess potential landfill-related impacts migrating beyond the site boundary, the RUC was used as an assessment tool to monitor downgradient impacts from the waste disposal site. Downgradient impacts are typically assessed using the RUC at monitoring wells located at, or in close proximity to, the downgradient property boundary. The downgradient monitoring wells located near the property boundary were compared to trigger concentrations for specific parameters as determined by groundwater quality at the site using the RUC for groundwater (MECP Procedure B-7-1, 1994a). Further to MECP Technical Support Section (TSS) comments (September 28, 2007) and the Action Plan from the 2007 Annual Report (Greenview, 2008), additional downgradient monitoring wells were included, beginning with the 2008 groundwater monitoring program to further assess conformance with MECP Guideline B-7.

The MECP Procedure B-7-1: Determination of Contaminant Limits and Attenuation Zones iterates that in accordance with the appropriate criteria for particular uses, a change in groundwater quality on an adjacent property as a result of landfilling activities will only be accepted by the MECP as follows:

The quality cannot be degraded by an amount in excess of 50% of the difference between background and the Ontario Drinking Water Standards for non-health related parameters and in excess of 25% of the difference between background and the Ontario Drinking Water Standards for health-related parameters. Background is considered to be the quality of the groundwater prior to any man-made contamination.

MECP Procedure B-7-1

The RUC assessment was conducted using the concepts and procedures outlined in MECP Procedure B-7-1 (MECP, 1994), and further to MECP TSS comments dated September 28, 2007 (Greenview, 2008), specifically using the median value of individual background parameter concentrations from monitoring well 91-1 from 2003 to 2009, to characterize natural groundwater quality at the site for assessing site compliance with the RUC.

Groundwater quality data following August 2009 to current for monitoring well 91-1 was removed from the RUC calculation in an effort to obtain valid median background concentrations and RUC values for the assessment of Guideline B-7. This procedure is discussed in more detail in Section 3.1 of this Annual Report.

Since 2008, results from monitoring wells 96-7S, 96-7D, and 96-9 were used to establish RUC at the Griffith site, due to their location north and northeast and furthest downgradient of the waste mound (Figure 5). Monitoring well MW06-11 was not considered to be an adequate monitor of compliance with the RUC given its location cross-gradient and southeast of the site, and its susceptibility to winter road maintenance activities on the adjacent Highway 41.

Monitoring wells 96-7S and 96-7D are located approximately 155 m from the downgradient property boundary to the north, while monitoring well 96-9 is located approximately 165 m from the downgradient northern property boundary (Figures 2, 5, and 6). For the 2021 groundwater sampling event in summer 2021, monitoring well 96-7S was observed to be dry, and no sample was obtained.

All parameters tested as part of the established annual monitoring program were used as groundwater triggers at downgradient monitoring wells 96-7D and 96-9, and a respective RUC criteria value was calculated for each parameter at the Griffith Waste Disposal Site. The trigger concentrations used to assess RUC compliance for the groundwater regime at the site were based on the RUC for each of the respective parameters.

The RUC values for individual parameters should be generated each year based on analytical results obtained from the groundwater monitoring program. If RUC non-conformances are noted, then action will be undertaken as appropriate and necessary in accordance with a defined groundwater contingency plan for the site. In cases where a groundwater contingency plan is not defined, a meeting with representatives of the district MECP office should be held to develop an appropriate contingency plan, as necessary and appropriate for the particular site.

Non-conformances of RUC in summer 2021 from groundwater results at downgradient monitoring wells 96-7D and 96-9 are included in the table below. The Township notes that historical RUC non-conformances were observed for background monitoring well 91-1 prior to 2010 for chloride, hardness, iron, manganese, and TDS (Greenview, 2011):

Monitoring Well	RUC Non-Conformance
	Summer 2021
96-7S	<ul style="list-style-type: none"> No sample (Dry)
96-7D	<ul style="list-style-type: none"> DOC Manganese
96-9	<ul style="list-style-type: none"> DOC

Since DOC and manganese concentrations decrease significantly between upgradient monitoring wells situated within the AWDA (91-2 and 91-4) and the downgradient monitors 96-7D and 96-9, it was extrapolated that DOC and manganese concentrations would meet RUC criteria at the downgradient northern and eastern property boundaries (Figures 2, 5, and 6). Additionally, 2021 manganese concentrations at downgradient monitoring well 96-7D was generally less concentrated than previous results from background surface water sampling location STN-1 and was less than the 75th percentile background concentration calculated from historical results from background surface water location STN-1, which indicates that high concentrations of manganese are naturally-occurring in the vicinity of the site (Table 5). Downgradient monitoring wells 96-7D and 96-9 were not interpreted to be significantly impacted by landfill-related activities at the closest monitoring locations to the downgradient property boundary in 2021 (Figure 2 and 5). The site was interpreted to meet the intent of MECP Guideline B-7 at the downgradient northern and eastern property boundaries in 2021.

4.1.4 Proposed Trigger Mechanism and Contingency Plan Assessment

Based on MECP TSS groundwater review comments dated June 19, 2013 (Greenview, 2014) related to the 2012 Annual Report (Greenview, 2013), the MECP TSS requested that the Township propose a trigger mechanism for the Griffith site based on MECP Guideline B-7, and general contingency plans in the event the trigger mechanism is ever interpreted to be activated.

As requested, the Township included a proposed trigger mechanism and contingency plan (trigger mechanism) in the 2013 Annual Report for the Griffith site (Greenview, 2014). At the time of writing of this report, no response from the MECP had been received by the Township relative to the proposed trigger mechanism.

Based on a review of the proposed trigger mechanism in 2021 it was interpreted that the trigger mechanism was not activated. The RUC non-conformances for the non-health related parameters DOC at 96-7D and 96-9, and manganese at 96-7D only, were not interpreted to be solely related to former landfilling activities at the site. As high concentrations of manganese were historically noted in background groundwater and surface water in the vicinity of the site, and since the concentration downgradient of the waste mound at monitoring well 96-7D was generally similar to historical background concentrations, the noted manganese concentration at 96-7D in 2021 were not deemed to have activated the trigger mechanism. Similarly, as monitoring wells 96-7D and 96-9 are located within a poorly drained area northeast of the waste mound, high concentrations of DOC would be anticipated in this type of environmental setting, and the trigger mechanism with respect to DOC was not deemed to be activated.

Given the considerable distance of monitoring wells 96-7D and 96-9 from the downgradient northern property boundary (155 m and 165 m, respectively; Figure 2), attenuation of DOC and manganese to acceptable levels is anticipated prior to reaching the downgradient property boundary.

Further review of the proposed trigger mechanism and contingency plan should continue in future annual reports.

Final closure operations were completed at the Griffith Waste Disposal Site in 2011 and 2012, and the closed status of the landfill should be considered as part of any future review of the trigger mechanism.

4.2 Surface Water Quality Assessment

As part of the summer surface water sampling event, physical characteristics of sampling locations STN-1 (background), STN-4 and STN-5 were recorded (Figure 4; Appendix D).

For the summer 2021 sampling event, depth (m), width (m), velocity (m/s), and discharge (m³/s) were measured and calculated with results as follows:

Summer 2021				
Sample Location	Depth (m)	Width (m)	Velocity (m/s)	Discharge (m ³ /s)
STN-1	0.15	1.00	0.10	0.014
STN-4	0.20	1.25	0.09	0.020
STN-5	0.22	4.00	No discernible flow	

Surface water quality results for the Griffith site were compared to MECP Provincial Water Quality Objectives (PWQO; MECP, 1994b) and the results of the 2021 surface water monitoring program are presented in Table 5. Surface water quality results were also compared with the Canadian Water Quality Guidelines (CWQG; Canadian Council of Resource and Environment Ministers [CCREM], 1987) for select parameters, in accordance with Table B of the MECP Technical Guidance Document (TGD; MECP, 2010). Accredited laboratory Certificates of Analysis for the surface water quality results are provided in Appendix E. Trend analysis was completed using results from the previous five (5) years and only significant trends are discussed in this report.

The blind duplicate samples collected at surface water location STN-1 in summer 2021 were interpreted to be similar to each of the identified collected samples, indicating that the results of the 2021 surface water monitoring

program can be interpreted with confidence.

Surface water station STN-4 is located approximately 250 m downstream of background location STN-1 on a small creek (Figure 4). A low-lying area exists, surrounded by cedar trees, between sampling locations STN-1 and STN-4 where bulrushes and tall grasses are the predominant vegetation. Sampling location STN-5 is located northeast of location STN-1, within a low-lying area of higher elevation than STN-1 and STN-4. Sampling location STN-5 is not located on the same stream as STN-1 and STN-4; however, during times of extensive precipitation and/or snow melt, surface water collects within the low area in the vicinity of STN-5 and can flow downhill towards the creek. Historically, STN-5 has often been observed to be dry and/or have low/no discernible flow during the summer months (Figure 4). In summer 2021, surface water sampling location STN-5 was observed to have sufficient surface water for sampling purposes (Appendix D).

Historically, background surface water quality was assessed at surface water location STN-1, located upstream of the site on a small creek that flows to the northeast, with eventual discharge into the Madawaska River (Figure 4). The following photograph is representative of background surface water location STN-1 in 2021:

Photograph 1: Surface Water Location STN-1 (Summer 2021)



Non-conformances of PWQO, and significant trends, at background surface water sampling location STN-1 (background) were as follows (Table 5):

Sampling Location	PWQO Non-Conformance	Five (5) Year Trend Analysis	
	Summer 2021	Increasing	Decreasing
STN-1 (background)	<ul style="list-style-type: none"> • DO (low) • Iron 	<ul style="list-style-type: none"> • Chloride • Conductivity (field-tested) • Conductivity (lab-tested) • Sodium • TDS 	<ul style="list-style-type: none"> • Dissolved Oxygen (DO)

Dissolved oxygen (DO), iron, and phosphorus concentrations have historically not met PWQO limits at surface water location STN-1 in previous summer sampling events (Table 5). All non-conformances with the PWQO at background location STN-1 were attributed to either naturally-occurring or upstream sources, and not to landfill-related activities. In 2021, the concentration of chloride was documented to be higher than the limit of Table B of the TGD for the summer 2021 sampling event at background location STN-1. Due to the proximity of STN-1 to Highway 41, and the direction of surface water flow, winter road maintenance activities along Highway 41 and

resultant effects on the solubility of many parameters of the surface water suite are interpreted to be related to the noted increasing trends in results at STN-1 (Table 5; Figure 4). Surface water quality results from STN-1 were interpreted to be representative of background surface water quality at the Griffith Waste Disposal Site in 2021.

Surface water location STN-5 is located on an ephemeral drainage channel that flows intermittently into the small surface water stream where surface water sampling locations STN-1 and STN-4 are sampled (Figure 4). The most recent sampling event at STN-5 was in May 2017 (Table 5), and in summer 2021 surface water was observed in sufficient quantities at STN-5 for sampling purposes. The following photograph is representative of surface water location STN-5 in 2021:

Photograph 2: Surface Water Location STN-5 (Summer 2021)



Non-conformances of PWQO, and significant trends, at surface water sampling location STN-5 were as follows (Table 5):

Sampling Location	PWQO Non-Conformance	Five (5) Year Trend Analysis	
	Summer 2021	Increasing	Decreasing
STN-5	<ul style="list-style-type: none"> • DO (low) • Iron • Phosphorus 	<ul style="list-style-type: none"> • Insufficient recent date for trend analysis 	<ul style="list-style-type: none"> • Insufficient recent date for trend analysis

Given that high phosphorus concentrations have historically been documented in background surface water quality results at STN-1 (Table 5), and since the surface water expression observed in 2021 at STN-5 was not documented to be flowing into the creek on which STN-1 and STN-4 are located, the non-conformance of the PWQO for the concentration of phosphorus was not interpreted to represent a significant risk to downstream surface water quality in the vicinity of the Griffith site (Appendix D; Table 5). As high phosphorus concentrations at location STN-5 have not been historically evident, the concentration noted in August 2021 may be anomalous, and future sampling events are required to determine the potential significance of the August 2021 documented concentration. As previously noted, high iron and low DO concentrations are historically evident at background location STN-1, and therefore the noted non-conformances of the PWQO for iron and DO at STN-5 were attributed to naturally-occurring conditions in the vicinity of the Griffith site. No non-conformances were noted in results from STN-5 for the parameters identified in Table B of the TGD from the summer 2021 sampling event at the Griffith Waste Disposal Site.

Surface water location STN-4 is located downstream of surface water location STN-1 and the low-lying area (Figure 4), and is the furthest downstream surface water sampling location at the Griffith site. The following photograph is representative of downstream surface water location STN-4 in 2021:

Photograph 3: Surface Water Location STN-4 (Summer 2021)



Non-conformances of PWQO, and significant trends, at surface water sampling location STN-4 were as follows (Table 5):

Sampling Location	PWQO Non-Conformance	Five (5) Year Trend Analysis	
	Summer 2021	Increasing	Decreasing
STN-4	<ul style="list-style-type: none"> None 	<ul style="list-style-type: none"> Chloride Conductivity (field-tested) Conductivity (lab-tested) Sodium TDS 	<ul style="list-style-type: none"> No significant trends

In 2021, the concentration of chloride was documented to be higher than the limit of Table B of the TGD for the summer 2021 sampling event at location STN-4. The noted increasing trends at STN-4 were consistent with trends interpreted from results at background location STN-1, and were interpreted to be consistent with impacts related to winter road maintenance activities and to naturally-occurring conditions in the vicinity of the site (Table 5). Surface water quality downstream of the Griffith site at sampling location STN-4 was not interpreted to be impacted from landfill-related activities the Griffith site.

Based on current and historical surface water quality results for the Griffith Waste Disposal Site (Table 5), it is interpreted that landfill-related impacts to the surface water system downgradient and downstream have not and are not occurring.

4.3 Operations Summary

A summary of 2021 waste management operations at the Griffith Waste Disposal Site is presented below.

4.3.1 Site Operations

The site currently operates as a municipal solid waste and recycling transfer station. The Griffith site is approved

to accept residential and Industrial, Commercial and Institutional (IC&I) waste from within the Township, and operates in accordance with ECA A412203 (Appendix A). Construction of the waste and recycling transfer station at the Griffith Waste Disposal Site commenced in 2009 and was completed in 2010.

Photograph 4: Waste and Recycling Transfer Station



All regular municipal waste (residential and IC&I waste bagged garbage), and Blue Box recycling, collected at the site in 2021 was transferred to GLF in Moose Creek, Ontario. Landfilling operations ceased at the Griffith site in 2011, following the utilization of the remaining site disposal capacity.

The waste and recycling transfer station at the Griffith site is approved to collect the following materials, per the approved Amendment to the ECA dated June 1, 2016 (Appendix A; Figure 3):

Waste / Recyclables	Quantity (units)
Regular Municipal Waste (Residential & IC&I)	80 m ³
Organics	20 m ³
Blue Box Recyclables (Mixed Fibres & Commingled Containers)	160 m ³
Old Corrugated Cardboard (OCC)	80 m ³
Scrap Metal & White Goods	150 m ³
Refrigerant Appliances	25 units
Waste Electrical and Electronic Equipment (WEEE)	40 m ³
Tires	100 m ³
Leaf and Yard Waste	400 m ³
Construction and Demolition Waste (C&D) and Bulky Waste	80 m ³
Automotive Plastics (waste oil and antifreeze containers)	5.4 m ³
Refillable Propane Tanks	50 units
Single-use Propane Cylinders	1 m ³

A sign is posted at the entrance to the Griffith Waste Disposal Site that provides hours of operation, accepted waste and recyclables, permitted users, emergency contact information, and the ECA number for the site.

The hours of operation at the Griffith site in 2021 were as follows:

Day of the Week	Hours of Operation
Wednesday	3:00 p.m. – 5:00 p.m.
Saturday	1:00 p.m. – 5:00 p.m.
Sunday	1:00 p.m. – 6:00 p.m.
Holiday Monday (May to October)	12:00 p.m. – 6:00 p.m.

The physical address of the Griffith Waste Disposal Site is 6 Finns Road, and is accessed from the site road extending to the north from Finns Road and Highway 41 (Figure 3). Access to the Griffith site is restricted by a lockable gate along the site access road. The site is surrounded by forested lands, which provide adequate screening and restricted access for vehicular traffic, aside from the maintained site entrance-way. The site access road extending from Finns Road has sufficient width at the entrance and within the site to allow for unimpeded winter travel and access for emergency and snow removal equipment. The site access road was observed to be in serviceable condition during the routine site inspections conducted by Greenview during site visits in 2021.

4.3.2 Waste Disposal / Transfer Summary

The Griffith Waste Disposal Site is approved to receive waste and recyclables from residents and IC&I generators of the entire Township (Appendix A). The Township commenced with final closure activities at the Griffith site in May 2011, including the application of a minimum of 600 mm of sandy soil material of medium permeability to the entire AWDA, in accordance with the Closure Plan (SGS, 2006) and Schedule A of the ECA (Appendix A). To assist with final closure activities, including grading of the waste mound and application of final cover, a grade stake survey was completed on June 8, 2011 to indicate elevations of the final contours at closure for associated cover material requirements. In late summer 2011, the Township completed the final cover requirements at the site by applying 150 mm of vegetative cover over the previously applied sandy soil material. Additional seeding of the final (vegetative) cover at the Griffith site was completed in the spring of 2012 (Figure 3), and some additional cover material was applied to the waste mound in fall 2012. In accordance with action items #5 and #6 of the Inspection Report, and as noted in the Proposed Compliance Action Plan Schedule (Greenview, 2016), the Township completed repairs to the eroded areas of the AWDA, and areas that required additional vegetative cover and seeding, prior to October 31, 2015 (Greenview, 2016).

Photograph 5: View of closed waste mound at Griffith Waste Disposal Site (from transfer station area)



Based on municipal records, approximately 5,769 vehicles visited the Griffith site in 2021, and accepted approximately 12,765 bags and 177 trailer-loads of municipal waste for transfer. Included in these totals were

approximately 294 cubic metres of leaf and yard waste and 900 cubic metres of construction and demolition (C&D) waste. Based on information supplied by the municipality, 85 tonnes of municipal waste were collected at the Griffith site in 2021 and transported for final disposal to the approved waste disposal facility of GFL in Moose Creek, Ontario.

Recycling tonnage records provided by the municipality indicated that 39 tonnes of Blue Box recyclables were collected from the Griffith Waste Disposal Site in 2021. Blue Box recyclable quantities contributing to this total included 17 tonnes of commingled containers, 17 tonnes of mixed fibres, and 5 tonnes of old corrugated cardboard. Approximately 2 tonnes of household organics were diverted at the Griffith site in 2021.

According to Township records, 129 tonnes of scrap metal and 63 refrigerant appliances, 20 tonnes of waste electronic and electrical equipment, and 3,078 tires were diverted from the depots at the Norway Lake Waste Disposal Site, Mount St. Patrick Waste Disposal Site, and Griffith Waste Disposal Site.

Waste operations training for Township waste operation staff was conducted by Greenview on June 12, 2017. In 2013, the Township passed a new waste management by-law (By-law No. 09 – 2013), to establish, maintain and regulate a system for the disposal of municipal waste, recyclables and other refuse (Greenview, 2014).

4.3.3 Site Inspections and Maintenance

A site inspection of the operations area and property at the Griffith site was conducted by Greenview on August 18, 2021 during the summer sampling event. The Township also conducted periodic (quarterly) inspections to verify the compliance status of the site.

The site inspection completed by Greenview included a cursory investigation of housekeeping/litter control aspects, monitoring well maintenance requirements in accordance with O. Reg. 903, and a general site overview for MECP regulatory compliance issues. There were no compliance action items requiring immediate action on the part of the Township observed during the routine site inspections completed in 2021.

Closed Landfill Site Quarterly Inspection Logs for the Griffith site are required to be conducted by the Township in spring, summer, fall, and winter, as noted by the MECP Ottawa District Office in the 2019 Inspection Report (Greenview, 2020). Copies of the Quarterly Inspection Logs completed by the Township in 2021 are included in Appendix B. Copies of future Quarterly Inspection Logs are to continue to be included in Annual Reports, on an on-going basis.

The Township exercises routine litter management activities at the Griffith site. Additional site cleanup activities were completed by the Township on an as required basis.

4.3.4 Complaints

There were no complaints received by the Township with respect to waste management operations at the Griffith Waste Disposal Site in 2021.

4.3.5 Monitoring and Screening Checklist

In accordance with the MECP TGD (MECP, 2010), the Monitoring and Screening Checklist for the Griffith Waste Disposal Site is included as Appendix F of this report.

5.0 Conclusions and Recommendations

Based on the results of the 2021 environmental monitoring program completed for the Griffith Waste Disposal Site, the following conclusions are provided:

- The groundwater configuration at the site in 2021 was interpreted to be similar to historical interpretations with the direction of groundwater flow in the overburden unit being to the northeast towards the low-lying area northeast of the site. The average horizontal gradient in the vicinity of the waste mound, and to the northeast of the waste mound, was calculated in summer 2021 to be 0.093 and 0.028, respectively.
- Groundwater from background monitoring well 91-1 in summer 2021 was interpreted to be impacted by winter road maintenance activities at the site, and was not interpreted to be impacted by landfill-related activities.
- Groundwater within the AWDA and adjacent to the north-eastern AWDA boundary, at monitoring wells 91-2 and 91-4, was interpreted to be impacted by landfill-related activities at the site. Monitoring wells 91-2 and 91-4 were also interpreted to be impacted by winter road maintenance activities from the transfer station.
- Monitoring well 91-5, located approximately 45 m downgradient from monitoring well 91-2, was interpreted to be impacted by a combination of landfill-related activities and winter road maintenance of the transfer station; however, the majority of concentrations were lower than those observed at monitoring well 91-2, indicating that attenuation is likely occurring downgradient of the site.
- Groundwater monitoring wells 96-10S and 96-10D are located approximately 65 m downgradient / partially cross-gradient and east from monitoring well 91-4, while monitoring well MW06-11 is located east of the site at the southern property boundary, north and adjacent to Highway 41. Both 96-10S and 96-10D were interpreted to be impacted by a combination of landfill-related activities and winter road maintenance of the transfer station. Monitoring well MW06-11 was not interpreted to be impacted by the Griffith Waste Disposal Site; however, it was interpreted to be impacted by winter road maintenance along Highway 41.
- Monitoring wells 96-7S, 96-7D, and 96-9 were added to the environmental monitoring program in 2008 to establish groundwater quality at the downgradient extent of the established well network at the Griffith site. Concentrations in groundwater samples collected from 96-7D and 96-9 were generally significantly lower than concentrations at monitoring wells closer to the waste mound (91-2 and 91-4), which was interpreted to represent that significant attenuation was occurring downgradient of the site. Minor impacts related to landfill-related activities at downgradient monitoring well 96-7D may be occurring; however, no significant landfill-related impacts were interpreted to be occurring at monitoring well 96-9. Naturally-occurring conditions in the vicinity of 96-7D and 96-9 and winter road maintenance activities of the transfer station were interpreted to be the most significant contributors to groundwater quality in 2021.
- Monitoring wells 96-7D and 96-9, the most downgradient monitoring wells at the site, were used to determine RUC and conformance with Guideline B-7 at the site. Since DOC and manganese concentrations decrease significantly between upgradient monitoring wells situated within the AWDA (91-2 and 91-4) and the downgradient monitors 96-7D and 96-9, it was extrapolated that DOC and manganese concentrations would meet RUC criteria at the downgradient northern and eastern property boundaries. Additionally, 2021 manganese concentrations at downgradient monitoring well 96-7D was generally less concentrated than previous results from background surface water sampling location STN-1 and was less than the 75th percentile background concentration calculated from historical results from background surface water location STN-1, which indicates that high concentrations of manganese are naturally-occurring in the vicinity of the site. Downgradient monitoring wells 96-7D and 96-9 were

not interpreted to be significantly impacted by landfill-related activities at the closest monitoring locations to the downgradient property boundary in 2021. The site was interpreted to meet the intent of MECP Guideline B-7 at the downgradient northern and eastern property boundaries in 2021.

- Monitoring well MW06-11 was not considered to be adequate for monitoring compliance with the MECP RUC given its location southeast of the site, and its susceptibility to winter road maintenance activities on the adjacent Highway 41.
- In general, and given that site closure was completed in 2012, groundwater quality results were interpreted to be generally stable and/or improving at the Griffith Waste Disposal Site.
- Based on a review of the proposed groundwater trigger mechanism and contingency plan for the Griffith site in 2021, the groundwater trigger mechanism was not interpreted to be activated. MECP approval of the proposed groundwater trigger mechanism and contingency plan, as proposed in the 2013 Annual Report, has not been received by the Township. Final closure operations were completed at the Griffith Waste Disposal Site in 2011 and 2012, and the closed status of the landfill should be considered as part of any future review of the trigger mechanism.
- Surface water quality downstream of the Griffith site was not interpreted to be impacted from landfill-related activities in 2021.
- Based on municipal records, approximately 5,769 vehicles visited the Griffith site in 2021, and accepted approximately 12,765 bags and 177 trailer-loads of municipal waste for transfer. Included in these totals were approximately 294 cubic metres of leaf and yard waste and 900 cubic metres of construction and demolition waste. Based on information supplied by the municipality, 85 tonnes of municipal waste were collected at the Griffith site in 2021 and transported for final disposal to the approved waste disposal facility of GFL in Moose Creek, Ontario.
- Recycling tonnage records provided by the municipality indicated that 39 tonnes of Blue Box recyclables were collected from the Griffith Waste Disposal Site in 2021. Blue Box recyclable quantities contributing to this total included 17 tonnes of commingled containers, 17 tonnes of mixed fibres, and 5 tonnes of old corrugated cardboard. Approximately 2 tonnes of household organics were diverted at the Griffith site in 2021.
- According to municipal records, 129 tonnes of scrap metal and 63 refrigerant appliances, 20 tonnes of waste electronic and electrical equipment, and 3,078 tires were diverted from the depots at the Norway Lake Waste Disposal Site, Mount St. Patrick Waste Disposal Site, and Griffith Waste Disposal Site.

The following recommendations are provided to the Township for consideration as part of the 2022 environmental work program for the Griffith Waste Disposal Site:

- The 2022 groundwater monitoring program for the site should include one (1) sampling event in the summer for the parameter suite shown in Table 1 for the groundwater regime at the site.
- In 2022, groundwater monitoring wells 96-7S, 96-7D, and 96-9 should continue to be used to assess the site's compliance with MECP Guideline B-7 downgradient of the site. Since monitoring wells 96-7S, 96-7D and 96-9 are located approximately 160 m upgradient of the downgradient property boundary, they are interpreted to be sufficient to assess the site's compliance with MECP RUC and Guideline B-7.
- Consistent with the recommendation included in the 2015 Annual Report (Greenview, 2016), in the interest of using data that is understood to not be influenced by winter road maintenance activities at the transfer station as part of the calculations of median background groundwater quality and RUC limits, it is recommended to use only data from 2003 to 2009 from background monitoring well 91-1. The Township should continue to review documented groundwater quality at background monitor 91-1 in

future years, and if parameter concentrations are observed to decrease to pre-impacted levels, then consideration of including data interpreted to not be impacted by winter road maintenance activities is recommended.

- Consistent with the MECP TSS surface water review received in February 2018, a surface water monitoring event should be conducted once per year in summer, coinciding with the groundwater monitoring event, utilizing surface water sampling stations STN-1, STN-4, and STN-5 in accordance with the parameter suite presented in Table 1, to monitor the surface water regime at the site. Collection of surface water samples during scheduled sample events should only be conducted if sufficient quantities of water are available at the sampling location to avoid potentially biased results.
- In 2022, the Township should continue to conduct routine litter management (as required), waste record keeping protocols, and refrigerant management activities at the Griffith Waste Disposal Site to maintain continued compliance with MECP guidelines.
- Given that landfilling ceased at the Griffith Waste Disposal Site in 2011 and closure of the waste mound was completed as of 2012, it is recommended that the MECP consider reductions in the scope of the groundwater monitoring program for future years. At this time, it is proposed that groundwater sampling should be modified for summer sampling events to include only the following monitoring wells: 91-1, 91-2, 91-4, 91-5, 96-9, and MW06-11. All wells that currently exist at the site should be maintained in order that groundwater elevations may continue to be measured as part of future summer groundwater sampling events, such that detailed groundwater flow directions at the site may be calculated annually for reporting purposes. The existing groundwater parameter suite is proposed to be maintained as part of future summer sampling events. Upon approval of this proposed reduction in scope of the groundwater monitoring program by the MECP, the changes would be applied to the following year's groundwater monitoring program.

6.0 Closing

Greenview has prepared this report in accordance with MECP guidelines and ECA (A412203) Condition 19, to document the results of the 2021 environmental monitoring program and to detail site operations for the Griffith Waste Disposal Site.

Based on the results of the 2021 environmental monitoring program, the Griffith Waste Disposal Site is in compliance with all conditions of the ECA (A412203) and with the inspections, monitoring, and reporting requirements of the Conditions therein.

This report is governed by the attached statement of service conditions and limitations (Appendix G).

All respectfully submitted by,

Greenview Environmental Management Limited



Dan Hagan, P.Geol.
Senior Project Manager / Geologist



Tyler H. Peters, P.Eng.
Project Director

7.0 References

- Bear, J., 1972. Dynamics of Fluids in Porous Media. Dover Publications. 1972.
- CCREM (Canadian Council of Resource and Environment Ministers). 1987. Canadian Water Quality Guidelines. Prepared by the Task Force on Water Quality Guidelines.
- Fetter, C. W. (1994). Applied Hydrogeology, 3rd ed. Upper Saddle River, NJ: Prentice Hall, Inc.
- Golder Associates Limited, 2006. 2005 Annual Report, Griffith Waste Disposal Site, Township of Greater Madawaska, Ontario. March 2006.
- Golder Associates Limited, 2007. 2006 Annual Report, Griffith Waste Disposal Site, Township of Greater Madawaska, Ontario. March 2007.
- Google Earth. May 8, 2004. February 13, 2013.
- Greenview Environmental Management Limited, 2007. Addendum to the Closure Plan, Griffith Waste Disposal Site, Township of Greater Madawaska, Ontario. June 2007.
- Greenview Environmental Management Limited, 2008. 2007 Annual Report, Griffith Waste Disposal Site, Township of Greater Madawaska, Ontario. March 2008.
- Greenview Environmental Management Limited, 2009. 2008 Annual Report, Griffith Waste Disposal Site, Township of Greater Madawaska, Ontario. March 2009.
- Greenview Environmental Management Limited, 2010. 2009 Annual Report, Griffith Waste Disposal Site, Township of Greater Madawaska, Ontario. March 2010.
- Greenview Environmental Management Limited, 2011. 2010 Annual Report, Griffith Waste Disposal Site, Township of Greater Madawaska, Ontario. March 2011.
- Greenview Environmental Management Limited, 2012. 2011 Annual Report, Griffith Waste Disposal Site, Township of Greater Madawaska, Ontario. March 26, 2012.
- Greenview Environmental Management Limited, 2013. 2012 Annual Report, Griffith Waste Disposal Site, Township of Greater Madawaska, Ontario. March 22, 2013.
- Greenview Environmental Management Limited, 2014. 2013 Annual Report, Griffith Waste Disposal Site, Township of Greater Madawaska, Ontario. March 21, 2014.
- Greenview Environmental Management Limited, 2015. 2014 Annual Report, Griffith Waste Disposal Site, Township of Greater Madawaska, Ontario. March 23, 2015.
- Greenview Environmental Management Limited, 2016. 2015 Annual Report, Griffith Waste Disposal Site, Township of Greater Madawaska, Ontario. March 2016.
- Greenview Environmental Management Limited, 2017. 2016 Annual Report, Griffith Waste Disposal Site, Township of Greater Madawaska, Ontario. March 2017.
- Greenview Environmental Management Limited, 2018. 2017 Annual Report, Griffith Waste Disposal Site, Township of Greater Madawaska, Ontario. March 2018.
- Greenview Environmental Management Limited, 2019. 2018 Annual Report, Griffith Waste Disposal Site, Township of Greater Madawaska, Ontario. March 2019.
- Greenview Environmental Management Limited, 2020. 2019 Annual Report, Griffith Waste Disposal Site, Township of Greater Madawaska, Ontario. March 2020.
- Greenview Environmental Management Limited, 2021. 2020 Annual Report, Griffith Waste Disposal Site, Township of Greater Madawaska, Ontario. March 2021.
- Ontario Ministry of the Environment, 1994a. MECP Procedure B-7-1: Determination of Contaminant Limits and Attenuation Zones. 1994.

Ontario Ministry of the Environment, 1994b. Water Management: Policies, Guidelines, Provincial Water Quality Objectives of the Ministry of Environment and Energy. July, 1994.

Ontario Ministry of the Environment, 2006. Technical Support Document for Ontario Drinking Water Standards, Objectives and Guidelines. June, 2006.

Ontario Ministry of the Environment, 2010. Monitoring and Reporting for Waste Disposal Sites, Groundwater and Surface Water - Technical Guidance Document. November, 2010.

SGS Lakefield Research Ltd., 2005. 2004 Annual Report, Griffith Waste Disposal Site. March 28, 2005.

SGS Lakefield Research Ltd., 2006. Closure Plan, Griffith Waste Disposal Site. May 30, 2006.

Tables



Table 1
2021 Groundwater and Surface Water Monitoring Program
Griffith Waste Disposal Site

Location		Frequency	Parameters		
Groundwater					
91-1	91-2	Once (1x)	Alkalinity	Ammonia (total)	Boron
91-4	91-5		Cadmium	Calcium	Chloride
96-7S	96-7D		COD	Copper	DOC
96-9	96-10S		Hardness	Ion Balance	Iron
96-10D	MW06-11		Magnesium	Manganese	Nitrate
			Nitrite	Phenols	Potassium
			Sodium	Strontium	Sulphate
1x QA/QC		(Summer)	TDS	TKN	
			Field Measurements		
			Conductivity	Dissolved Oxygen	pH
			Temperature		
COUNT =	11				
Surface Water					
STN-1	STN-4	Once (1x)	Alkalinity	Ammonia (total)	Boron
STN-5			Cadmium	Calcium	Chloride
			COD	Copper	Hardness
			Ion Balance	Iron	Magnesium
			Manganese	Nitrate	Nitrite
1x QA/QC			Phenols	Phosphorus (total)	Potassium
			Sodium	Strontium	Sulphate
		(Summer)	TDS	TKN	Zinc
			Field Measurements		
			Conductivity	Dissolved Oxygen	pH
			Temperature	Un-ionized Ammonia (calculation)	
COUNT =	4				

Table 2
Groundwater Monitoring Well and Surface Water Sampling Locations
Griffith Waste Disposal Site

Groundwater			
Monitor	Zone	Northing	Easting
91-1	18T	5012572	327304
91-2	18T	5012742	327299
91-4	18T	5012691	327323
91-5	18T	5012787	327312
96-7D	18T	5012840	327267
96-7S	18T	5012840	327267
96-9	18T	5012857	327354
96-10D	18T	5012796	327368
96-10S	18T	5012796	327368
MW06-11	18T	5012656	327575
MW12-12	18T	5012541	327310

Surface Water			
Monitor	Zone	Northing	Easting
STN-1	18T	5012656	327575
STN-4	18T	5012786	327637
STN-5	18T	5012838	327607

Notes:

Global Positioning System (GPS) point locations acquired by Greenview using a Garmin eTrex Venture HC.



Table 3
Groundwater Elevations
Griffith Waste Disposal Site

























Monitor	Ground Elevation (m)	Top of Pipe Elevation (m) 1,2	Original Stick-Up (m)	Depth of Well (m) ³	Well Diameter (mm)	Groundwater Elevation (m)											
						22-May-14	03-Sep-14	25-May-15	10-Aug-15	24-May-16	31-Aug-16	04-May-17	19-Sep-17	13-Aug-18	20-Aug-19	19-Aug-20	18-Aug-21
91-1	103.70	104.73	1.03	4.45	38.1	103.58	102.07	102.84	102.70	102.96	101.94	103.62	102.15	102.18	101.82	102.02	102.51
91-2	95.75	96.36	0.61	9.66	38.1	90.84	89.80	90.17	88.92	90.45	88.99	91.23	89.92	89.93	89.22	89.34	89.88
91-4	92.18	94.63	0.94	6.08	38.1	91.89	90.83	91.15	90.35	91.39	90.23	92.16	90.64	90.62	90.44	90.38	91.37
91-5	91.08	91.83	1.09	6.95	38.1	89.32	88.58	88.70	88.20	88.75	88.25	89.18	88.51	88.51	88.21	88.34	88.70
91-6	91.70	92.46	1.14	4.15	38.1	91.27	90.80	90.96	90.44	91.06	90.44	91.20	90.70	90.62	90.37	90.56	91.03
96-7S	90.75	91.78	1.03	2.38	38.1	90.11	Dry	89.47	Dry	Dry	Dry	90.45	Dry	Dry	Dry	Dry	Dry
96-7D	90.75	91.35	0.60	6.89	38.1	89.20	89.26	89.02	88.45	89.10	88.46	89.45	89.04	88.95	88.17	88.97	89.83
96-8	90.51	91.54	1.03	5.16	38.1	89.17	88.50	89.33	88.01	88.64	88.05	89.08	88.42	88.39	87.70	88.23	88.56
96-9	89.67	90.41	0.74	5.86	38.1	87.98	87.75	87.92	87.30	87.89	87.53	87.96	87.68	87.62	87.06	87.45	87.90
96-10S	88.50	89.43	0.93	2.24	38.1	88.36	88.20	88.22	87.88	88.24	87.92	88.36	88.17	88.11	87.80	88.03	88.19
96-10D	88.50	89.43	0.93	6.66	38.1	88.50	88.26	88.27	87.93	88.30	87.96	88.47	88.21	88.18	87.87	88.07	88.23
MW06-11	83.40	84.39	0.83	3.82	50.8	83.69	83.40	83.57	83.26	83.50	83.24	83.72	83.36	83.35	83.26	83.37	83.53
MW12-12	104.54	105.40	0.86	6.86	50.8	104.09	102.61	103.40	101.96	103.52	101.96	104.13	102.39	102.32	101.92	102.17	102.11

Notes:

1. Elevations based on SGS Lakefield Research 2004 Annual Report, with updated elevations following 2006 repairs.
2. Monitoring Well 91-2 extended and MW12-12 installed July 27, 2012, surveyed November 20, 2012.
3. Depth of well below ground surface (m).

All elevations are relative to a site specific benchmark (BM# 2) elevation of 106.277 m.
 "-" indicates water level is not available.

Table 4
Groundwater Quality
Griffith Waste Disposal Site

Parameter	Background (median) (2003 - 2009)	RUC ¹	ODWS ²	91-1 (Background)							5-year Trends (sparkline)
				10-Aug-15	31-Aug-16	19-Sep-17	13-Aug-18	20-Aug-19	19-Aug-20	18-Aug-21	
Alkalinity (as CaCO ₃)	175	338	30 - 500	235	274	277	238	192	249	298	
Ammonia, Total (as N)	0.1	N/L	N/L	< 0.1	0.14	0.04	0.03	0.06	0.02	0.04	
Boron	0.02	1.3	5	0.0719	0.044	0.041	0.041	0.061	0.054	0.053	
Cadmium	0.00004	0.0013	0.005	0.000018	< 0.00002	< 0.000014	< 0.000015	< 0.000015	< 0.000028	< 0.000028	
Calcium	84	N/L	N/L	233	110	90.3	112	394	159	97.8	
Chloride	64	157	250	630	220	146	301	1380	468	230	
Chemical Oxygen Demand	10	N/L	N/L	11	19	13	11	25	10	13	
Conductivity (µS/cm) ³	452	N/L	N/L	1801	1276	876	1119	2424	1409	941	
Copper	0.003	0.5	1	0.00105	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.0012	
Dissolved Organic Carbon	2.1	3.6	5	< 1	1.4	3.3	1.7	1.6	2.9	2.2	
Hardness (as CaCO ₃)	244	372	500	669	321	262	329	1140	459	282	
Iron	5.2	5.2	0.3	12.80	6.95	5.22	7.56	23.4	7.20	6.14	
Magnesium	8.6	N/L	N/L	21.0	11.0	8.83	11.9	36.6	14.9	9.21	
Manganese	0.11	0.11	0.05	0.131	0.079	0.066	0.078	0.207	0.082	0.063	
Nitrate (as N)	0.07	2.6	10	< 0.06	0.1	< 0.05	< 0.05	< 0.5	< 0.05	< 0.5	
Nitrite (as N)	0.06	0.3	1	< 0.03	< 0.1	< 0.05	< 0.05	< 0.5	< 0.05	< 0.5	
pH (units) ³	7.00	6.5 - 8.5	6.5 - 8.5	7.19	7.41	7.56	7.17	6.88	7.02	7.48	
Phenols	0.002	N/L	N/L	0.008	< 0.001	< 0.001	0.008	< 0.002	0.008	< 0.002	
Potassium	2.9	N/L	N/L	4.47	3.8	3.9	4.1	7.4	4.8	3.9	
Sodium	18.2	109	200	195	160	158	182	386	259	215	
Strontium	0.28	N/L	N/L	0.889	0.429	0.319	0.444	1.41	0.542	0.355	
Sulphate	18	259	500	42	47	30	33	45	37	30	
Total Dissolved Solids	354	427	500	1760	733	615	801	2290	1148	783	
Total Kjeldahl Nitrogen	0.5	N/L	N/L	< 0.5	1.1	0.2	0.4	0.2	0.3	0.2	
Anion Sum (meq/L)	-	N/L	N/L	-	12.7	10.3	13.9	43.7	19.0	13.1	-
Cation Sum (meq/L)	-	N/L	N/L	-	13.8	12.5	15.0	40.9	20.9	15.4	-
Anion-Cation Balance (% difference)	-	N/L	N/L	-	4.36	9.78	3.69	3.30	4.92	8.29	-

Notes:

1. Reasonable Use Concept (RUC) criteria.
2. Ontario Drinking Water Standards (ODWS).
3. Results obtained from field analysis.

All results are expressed in mg/L unless otherwise stated.

























Bold and shaded values exceed the ODWS.

Bold and italic values exceed RUC limits.

N/L indicates No Limit.

"-" indicates the parameter was not analyzed.

Table 4
Groundwater Quality
Griffith Waste Disposal Site

Parameter	Background (median) (2003 - 2009)	RUC ¹	ODWS ²	91-2							5-year Trends (sparkline)
				10-Aug-15	31-Aug-16	19-Sep-17	13-Aug-18	20-Aug-19	19-Aug-20	18-Aug-21	
Alkalinity (as CaCO ₃)	175	338	30 - 500	751	840	792	722	674	674	692	
Ammonia, Total (as N)	0.1	N/L	N/L	7.1	7.30	6.37	6.95	6.05	6.49	6.19	
Boron	0.02	1.3	5	0.591	0.803	0.935	0.773	0.615	0.768	0.740	
Cadmium	0.00004	0.0013	0.005	0.000462	0.00063	0.000386	0.000384	0.000362	0.000423	0.000442	
Calcium	84	N/L	N/L	179	210	214	176	203	217	222	
Chloride	64	157	250	140	139	65.8	65.5	68.7	83.9	115	
Chemical Oxygen Demand	10	N/L	N/L	58	214	73	56	52	53	69	
Conductivity (µS/cm) ³	452	N/L	N/L	1385	1884	1193	1123	936	1034	1003	
Copper	0.003	0.5	1	0.0331	0.037	0.027	0.023	0.017	0.032	0.0228	
Dissolved Organic Carbon	2.1	3.6	5	24.3	13.4	20.1	18.0	18.4	18.9	12.3	
Hardness (as CaCO ₃)	244	372	500	565	681	687	578	635	687	705	
Iron	5.2	5.2	0.3	0.128	0.193	0.245	0.250	0.191	0.678	0.598	
Magnesium	8.6	N/L	N/L	28.7	38.0	37.0	33.6	31.1	35.2	36.4	
Manganese	0.11	0.11	0.05	25.7	33.0	26.4	22.1	19.6	22.8	22.5	
Nitrate (as N)	0.07	2.6	10	< 0.06	< 0.1	0.20	< 0.05	0.71	0.27	< 0.5	
Nitrite (as N)	0.06	0.3	1	< 0.03	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	
pH (units) ³	7.00	6.5 - 8.5	6.5 - 8.5	6.72	6.79	6.73	6.62	6.80	6.49	7.24	
Phenols	0.002	N/L	N/L	0.008	< 0.001	< 0.001	0.015	< 0.002	< 0.002	< 0.002	
Potassium	2.9	N/L	N/L	54.8	63.7	63.1	61.1	51.4	60.0	57.9	
Sodium	18.2	109	200	126	149	121	95.6	68.9	68.0	69.3	
Strontium	0.28	N/L	N/L	0.648	0.772	0.737	0.638	0.755	0.673	0.709	
Sulphate	18	259	500	65	79	77	63	85	76	51	
Total Dissolved Solids	354	427	500	1200	1120	988	875	846	897	914	
Total Kjeldahl Nitrogen	0.5	N/L	N/L	6.8	9.1	8.4	8.1	7.2	7.4	6.7	
Anion Sum (meq/L)	-	N/L	N/L	-	22.4	19.3	17.6	17.2	17.4	18.1	-
Cation Sum (meq/L)	-	N/L	N/L	-	23.1	22.2	18.7	17.9	19.7	20.0	-
Anion-Cation Balance (% difference)	-	N/L	N/L	-	1.72	7.04	3.18	1.81	6.11	4.91	-

Notes:

1. Reasonable Use Concept (RUC) criteria.
2. Ontario Drinking Water Standards (ODWS).
3. Results obtained from field analysis.

All results are expressed in mg/L unless otherwise stated.

























Bold and shaded values exceed the ODWS.

Bold and italic values exceed RUC limits.

N/L indicates No Limit.

"-" indicates the parameter was not analyzed.

Table 4
Groundwater Quality
Griffith Waste Disposal Site

Parameter	Background (median) (2003 - 2009)	RUC ¹	ODWS ²	91-4							5-year Trends (sparkline)
				10-Aug-15	31-Aug-16	19-Sep-17	13-Aug-18	20-Aug-19	19-Aug-20	18-Aug-21	
Alkalinity (as CaCO ₃)	175	338	30 - 500	614	665	659	581	580	570	618	
Ammonia, Total (as N)	0.1	N/L	N/L	5.0	5.05	4.90	4.09	4.99	4.47	5.28	
Boron	0.02	1.3	5	0.421	0.442	0.463	0.454	0.435	0.460	0.518	
Cadmium	0.00004	0.0013	0.005	0.000628	0.000760	0.000509	0.000550	0.000613	0.000495	0.000654	
Calcium	84	N/L	N/L	189	212	209	177	200	212	216	
Chloride	64	157	250	70	72.9	42.5	34.1	51.6	69.6	91.9	
Chemical Oxygen Demand	10	N/L	N/L	40	56	34	44	44	44	61	
Conductivity (µS/cm) ³	452	N/L	N/L	936	1041	954	897	839	864	1006	
Copper	0.003	0.5	1	0.0286	0.0350	0.027	0.027	0.023	0.026	0.0291	
Dissolved Organic Carbon	2.1	3.6	5	20.2	13.6	18.8	15.8	17.7	16.3	11.6	
Hardness (as CaCO ₃)	244	372	500	574	668	654	556	621	646	667	
Iron	5.2	5.2	0.3	0.023	0.015	0.013	0.016	0.008	0.015	0.021	
Magnesium	8.6	N/L	N/L	25.0	33.7	32.1	27.7	29.4	28.3	30.9	
Manganese	0.11	0.11	0.05	29.2	32.2	26.7	23.0	24.3	21.9	23.8	
Nitrate (as N)	0.07	2.6	10	0.46	0.5	0.84	0.65	0.51	1.04	< 0.5	
Nitrite (as N)	0.06	0.3	1	< 0.03	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	
pH (units) ³	7.00	6.5 - 8.5	6.5 - 8.5	6.45	6.61	6.48	6.56	6.50	6.50	7.04	
Phenols	0.002	N/L	N/L	0.005	< 0.001	< 0.001	0.012	< 0.002	< 0.002	< 0.002	
Potassium	2.9	N/L	N/L	39.9	47.8	47.8	41.4	46	39.0	42.4	
Sodium	18.2	109	200	48.2	57.3	53.6	49.0	49.8	35.4	50.0	
Strontium	0.28	N/L	N/L	0.600	0.703	0.649	0.601	0.624	0.597	0.667	
Sulphate	18	259	500	74	112	66	65	106	77	74	
Total Dissolved Solids	354	427	500	954	865	805	710	749	783	829	
Total Kjeldahl Nitrogen	0.5	N/L	N/L	4.6	5.9	5.6	4.6	5.8	5.1	6.0	
Anion Sum (meq/L)	-	N/L	N/L	-	17.7	15.8	14.0	15.3	15.0	16.5	-
Cation Sum (meq/L)	-	N/L	N/L	-	18.4	18.1	15.6	16.8	16.7	18.0	-
Anion-Cation Balance (% difference)	-	N/L	N/L	-	2.02	6.86	5.43	4.73	5.29	4.36	-

Notes:

1. Reasonable Use Concept (RUC) criteria.
2. Ontario Drinking Water Standards (ODWS).
3. Results obtained from field analysis.

All results are expressed in mg/L unless otherwise stated.























Bold and shaded values exceed the ODWS.

Bold and italic values exceed RUC limits.

N/L indicates No Limit.

"-" indicates the parameter was not analyzed.

Table 4
Groundwater Quality
Griffith Waste Disposal Site

Parameter	Background (median) (2003 - 2009)	RUC ¹	ODWS ²	91-5							5-year Trends (sparkline)
				10-Aug-15	31-Aug-16	19-Sep-17	13-Aug-18	20-Aug-19	19-Aug-20	18-Aug-21	
Alkalinity (as CaCO ₃)	175	338	30 - 500	512	594	356	288	581	552	646	
Ammonia, Total (as N)	0.1	N/L	N/L	0.7	2.79	1.23	1.23	4.66	3.11	2.11	
Boron	0.02	1.3	5	0.323	0.539	0.348	0.274	0.648	0.635	0.733	
Cadmium	0.00004	0.0013	0.005	0.000082	0.00015	0.000054	0.000092	0.000063	0.000053	0.000271	
Calcium	84	N/L	N/L	169	187	144	129	201	213	241	
Chloride	64	157	250	97	87.0	152	211	75.2	66.6	36.7	
Chemical Oxygen Demand	10	N/L	N/L	42	94	106	63	118	61	49	
Conductivity (µS/cm) ³	452	N/L	N/L	854	1273	855	774	811	780	1004	
Copper	0.003	0.5	1	0.00284	0.004	< 0.002	< 0.002	< 0.002	0.002	0.0087	
Dissolved Organic Carbon	2.1	3.6	5	16.1	12.9	8.7	6.0	17.1	15.5	15.7	
Hardness (as CaCO ₃)	244	372	500	494	581	441	391	624	643	719	
Iron	5.2	5.2	0.3	1.81	2.50	2.13	0.586	2.73	3.95	2.48	
Magnesium	8.6	N/L	N/L	17.7	27.8	19.6	16.6	29.5	26.8	28.3	
Manganese	0.11	0.11	0.05	5.96	9.09	8.77	3.63	9.64	7.89	4.88	
Nitrate (as N)	0.07	2.6	10	0.3	0.2	< 0.05	0.07	0.08	0.07	< 0.5	
Nitrite (as N)	0.06	0.3	1	0.08	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	
pH (units) ³	7.00	6.5 - 8.5	6.5 - 8.5	6.67	6.86	6.67	6.79	6.95	7.30	7.31	
Phenols	0.002	N/L	N/L	0.005	< 0.001	< 0.001	< 0.01	< 0.002	< 0.002	< 0.002	
Potassium	2.9	N/L	N/L	9.0	24.4	15.1	16.0	30.2	30.0	26.2	
Sodium	18.2	109	200	78	84.0	104	81.5	53.5	47.4	31.0	
Strontium	0.28	N/L	N/L	1.51	1.96	1.39	1.07	2.32	1.38	1.55	
Sulphate	18	259	500	71	88	53	43	106	83	113	
Total Dissolved Solids	354	427	500	863	817	758	710	778	755	772	
Total Kjeldahl Nitrogen	0.5	N/L	N/L	1.2	3.8	3.0	2.5	6.6	6.2	2.8	
Anion Sum (meq/L)	-	N/L	N/L	-	16.2	12.5	12.6	15.9	14.6	16.3	-
Cation Sum (meq/L)	-	N/L	N/L	-	16.4	14.3	12.0	16.1	16.4	16.9	-
Anion-Cation Balance (% difference)	-	N/L	N/L	-	0.748	6.65	2.36	0.576	5.76	1.77	-

Notes:

1. Reasonable Use Concept (RUC) criteria.
2. Ontario Drinking Water Standards (ODWS).
3. Results obtained from field analysis.

All results are expressed in mg/L unless otherwise stated.

























Bold and shaded values exceed the ODWS.

Bold and italic values exceed RUC limits.

N/L indicates No Limit.

"-" indicates the parameter was not analyzed.

Table 4
Groundwater Quality
Griffith Waste Disposal Site

Parameter	Background (median) (2003 - 2009)	RUC ¹	ODWS ²	96-7D							5-year Trends (sparkline)
				10-Aug-15	31-Aug-16	19-Sep-17	13-Aug-18	20-Aug-19	19-Aug-20	18-Aug-21	
Alkalinity (as CaCO ₃)	175	338	30 - 500	217	215	208	197	196	196	221	
Ammonia, Total (as N)	0.1	N/L	N/L	< 0.1	0.05	0.06	0.06	0.06	0.04	0.07	
Boron	0.02	1.3	5	0.0679	0.043	0.035	0.039	0.036	0.042	0.044	
Cadmium	0.00004	0.0013	0.005	0.000049	0.00002	< 0.000014	0.000017	< 0.000015	< 0.000015	< 0.000015	
Calcium	84	N/L	N/L	111.0	122	123	110	111	114	110	
Chloride	64	157	250	56.0	92.1	68.2	78.9	65.2	60.8	57.6	
Chemical Oxygen Demand	10	N/L	N/L	32	25	31	29	32	29	29	
Conductivity (µS/cm) ³	452	N/L	N/L	459	626	484	465	393	382	490	
Copper	0.003	0.5	1	0.00199	< 0.002	< 0.002	< 0.002	< 0.002	< 0.002	0.0017	
Dissolved Organic Carbon	2.1	3.6	5	9.2	7.8	10.6	10.4	11.8	11.8	9.0	
Hardness (as CaCO ₃)	244	372	500	304	337	338	306	304	315	305	
Iron	5.2	5.2	0.3	0.59	1.25	0.671	0.702	0.476	0.877	0.948	
Magnesium	8.6	N/L	N/L	6.18	7.42	7.44	7.51	6.44	7.20	7.25	
Manganese	0.11	0.11	0.05	0.124	0.285	0.140	0.215	0.111	0.183	0.219	
Nitrate (as N)	0.07	2.6	10	0.07	0.1	< 0.05	0.06	0.08	0.07	0.14	
Nitrite (as N)	0.06	0.3	1	< 0.03	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
pH (units) ³	7.00	6.5 - 8.5	6.5 - 8.5	6.41	6.95	6.67	7.31	7.76	8.01	8.12	
Phenols	0.002	N/L	N/L	0.003	< 0.001	< 0.001	< 0.002	< 0.002	0.007	< 0.002	
Potassium	2.9	N/L	N/L	2.89	3.40	3.5	3.3	3.4	3.4	3.4	
Sodium	18.2	109	200	5.88	10.9	13.4	12.1	11.7	10.6	11.3	
Strontium	0.28	N/L	N/L	1.26	1.25	1.21	1.25	1.10	1.14	1.20	
Sulphate	18	259	500	14	15	16	17	17	17	18	
Total Dissolved Solids	354	427	500	463	395	378	355	311	319	331	
Total Kjeldahl Nitrogen	0.5	N/L	N/L	< 0.5	0.4	0.5	0.5	0.4	0.5	0.4	
Anion Sum (meq/L)	-	N/L	N/L	-	7.21	6.40	6.51	6.12	5.98	6.43	-
Cation Sum (meq/L)	-	N/L	N/L	-	7.36	7.47	6.77	6.7	6.89	6.73	-
Anion-Cation Balance (% difference)	-	N/L	N/L	-	1.05	7.67	1.95	4.51	7.02	2.27	-

Notes:

1. Reasonable Use Concept (RUC) criteria.
2. Ontario Drinking Water Standards (ODWS).
3. Results obtained from field analysis.

All results are expressed in mg/L unless otherwise stated.

























Bold and shaded values exceed the ODWS.

Bold and italic values exceed RUC limits.

N/L indicates No Limit.

“-” indicates the parameter was not analyzed.

Table 4
Groundwater Quality
Griffith Waste Disposal Site

Parameter	Background (median) (2003 - 2009)	RUC ¹	ODWS ²	96-9							5-year Trends (sparkline)
				10-Aug-15	31-Aug-16	19-Sep-17	13-Aug-18	20-Aug-19	19-Aug-20	18-Aug-21	
Alkalinity (as CaCO ₃)	175	338	30 - 500	147	188	139	117	192	119	141	
Ammonia, Total (as N)	0.1	N/L	N/L	< 0.1	0.10	0.01	0.02	0.04	< 0.01	0.03	
Boron	0.02	1.3	5	0.0357	0.024	0.021	0.022	0.036	0.023	0.030	
Cadmium	0.00004	0.0013	0.005	0.000017	< 0.00002	< 0.000014	< 0.000015	< 0.000015	< 0.000015	0.000016	
Calcium	84	N/L	N/L	73.6	104	73.7	60.7	98.1	51.3	67.8	
Chloride	64	157	250	47	77.4	30.3	23.7	54.8	19.3	33.7	
Chemical Oxygen Demand	10	N/L	N/L	< 8	41	14	6	13	6	12	
Conductivity (µS/cm) ³	452	N/L	N/L	365	406	369	368	337	331	440	
Copper	0.003	0.5	1	0.00184	0.002	< 0.002	0.003	< 0.002	0.003	0.0044	
Dissolved Organic Carbon	2.1	3.6	5	4.1	2.9	4.9	4.1	5.3	5.4	4.8	
Hardness (as CaCO ₃)	244	372	500	211	311	218	178	290	148	194	
Iron	5.2	5.2	0.3	0.211	0.308	0.240	0.170	0.217	0.005	0.100	
Magnesium	8.6	N/L	N/L	6.63	12.5	8.19	6.49	11.0	4.87	6.01	
Manganese	0.11	0.11	0.05	0.134	0.240	0.147	0.112	0.230	0.058	0.076	
Nitrate (as N)	0.07	2.6	10	< 0.06	0.1	< 0.05	< 0.05	0.06	< 0.05	0.12	
Nitrite (as N)	0.06	0.3	1	< 0.03	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
pH (units) ³	7.00	6.5 - 8.5	6.5 - 8.5	6.62	6.49	7.97	7.21	7.79	8.13	7.74	
Phenols	0.002	N/L	N/L	< 0.002	< 0.001	< 0.001	< 0.002	< 0.002	0.006	< 0.002	
Potassium	2.9	N/L	N/L	1.54	1.8	1.7	1.4	1.8	1.4	1.6	
Sodium	18.2	109	200	5.11	7.3	8.1	9.4	13.2	8.4	12.9	
Strontium	0.28	N/L	N/L	0.494	0.819	0.496	0.421	0.715	0.309	0.382	
Sulphate	18	259	500	14.0	23	14	15	27	17	16	
Total Dissolved Solids	354	427	500	311	353	224	338	297	174	215	
Total Kjeldahl Nitrogen	0.5	N/L	N/L	< 0.5	0.4	0.2	0.2	0.2	0.1	0.2	
Anion Sum (meq/L)	-	N/L	N/L	-	6.43	3.91	3.31	5.94	3.28	4.11	-
Cation Sum (meq/L)	-	N/L	N/L	-	6.59	4.77	4.02	6.44	3.36	4.49	-
Anion-Cation Balance (% difference)	-	N/L	N/L	-	1.27	9.84	9.69	4.06	1.32	4.41	-

Notes:

1. Reasonable Use Concept (RUC) criteria.
2. Ontario Drinking Water Standards (ODWS).
3. Results obtained from field analysis.

All results are expressed in mg/L unless otherwise stated.

























Bold and shaded values exceed the ODWS.

Bold and italic values exceed RUC limits.

N/L indicates No Limit.

"-" indicates the parameter was not analyzed.

Table 4
Groundwater Quality
Griffith Waste Disposal Site

Parameter	Background (median) (2003 - 2009)	RUC ¹	ODWS ²	96-10S							5-year Trends (sparkline)
				10-Aug-15	31-Aug-16	19-Sep-17	13-Aug-18	20-Aug-19	19-Aug-20	18-Aug-21	
Alkalinity (as CaCO ₃)	175	338	30 - 500	496	594	516	549	606	512	534	
Ammonia, Total (as N)	0.1	N/L	N/L	0.5	1.42	1.61	1.57	2.97	1.15	0.64	
Boron	0.02	1.3	5	0.313	0.523	0.514	0.564	0.752	0.548	0.435	
Cadmium	0.00004	0.0013	0.005	0.000384	0.00045	0.000217	0.000098	0.000065	0.000099	0.000283	
Calcium	84	N/L	N/L	175	203	196	185	244	213	200	
Chloride	64	157	250	95	85.7	92.9	48.7	59.7	56.4	85.1	
Chemical Oxygen Demand	10	N/L	N/L	32	371	282	265	323	464	182	
Conductivity (µS/cm) ³	452	N/L	N/L	931	986	922	888	915	848	834	
Copper	0.003	0.5	1	0.00693	0.011	0.004	0.006	0.002	0.006	0.0120	
Dissolved Organic Carbon	2.1	3.6	5	13.3	11.2	11.9	13.3	17.2	13.0	9.4	
Hardness (as CaCO ₃)	244	372	500	524	626	601	570	739	645	625	
Iron	5.2	5.2	0.3	0.162	0.318	0.079	0.896	0.319	0.191	0.163	
Magnesium	8.6	N/L	N/L	21.0	28.7	27.1	26.1	31.5	27.3	30.3	
Manganese	0.11	0.11	0.05	5.44	4.40	2.78	2.24	3.15	2.22	4.30	
Nitrate (as N)	0.07	2.6	10	< 0.06	0.4	< 0.05	< 0.05	0.06	0.12	< 0.5	
Nitrite (as N)	0.06	0.3	1	< 0.03	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.5	
pH (units) ³	7.00	6.5 - 8.5	6.5 - 8.5	6.42	6.93	7.71	6.95	6.88	6.76	7.69	
Phenols	0.002	N/L	N/L	0.003	< 0.001	< 0.001	0.014	< 0.002	< 0.002	< 0.002	
Potassium	2.9	N/L	N/L	11.5	18.9	19.2	19.6	25.0	16.7	19.4	
Sodium	18.2	109	200	69.1	80.5	86.8	64.5	58.1	46.1	47.6	
Strontium	0.28	N/L	N/L	0.690	0.855	0.779	0.797	0.940	0.753	0.666	
Sulphate	18	259	500	69	92	69	72	115	83	57	
Total Dissolved Solids	354	427	500	814	813	771	704	783	687	687	
Total Kjeldahl Nitrogen	0.5	N/L	N/L	1.0	2.6	7.9	5.0	3.5	8.7	4.0	
Anion Sum (meq/L)	-	N/L	N/L	-	16.2	14.4	13.8	16.2	13.6	14.3	-
Cation Sum (meq/L)	-	N/L	N/L	-	16.7	16.5	14.9	18.1	15.5	15.3	-
Anion-Cation Balance (% difference)	-	N/L	N/L	-	1.37	6.97	3.86	5.56	6.61	3.44	-

Notes:

1. Reasonable Use Concept (RUC) criteria.
2. Ontario Drinking Water Standards (ODWS).
3. Results obtained from field analysis.

All results are expressed in mg/L unless otherwise stated.

























Bold and shaded values exceed the ODWS.

Bold and italic values exceed RUC limits.

N/L indicates No Limit.

"-" indicates the parameter was not analyzed.

Table 4
Groundwater Quality
Griffith Waste Disposal Site

Parameter	Background (median) (2003 - 2009)	RUC ¹	ODWS ²	96-10D							5-year Trends (sparkline)
				10-Aug-15	31-Aug-16	19-Sep-17	13-Aug-18	20-Aug-19	19-Aug-20	18-Aug-21	
Alkalinity (as CaCO ₃)	175	338	30 - 500	441	637	584	587	607	553	568	
Ammonia, Total (as N)	0.1	N/L	N/L	0.4	0.87	1.23	1.08	1.94	0.98	1.24	
Boron	0.02	1.3	5	0.240	0.514	0.665	0.567	0.742	0.669	0.645	
Cadmium	0.00004	0.0013	0.005	0.000113	0.00024	0.000181	0.000157	0.000194	0.000132	0.000153	
Calcium	84	N/L	N/L	155	204	215	188	234	235	202	
Chloride	64	157	250	110	92.4	84.1	44.0	57.5	56.0	60.4	
Chemical Oxygen Demand	10	N/L	N/L	27	78	40	45	45	36	62	
Conductivity (µS/cm) ³	452	N/L	N/L	808	925	986	879	845	859	856	
Copper	0.003	0.5	1	0.0042	0.011	0.003	0.008	0.005	0.005	0.0070	
Dissolved Organic Carbon	2.1	3.6	5	11.4	11.8	12.6	13.9	17.4	15.9	11.9	
Hardness (as CaCO ₃)	244	372	500	457	607	654	572	708	698	623	
Iron	5.2	5.2	0.3	1.220	0.216	0.903	0.637	0.574	0.910	1.39	
Magnesium	8.6	N/L	N/L	17.1	24.0	28.4	24.9	29.9	26.9	28.6	
Manganese	0.11	0.11	0.05	3.90	2.76	5.02	3.94	5.01	5.48	6.87	
Nitrate (as N)	0.07	2.6	10	< 0.06	0.1	< 0.05	< 0.05	0.06	0.06	0.09	
Nitrite (as N)	0.06	0.3	1	< 0.03	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
pH (units) ³	7.00	6.5 - 8.5	6.5 - 8.5	6.27	6.81	7.84	6.71	6.78	6.96	7.91	
Phenols	0.002	N/L	N/L	< 0.002	< 0.001	< 0.001	0.014	< 0.002	< 0.002	< 0.002	
Potassium	2.9	N/L	N/L	8.4	13.3	16.7	15.1	18.4	15.2	17.3	
Sodium	18.2	109	200	75.4	95.4	96.5	70.1	63.5	56.0	53.9	
Strontium	0.28	N/L	N/L	0.691	0.951	0.901	0.846	0.949	0.850	0.776	
Sulphate	18	259	500	54	102	83	74	118	95	83	
Total Dissolved Solids	354	427	500	751	865	828	710	783	744	710	
Total Kjeldahl Nitrogen	0.5	N/L	N/L	0.8	1.7	1.8	1.7	2.5	1.5	1.8	
Anion Sum (meq/L)	-	N/L	N/L	-	17.5	15.8	14.5	16.2	14.6	14.8	-
Cation Sum (meq/L)	-	N/L	N/L	-	16.7	18.0	15.1	17.6	17.1	15.7	-
Anion-Cation Balance (% difference)	-	N/L	N/L	-	2.10	6.72	2.14	4.18	7.88	2.95	-

Notes:

1. Reasonable Use Concept (RUC) criteria.
2. Ontario Drinking Water Standards (ODWS).
3. Results obtained from field analysis.

All results are expressed in mg/L unless otherwise stated.

























Bold and shaded values exceed the ODWS.

Bold and italic values exceed RUC limits.

N/L indicates No Limit.

"-" indicates the parameter was not analyzed.

Table 4
Groundwater Quality
Griffith Waste Disposal Site

Parameter	Background (median) (2003 - 2009)	RUC ¹	ODWS ²	MW06-11							5-year Trends (sparkline)
				10-Aug-15	31-Aug-16	19-Sep-17	13-Aug-18	20-Aug-19	19-Aug-20	18-Aug-21	
Alkalinity (as CaCO ₃)	175	338	30 - 500	86	84	111	91	103	102	113	
Ammonia, Total (as N)	0.1	N/L	N/L	< 0.1	0.08	0.01	0.01	0.03	0.04	0.06	
Boron	0.02	1.3	5	0.0288	0.010	0.008	0.007	0.005	0.010	0.009	
Cadmium	0.00004	0.0013	0.005	0.000068	0.00009	0.000099	0.000130	0.000148	< 0.000070	< 0.000070	
Calcium	84	N/L	N/L	57.2	95.3	178	144	209	86.1	52.5	
Chloride	64	157	250	380	582	806	1040	1450	863	598	
Chemical Oxygen Demand	10	N/L	N/L	< 8	183	84	< 5	34	86	16	
Conductivity (µS/cm) ³	452	N/L	N/L	1090	1410	2174	2451	2617	1835	1700	
Copper	0.003	0.5	1	0.00124	0.003	< 0.002	0.002	< 0.002	< 0.002	0.0035	
Dissolved Organic Carbon	2.1	3.6	5	2.1	0.4	0.7	0.5	1.1	1.4	0.6	
Hardness (as CaCO ₃)	244	372	500	171	295	554	448	632	258	157	
Iron	5.2	5.2	0.3	0.041	0.007	0.010	0.302	0.006	0.022	0.352	
Magnesium	8.6	N/L	N/L	6.84	13.7	26.5	21.3	26.6	10.4	6.35	
Manganese	0.11	0.11	0.05	0.0773	0.057	0.031	0.052	0.006	0.015	0.050	
Nitrate (as N)	0.07	2.6	10	0.12	0.5	< 0.5	< 0.5	< 0.5	0.18	0.21	
Nitrite (as N)	0.06	0.3	1	< 0.03	< 0.1	< 0.5	< 0.5	< 0.5	< 0.05	< 0.05	
pH (units) ³	7.00	6.5 - 8.5	6.5 - 8.5	7.41	7.57	7.25	7.11	6.81	6.97	8.12	
Phenols	0.002	N/L	N/L	0.003	< 0.001	< 0.001	< 0.01	< 0.002	< 0.002	< 0.002	
Potassium	2.9	N/L	N/L	2.12	2.8	4.2	4.1	4.9	3.2	2.6	
Sodium	18.2	109	200	196	288	439	501	593	469	401	
Strontium	0.28	N/L	N/L	0.154	0.276	0.497	0.436	0.578	0.229	0.147	
Sulphate	18	259	500	12	21	25	22	33	25	17	
Total Dissolved Solids	354	427	500	823	1130	1730	1887	2370	1600	1228	
Total Kjeldahl Nitrogen	0.5	N/L	N/L	< 0.5	0.3	0.2	0.2	0.1	0.4	1.1	
Anion Sum (meq/L)	-	N/L	N/L	-	18.6	25.5	31.6	43.7	26.9	19.5	-
Cation Sum (meq/L)	-	N/L	N/L	-	18.5	30.3	30.9	38.5	25.6	20.7	-
Anion-Cation Balance (% difference)	-	N/L	N/L	-	0.257	8.60	1.24	6.25	2.47	2.96	-

Notes:

1. Reasonable Use Concept (RUC) criteria.
2. Ontario Drinking Water Standards (ODWS).
3. Results obtained from field analysis.

All results are expressed in mg/L unless otherwise stated.




























Bold and shaded values exceed the ODWS.

Bold and italic values exceed RUC limits.

N/L indicates No Limit.

"-" indicates the parameter was not analyzed.

Table 4
Groundwater Quality
Griffith Waste Disposal Site

Parameter	Background (median) (2003 - 2009)	RUC ¹	ODWS ²	MW12-12				5-year Trends (sparkline)
				11-Sep-12	21-Aug-13	03-Sep-14	10-Aug-15	
Alkalinity (as CaCO ₃)	175	338	30 - 500	205	261	243	277	
Ammonia, Total (as N)	0.1	N/L	N/L	< 0.1	0.1	< 0.1	< 0.1	
Boron	0.02	1.3	5	0.0183	0.0121	0.0083	0.0157	
Cadmium	0.00004	0.0013	0.005	0.000071	0.000033	0.000041	0.000051	
Calcium	84	N/L	N/L	225	179	233	254	
Chloride	64	157	250	540	510	710	790	
Chemical Oxygen Demand	10	N/L	N/L	8	< 8	11	12	
Conductivity (µS/cm) ³	452	N/L	N/L	1425	1347	1922	2005	
Copper	0.003	0.5	1	0.0019	0.0026	0.00298	0.00257	
Dissolved Organic Carbon	2.1	3.6	5	1.2	< 1	< 1	4.1	
Hardness (as CaCO ₃)	244	372	500	729	573	735	773	
Iron	5.2	5.2	0.3	0.209	0.254	0.092	< 0.007	
Magnesium	8.6	N/L	N/L	40.4	30.6	37.1	33.6	
Manganese	0.11	0.11	0.05	0.286	0.0254	0.0189	0.0206	
Nitrate (as N)	0.07	2.6	10	0.26	1.02	1.08	1.43	
Nitrite (as N)	0.06	0.3	1	< 0.06	< 0.03	< 0.03	< 0.03	
pH (units) ³	7.00	6.5 - 8.5	6.5 - 8.5	7.68	6.32	7.34	6.66	
Phenols	0.002	N/L	N/L	< 0.002	< 0.002	< 0.002	0.007	
Potassium	2.9	N/L	N/L	6.76	5.16	6.23	3.57	
Sodium	18.2	109	200	96.3	161	267	274	
Strontium	0.28	N/L	N/L	0.665	0.533	0.659	0.789	
Sulphate	18	259	500	19	30	27	32	
Total Dissolved Solids	354	427	500	1890	1490	1730	1940	
Total Kjeldahl Nitrogen	0.5	N/L	N/L	< 0.5	< 0.5	< 0.5	< 0.5	
Anion Sum (meq/L)	-	N/L	N/L	19.72	20.22	-	-	
Cation Sum (meq/L)	-	N/L	N/L	18.91	18.58	-	-	
Anion-Cation Balance (% difference)	-	N/L	N/L	-2.09	-4.22	-	-	

Notes:

1. Reasonable Use Concept (RUC) criteria.
2. Ontario Drinking Water Standards (ODWS).
3. Results obtained from field analysis.

All results are expressed in mg/L unless otherwise stated.

Bold and shaded values exceed the ODWS.

Bold and italic values exceed RUC limits.

N/L indicates No Limit.

"-" indicates the parameter was not analyzed.

Table 5
Surface Water Quality
Griffith Waste Disposal Site

Parameter	75th Percentile Background	PWQO ¹	STN-1 (Background)										5-year Trends (sparkline)
			25-May-15	10-Aug-15	24-May-16	31-Aug-16	04-May-17	19-Sep-17	13-Aug-18	20-Aug-19	19-Aug-20	18-Aug-21	
Alkalinity (as CaCO ₃)	175	25 % Decrease	104	182	108	182	60	156	175	160	163	176	
Ammonia, Total (as N)	0.1	N/L	< 0.1	< 0.1	< 0.01	< 0.01	< 0.01	0.02	0.03	0.07	0.03	0.03	
Ammonia, Un-ionized (as N) ²	0.00047	0.02	0.00026	0.00047	0.00004	0.00007	0.00008	0.00013	0.00012	0.00016	0.00011	0.00047	
Boron	0.0095	0.2	0.0063	0.0054	0.007	0.009	0.057	0.011	0.006	0.006	0.091	0.007	
Cadmium	0.000015	0.0002	< 0.000003	0.000003	0.00004	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	
Calcium	58.6	N/L	35.2	56.2	37.1	64.3	23.7	56.0	57.8	60.9	69.8	57.7	
Chemical Oxygen Demand	21	N/L	10	12	11	14	22	26	23	19	21	20	
Chloride	132	N/L	65	87	68.5	126	49.5	84	127	145	154	149	
Conductivity (µS/cm) ³	762	N/L	-	-	450	752	315	613	745	732	813	792	
Conductivity (µS/cm) ⁴	576	N/L	273	517	375	687	227	492	622	501	560	661	
Copper	0.00073	0.005	0.00051	0.00021	0.0026	0.0007	< 0.002	0.0006	0.0002	0.0004	0.0002	0.0003	
Dissolved Oxygen ⁴	9.43	5	10.1	5.39	14.63	4.98	12.88	4.06	3.07	3.64	3.90	1.55	
Hardness (as CaCO ₃)	188	N/L	114	178	121	207	76	185	186	194	221	184	
Iron	3.13	0.3	0.248	0.617	0.140	3.20	0.098	2.55	3.37	7.55	3.10	1.42	
Magnesium	10.4	N/L	6.24	9.30	6.83	11.2	4.17	10.9	10.2	10.2	11.3	9.66	
Manganese	0.70	N/L	0.030	0.552	0.028	0.923	0.018	0.673	0.720	0.755	0.691	0.385	
Nitrate (as N)	0.06	N/L	< 0.06	< 0.06	< 0.1	0.1	< 0.05	< 0.05	< 0.05	0.06	< 0.05	< 0.05	
Nitrite (as N)	0.05	N/L	< 0.03	< 0.03	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
pH (units) ⁴	7.71	6.5 - 8.5	7.13	7.27	7.72	7.36	7.71	7.38	7.15	6.95	7.15	7.73	
Phenols	0.002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	0.002	< 0.002	< 0.002	< 0.002	< 0.001	
Phosphorus, Total	0.03	0.03	0.007	0.005	< 0.01	0.04	0.02	0.03	0.03	0.08	0.05	0.02	
Potassium	1.10	N/L	1.02	0.44	1.0	1.5	0.6	0.8	0.8	0.7	1.1	1.1	
Sodium	76.7	200	38.4	56.4	44.1	76.1	35.8	63.7	78.4	73.3	82.4	87.0	
Strontium	0.18	N/L	0.098	0.156	0.110	0.193	0.072	0.202	0.171	0.171	0.193	0.162	
Sulphate	5.3	N/L	5.0	< 1	7	2	7	1	< 1	< 1	< 1	2	
Total Dissolved Solids	392	N/L	243	360	229	399	186	337	389	382	424	422	
Total Kjeldahl Nitrogen	0.5	N/L	< 0.5	< 0.5	0.08	1.0	0.3	0.3	0.3	0.4	0.3	0.3	
Zinc	0.008	0.02	0.002	< 0.002	< 0.005	< 0.005	< 0.005	0.039	< 0.005	< 0.005	0.018	0.015	
Cation Sum (meq/L)	-	N/L	3.97	-	4.37	7.68	3.10	5.51	7.37	7.52	8.22	7.58	-
Anion Sum (meq/L)	-	N/L	4.01	-	4.22	7.23	2.74	6.65	7.11	7.32	7.59	7.77	-
Anion-Cation Balance (% difference)	-	N/L	-0.6	-	1.69	3.03	6.29	9.34	1.74	1.36	3.99	1.21	-

Notes:

1. Provincial Water Quality Objectives (PWQO).

2. Calculated using Total Ammonia and field analysis.

3. Results obtained from laboratory analysis.

4. Results obtained from field analysis.

All results are expressed in mg/L unless otherwise stated.

Bold and shaded values exceed the PWQO.

N/L indicates No Limit.





























"-" indicates the parameter was not analyzed.

**Table 5
Surface Water Quality
Griffith Waste Disposal Site**

Parameter	75th Percentile Background	PWQO ¹	STN-4										5-year Trends (sparkline)
			25-May-15	10-Aug-15	24-May-16	31-Aug-16	04-May-17	19-Sep-17	13-Aug-18	20-Aug-19	19-Aug-20	18-Aug-21	
Alkalinity (as CaCO ₃)	175	25 % Decrease	115	195	116	185	71	161	178	166	165	179	
Ammonia, Total (as N)	0.1	N/L	0.2	< 0.1	< 0.01	0.07	< 0.01	0.01	0.01	0.05	< 0.01	0.02	
Ammonia, Un-ionized (as N) ²	0.00047	0.02	0.00016	0.00024	0.00003	0.00101	0.00004	0.00011	0.00014	0.00011	0.00004	0.00073	
Boron	0.0095	0.2	0.0058	0.0068	0.008	0.008	0.057	0.009	0.005	< 0.005	0.098	0.009	
Cadmium	0.000015	0.0002	< 0.000003	0.000008	< 0.00002	< 0.00002	< 0.000014	< 0.000014	< 0.000015	< 0.000015	< 0.000015	< 0.000015	
Calcium	58.6	N/L	40.3	66.0	42.9	60.3	26.9	52.4	60.5	62.8	73.2	58.1	
Chemical Oxygen Demand	21	N/L	15	12	13	11	22	15	20	14	15	28	
Chloride	132	N/L	73	86	72.0	113	49.4	81.5	117	127	140	138	
Conductivity (µS/cm) ³	762	N/L	-	-	488	699	333	612	729	700	788	758	
Conductivity (µS/cm) ⁴	576	N/L	303	420	207	655	243	475	572	463	533	653	
Copper	0.00073	0.005	0.00142	0.00328	0.0005	0.0007	0.003	0.0007	0.0003	0.0004	0.0003	0.0007	
Dissolved Oxygen ⁴	9.43	5	11.56	9.11	15.38	9.89	13.39	7.89	8.91	12.45	8.43	5.44	
Hardness (as CaCO ₃)	188	N/L	129	207	140	193	86	171	194	199	231	185	
Iron	3.13	0.3	0.276	0.106	0.083	0.147	0.067	0.167	0.243	0.141	0.351	0.163	
Magnesium	10.4	N/L	6.82	10.30	7.98	10.30	4.54	9.75	10.3	10.3	11.8	9.57	
Manganese	0.70	N/L	0.051	0.129	0.021	0.068	0.014	0.126	0.254	0.101	0.248	0.099	
Nitrate (as N)	0.06	N/L	< 0.06	< 0.06	< 0.1	0.1	< 0.05	< 0.05	< 0.05	0.07	< 0.05	0.06	
Nitrite (as N)	0.05	N/L	< 0.03	< 0.03	< 0.1	< 0.1	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	< 0.05	
pH (units) ⁴	7.71	6.5 - 8.5	6.62	7.05	7.24	7.72	7.38	7.64	7.69	6.99	7.23	8.12	
Phenols	0.002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.002	< 0.002	0.002	< 0.001	
Phosphorus, Total	0.03	0.03	0.014	< 0.003	< 0.01	0.03	0.02	0.01	< 0.01	< 0.01	< 0.01	0.02	
Potassium	1.10	N/L	1.11	1.00	1.2	1.4	0.7	0.9	0.9	1.0	1.3	1.3	
Sodium	76.7	200	40.3	51.4	47.2	64.0	35.7	60.3	72.0	63.3	74.8	78.2	
Strontium	0.18	N/L	0.110	0.169	0.137	0.167	0.083	0.162	0.170	0.166	0.197	0.160	
Sulphate	5.3	N/L	6.0	< 1	7	4	7	2	2	4	3	3	
Total Dissolved Solids	392	N/L	249	380	248	383	197	337	380	364	403	409	
Total Kjeldahl Nitrogen	0.5	N/L	< 0.5	< 0.5	0.22	0.3	0.3	0.3	0.3	0.2	0.2	0.3	
Zinc	0.008	0.02	0.002	< 0.002	0.006	< 0.005	< 0.005	< 0.005	< 0.005	< 0.005	0.018	0.014	
Cation Sum (meq/L)	-	N/L	4.35	-	4.89	6.69	3.29	5.55	7.05	6.77	7.94	7.13	-
Anion Sum (meq/L)	-	N/L	4.48	-	4.49	6.99	2.96	6.08	6.89	7.01	7.31	7.53	-
Anion-Cation Balance (% difference)	-	N/L	-1.43	-	4.28	2.26	5.40	4.51	1.13	1.75	4.15	2.67	-

Notes:
1. Provincial Water Quality Objectives (PWQO).
2. Calculated using Total Ammonia and field analysis.
3. Results obtained from laboratory analysis.
4. Results obtained from field analysis.
All results are expressed in mg/L unless otherwise stated.
Bold and shaded values exceed the PWQO.
N/L indicates No Limit.
*- indicates the parameter was not analyzed.

Table 5
Surface Water Quality
Griffith Waste Disposal Site

Parameter	75th Percentile Background	PWQO ¹	STN-5					5-year Trends
			25-May-15	10-Aug-15	24-May-16	04-May-17	18-Aug-21	(sparkline)
Alkalinity (as CaCO ₃)	175	25 % Decrease	113	197	163	112	238	
Ammonia, Total (as N)	0.1	N/L	< 0.1	< 0.1	< 0.01	< 0.01	0.09	
Ammonia, Un-ionized (as N) ²	0.00047	0.02	0.00016	0.00021	0.00003	0.00002	0.00002	
Boron	0.0095	0.2	0.0055	0.0063	0.044	0.089	0.030	
Cadmium	0.000015	0.0002	< 0.000003	0.000005	< 0.00002	< 0.000014	< 0.000015	
Calcium	58.6	N/L	39.1	66.0	73.3	44.0	88.7	
Chemical Oxygen Demand	21	N/L	12	19	< 5	44	89	
Chloride	132	N/L	74	89	55.7	27.7	62.1	
Conductivity (µS/cm) ³	762	N/L	-	-	551	352	648	
Conductivity (µS/cm) ⁴	576	N/L	421	530	819	239	446	
Copper	0.00073	0.005	0.00075	0.00033	0.0004	< 0.002	0.0004	
Dissolved Oxygen ⁴	9.43	5	10.93	8.20	8.62	9.80	1.82	
Hardness (as CaCO ₃)	188	N/L	126	208	222	134	265	
Iron	3.13	0.3	0.26	0.121	0.058	0.023	0.310	
Magnesium	10.4	N/L	6.8	10.5	9.35	5.90	10.5	
Manganese	0.70	N/L	0.045	0.186	0.034	0.003	0.211	
Nitrate (as N)	0.06	N/L	< 0.06	< 0.06	< 0.1	< 0.05	0.07	
Nitrite (as N)	0.05	N/L	< 0.03	< 0.03	< 0.1	< 0.05	< 0.05	
pH (units) ⁴	7.71	6.5 - 8.5	6.92	6.99	7.18	7.04	8.20	
Phenols	0.002	0.001	< 0.001	< 0.001	< 0.001	< 0.001	< 0.001	
Phosphorus, Total	0.03	0.03	0.011	< 0.003	0.02	0.02	0.07	
Potassium	1.10	N/L	1.09	0.901	2.7	1.5	2.5	
Sodium	76.7	200	41.2	57.5	31.0	21.8	33.7	
Strontium	0.18	N/L	0.104	0.166	0.296	0.174	0.348	
Sulphate	5.3	N/L	6	< 1	14	13	< 1	
Total Dissolved Solids	392	N/L	254	383	284	199	328	
Total Kjeldahl Nitrogen	0.5	N/L	< 0.5	< 0.5	0.61	0.5	1.3	
Zinc	0.008	0.02	0.002	< 0.002	< 0.005	< 0.005	0.016	
Cation Sum (meq/L)	-	N/L	4.33	-	5.85	3.67	6.85	-
Anion Sum (meq/L)	-	N/L	4.47	-	5.12	3.28	6.52	-
Anion-Cation Balance (% difference)	-	N/L	-1.56	-	6.61	5.55	2.48	-

Notes:

1. Provincial Water Quality Objectives (PWQO).
2. Calculated using Total Ammonia and field analysis.
3. Results obtained from laboratory analysis.
4. Results obtained from field analysis.

All results are expressed in mg/L unless otherwise stated.

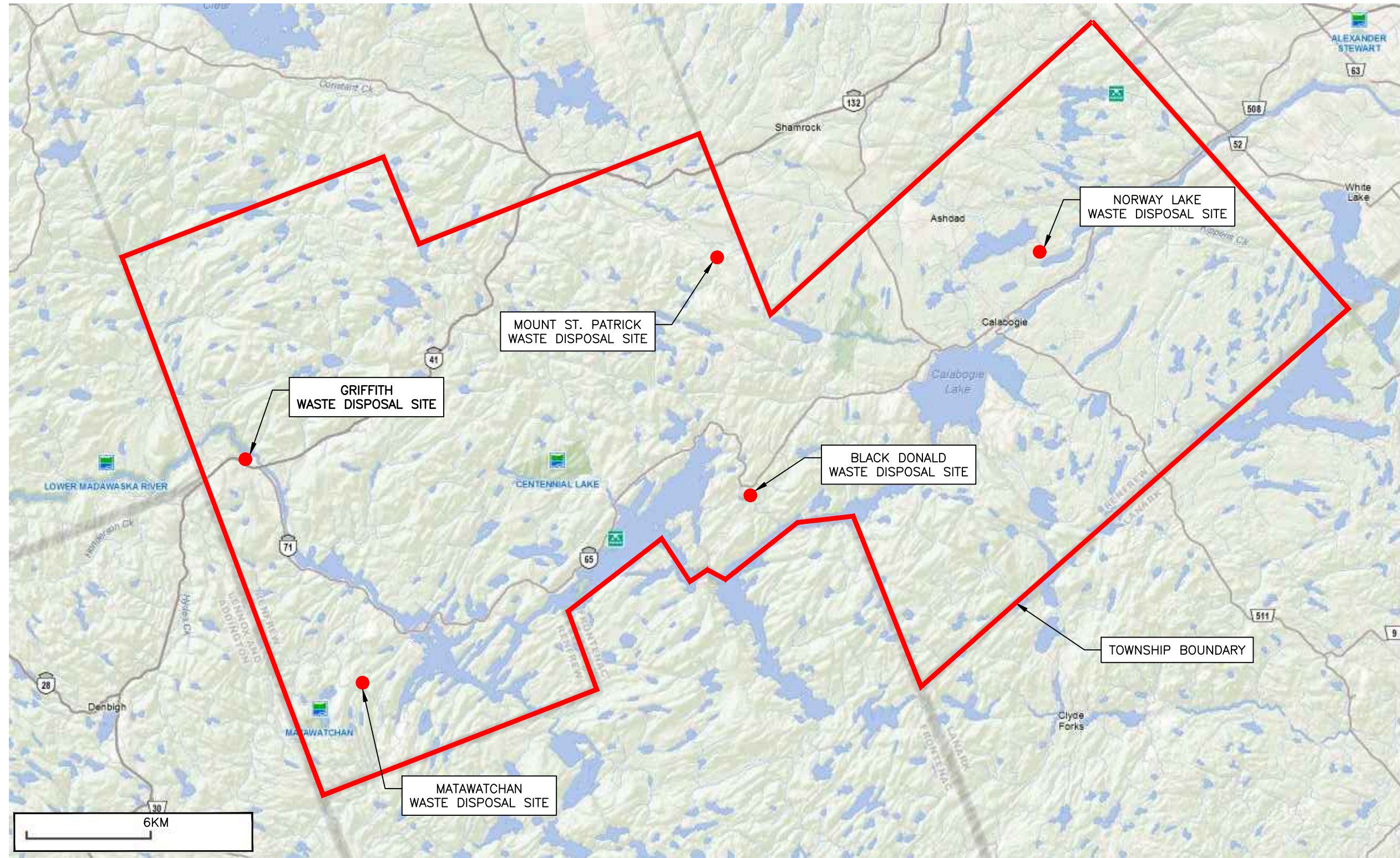
Bold and shaded values exceed the PWQO.

N/L indicates No Limit.

"-" indicates the parameter was not analyzed.

Figures





SOURCE: ONTARIO MINISTRY OF NATURAL RESOURCES AND FORESTRY, LAND INFORMATION ONTARIO, 2016.



13 Commerce Court
Bancroft, Ontario
613.332.0057
greenview-environmental.ca

No.	DATE	BY	REMARKS
1	MAR18-22	MAG	ISSUED FOR MECP REVIEW
0	DEC15-21	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY:	CHECKED BY:
MAG	DMH
DESIGNED BY:	APPROVED BY:
MAG	DMH
SCALE:	DATE:
AS NOTED	MAR 2022



PROJECT:

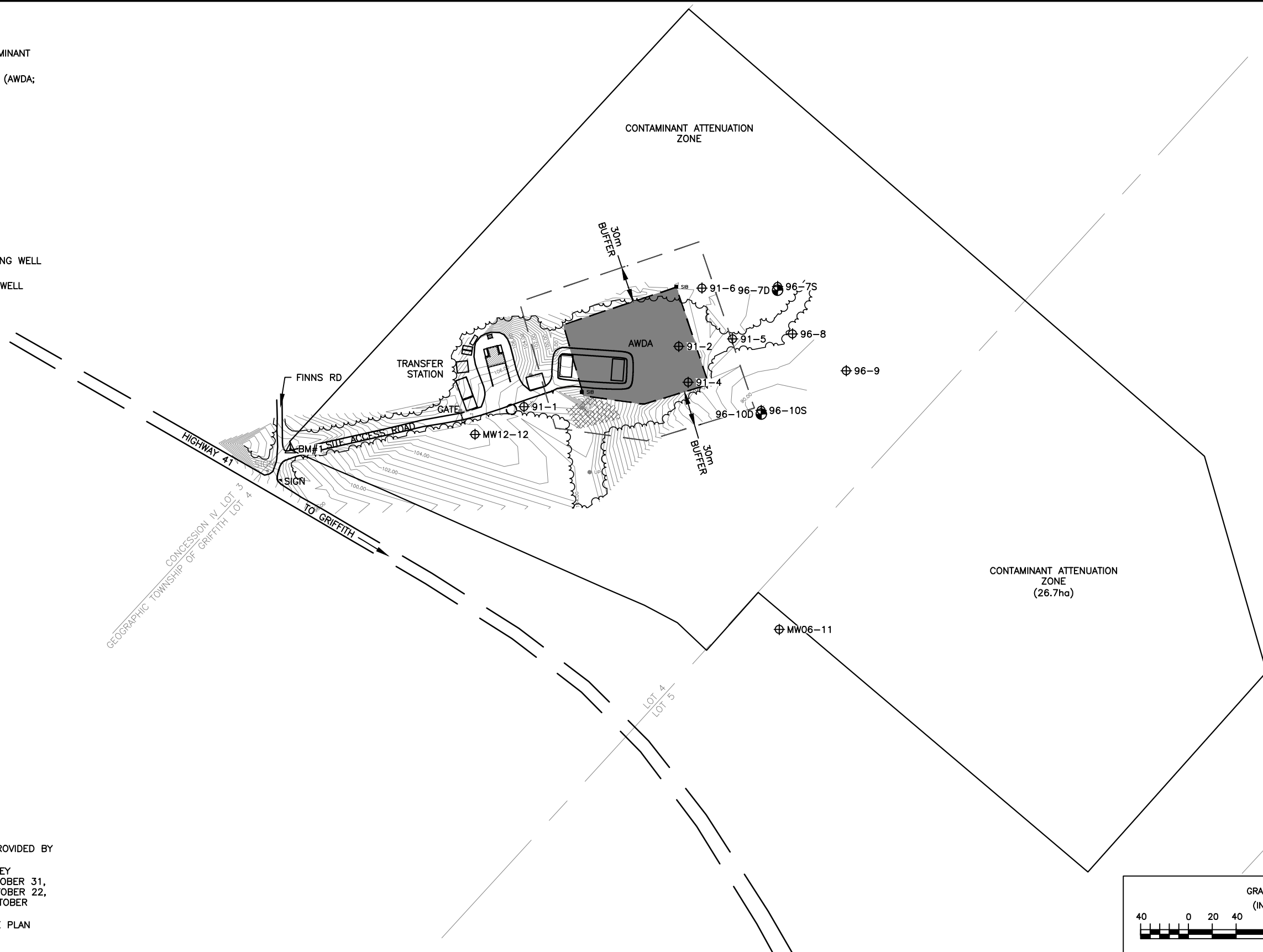
REGIONAL LOCATION PLAN
2021 ANNUAL REPORT
GRIFFITH WASTE DISPOSAL SITE
TOWNSHIP OF GREATER MADAWASKA

PROJECT No:
102.21.011

FIGURE:
1
1 OF 5

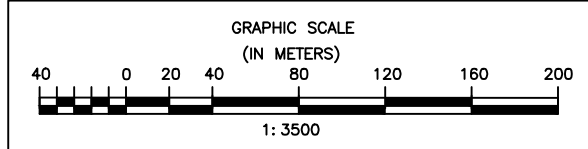
LEGEND

- PROPERTY BOUNDARY AND CONTAMINANT ATTENUATION ZONE (26.7ha)
- - - APPROVED WASTE DISPOSAL AREA (AWDA; 0.8ha)
- 30m BUFFER LIMIT
- 100.00 — TOPOGRAPHIC CONTOUR LINE
- == ON-SITE ROAD
- - - LOT LINE
- ~ ~ ~ APPROXIMATE TREE LINE
- ▨ ROCK OUTCROP
- ⊕ 91-1 SHALLOW GROUNDWATER MONITORING WELL
- ⊕ 96-7D DEEP GROUNDWATER MONITORING WELL
- △ BM#1 BENCHMARK



NOTES

1. BENCHMARKS
BM#1
NAIL IN GATE POST AT ENTRANCE TO SITE.
ASSUMED ELEVATION = 100.000m
2. DRAWING BASED ON DIGITAL INFORMATION PROVIDED BY GOLDER ASSOCIATES, 2006.
3. TOPOGRAPHICAL CONTOURS BASED ON SURVEY CONDUCTED BY TRANSENCO LIMITED ON OCTOBER 31, 2007, AND UPDATED BY GREENVIEW ON OCTOBER 22, 2008, NOVEMBER 2, 2009, APRIL 2010, OCTOBER 2010, AND SEPTEMBER 2011.
4. PROPERTY BOUNDARY BASED ON REFERENCE PLAN 49R-14625, AND IS SHOWN APPROXIMATE.



13 Commerce Court
Bancroft, Ontario
613.332.0057
greenview-environmental.ca

No.	DATE	BY	REMARKS
1	MAR18-22	MAG	ISSUED FOR MECP REVIEW
0	DEC15-21	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY: MAG	CHECKED BY: DMH
DESIGNED BY: MAG	APPROVED BY: DMH
SCALE: 1:3500	DATE: MAR 2022

CLIENT:

PROJECT:

PROPERTY PLAN
2021 ANNUAL REPORT
GRIFFITH WASTE DISPOSAL SITE
TOWNSHIP OF GREATER MADAWASKA

PROJECT No: 102.21.011
FIGURE: 2
2 OF 5



G:\VatoCAD\102_Greater_Madawaska\011_Griffith_WDS\dwg\102.21.011 - TGM - GRIFFITH WDS - 2021 AR FIGURES - FINAL.dwg

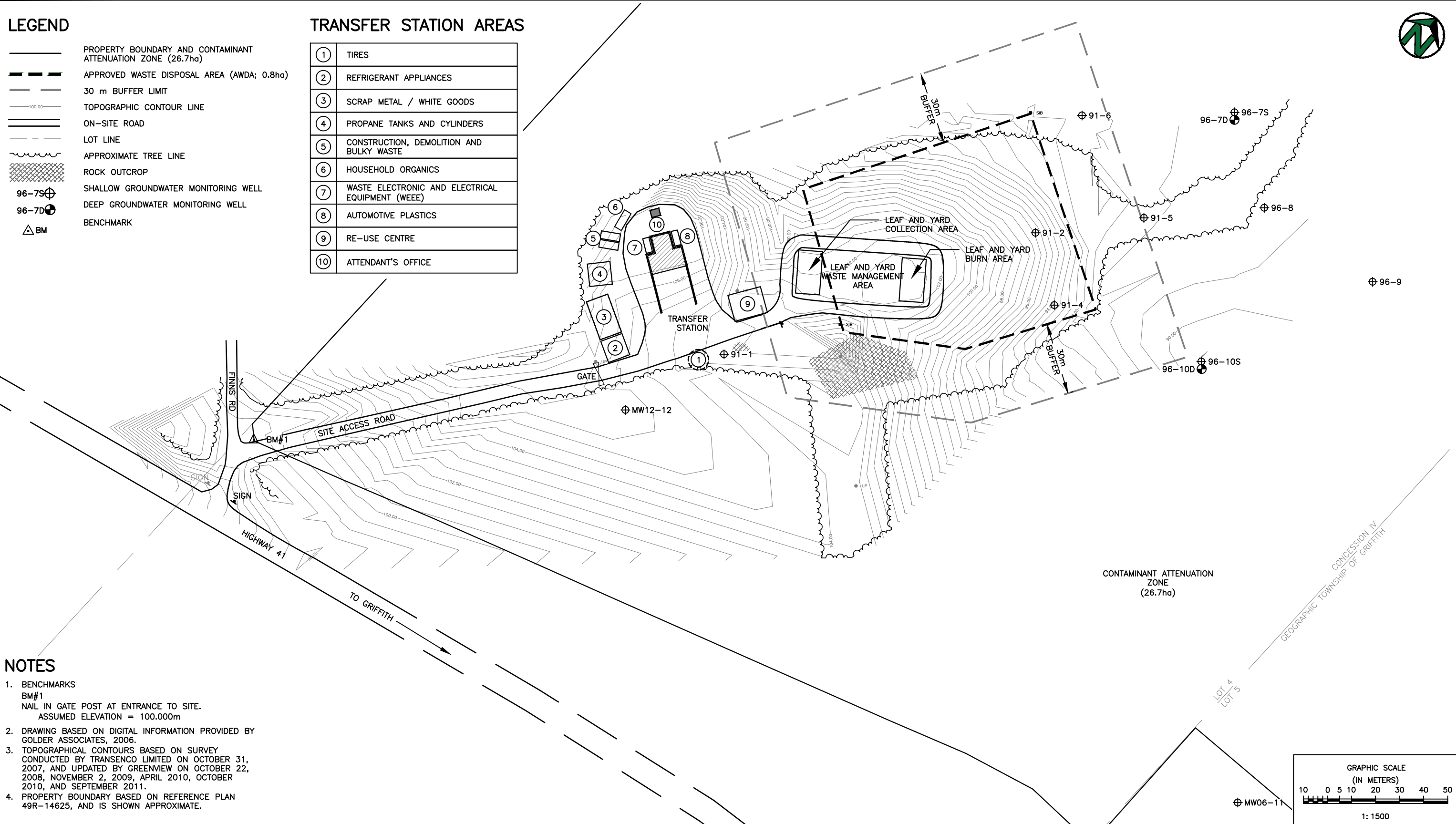


LEGEND

- PROPERTY BOUNDARY AND CONTAMINANT ATTENUATION ZONE (26.7ha)
- APPROVED WASTE DISPOSAL AREA (AWDA; 0.8ha)
- 30 m BUFFER LIMIT
- TOPOGRAPHIC CONTOUR LINE
- ON-SITE ROAD
- LOT LINE
- APPROXIMATE TREE LINE
- ROCK OUTCROP
- SHALLOW GROUNDWATER MONITORING WELL
- DEEP GROUNDWATER MONITORING WELL
- BENCHMARK

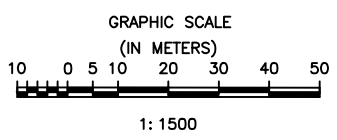
TRANSFER STATION AREAS

①	TIRES
②	REFRIGERANT APPLIANCES
③	SCRAP METAL / WHITE GOODS
④	PROPANE TANKS AND CYLINDERS
⑤	CONSTRUCTION, DEMOLITION AND BULKY WASTE
⑥	HOUSEHOLD ORGANICS
⑦	WASTE ELECTRONIC AND ELECTRICAL EQUIPMENT (WEEE)
⑧	AUTOMOTIVE PLASTICS
⑨	RE-USE CENTRE
⑩	ATTENDANT'S OFFICE



NOTES

1. BENCHMARKS
BM#1
NAIL IN GATE POST AT ENTRANCE TO SITE.
ASSUMED ELEVATION = 100.000m
2. DRAWING BASED ON DIGITAL INFORMATION PROVIDED BY GOLDER ASSOCIATES, 2006.
3. TOPOGRAPHICAL CONTOURS BASED ON SURVEY CONDUCTED BY TRANSENCO LIMITED ON OCTOBER 31, 2007, AND UPDATED BY GREENVIEW ON OCTOBER 22, 2008, NOVEMBER 2, 2009, APRIL 2010, OCTOBER 2010, AND SEPTEMBER 2011.
4. PROPERTY BOUNDARY BASED ON REFERENCE PLAN 49R-14625, AND IS SHOWN APPROXIMATE.



Greenview
ENVIRONMENTAL MANAGEMENT

13 Commerce Court
Bancroft, Ontario
613.332.0057
greenview-environmental.ca

No.	DATE	BY	REMARKS
1	MAR18-22	MAG	ISSUED FOR MECP REVIEW
0	DEC15-21	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY: MAG	CHECKED BY: DMH
DESIGNED BY: MAG	APPROVED BY: DMH
SCALE: 1:1500	DATE: MAR 2022

CLIENT:

PROJECT:
EXISTING SITE CONDITIONS PLAN
2021 ANNUAL REPORT
GRIFFITH WASTE DISPOSAL SITE
TOWNSHIP OF GREATER MADAWASKA

PROJECT No:
102.21.011

FIGURE:
3

3 OF 5

G:\Vat020\102_21_011_011 - TGM - GRIFFITH WDS - 2021 AR FIGURES - FINAL.dwg



NOTE: ALL LOCATIONS APPROXIMATE.

SOURCE: GOOGLE EARTH, LOCATIONS APPROXIMATE, 2017.

Greenview
ENVIRONMENTAL MANAGEMENT

13 Commerce Court
Bancroft, Ontario
613.332.0057
greenview-environmental.ca

No.	DATE	BY	REMARKS
1	MAR18-22	MAG	ISSUED FOR MECP REVIEW
0	DEC15-21	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY: MAG	CHECKED BY: DMH
DESIGNED BY: MAG	APPROVED BY: DMH
SCALE: NTS	DATE: MAR 2022

CLIENT:

THE TOWNSHIP OF
GREATER MADAWASKA

PROJECT:

SURFACE WATER MONITORING LOCATION PLAN
2021 ANNUAL REPORT
GRIFFITH WASTE DISPOSAL SITE
TOWNSHIP OF GREATER MADAWASKA

PROJECT No:
102.21.011

FIGURE:
4

4 OF 5

G:\vato040\102_21\011 - TGM - GRIFFITH WDS - 2021 AR FIGURES - FINAL.dwg

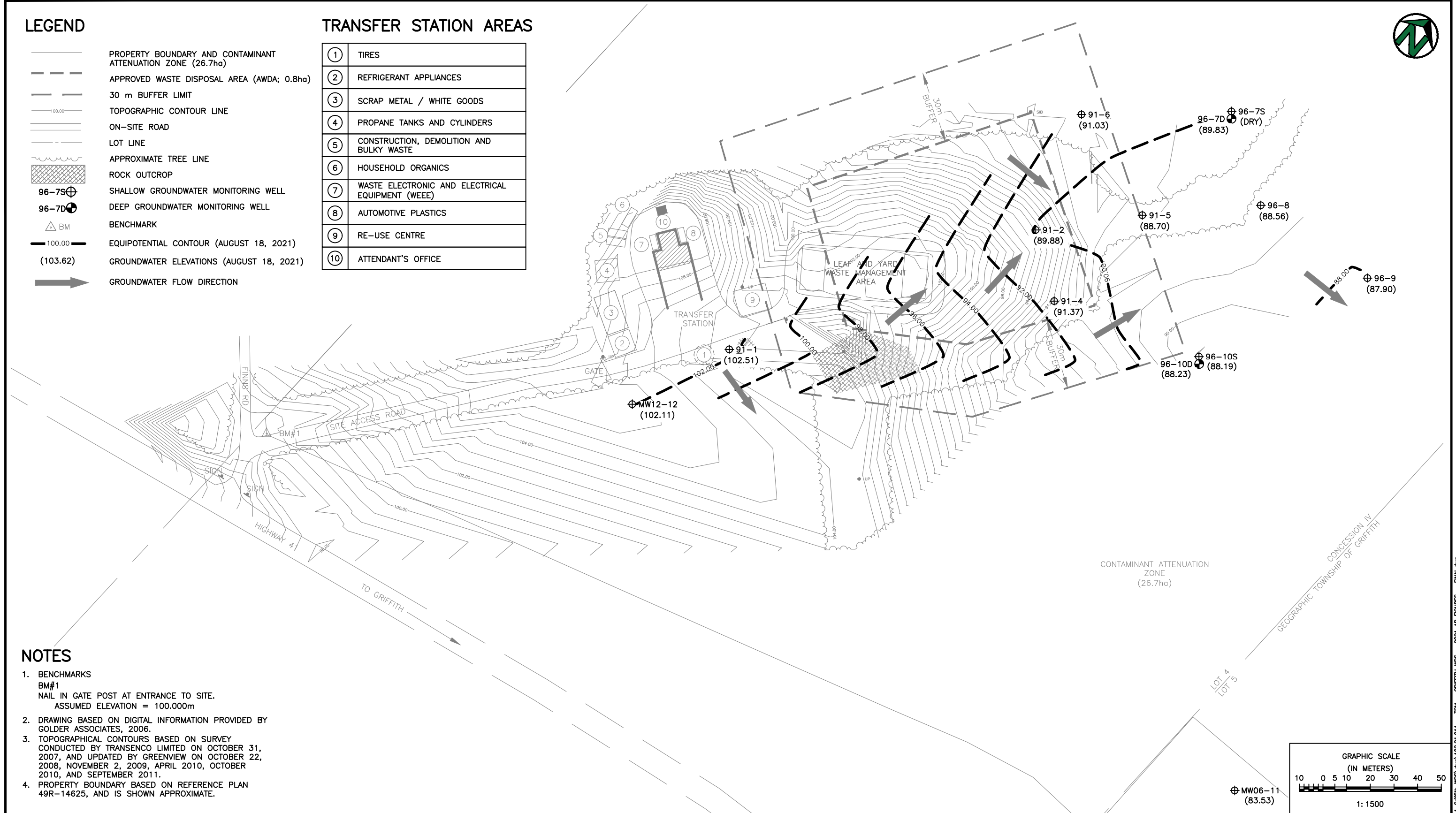


LEGEND

- PROPERTY BOUNDARY AND CONTAMINANT ATTENUATION ZONE (26.7ha)
- - - APPROVED WASTE DISPOSAL AREA (AWDA; 0.8ha)
- - - 30 m BUFFER LIMIT
- 100.00 TOPOGRAPHIC CONTOUR LINE
- ON-SITE ROAD
- - - LOT LINE
- ~ ~ ~ APPROXIMATE TREE LINE
- ROCK OUTCROP
- 96-7S ⊕ SHALLOW GROUNDWATER MONITORING WELL
- 96-7D ⊕ DEEP GROUNDWATER MONITORING WELL
- △ BM BENCHMARK
- 100.00 EQUIPOTENTIAL CONTOUR (AUGUST 18, 2021)
- (103.62) GROUNDWATER ELEVATIONS (AUGUST 18, 2021)
- GROUNDWATER FLOW DIRECTION

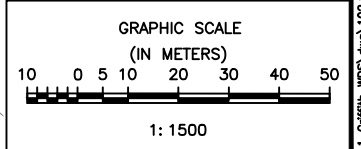
TRANSFER STATION AREAS

①	TIRES
②	REFRIGERANT APPLIANCES
③	SCRAP METAL / WHITE GOODS
④	PROPANE TANKS AND CYLINDERS
⑤	CONSTRUCTION, DEMOLITION AND BULKY WASTE
⑥	HOUSEHOLD ORGANICS
⑦	WASTE ELECTRONIC AND ELECTRICAL EQUIPMENT (WEEE)
⑧	AUTOMOTIVE PLASTICS
⑨	RE-USE CENTRE
⑩	ATTENDANT'S OFFICE



NOTES

1. BENCHMARKS
BM#1
NAIL IN GATE POST AT ENTRANCE TO SITE.
ASSUMED ELEVATION = 100.000m
2. DRAWING BASED ON DIGITAL INFORMATION PROVIDED BY GOLDER ASSOCIATES, 2006.
3. TOPOGRAPHICAL CONTOURS BASED ON SURVEY CONDUCTED BY TRANSENCO LIMITED ON OCTOBER 31, 2007, AND UPDATED BY GREENVIEW ON OCTOBER 22, 2008, NOVEMBER 2, 2009, APRIL 2010, OCTOBER 2010, AND SEPTEMBER 2011.
4. PROPERTY BOUNDARY BASED ON REFERENCE PLAN 49R-14625, AND IS SHOWN APPROXIMATE.



Greenview
ENVIRONMENTAL MANAGEMENT

13 Commerce Court
Bancroft, Ontario
613.332.0057
greenview-environmental.ca

No.	DATE	BY	REMARKS
1	MAR18-22	MAG	ISSUED FOR MECP REVIEW
0	DEC15-21	MAG	ISSUED FOR CLIENT REVIEW

DRAWN BY:	CHECKED BY:
MAG	DMH
DESIGNED BY:	APPROVED BY:
MAG	DMH
SCALE:	DATE:
1:1500	MAR 2022

CLIENT:

PROJECT:

ENVIRONMENTAL MONITORING LOCATION PLAN – SUMMER
2021 ANNUAL REPORT
GRIFFITH WASTE DISPOSAL SITE
TOWNSHIP OF GREATER MADAWASKA

PROJECT No:
102.21.011

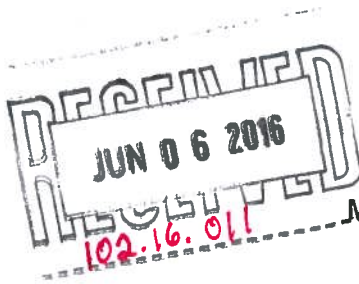
FIGURE:
5

5 OF 5

G:\Vatoc\02_Greater Madawaska\011_Griffith WDS\DWG\102.21.011 - TGM - GRIFFITH WDS - 2021 AR FIGURES - FINAL.dwg

Appendix A



**AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL**

NUMBER A412203

Notice No. 5

Issue Date: June 1, 2016

The Corporation of the Township of Greater Madawaska
19 Parnell St
Post Office Box, No. 180
Calabogie, Ontario
K0J 1H0

Site Location: Griffith Waste Disposal Site
6 Finns Road
Lot Part of the S 1/2 of Lots 4 and 5, Concession 4
Township of Greater Madawaska, County of Renfrew

You are hereby notified that I have amended Approval No. A412203 issued on December 22, 1999 amended on September 25, 2000, June 13, 2001, June 3, 2008 and October 11, 2013 for the use and operation of a 0.8 hectare landfill site and recycling and transfer site within a 27.5 hectare , as follows:

Following conditions are hereby revoked and replaced as follows :

24(3) The *Owner* shall ensure that the final maximum storage capacity of the Leaf and Yard Burn Storage Area pile does not exceeded 400 m³.

25. The *Owner* shall ensure that the final maximum capacities are not exceeded:

(a) waste destined for final disposal	80 m ³
(b) organic waste	20 m ³
(c) OCC	80 m ³
(d) scrap metal	150 m ³
(e) refrigerant appliances	25 (units)
(c) waste electrical and electronic equipment	40 m ³
(d) blue box waste	160 m ³
(e) tires	100 m ³
(f) leaf and yard waste	400 m ³
(g) Construction and Demolition waste	80 m ³

(h)	Automotive Plastic	5.4 m3
(i)	Refillable Propane Tanks	50 units
(j)	Single use propane cylinders	1 m3

The following Item is hereby added to Schedule "A":

11. Environmental Compliance Approval Application dated October 27, 2015 signed by Ms. Alison Haltzhauer, CAO/Clerk - Treasurer, Township of Greater Madawaska Valley.
12. Letter dated April 28, 2016 from Greenview Environmental Management to MoECC regarding the clarification of storage quantities, storage method.
13. Email dated May 5, 2016 from Dan Hagan, Grennview Environmental Management to Hirva Vyas, MoECC re : revised site layout plan as well as clarification regarding propane cylinders and tanks

The reason for this amendment to the Approval is as follows:

The reason for the amendment to Condition No. 24 and 25 is to amend the storage volumes of Diversion material at the transfer station.

This Notice shall constitute part of the approval issued under Approval No. A412203 dated December 22, 1999

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

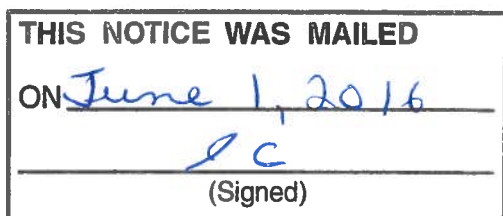
AND

The Director appointed for the purposes of Part II.1 of
the Environmental Protection Act
Ministry of the Environment and Climate Change
135 St. Clair Avenue West, 1st Floor
Toronto, Ontario
M4V 1P5

* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 212-6349, Fax: (416) 326-5370 or www.ert.gov.on.ca

The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

DATED AT TORONTO this 1st day of June, 2016



Dale Gable, P.Eng.

Director

appointed for the purposes of Part II.1 of the
Environmental Protection Act

HV/

c: District Manager, MOECC Ottawa
Dan Hagan, Greenview Environmental Management Limited ✓



AMENDMENT TO ENVIRONMENTAL COMPLIANCE APPROVAL

NUMBER A412203

Notice No. 4

Issue Date: October 11, 2013

The Corporation of the Township of Greater Madawaska
1101 Francis St
Post Office Box, No. 180
Greater Madawaska, Ontario
K0J 1H0

Site Location: Griffith Waste Disposal Site
HWY 41, Finn Road
Lot Part of the S 1/2 of Lots 4 and 5, Concession 4
Greater Madawaska Township, County of Renfrew

You are hereby notified that I have amended Approval No. A412203 issued on December 22, 1999 and amended on September 25, 2000, June 13, 2001 and June 3, 2008 for the use and operation of a 0.8 hectare landfill site and recycling and transfer site within a 27.5 hectare, as follows:

The following Definition is hereby amended/added to the ECA:

"Approval" or "Certificate" or "ECA" means this entire provisional Environmental Compliance Approval document, issued in accordance with Section 20.3 of the EPA, and includes any schedules to it, the application and the supporting documentation listed in Schedule "A".

The following Condition is hereby added to the ECA:

Burning of Waste

24. (1) Burning of waste is not permitted at the Site with the exception of the material under Condition 24 (2).

(2) Only clean wood and brush shall be permitted for burning. Burning of the materials shall be completed as per the Ministry of the Environment Guideline C-7 (Burning at landfill Sites).

(3) The Owner shall ensure that the final maximum storage capacity of the Leaf and Yard Burn Storage Area pile does not exceed 200 m³.

25. The Owner shall ensure that the final maximum capacities are not exceeded:

- (a) waste destined for final disposal 80 m³
- (b) organic waste 20 m³
- (c) OCC 80 m³
- (d) scrap metal 60 m³
- (e) refrigerant appliances 25 (units)
- (c) waste electrical and electronic equipment 40 m³
- (d) blue box waste 160 m³
- (e) tires 100 m³
- (f) leaf and yard waste 200 m³

The following Item is hereby added to Schedule "A":

CONTENT COPY OF ORIGINAL

9. Letter dated May 21, 2013 and supporting documentation addressed to Mr. Ian Parrott, Director, Environmental Approvals Branch from Mr. Dan Hagan, Greenview Environmental Management Ltd. submitting an application to amend the volume of SSO and leaf and yard waste and permit the burning of leaf and yard waste. The supporting documentation includes:

- i. Environmental Compliance Approval Application dated May 2, 2013 and signed by Ms. Alison Haltzhauer, CAO/Clerk - Treasurer, Township of Greater Madawaska Valley.
- ii. Figure No. 1 entitled "Griffith Waste Disposal Site - Proposed Site Design" prepared by Greenview Environmental Management Ltd. (Project No. 102.13.011) dated May 2013 (saved May 22, 2013)

10. Email dated September 24, 2013 at 5:10 p.m. to Mr. Dale Gable, Ministry of the Environment from Mr. Dan Hagan, Greenview Environmental Management Ltd. providing details and photos of the storage container for organic waste.

The reasons for this amendment to the Approval are as follows:

1. *The reason for Condition 15.14 is to ensure that no waste is burned at the Site other than leaf and yard waste. This is to ensure the leaf and yard waste is managed in a acceptable manner.*
2. *The reason for the amendment to Condition No. 16.4 is to amend the storage volumes at the transfer station.*

This Notice shall constitute part of the approval issued under Approval No. A412203 dated

In accordance with Section 139 of the Environmental Protection Act, you may by written Notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act provides that the Notice requiring the hearing shall state:

1. The portions of the environmental compliance approval or each term or condition in the environmental compliance approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

Pursuant to subsection 139(3) of the Environmental Protection Act, a hearing may not be required with respect to any terms and conditions in this environmental compliance approval, if the terms and conditions are substantially the same as those contained in an approval that is amended or revoked by this environmental compliance approval.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The environmental compliance approval number;
6. The date of the environmental compliance approval;
7. The name of the Director, and;
8. The municipality or municipalities within which the project is to be engaged in.

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, Suite 1500
Toronto, Ontario
M5G 1E5

AND

The Director appointed for the purposes of Part II.1 of
the Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at:
Tel: (416) 212-6349, Fax: (416) 314-3717 or www.ert.gov.on.ca**

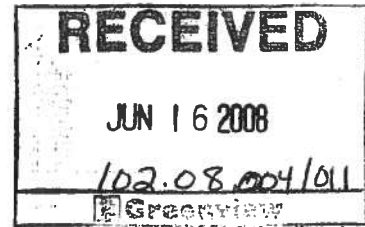
The above noted activity is approved under s.20.3 of Part II.1 of the Environmental Protection Act.

CONTENT COPY OF ORIGINAL

DATED AT TORONTO this 11th day of October, 2013

Tesfaye Gebrezghi, P.Eng.
Director
appointed for the purposes of Part II.1 of the
Environmental Protection Act

DG/
c: District Manager, MOE Ottawa
Dan Hagan, Greenview Environmental Management Limited



Ministry of the Environment
Ministère de l'Environnement

**AMENDMENT TO PROVISIONAL CERTIFICATE OF
APPROVAL
WASTE DISPOSAL SITE
NUMBER A412203
Notice No. 3
Issue Date: June 3, 2008**

The Corporation of the Township of Greater Madawaska
1101 Francis Street
Bagot, Blythfield And Brougham, Ontario K0J 1H0

Site Location: Griffith Waste Disposal Site
Part of the S 1/2 of Lots 4 and 5, Concession 4
Greater Madawaska Township, County of Renfrew

You are hereby notified that I have amended Provisional Certificate of Approval No. A412203 issued on December 22, 1999 and amended on September 25, 2000 and June 13, 2001 for the use and operation of a 0.8 hectare landfill site and recycling and transfer site within a 27.5 hectare , as follows:

"Refrigerant Appliances" means household appliances which use, or may use refrigerants, and which include, but is not restricted to, refrigerators, freezers and air-conditioning systems;

Condition Number 16 is revoked and replaced with the following:

16. This Site shall only receive Municipal Waste that is generated from within the Township of Greater Madawaska.

The following conditions are added to the Certificate:

20.1 The landfill shall be closed in accordance with items 10, 11 and 12 of Schedule "A".

23. WASTE DIVERSION

(1) The Owner shall ensure that:

- (a) all bins and waste storage areas are clearly labelled;
- (b) all lids or doors on bins shall be kept closed during non-operating hours and during the high wind events; and
- (c) if necessary to prevent litter, waste storage areas shall be covered during the high winds events.

- (2) The Owner shall provide a segregated area for the storage of *Refrigerant Appliances* so that the following are ensured:
 - (a) all *Refrigerant Appliances* have been tagged to indicate that the refrigerant has been removed by a licensed technician. The tag number shall be recorded in the log book and shall remain affixed to the appliance until transferred from the *Site*; **or**
 - (b) all *Refrigerant Appliances* accepted at the *Site*, which have not been tagged by a licensed technician to verify that the equipment no longer contains refrigerants, are stored segregated, in a clearly marked area, in an upright position and in a manner which allows for the safe handling and transfer from the *Site* for removal of refrigerants as required by O.Reg. 189; and
 - (c) all *Refrigerant Appliances* received on-site shall either have the refrigerant removed prior to being transferred from the *Site* or shall be shipped off-site only to facilities where the refrigerants can be removed by a licensed technician in accordance with O.Reg. 189.
- (3) Propane cylinders shall be stored in a segregated area in a manner which prevents cylinders from being knocked over or cylinder valves from breaking.
- (4) The Owner shall transfer waste and recyclable materials from the *Site* as follows:
 - (a) recyclable materials shall be transferred off-site once their storage bins are full;
 - (b) scrap metal shall be transferred off-site once the staging bunker is full;
 - (c) tires shall be transferred off-site as soon as a load for the contractor hired by the Owner has accumulated or as soon as storage bunker is full; and
 - (d) immediately, in the event that waste is creating an odour or vector problem.
- (5) The Owner shall notify the appropriate contractors that waste and recyclable wastes that are to be transferred off the *Site* are ready for removal. Appropriate notice time, as determined by the contract shall be accommodated in the notification procedure.

The following items are added to the Schedule "A".

10. Report titled "Closure Plan, Griffith Waste Disposal Site, Certificate of Approval No.:A412203" and dated May 30, 2006, prepared by SGS Lakefield Research Limited.
11. Letter report dated June 29, 2007 addressed to Ranjani Munasinghe, Ontario Ministry of the Environment, from Tyler Peters, Greenview Environmental Management.
12. Letter report dated March 20, 2008 addressed to Ranjani Munasinghe, Ontario Ministry of the Environment, from Tyler Peters, Greenview Environmental Management.

The reason(s) for this amendment to the Certificate of Approval is (are) as follows:

1. This amendment is to approve the closure plan and the recycling and transfer operation.
2. The reason for condition 16.1 is to increase the service area to Township of Greater Madawaska.
3. Condition 23 is included to ensure that the recyclable materials are stored in their temporary storage.

location in a manner as to minimize a likelihood of an adverse effect or a hazard the natural environment or any person.

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A412203 dated December 22, 1999 as amended.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Review Tribunal within 15 days after receipt of this Notice, require a hearing by the Tribunal. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the waste disposal site is located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Review Tribunal
655 Bay Street, 15th Floor
Toronto, Ontario
M5G 1E5

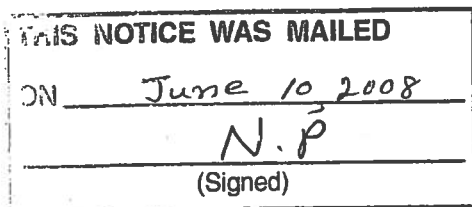
AND

The Director
Section 39, *Environmental Protection Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

* Further information on the Environmental Review Tribunal's requirements for an appeal can be obtained directly from the Tribunal at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca

The above noted waste disposal site is approved under Section 39 of the Environmental Protection Act.

DATED AT TORONTO this 3rd day of June, 2008



Tesfaye Gebrezghi, P.Eng.
Director
Section 39, *Environmental Protection Act*

RM/

c: District Manager, MOE Ottawa

CONTENT COPY OF ORIGINAL



Ministry
of the
Environment

Ministère
de
l'Environnement

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A412203
Notice No. 2

Corporation of the Township of Greater Madawaska
1101 Francis Street
Bagot, Ontario
K0J 1H0

Site Location: Part of the South Half of Lots 4 and 5, Concession 4
Township of Greater Madawaska, County Of Renfrew

You are hereby notified that I have amended Provisional Certificate of Approval No. A412203 issued on December 22, 1999, and as amended on September 26, 2000, for the use and operation of a 0.80 hectare landfill within a 27.5 hectare total site area, as follows:

1. The following item is hereby added to the supporting information described in Schedule "A":

9. Letter dated March 28, 2001, from Mr. Brian Whitehead, Jp2g Consultants Inc., 12 International Drive, Pembroke, Ontario, K8A 6W5.

2. The Company's name and address have changed:

FROM: Corporation of the Township of Griffith & Matawatchan
Highway No. 41
Griffith & Matawatchan, Ontario
K0J 2A0

TO: Corporation of the Township of Greater Madawaska
1101 Francis St.
Bagot, Ontario
K0J 1H0

3. The date in Condition 15. (b) of Provisional Certificate of Approval No. A412203 is amended to March 31, 2002, to read as follows:

15. (b) By March 31, 2002, the Applicant must acquire ownership of the buffer land as specified in Item (7) of Schedule "A" or shall close the Site;

All in accordance with the letter dated March 28, 2001, from Mr. Brian Whitehead, Jp2g Consultants Inc., 12 International Drive, Pembroke, Ontario, K8A 6W5.

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A412203 dated December 22, 1999.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;

CONTENT COPY OF ORIGINAL

2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the waste disposal site is located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Appeal Board
2300 Yonge St., 12th Floor
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Director
Section 39, *Environmental Protection Act*
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

*** Further information on the Environmental Appeal Board's requirements for an appeal can be obtained directly from the Board at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted waste disposal site is approved under Section 39 of the Environmental Protection Act.

DATED AT TORONTO this 13th day of June, 2001

Yvonne Hall, P.Eng.
Director
Section 39, *Environmental Protection Act*

ML/
c: District Manager, MOE Ottawa
Brian Whitehead, Jp2g Consultants Inc.

CONTENT COPY OF ORIGINAL



Ontario

Ministry
of the
Environment

Ministère
de
l'Environnement

AMENDMENT TO PROVISIONAL CERTIFICATE OF APPROVAL
WASTE DISPOSAL SITE
NUMBER A412203
Notice No. 1

Corporation of the Township of Griffith & Matawatchan
Highway No. 41
Griffith & Matawatchan, Ontario
K0J 2A0

Site Location: Part of the S 1/2 of Lots 4 and 5, Concession 4
Griffith & Matawatchan Township, County Of Renfrew, Ontario

You are hereby notified that I have amended Provisional Certificate of Approval No. A412203 issued on December 22, 1999 for use and operation of a 0.80 hectare landfill within a 27.5 hectare total site area, as follows:

Condition 15 (b) of your Provisional Certificate of Approval is hereby revoked and replaced with the following updated Condition No. 15 (b).

15 (b) By March 31, 2001, the Applicant must acquire ownership of the buffer land as specified in Item (7) of Schedule "A" or shall close the site;

The reason for this amendment to the Certificate of Approval is as follows:

Receipt of an application dated August 24, 2000, signed by Audrey Youmans, Clerk-Treasurer, the Township of Griffith & Matawatchan requesting an extension of time.

This Notice shall constitute part of the approval issued under Provisional Certificate of Approval No. A412203 dated December 22, 1999.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990, Chapter E-19, as amended, you may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 142 of the Environmental Protection Act, provides that the Notice requiring the hearing shall state:

1. The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;
2. The grounds on which you intend to rely at the hearing in relation to each portion appealed.

The Notice should also include:

3. The name of the appellant;
4. The address of the appellant;
5. The Certificate of Approval number;
6. The date of the Certificate of Approval;
7. The name of the Director;
8. The municipality within which the waste disposal site is located;

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary*
Environmental Appeal Board
2300 Yonge St., 12th Floor
P.O. Box 2382
Toronto, Ontario
M4P 1E4

AND

The Director
Section 39, Environmental Protection Act
Ministry of the Environment
2 St. Clair Avenue West, Floor 12A
Toronto, Ontario
M4V 1L5

CONTENT COPY OF ORIGINAL

*** Further information on the Environmental Appeal Board's requirements for an appeal can be obtained directly from the Board at: Tel: (416) 314-4600, Fax: (416) 314-4506 or www.ert.gov.on.ca**

The above noted waste disposal site is approved under Section 39 of the Environmental Protection Act.

DATED AT TORONTO this 25th day of September, 2000

Yvonne Hall, P.Eng.
Director
Section 39, *Environmental Protection Act*

LD/
c: District Manager, MOE Ottawa District Office
Brian Whitehead, Janota Patrick Consulting Engineers



Ontario

Ministry of the Environment
Ministère de l'Environnement

**PROVISIONAL CERTIFICATE OF APPROVAL
FOR A WASTE DISPOSAL SITE
NO. A 412203
Page 1 of 9**

Under the Environmental Protection Act and the regulations and subject to the limitations thereof, this Provisional Certificate of Approval is issued to:

Township of Griffith & Matawatchan
Highway 41
Griffith, Ontario
K0J 2R0

for the use and operation of a 0.80 hectare landfill within a 27.5 hectare total Site area;

all in accordance with the following plans and specifications:

The application and supporting information as listed in Schedule "A", which is attached to this Provisional Certificate of Approval and forms part of this Certificate;

Located: S1/2 Lots 4 and 5, Concession 4
Township of Griffith
County of Renfrew

which includes the use of the site only for the disposal of the following categories of waste (Note: Use of the site for additional categories of wastes requires a new application and amendments to the Provisional Certificate of Approval) Municipal Waste

and subject to the following conditions:

A. DEFINITIONS

For the purpose of this Provisional Certificate of Approval:

- (a) "Act" and "EPA" mean the Environmental Protection Act, R.S.O. 1990, C. E-19 as amended;
- (b) "Applicant", "Owner" and "Operator" mean the Township of Griffith & Matawatchan, including its officers, employees, agents or contractors;
- (c) "Certificate" means this entire Provisional Certificate of Approval including its schedules, if any, issued in accordance with Section 27, Part V of the Environmental Protection Act;
- (d) "Director" means a Director, Environmental Assessment and Approvals Branch of the Ministry of the Environment;



- (e) "District Manager" means the District Manager of the Ottawa District Office, Eastern Region of the Ministry;
- (f) "Ministry" means the Ontario Ministry of the Environment (MOE);
- (g) "Municipal Waste" is as defined in Ontario Regulation 347, R.R.O. 1990;
- (h) "Site" means the landfill site as described in this Certificate; and
- (i) "Waste fill area" means the area on the surface of the site beneath which or above which waste is disposed by landfilling.

B. GENERAL

1. (a) The Provisional Certificate of Approval No. A 412203, dated July 1, 1975 is hereby revoked and replaced by this Certificate; and
(b) Notwithstanding Condition 8, nothing in Condition 1(a) revokes any ongoing obligations and requirements imposed and initiated as the result of the issuance or existence of the previous Certificate for this Site unless specifically stated in this Certificate.
2. Except as otherwise provided by these Conditions, the Site shall be operated and maintained, in accordance with the Applications for a Certificate of Approval for a Waste Disposal Site, dated February 15, 1971, and its supporting documents as listed in Schedule "A".
3. The requirements specified in this Certificate are the requirements under the Environmental Protection Act, R.S.O. 1990. The issuance of this Certificate in no way abrogates the Applicant's legal obligations to take all reasonable steps to avoid violating other applicable provisions of this legislation and other legislation and regulations.
4. The requirements of the Certificate are severable. If any requirement of this Provisional Certificate of Approval, or the application of any requirement of the Provisional Certificate of Approval to any circumstance, is held invalid, the application of such requirement to other circumstances and the remainder of the Provisional Certificate of Approval shall not be affected in any way.
5. The Applicant shall ensure compliance with all the terms and conditions of this Certificate. Any non-compliance constitutes a violation of the Environmental Protection Act, R.S.O. 1990 and its grounds for enforcement.
6. (a) The Applicant shall, forthwith upon request of the Director, District Manager, or Provincial Officer (as defined in the Act), furnish any information requested by such persons with respect to compliance with this Certificate, including but not limited to, any records required to be kept



under this Certificate; and

- (b) In the event, the Applicant provides the Ministry with information, records, documentation or notification in accordance with this Certificate (for the purposes of this condition referred to as "Information"),
- i. the receipt of Information by the Ministry;
 - ii. the acceptance by the Ministry of the Information's completeness or accuracy; or
 - iii. the failure of the Ministry to prosecute the Applicant, or to require the Applicant to take any action, under this Certificate or any statute or regulation in relation to the Information

shall not be construed as an approval, excuse or justification by the Ministry of any act or omission of the Applicant relating to the Information, amounting to non-compliance with this Certificate or any statute or regulation.

7. The Applicant shall allow Ministry personnel, or a Ministry authorized representative(s), upon presentation of credentials, to:

- (a) carry out any and all inspections authorized by Section 156, 157 or 158 of the Environmental Protection Act, R.S.O. 1990, Section 15, 16 or 17 of the Ontario Water Resources Act, R.S.O. 1990, or Section 19 or 20 of the Pesticides Act, R.S.O. 1990, as amended from time to time, of any place to which this Certificate relates; and

without restricting the generality of the foregoing, to:

- (b)
- i. enter upon the premises where the records required by the conditions of this Certificate are kept;
 - ii. have access to and copy, at reasonable times, any records required by the conditions of this Certificate;
 - iii. inspect at reasonable times any facilities, equipment (including monitoring and control equipment), practices, or operations required by the conditions of this Certificate; and
 - iv. sample and monitor at reasonable times for the purposes of assuring compliance with the conditions of this Certificate.

- (a) Where there is a conflict between a provision of any document referred to in Schedule "A" and the conditions of this Certificate, the conditions in this Certificate shall take precedence; and



- (b) Where there is a conflict between documents listed in Schedule "A", the document bearing the most recent date shall prevail.
9. The Applicant shall ensure that all communications/correspondence made pursuant to this Certificate includes reference to the Certificate approval number A 412203.
10. The Applicant shall notify the Director in writing of any of the following changes within thirty (30) days of the change occurring:
- (a) change of Applicant or Operator of the Site or both;
 - (b) change of address or address of the new Applicant;
 - (c) change of partners where the Applicant or Operator is or at any time becomes a partnership, and a copy of the most recent declaration filed under the Business Names Act, 1991 shall be included in the notification to the Director;
 - (d) any change of name of the corporation where the Applicant or Operator is or at any time becomes a corporation, and a copy of the most current "Initial Notice or Notice of Change" (form 1 or 2 of O. Reg. 182, Chapter C-39, R.R.O. 1990 as amended from time to time), filed under the Corporations Information Act shall be included in the notification to the Director; and
 - (e) change in directors or officers of the corporation where the Applicant or Operator is or at any time becomes a corporation, and a copy of the most current "Initial Notice or Notice of Change" as referred to in 10(d), supra.
11. In the event of any change in ownership of the Site, the Applicant shall notify, in writing, the succeeding owner of the existence of this Certificate, and a copy of such notice shall be forwarded to the Director.
12. Any information relating to this Certificate and contained in Ministry files may be made available to the public in accordance with the provisions of the Freedom of Information and Protection of Privacy Act, R.S.O. 1990, C. F-31.
13. All records and monitoring data required by the conditions of this Certificate shall be kept on the Owners's premises for a minimum period of two (2) years from the date of their creation.
14. The obligations imposed by the terms and conditions of this Certificate are obligations of due diligence.

C. PROHIBITION AND REGISTRATION ON TITLE

15. (a) Pursuant to Section 197 of the EPA, neither the Applicant nor any person having an interest in the



Site shall deal with the Site in any way without first giving a copy of the Provisional Certificate of Approval to each person acquiring an interest in the Site as a result of the dealing;

- (b) By August 31, 2000, the Applicant must acquire ownership of the buffer land as specified in Item (7) of Schedule "A" or shall close the Site;
- (c) Within sixty (60) calendar days of the date of obtaining ownership of the buffer land, the Applicant shall submit to the Director for the Director's signature two (2) copies of a completed Certificate of Prohibition containing a register able description of the Site, in accordance with Form 1 of O. Reg. 14/92; and
- (d) Within ten (10) calendar days of receiving the Certificate of Prohibition, the Applicant shall register the Certificate of Prohibition in the appropriate Land Registry Office on title and immediately following registration, submit to the Director the duplicate registered copy.

D. SITE OPERATIONS

- 16. This Site shall only receive Municipal Waste that is generated from within the Township of Griffith & Matawachan.
- 17. The final volumetric capacity of this Site, excluding final cover, is 17, 250 cubic metres.
- 18. Waste shall be managed and landfilled at the Site in accordance with the items listed in Schedule "A".

E. MONITORING AND REPORTING

- 19. The Owner shall conduct surface and ground water sampling at the frequencies and for the parameters specified in Schedule "B", as modified by the District Manager. By March 31, 2000 and on an annual basis thereafter, the Owner shall submit to the District Manager, an Annual Report that contains the following, for the previous calendar year:
 - (a) the analytical results of the sampling program;
 - (b) an analysis of the results of the monitoring programs conducted at the Site to date;
 - (c) recommendations for any alterations to the monitoring or operation of the Site;
 - (d) for the first two Annual Reports, and at a frequency specified by the District Manager thereafter, a site plan, including cross sectional drawings, showing the current extent of waste disposal;
 - (e) an estimate of the total amount of waste landfilled and an estimate of the Site's remaining capacity;
 - (f) a statement as to compliance with the terms and conditions of the Certificate;



- (g) a summary of complaints regarding the operation the Site and the Owner's response to those complaints; and
- (h) an assessment of the need to develop and implement contingency plans for leachate control.

F. Site Closure

20. One (1) year prior to the Site reaching the capacity specified in Condition (17), the Owner shall submit to the Director, for approval, a plan for the closure, monitoring and long term maintenance of the Site.

G. EMERGENCIES

21. In case of an emergency or a spill at this Site, the Applicant shall forthwith call the Ministry of the Environment Spills Action Centre (1-800-268-6060) or the District Office.

H. RECORD KEEPING

22. The Company shall maintain records of the results of all inspections and monitoring and a summary of all activities associated with the Site (e.g. spills, maintenance work) in a record book located at the Site.

SCHEDULE "A"

This Schedule "A" forms part of Provisional Certificate of Approval No. A 413102:

1. Application for a Certificate of Approval for a Waste Disposal Site, dated December 11, 1972 and signed by the Clerk, Township of Griffith & Matawatchan.
2. Application to amend a Certificate of Approval for a Waste Disposal Site, dated September 26, 1996 and signed by Audrey Youmath, Clerk, Township of Griffith & Matawatchan.
3. Document entitled "Griffith Waste Disposal Site, Township of Griffith & Matawatchan, Site Development and Operation", dated March 1999 and prepared by Janota Patrick & Associates Ltd.
4. Letter from B. Whitehead, Janota Patrick & Associates Ltd. to A. Polley, MOE, dated March 5, 1999 re: Additional Supporting Information to the application.
5. Letter from I. Parrott, MOE to B. Whitehead, Janota Patrick & Associates Ltd., dated March 15, 1999: re: MOE Review Comments.



Ontario

Ministry of the Environment
Ministère de l'Environnement

PROVISIONAL CERTIFICATE OF APPROVAL
FOR A WASTE DISPOSAL SITE

NO. A 412203

Page 7 of 9

6. Letter from I. Parrott, MOE to B. Whitehead, Janota Patrick & Associates Ltd., dated July 8, 1999: re MOE Review Comments.
7. Letter from B. Whitehead, Janota Patrick & Associates Ltd. to I. Parrott, MOE, dated August 6, 1996 (including attached letter from S. Usher, Gartner Lee Limited to B. Whitehead), re: Response to MOE letters dated March 15, 1999 and July 8, 1999.
8. Letter from B. Whitehead, Janota Patrick & Associates Ltd. to I. Parrott, MOE, dated December 10, 1999 re: Cover material requirements during winter.

SCHEDULE "B"

Groundwater Monitoring

On an annual basis in August, Monitors 91-2 91-4, 91-5, 96-10S and 96-10D shall be sampled and analysed for the following parameters:

Major and Minor Ions (Ca, Na, Cl, SO₄, B, K, Mg)
Trace Metals (Fe, Mn, Cu, Sr)
Nitrogen Species (NO₃, NO₂, NH₃, TKN)
General Parameters (hardness, DOC, alkalinity, COD, phenols, ion balance, total dissolved solids)
Field Measurements (pH, conductivity, temperature)

On an annual basis, ground water levels in Monitors 91-1, 91-2, 91-4, 91-5, 91-6, 96-7S 96-7D, 96-8, 96-9, 96-10S, 96-10D shall be measured and recorded.

Surface Water Monitoring

On an annual basis in May and August, at sampling stations STN1, STN4 and STN5, samples shall be collected and analysed for the following parameters:

Major and Minor Ions (Ca, Na, Cl, SO₄, total phosphorus, B, K, Mg)
Trace Metals (Fe, Mn, Cu, Cd, Sr and Zn)
Nitrogen Species (NO₃, NO₂, NH₃, TKN)
General Parameters (alkalinity, COD, phenols, ion balance, total dissolved solids)
Field Measurements (flow, DO, pH, conductivity, temperature)



The reasons for the imposition of these conditions are as follows:

1. Conditions 1, 3, 4, 5, 6, 8, 9, 10, 11, 12 and 13 are to clarify the legal rights and obligations of this Certificate.
2. Condition 7 is to ensure that the appropriate Ministry staff have ready access to the waste Site to inspect the operations that are approved under this Certificate. The condition is supplementary to the powers of entry afforded a Provincial Officer pursuant to the Environmental Protection Act, as amended.
3. Conditions 2 and 22 are to ensure that the waste disposal Site is operated in accordance with the application for this Certificate and supporting information and not in any way or under any name which the Director has not been asked to consider.
4. Condition 14 is required to clarify that the terms and conditions of this Certificate impose a standard of due diligence and not absolute liability.
5. The reason for Condition 15, which requires registration of the Certificate, is that Section 46 of the Environmental Protection Act prohibits any use being made of the lands after they cease to be used for waste disposal purposes within a period of twenty-five years from the year in which such land ceased to be used, unless the approval of the Minister for the proposed use has been given. The purpose of this prohibition is to protect future occupants of the site and the environment from any hazards which might occur as a result of waste being disposed of on the site. This prohibition and potential hazard should be drawn to the attention of future owners and occupants by the Certificate being registered on title.
6. The reason for Conditions 16, 17, 18, 19, 20 and 21 is to ensure that the Site is operated and maintained in a manner that protects the health and safety of people and the environment.

In accordance with Section 139 of the Environmental Protection Act, R.S.O. 1990 c. E-19, you may by written notice served upon me and the Environmental Appeal Board within 15 days after receipt of this Notice, require a hearing by the Board. Section 142 of the Environmental Protection Act, as amended provides that the Notice requiring a hearing shall state:

1. *The portions of the approval or each term or condition in the approval in respect of which the hearing is required, and;*
2. *The grounds on which you intend to rely at the hearing in relation to each portion appealed.*

In addition to these legal requirements, the Notice should also include:

3. *The name of the appellant;*
4. *The address of the appellant;*
The Certificate of Approval number;
6. *The date of the Certificate of Approval;*
7. *The name of the Director;*
8. *The municipality within which the waste disposal site is located;*



Ministry of the Environment
Ministère de l'Environnement

PROVISIONAL CERTIFICATE OF APPROVAL
FOR A WASTE DISPOSAL SITE
NO. A 412203
Page 9 of 9

And the Notice should be signed and dated by the appellant.

This Notice must be served upon:

The Secretary,
Environmental Appeal Board,
2300 Yonge St., 12th Floor,
P.O. Box 2382
Toronto, Ontario.
M4P 1E4

AND

The Director,
Section 39, Environmental Protection Act,
Ministry of the Environment,
2 St. Clair Ave. W., 12A Floor,
Toronto, Ontario.
M4V 1L5

DATED AT TORONTO this 22nd day of December, 1999.

THIS IS A TRUE COPY OF THE
ORIGINAL CERTIFICATE MAILED

ON Dec 24/99
[Signature]
(Signed)

[Signature]
A. Dominski, P. Eng.,
Director,
Section 39,
Environmental Protection Act

IP/nb
c.:- District Manager, Ottawa District Office

LRO # 49 Application (General)

Registered as RE49430 on 2008 02 27 at 11:42

The applicant(s) hereby applies to the Land Registrar.

yyyy mm dd Page 1 of 2

Properties

Pin 57477 - 0134 LT
Description ALL OF LOCATION CL11653 BEING PART OF LTS 4 & 5, CON 4, PTS 1 & 2, 49R
 14625; GRIFFITH; GREATER MADAWASKA
Address GRIFFITH

Applicant(s)

Name MINISTRY OF THE ENVIRONMENT
Address for Service 2 St. Clair Avenue West, Floor 12A,
 Toronto, ON
 M4V 1L5

I, Greg Washuta, have the authority to bind the corporation.

This document is not authorized under Power of Attorney by this party.

Statements

Schedule: See Schedules

Signed By

Howard Lithwick	300-39 Robertson Rd. Ottawa (Nepean) K2H 8R2	acting for Applicant(s)	Signed	2008 02 07
Tel	613-828-2120			
Fax	6135980881			

Submitted By

HOWARD A. LITHWICK	300-39 Robertson Rd. Ottawa (Nepean) K2H 8R2	2008 02 27
Tel	613-828-2120	
Fax	6135980881	

Fees/Taxes/Payment

Statutory Registration Fee	\$60.00
Total Paid	\$60.00

Instrument Statement, 61

Page 2 of 2

CERTIFICATE OF PROHIBITION

s. 197(2) Environmental Protection Act

This is to certify that pursuant to Provisional Certificate of Waste Disposal Site Number A412203, dated December 22, 1999, relating to the landfill site more particularly described in this document herein, the following person, namely The Corporation of the Township of Greater Madawaska is prohibited from dealing with the property described in this document herein, without first giving a copy of the Amended Provisional Certificate of Approval to each person acquiring an interest in the property as a result of the dealing.

Under subsection 197(3) of the Environmental Protection Act, the prohibition applies to each person who, subsequent to the registration of this certificate, acquires an interest in the property.

Appendix B





Quarterly Inspection Log
Griffith Waste Disposal Site
Township of Greater Madawaska

Waste Mound Final Cover Inspections			
Potential Issues	Deficiencies Noted		Actions Taken
	Y/N	Location of Issue & Description	
Erosion of Final Cover	N		
Vegetation	N		
Settlement Areas	N		
Leachate Seeps	N		
Litter Management	N		

Inspection Completed By:	Name	Date (mm/dd/yyyy)	Time
	Leonard Poir	04/09/21	7 AM

Spring



Quarterly Inspection Log
Griffith Waste Disposal Site
Township of Greater Madawaska

Waste Mound Final Cover Inspections			
Potential Issues	Deficiencies Noted		Actions Taken
	Y/N	Location of Issue & Description	
Erosion of Final Cover	N		
Vegetation	N		
Settlement Areas	N		
Leachate Seeps	N		
Litter Management	N		

Inspection Completed By:	Name	Date (mm/dd/yyyy)	Time
	Leonard Em...	02/02/21	9 AM

winter



Quarterly Inspection Log
Griffith Waste Disposal Site
Township of Greater Madawaska

Waste Mound Final Cover Inspections			
Potential Issues	Deficiencies Noted		Actions Taken
	Y/N	Location of Issue & Description	
Erosion of Final Cover	N		
Vegetation	N		
Settlement Areas	N		
Leachate Seeps	N		
Litter Management	N		

Inspection Completed By:	Name	Date (mm/dd/yyyy)	Time
	Leonard Emgen	07/06/21	8:00

Summer



Quarterly Inspection Log
Griffith Waste Disposal Site
Township of Greater Madawaska

Waste Mound Final Cover Inspections			
Potential Issues	Deficiencies Noted		Actions Taken
	Y/N	Location of Issue & Description	
Erosion of Final Cover	N		
Vegetation	N		
Settlement Areas	N		
Leachate Seeps	N		
Litter Management	N		

Inspection Completed By:	Name	Date (mm/dd/yyyy)	Time
	Leonard Emm	10/12/21 Fall	7:00 AM

Appendix C





Cambium Environmental Inc.
 PO Box 325 • Unit 2 • 2085 Whittington Drive
 Peterborough • Ontario • K9J 6X4

Project No.: 06-1122-001

Project Name: Griffith Waste Disposal Site

Client: Twp of Greater Madawaska

Location: See Figure

Log of Borehole: MW06-11

UTM: 18 T 327534 5012692

Logged By: C. Wolf

Project Manager: C. Wolf

SUBSURFACE PROFILE			SAMPLE				Well Installation	Remarks
Depth	Symbol	Description	Number	Type	% Recovery	SPT (n)		
0		Ground Surface						Well equipped with lockable steel casing. Bentonite Hole Plug Native Fill Bentonite Hole Plug Filter Sand Well Screen: 1.52m x 0.05m
2		<i>Sand</i> Grey, medium grained Sand, Saturated	1	SS	30	55		
4		<i>Sand</i> Brown, medium grained Sand, Saturated	2	SS	20	44		
6		<i>Sand, some gravel</i> Brown, medium grained Sand, some Gravel, very wet	3	SS	15	10		
8		No sample, same as above	4	SS	15	43		
10		<i>Sand, some Silt</i> Coarse grained Sand, some Silt <i>Auger Refusal at 3.86m</i>	5	SS		60		
12		End of Borehole						

Drilled By: George Downing Estate Drilling

Drill Method: CME Hollow Stem Auger

Drill Date: October 12/06

Input By: CMW, snr

Checked By: CMW

Sheet: 1 of 1

CLIENT Township of Greater Madawaska

 PROJECT NAME Griffith Waste Disposal Site

 PROJECT NUMBER 102.12.011

 PROJECT LOCATION Griffith, Ontario

 DATE STARTED 7/27/12 COMPLETED 7/27/12

 GROUND ELEVATION 104.54 m HOLE SIZE 0.1524

 DRILLING CONTRACTOR Lantech Drilling Services Inc.

GROUND WATER LEVELS:

 DRILLING METHOD Solid Stem Auger

 AT TIME OF DRILLING ---

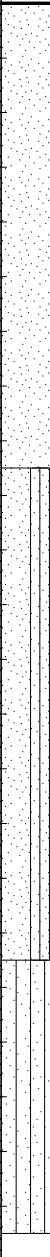
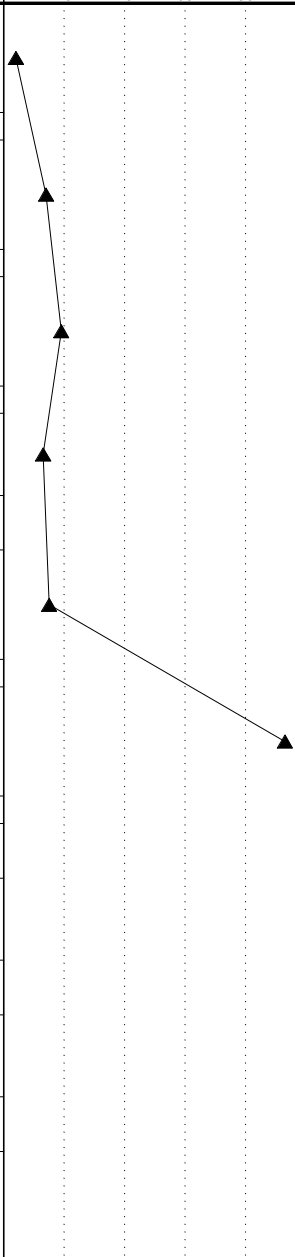
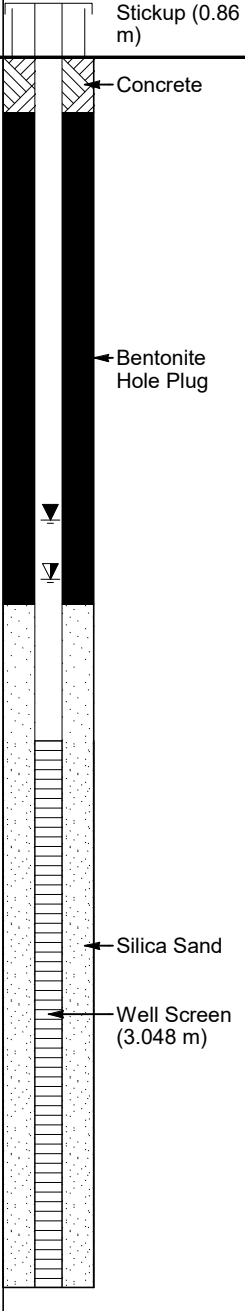
 LOGGED BY D. Hagan, B.Sc. CHECKED BY T. Peters, P.Eng

 ▼ AT END OF DRILLING 2.58 m / Elev 101.96 m

NOTES _____

 ▼ AFTER DRILLING 2.91 m / Elev 101.63 m

GREENVIEW - MW LOG - MAY 18 - 2011 102.12.011 - TGM - GRIFFITH WDS - MW12-12 - FEB 15 - 13 - GPJ GINT STD CANADA GDT 2/22/13

DEPTH (m)	DEPTH (ft)	GRAPHIC LOG	MATERIAL DESCRIPTION	SAMPLE TYPE NUMBER	RECOVERY % (RQD)	BLOW COUNTS (N VALUE)	▲ SPT N VALUE ▲	WELL DIAGRAM
1	3		(SP) Brown to grey, fine grained sand with minor gravel, dry, very loose to loose.	SS 1	80	2-2-2-3 (4)		
2	4			SS 2	62	3-7-7-8 (14)		
3	5			SS 3	0	4-10-9-10 (19)		
4	6			SS 4	101	6-7-6 (13)		
5	7			SS 5	79	5-6-9-13 (15)		
6	8			SS 6	56	21-43-50-50 (93)		
7	9			SS 7	49	22-50		
8	10			SS 8	92	30-70		
9	11			SS 9	36	13-50		
10	12							
11	13							
12	14							
13	15							
14	16							
15	17							
16	18							
17	19							
18	20							
19	21							
20	22							
21	23							

Bottom of hole at 7.06 m.

Appendix D



Appendix E



C.O.C.: G103249

REPORT No. B21-26539

Report To:

Greenview Environmental Management

13 Commerce Crt., PO Box 100

Bancroft Ontario K0L1C0

Attention: Riley Betson

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001

Fax: 613-544-2770

DATE RECEIVED: 20-Aug-21

JOB/PROJECT NO.: Griffith WDS

DATE REPORTED: 02-Sep-21

P.O. NUMBER: 102.21.011

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

Parameter	Units	R.L.	Client I.D.		91-1	91-2	91-4	91-5
			Reference Method	Date/Site Analyzed	B21-26539-1	B21-26539-2	B21-26539-3	B21-26539-4
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	24-Aug-21/O	298	692	618	646
Chloride	mg/L	0.5	SM4110C	26-Aug-21/O	230	115	91.9	36.7
Nitrite (N)	mg/L	0.05	SM4110C	26-Aug-21/O	< 0.5	< 0.5	< 0.5	< 0.5
Nitrate (N)	mg/L	0.05	SM4110C	26-Aug-21/O	< 0.5	< 0.5	< 0.5	< 0.5
Sulphate	mg/L	1	SM4110C	26-Aug-21/O	30	51	74	113
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	26-Aug-21/K	0.2	6.7	6.0	2.8
Ammonia (N)-Total	mg/L	0.01	SM4500-NH3-H	26-Aug-21/K	0.04	6.19	5.28	2.11
TDS (Calc. from Cond.)	mg/L	1	Calc.	25-Aug-21	783	914	829	772
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	23-Aug-21/O	2.2	12.3	11.6	15.7
Phenolics	mg/L	0.002	MOEE 3179	25-Aug-21/K	< 0.002	< 0.002	< 0.002	< 0.002
COD	mg/L	5	SM5220C	24-Aug-21/K	13	69	61	49
Hardness (as CaCO3)	mg/L	1	SM 3120	24-Aug-21/O	282	705	667	719
Boron	mg/L	0.005	SM 3120	24-Aug-21/O	0.053	0.740	0.518	0.733
Cadmium	mg/L	0.00015	EPA 200.8	25-Aug-21/O	< 0.00028	0.000442	0.000654	0.000271
Calcium	mg/L	0.02	SM 3120	24-Aug-21/O	97.8	222	216	241
Copper	mg/L	0.0001	EPA 200.8	25-Aug-21/O	0.0012	0.0228	0.0291	0.0087
Iron	mg/L	0.005	SM 3120	24-Aug-21/O	6.14	0.598	0.021	2.48
Magnesium	mg/L	0.02	SM 3120	24-Aug-21/O	9.21	36.4	30.9	28.3
Manganese	mg/L	0.001	SM 3120	24-Aug-21/O	0.063	22.5	23.8	4.88
Potassium	mg/L	0.1	SM 3120	24-Aug-21/O	3.9	57.9	42.4	26.2
Sodium	mg/L	0.2	SM 3120	24-Aug-21/O	215	69.3	50.0	31.0
Strontium	mg/L	0.001	SM 3120	24-Aug-21/O	0.355	0.709	0.667	1.55
Anion Sum	meq/L		Calc.	30-Aug-21/O	13.1	18.1	16.5	16.3
Cation Sum	meq/L		Calc.	30-Aug-21/O	15.4	20.0	18.0	16.9
% Difference	%		Calc.	30-Aug-21/O	8.29	4.91	4.36	1.77
Ion Ratio	AS/CS		Calc.	30-Aug-21/O	0.847	0.906	0.916	0.965
Conductivity (calc.)	µmho/cm		Calc.	30-Aug-21/O	1380	1620	1462	1394



R.L. = Reporting Limit

Test methods may be modified from specified reference method unless indicated by an *

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Michelle Dubien
 Lab Manager

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from

C.O.C.: G103249

REPORT No. B21-26539

Report To:

Greenview Environmental Management
 13 Commerce Crt., PO Box 100
 Bancroft Ontario K0L1C0

Attention: Riley Betson

Caduceon Environmental Laboratories

285 Dalton Ave
 Kingston Ontario K7K 6Z1
 Tel: 613-544-2001
 Fax: 613-544-2770

DATE RECEIVED: 20-Aug-21

JOB/PROJECT NO.: Griffith WDS

DATE REPORTED: 02-Sep-21

P.O. NUMBER: 102.21.011

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

			Client I.D.	91-1	91-2	91-4	91-5	
			Sample I.D.	B21-26539-1	B21-26539-2	B21-26539-3	B21-26539-4	
			Date Collected	18-Aug-21	18-Aug-21	18-Aug-21	18-Aug-21	
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
TDS(ion sum calc.)	mg/L	1	Calc.	30-Aug-21/O	771	998	906	873



R.L. = Reporting Limit

Test methods may be modified from specified reference method unless indicated by an *

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Michelle Dubien
 Lab Manager

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from

C.O.C.: G103249

REPORT No. B21-26539

Report To:

Greenview Environmental Management
 13 Commerce Crt., PO Box 100
 Bancroft Ontario K0L1C0

Attention: Riley Betson

Caduceon Environmental Laboratories

285 Dalton Ave
 Kingston Ontario K7K 6Z1
 Tel: 613-544-2001
 Fax: 613-544-2770

DATE RECEIVED: 20-Aug-21

JOB/PROJECT NO.: Griffith WDS

DATE REPORTED: 02-Sep-21

P.O. NUMBER: 102.21.011

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

Parameter	Units	R.L.	Reference Method	Date/Site Analyzed	Client I.D.	96-7D	96-9	96-10S	96-10D
					Sample I.D.	18-Aug-21	18-Aug-21	18-Aug-21	18-Aug-21
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	24-Aug-21/O	B21-26539-5	221	141	534	568
Chloride	mg/L	0.5	SM4110C	26-Aug-21/O	B21-26539-6	57.6	33.7	85.1	60.4
Nitrite (N)	mg/L	0.05	SM4110C	26-Aug-21/O	B21-26539-7	< 0.05	< 0.05	< 0.5	< 0.05
Nitrate (N)	mg/L	0.05	SM4110C	26-Aug-21/O	B21-26539-8	0.14	0.12	< 0.5	0.09
Sulphate	mg/L	1	SM4110C	26-Aug-21/O		18	16	57	83
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	26-Aug-21/K		0.4	0.2	4.0	1.8
Ammonia (N)-Total	mg/L	0.01	SM4500-NH3-H	26-Aug-21/K		0.07	0.03	0.64	1.24
TDS (Calc. from Cond.)	mg/L	1	Calc.	25-Aug-21		331	215	687	710
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	23-Aug-21/O		9.0	4.8	9.4	11.9
Phenolics	mg/L	0.002	MOEE 3179	25-Aug-21/K		< 0.002	< 0.002	< 0.002	< 0.002
COD	mg/L	5	SM5220C	24-Aug-21/K		29	12	182	62
Hardness (as CaCO3)	mg/L	1	SM 3120	24-Aug-21/O		305	194	625	623
Boron	mg/L	0.005	SM 3120	24-Aug-21/O		0.044	0.030	0.435	0.645
Cadmium	mg/L	0.00015	EPA 200.8	25-Aug-21/O		< 0.00015	0.00016	0.000283	0.000153
Calcium	mg/L	0.02	SM 3120	24-Aug-21/O		110	67.8	200	202
Copper	mg/L	0.0001	EPA 200.8	25-Aug-21/O		0.0017	0.0044	0.0120	0.0070
Iron	mg/L	0.005	SM 3120	24-Aug-21/O		0.948	0.100	0.163	1.39
Magnesium	mg/L	0.02	SM 3120	24-Aug-21/O		7.25	6.01	30.3	28.6
Manganese	mg/L	0.001	SM 3120	24-Aug-21/O		0.219	0.076	4.30	6.87
Potassium	mg/L	0.1	SM 3120	24-Aug-21/O		3.4	1.6	19.4	17.3
Sodium	mg/L	0.2	SM 3120	24-Aug-21/O		11.3	12.9	47.6	53.9
Strontium	mg/L	0.001	SM 3120	24-Aug-21/O		1.20	0.382	0.666	0.776
Anion Sum	meq/L		Calc.	30-Aug-21/O		6.43	4.11	14.3	14.8
Cation Sum	meq/L		Calc.	30-Aug-21/O		6.73	4.49	15.3	15.7
% Difference	%		Calc.	30-Aug-21/O		2.27	4.41	3.44	2.95
Ion Ratio	AS/CS		Calc.	30-Aug-21/O		0.956	0.916	0.933	0.943
Conductivity (calc.)	µmho/cm		Calc.	30-Aug-21/O		645	432	1303	1308



R.L. = Reporting Limit

Test methods may be modified from specified reference method unless indicated by an *

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Michelle Dubien
 Lab Manager

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from

C.O.C.: G103249

REPORT No. B21-26539

Report To:

Greenview Environmental Management
 13 Commerce Crt., PO Box 100
 Bancroft Ontario K0L1C0

Attention: Riley Betson

Caduceon Environmental Laboratories

285 Dalton Ave
 Kingston Ontario K7K 6Z1
 Tel: 613-544-2001
 Fax: 613-544-2770

DATE RECEIVED: 20-Aug-21

JOB/PROJECT NO.: Griffith WDS

DATE REPORTED: 02-Sep-21

P.O. NUMBER: 102.21.011

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

Parameter	Units	R.L.	Reference Method	Date/Site Analyzed	Client I.D.	96-7D	96-9	96-10S	96-10D
					Sample I.D.	Date Collected			
TDS(ion sum calc.)	mg/L	1	Calc.	30-Aug-21/O	B21-26539-5	341	223	765	796



R.L. = Reporting Limit

Test methods may be modified from specified reference method unless indicated by an *

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Michelle Dubien
 Lab Manager

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from

C.O.C.: G103249

REPORT No. B21-26539

Report To:

Greenview Environmental Management

13 Commerce Crt., PO Box 100

Bancroft Ontario K0L1C0

Attention: Riley Betson

Caduceon Environmental Laboratories

285 Dalton Ave

Kingston Ontario K7K 6Z1

Tel: 613-544-2001

Fax: 613-544-2770

DATE RECEIVED: 20-Aug-21

JOB/PROJECT NO.: Griffith WDS

DATE REPORTED: 02-Sep-21

P.O. NUMBER: 102.21.011

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

				Client I.D.	MW06-11	GW QA/QC		
				Sample I.D.	B21-26539-9	B21-26539-10		
				Date Collected	18-Aug-21	18-Aug-21		
Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	24-Aug-21/O	113	297		
Chloride	mg/L	0.5	SM4110C	26-Aug-21/O	598	274		
Nitrite (N)	mg/L	0.05	SM4110C	26-Aug-21/O	< 0.05	< 0.05		
Nitrate (N)	mg/L	0.05	SM4110C	26-Aug-21/O	0.21	0.06		
Sulphate	mg/L	1	SM4110C	26-Aug-21/O	17	35		
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	26-Aug-21/K	1.1	0.2		
Ammonia (N)-Total	mg/L	0.01	SM4500-NH3-H	26-Aug-21/K	0.06	0.04		
TDS (Calc. from Cond.)	mg/L	1	Calc.	25-Aug-21	1228	789		
Dissolved Organic Carbon	mg/L	0.2	EPA 415.2	23-Aug-21/O	0.6	1.9		
Phenolics	mg/L	0.002	MOEE 3179	25-Aug-21/K	< 0.002	< 0.002		
COD	mg/L	5	SM5220C	24-Aug-21/K	16	14		
Hardness (as CaCO3)	mg/L	1	SM 3120	24-Aug-21/O	157	282		
Boron	mg/L	0.005	SM 3120	24-Aug-21/O	0.009	0.052		
Cadmium	mg/L	0.00015	EPA 200.8	25-Aug-21/O	< 0.000070	< 0.000015		
Calcium	mg/L	0.02	SM 3120	24-Aug-21/O	52.5	97.8		
Copper	mg/L	0.0001	EPA 200.8	25-Aug-21/O	0.0035	0.0013		
Iron	mg/L	0.005	SM 3120	24-Aug-21/O	0.352	6.13		
Magnesium	mg/L	0.02	SM 3120	24-Aug-21/O	6.35	9.02		
Manganese	mg/L	0.001	SM 3120	24-Aug-21/O	0.050	0.062		
Potassium	mg/L	0.1	SM 3120	24-Aug-21/O	2.6	3.8		
Sodium	mg/L	0.2	SM 3120	24-Aug-21/O	401	211		
Strontium	mg/L	0.001	SM 3120	24-Aug-21/O	0.147	0.348		
Anion Sum	meq/L		Calc.	30-Aug-21/O	19.5	14.4		
Cation Sum	meq/L		Calc.	30-Aug-21/O	20.7	15.2		
% Difference	%		Calc.	30-Aug-21/O	2.96	2.79		
Ion Ratio	AS/CS		Calc.	30-Aug-21/O	0.943	0.946		



R.L. = Reporting Limit

Test methods may be modified from specified reference method unless indicated by an *

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Michelle Dubien

Lab Manager

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from

C.O.C.: G103249

REPORT No. B21-26539

Report To:

Greenview Environmental Management
 13 Commerce Crt., PO Box 100
 Bancroft Ontario K0L1C0

Attention: Riley Betson

Caduceon Environmental Laboratories

285 Dalton Ave
 Kingston Ontario K7K 6Z1
 Tel: 613-544-2001
 Fax: 613-544-2770

DATE RECEIVED: 20-Aug-21

JOB/PROJECT NO.: Griffith WDS

DATE REPORTED: 02-Sep-21

P.O. NUMBER: 102.21.011

SAMPLE MATRIX: Groundwater

WATERWORKS NO.

Parameter	Units	R.L.	Reference Method	Date/Site Analyzed				
Conductivity (calc.)	µmho/cm		Calc.	30-Aug-21/O	2158	1456		
TDS(ion sum calc.)	mg/L	1	Calc.	30-Aug-21/O	1146	815		

Client I.D.	MW06-11	GW QA/QC		
Sample I.D.	B21-26539-9	B21-26539-10		
Date Collected	18-Aug-21	18-Aug-21		



R.L. = Reporting Limit

Test methods may be modified from specified reference method unless indicated by an *

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Michelle Dubien
 Lab Manager

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from

C.O.C.: G103262

REPORT No. B21-26534

Report To:

Greenview Environmental Management
 13 Commerce Ct., PO Box 100
 Bancroft Ontario K0L1C0

Attention: Riley Betson

Caduceon Environmental Laboratories

285 Dalton Ave
 Kingston Ontario K7K 6Z1
 Tel: 613-544-2001
 Fax: 613-544-2770

DATE RECEIVED: 20-Aug-21

JOB/PROJECT NO.: Griffith WDS

DATE REPORTED: 30-Aug-21

P.O. NUMBER: 102.21.011

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

Parameter	Units	R.L.	Client I.D.		STN-1	STN-4	STN-5	QA/QC SW
			Sample I.D.	Date Collected	B21-26534-1	B21-26534-2	B21-26534-3	B21-26534-4
			Reference Method	Date/Site Analyzed	18-Aug-21	18-Aug-21	18-Aug-21	18-Aug-21
Alkalinity(CaCO3) to pH4.5	mg/L	5	SM 2320B	23-Aug-21/O	176	179	238	176
Chloride	mg/L	0.5	SM4110C	26-Aug-21/O	149	138	62.1	149
Nitrite (N)	mg/L	0.05	SM4110C	26-Aug-21/O	< 0.05	< 0.05	< 0.05	< 0.05
Nitrate (N)	mg/L	0.05	SM4110C	26-Aug-21/O	< 0.05	0.06	0.07	< 0.05
Sulphate	mg/L	1	SM4110C	26-Aug-21/O	2	3	< 1	2
Phosphorus-Total	mg/L	0.01	E3199A.1	26-Aug-21/K	0.02	0.02	0.07	0.02
Total Kjeldahl Nitrogen	mg/L	0.1	E3199A.1	26-Aug-21/K	0.3	0.3	1.3	0.3
Ammonia (N)-Total	mg/L	0.01	SM4500-NH3-H	26-Aug-21/K	0.03	0.02	0.09	0.03
TDS (Calc. from Cond.)	mg/L	1	Calc.	24-Aug-21	422	409	328	422
Phenolics	mg/L	0.001	MOEE 3179	25-Aug-21/K	< 0.001	< 0.001	< 0.001	< 0.001
COD	mg/L	5	SM5220C	24-Aug-21/K	20	28	89	17
Hardness (as CaCO3)	mg/L	1	SM 3120	25-Aug-21/O	184	185	265	171
Boron	mg/L	0.005	SM 3120	25-Aug-21/O	0.007	0.009	0.030	0.007
Cadmium	mg/L	0.00015	EPA 200.8	25-Aug-21/O	< 0.000015	< 0.000015	< 0.000015	< 0.000015
Calcium	mg/L	0.02	SM 3120	25-Aug-21/O	57.7	58.1	88.7	53.7
Copper	mg/L	0.0001	EPA 200.8	25-Aug-21/O	0.0003	0.0007	0.0004	0.0007
Iron (Total)	mg/L	0.005	SM 3120	25-Aug-21/O	1.42	0.163	0.310	1.32
Magnesium	mg/L	0.02	SM 3120	25-Aug-21/O	9.66	9.57	10.5	9.05
Manganese (Total)	mg/L	0.001	SM 3120	25-Aug-21/O	0.385	0.099	0.211	0.359
Potassium	mg/L	0.1	SM 3120	25-Aug-21/O	1.1	1.3	2.5	1.1
Sodium	mg/L	0.2	SM 3120	25-Aug-21/O	87.0	78.2	33.7	81.7
Strontium	mg/L	0.001	SM 3120	25-Aug-21/O	0.162	0.160	0.348	0.152
Zinc	mg/L	0.005	SM 3120	25-Aug-21/O	0.015	0.014	0.016	< 0.005
Anion Sum	meq/L		Calc.	27-Aug-21/O	7.77	7.53	6.52	7.76
Cation Sum	meq/L		Calc.	27-Aug-21/O	7.58	7.13	6.85	7.09
% Difference	%		Calc.	27-Aug-21/O	1.21	2.67	2.48	4.51
Ion Ratio	AS/CS		Calc.	27-Aug-21/O	1.02	1.05	0.952	1.09



R.L. = Reporting Limit

Test methods may be modified from specified reference method unless indicated by an *

Site Analyzed=K-Kingston, W-Windsor, O-Ottawa, R-Richmond Hill, B-Barrie

Michelle Dubien
 Lab Manager

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from

C.O.C.: G103262

REPORT No. B21-26534

Report To:

Greenview Environmental Management
 13 Commerce Crt., PO Box 100
 Bancroft Ontario K0L1C0

Attention: Riley Betson

Caduceon Environmental Laboratories

285 Dalton Ave
 Kingston Ontario K7K 6Z1
 Tel: 613-544-2001
 Fax: 613-544-2770

DATE RECEIVED: 20-Aug-21

JOB/PROJECT NO.: Griffith WDS

DATE REPORTED: 30-Aug-21

P.O. NUMBER: 102.21.011

SAMPLE MATRIX: Surface Water

WATERWORKS NO.

Parameter	Units	R.L.	Reference Method	Date/Site Analyzed	Client I.D.	STN-1	STN-4	STN-5	QA/QC SW			
					Sample I.D.	Date Collected						
Conductivity (calc.)	µmho/cm		Calc.	27-Aug-21/O	B21-26534-1	18-Aug-21	B21-26534-2	18-Aug-21	B21-26534-3	18-Aug-21	B21-26534-4	18-Aug-21
TDS(ion sum calc.)	mg/L	1	Calc.	27-Aug-21/O								



R.L. = Reporting Limit

Test methods may be modified from specified reference method unless indicated by an *

Site Analyzed=K-Kingston,W-Windsor,O-Ottawa,R-Richmond Hill,B-Barrie

Michelle Dubien
 Lab Manager

The analytical results reported herein refer to the samples as received. Reproduction of this analytical report in full or in part is prohibited without prior consent from

Appendix F



Appendix D-Monitoring and Screening Checklist General Information and Instructions

General Information: The checklist is to be completed, and submitted with the Monitoring Report.

Instructions: A complete checklist consists of:

- (a) a completed and signed checklist, including any additional pages of information which can be attached as needed to provide further details where indicated.
- (b) completed contact information for the Competent Environmental Practitioner (CEP)
- (c) self-declaration that CEP(s) meet(s) the qualifications as set out below and in Section 1.2 of the Technical Guidance Document.

Definition of Groundwater CEP:

For groundwater, the CEP must have expertise in hydrogeology and meet one of the following:

- (a) the person holds a licence, limited licence or temporary licence under the *Professional Engineers Act*; or
- (b) the person holds a certificate of registration under the *Professional Geoscientists Act, 2000* and is a practicing member, temporary member or limited member of the Association of Professional Geoscientists of Ontario. O. Reg. 66/08, s. 2..

Definition of Surface water CEP:

A CEP for surface water assessments is a scientist, professional engineer or professional geoscientist as described in (a) and (b) above with demonstrated experience and post-secondary education, either a diploma or degree, in hydrology, aquatic ecology, limnology, aquatic biology, physical geography with specialization in surface water, and/or water resource management.

The type of scientific work that a CEP performs must be consistent with that person's education and experience. If an individual has appropriate training and credentials in both groundwater and surface water and is responsible for both areas of expertise, the CEP may then complete and validate both sections of the checklist.

Monitoring Report and Site Information

Waste Disposal Site Name: Griffith WDS

Location (e.g. street address, lot, concession): Part of Lots 4 and 5, Concession IV, geographic Township of Griffith, Township of Greater Madawaska

GPS Location (taken within the property boundary at front gate/front entry):
North American Datum (NAD83) are 327277.0 metres (m) East, 5012416.0 m North, in Zone 18T

Municipality: Township of Greater Madawaska

Client and/or Site Owner: Township of Greater Madawaska

Monitoring Period (Year): 2021

This Monitoring Report is being submitted under the following:

- Certificate of Approval No.: A412203
- Director's Order No.: _____
- Provincial Officer's Order No.: _____
- Other: _____

Report Submission Frequency: Annual Other specify : _____

The site is: active inactive closed

Closure Plan (May 2006)

If closed, specify C of A, control or authorizing document closure date: Addendum to the Closure Plan (June 2007)

Has the nature of the operations at the site changed during this monitoring period? Yes No

If yes, provide details: _____

Groundwater WDS Verification:

Based on all available information about the site and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

- 1) The monitoring program continues to effectively characterize site conditions and any groundwater discharges from the site. All monitoring wells are confirmed to be in good condition and are secure:

Yes No

If no, list exceptions:

See report

- 2) All groundwater, leachate and WDS gas sampling and monitoring for the monitoring period being reported on was successfully completed as required by Certificate(s) of Approval or other relevant authorizing/control document(s):

Yes No Not applicable

If no, list exceptions below or attach information.

Groundwater Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date

3) a) Some or all groundwater, leachate and WDS gas sampling and monitoring requirements have been established or defined outside of a ministry C of A, authorizing, or control document.

Yes No Not applicable

b) If yes, the sampling and monitoring identified under 3(a) for the monitoring period being reported on was successfully completed in accordance with established protocols, frequencies, locations, and parameters developed as per the Technical Guidance Document:

Yes No Not applicable

If no, list exceptions or attach additional information.

Groundwater Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date

4) All field work for groundwater investigations was done in accordance with standard operating procedures as established/outlined per the Technical Guidance Document (including internal/external QA/QC requirements) (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):

Yes No

If no, specify:

Sampling and Monitoring Program Results/WDS Conditions and Assessment:

- 5) The site has an adequate buffer, Contaminant Attenuation Zone (CAZ) and/or contingency plan in place. Design and operational measures, including the size and configuration of any CAZ, are adequate to prevent potential human health impacts and impairment of the environment.

Yes No

If no, the potential design and operational concerns/exceptions are as follows:

See report

- 6) The site meets compliance and assessment criteria.

Yes No

If no, list and explain exceptions

See report

- 7) The site continues to perform as anticipated. There have been no unusual trends/ changes in measured leachate and groundwater levels or concentrations.

Yes No

If no, list exceptions and explain reason for increase/change.

See report

8) Is one or more of the following risk reduction practices in place at the site:

- (a) There is minimal reliance on natural attenuation of leachate due to the presence of an effective waste liner and active leachate collection/treatment; or
- (b) There is a predictive monitoring program in-place (modeled indicator concentrations projected over time for key locations); or
- (c) The site meets the following two conditions (typically achieved after 15 years or longer of site operation):
 - i. The site has developed stable leachate mound(s) and stable leachate plume geometry/concentrations; and
 - ii. Seasonal and annual water levels and water quality fluctuations are well understood.

Yes Note which practice(s): (a) b) c)
 No

9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):

Yes No Not applicable

If yes, list value(s) that are/have been exceeded and follow-up action taken

See report

Groundwater CEP Declaration:

I am a licensed professional Engineer or a registered professional geoscientist in Ontario with expertise in hydrogeology, as defined in Appendix D under Instructions. Where additional expertise was needed to evaluate the site monitoring data, I have relied on individuals who I believe to be experts in the relevant discipline, who have co-signed the compliance monitoring report or monitoring program status report, and who have provided evidence to me of their credentials.

I have examined the applicable Certificate of Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended), and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to *ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories*, or as amended from time to time by the ministry.

If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature and will be rectified for the next monitoring/reporting period. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated: _____.

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

- No changes to the monitoring program are recommended
- The following change(s) to the monitoring program is/are recommended:

See report.

- No changes to the site design and operation are recommended
- The following change(s) to the site design and operation is/are recommended:

Name: Dan Hagan, P.Geo.

Seal:

Signature: 

Date: Mar21-22



CEP Contact Information:

Company: Greenview Environmental Address:

Telephone No.: 613-332-0057 Fax No. :

E-mail Address:

dan.hagan@greenview-environmental.ca

Co-signers for additional expertise provided:

Signature: _____ Date: _____

Signature: _____ Date: _____

Surface Water WDS Verification:

Provide the name of surface water body/bodies potentially receiving the WDS effluent and the approximate distance to the waterbody (including the nearest surface water body/bodies to the site):

Name (s) Un-named creek

Distance(s) See report

Based on all available information and site knowledge, it is my opinion that:

Sampling and Monitoring Program Status:

- 1) The current surface water monitoring program continues to effectively characterize the surface water conditions, and includes data that relates upstream/background and downstream receiving water conditions:

Yes No

If no, identify issues.

See report

- 2) All surface water sampling for the monitoring period being reported was successfully completed in accordance with the Certificate(s) of Approval or relevant authorizing/control document(s) (if applicable):

Yes No Not applicable (No C of A, authorizing/control document applies)

If no, specify below or provide details in an attachment.

Surface Water Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date

3) a) Some or all surface water sampling and monitoring program requirements for the monitoring period have been established outside of a ministry C of A or authorizing/control document.

Yes No Not applicable

b) If yes, all surface water sampling and monitoring identified under 3 (a) was successfully completed in accordance with the established program from the site, including sampling protocols, frequencies, locations and parameters) as developed per the Technical Guidance Document:

Yes No Not applicable

If no, specify below or provide details in an attachment.

Surface Water Sampling Location	Description/Explanation for change (change in name or location, additions, deletions)	Date

4) All field work for surface water investigations was done in accordance with standard operating procedures, including internal/external QA/QC requirements, as established/outlined as per the Technical Guidance Document, MOE 2010, or as amended. (Note: A SOP can be from a published source, developed internally by the site owner's consultant, or adopted by the consultant from another organization):

Yes No

If no, specify:

Sampling and Monitoring Program Results/WDS Conditions and Assessment:

- 5) The receiving water body meets surface water-related compliance criteria and assessment criteria: i.e., there are no exceedances of criteria, based on MOE legislation, regulations, Water Management Policies, Guidelines and Provincial Water Quality Objectives and other assessment criteria (e.g., CWQGs, APVs), as noted in Table A or Table B in the Technical Guidance Document (Section 4.6):

Yes No

If no, list parameters that exceed criteria outlined above and the amount/percentage of the exceedance as per the table below or provide details in an attachment:

Parameter	Compliance or Assessment Criteria or Background	Amount by which Compliance or Assessment Criteria or Background Exceeded
e.g. Nickel	e.g. C of A limit, PWQO, background	e.g. X% above PWQO
See report		

- 6) In my opinion, any exceedances listed in Question 5 are the result of non-WDS related influences (such as background, road salting, sampling site conditions)?

Yes No

If yes, specify

See report

- 7) All monitoring program surface water parameter concentrations fall within a stable or decreasing trend. The site is not characterized by historical ranges of concentrations above assessment and compliance criteria.

Yes No

If no, list parameters and stations that is outside the expected range. Identify whether parameter concentrations show an increasing trend or are within a high historical range.

See report

- 8) For the monitoring program parameters, does the water quality in the groundwater zones adjacent to surface water receivers exceed assessment or compliance criteria (e.g. , PWQOs, CWQGs, or toxicity values for aquatic biota (APVs)):

Yes No Not known Not applicable

If yes, provide details and whether remedial measures are necessary.

- 9) Have trigger values for contingency plans or site remedial actions been exceeded (where they exist):

Yes No Not applicable

If yes, list value(s) that are/have been exceeded and follow-up action taken.

Surface Water CEP Declaration:

I, the undersigned hereby declare that I am a Competent Environmental Practitioner as defined in Appendix D under Instructions, holding the necessary level of experience and education to design surface water monitoring and sampling programs, conduct appropriate surface water investigations and interpret the related data as it pertains to the site for this monitoring period.

I have examined the applicable Certificate of Approval and any other environmental authorizing or control documents that apply to the site. I have read and followed the Monitoring and Reporting for Waste Disposal Sites Groundwater and Surface Water Technical Guidance Document (MOE, 2010, or as amended) and associated monitoring and sampling guidance documents, as amended from time to time. I have reviewed all of the data collected for the above-referenced site for the monitoring period(s) identified in this checklist. Except as otherwise agreed with the ministry for certain parameters, all of the analytical work has been undertaken by a laboratory which is accredited for the parameters analysed to *ISO/IEC 17025:2005 (E)- General requirements for the competence of testing and calibration laboratories*, or as amended from time to time by the ministry.


If any exceptions or potential concerns have been noted in the questions in the checklist attached to this declaration, it is my opinion that these exceptions and concerns are minor in nature or will be rectified for future monitoring events. Where this is not the case, the circumstances concerning the exception or potential concern and my client's proposed action have been documented in writing to the Ministry of the Environment District Manager in a letter from me dated: _____.

Recommendations:

Based on my technical review of the monitoring results for the waste disposal site:

- No changes to the monitoring program are recommended
- The following change(s) to the monitoring program is/are recommended:

- No changes to the site design and operation are recommended
- The following change(s) to the site design and operation is/are recommended:

CEP Signature:  _____
 Relevant Discipline P.Geo.
 Date: (yyyy/mm/dd): Mar21-22

CEP Contact Information:
 Company: Greenview Environmental Management Limited
 Address: 13 Commerce Court, Bancroft, Ontario, K0L 1C0
 Telephone No.: 613-332-0057
 Fax No. :
 E-mail Address: dan.hagan@greenview-environmental.ca

Appendix G



Statement of Service Conditions & Limitations

The following conditions and limitations shall form an integral part of any agreement between Greenview and the Client. In the event of duplication or conflict, the most stringent shall supercede the other.

Provision of Services and Payment

Upon documented acceptance of Greenview's proposed services and conditions in written form by the Client, Greenview may commence work on the proposed services directly.

Greenview's offers for services in the form of proposals, quotations, bids, tenders, or other like an offering to a Client are formulated upon available information at the time of the offer submission. In the event of discovery of unknown conditions, or any other unknown circumstance that may arise following the presentation of Greenview's offer to the Client, Greenview reserves the right to negotiate terms with the Client with respect to changes in scope, fees, disbursements, or the like as may be fair and reasonable considering the discovery.

Upon retention of Greenview's services related to any commission, the Client agrees to remit payment for the services rendered for the specified period within (30) days of the invoice date as invoiced by Greenview on a typical monthly basis, unless otherwise arranged between the Client and Greenview. In the event of non-payment by the Client, Greenview reserves the right, without external influence or expense, to discontinue services and retain any documentation, data, reports, or other project information until such time as payment is received by Greenview. Interest on any overdue accounts may be applied accordingly.

Warranty, Limitations, and Reliance

Greenview relies on background and historical information from the Client to determine the appropriate scope of services to meet the Client's objectives, in accordance with applicable legislation, guidelines, industry practices, and accepted methodologies.

Greenview provides its services under the specific terms and conditions of a specific proposal (and where necessary formal contract), in accordance with the above requirements and the *Limitations Act 2002*, as amended, only.

The hypotheses, results, conclusions, and recommendations presented in documentation authored by Greenview are founded on the information provided by the Client to Greenview in preparation for the work. Facts, conditions, and circumstances discovered by Greenview during the performance of the work requested by the Client are assumed by Greenview to be part of preparatory information provided by the Client as part of the proposal stage of the project. Greenview assumes that, until notified or discovered otherwise, that the information provided by, or obtained by Greenview from, the Client is factual, accurate, and represents a true depiction of the circumstances that exist related to the time of the work.

Greenview relies on its Clients to inform Greenview if there are changes to any related information to the work. Greenview does not review, analyze, or attempt to verify the accuracy or completeness of the information or materials provided, or circumstances encountered, other than in accordance with applicable accepted industry practice. Greenview will not be responsible for matters arising from incomplete, incorrect, or misleading information or from facts or circumstances that are not fully disclosed to, or that are concealed from Greenview during the period that proposals, services, work, or documentation preparation was performed by Greenview.

Facts, conditions, information, and circumstances may vary with time and locations and Greenview's services are based on a review of such matters as they existed at the time and location indicated in its documentation. No assurance is made by Greenview that the facts, conditions, information, circumstances or any underlying assumptions made by Greenview in connection with the work performed will not change after the work is completed and documentation is submitted. If any such changes occur or additional information is obtained, Greenview should be advised and

requested to consider if the changes or additional information affect its findings or results.

When preparing documentation, Greenview considers applicable legislation, regulations, governmental guidelines, and policies to the extent they are within its knowledge, but Greenview is not qualified to advise with respect to legal matters. The presentation of information regarding applicable legislation, regulations, not intended to and should not be interpreted as constituting a legal opinion concerning the work completed or conditions outlined in a report. All legal matters should be reviewed and considered by an appropriately qualified legal practitioner.

Greenview's services, work and reports are provided solely for the exclusive use of the Client which has retained the services of Greenview and to which its reports are addressed. Greenview is not responsible for the use of its services, work or reports by any other party, or for the reliance on, or for any decision which is made by any party using the services or work performed by or a report prepared by Greenview without Greenview's express written consent. Any party that uses, relies on, or makes a decision based on services or work performed by Greenview or a report prepared by Greenview without Greenview's express written consent, does so at its own risk. Except as set out herein, Greenview specifically disclaims any liability or responsibility to any third party for any loss, damage, expense, fine, penalty or other such thing which may arise or result from the use of, reliance on or decision based on any information, recommendation or other matter arising from the services, work or reports provided by Greenview.

Site Reviews and Assessments

A site assessment is created using data and information collected during the investigation of a site and based on conditions encountered at the time and particular locations at which fieldwork is conducted. The information, sample results and data collected represent the conditions only at the specific times at which and at those specific locations from which the information, samples and data were obtained and the information, sample results and data may vary at other locations and times. To the extent that Greenview's work or report considers any locations or times other than those from which information, sample results and data were specifically received, the work or report is based on a reasonable extrapolation from such information, sample results and data but the actual conditions encountered may vary from those based on extrapolations.

Only conditions, and substances, at the site and locations chosen for study by the Client are evaluated; no adjacent or other properties are evaluated unless specifically requested by the Client. Any physical or other aspects of the site that were not chosen for study by the Client, or any other matter not specifically addressed in a report prepared by Greenview, are beyond the scope of the work performed by Greenview and such matters have not been investigated or addressed.

Confidentiality

Greenview provides its proposals, reports, assessments, designs, and any other work for the sole party identified as the Client or potential Client in the case of proposals.

For proposals specifically, the information contained therein is strictly confidential, proprietary information, and shall not be reproduced or disclosed to any other party than to that of the addressee of the original proposal submission, without prior written permission of Greenview. Any such unauthorised reproduction, in whole or in part, is considered a breach of trust or contract, as applicable by law.

Greenview retains all rights to its working/editable files, documents, calculations, drawings, and all other such information utilized in the preparation of its end deliverables to its Clients. Working documentation is considered to be proprietary, and the sole ownership of Greenview and its subconsultants/subcontractors.