Environmental Screening Report: Ruby Road Waste Disposal Site Capacity Expansion

prepared for

THE CORPORATION OF THE TOWNSHIP OF BONNECHERE VALLEY

Reference No.: 1219-001

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Cambium Environmental Inc.

P.O. Box 325, 52 Hunter Street East, Peterborough, Ontario, K9H 1G5

Telephone: (705) 742.7900 (866) 217.7900

Facsimile: (705) 742.7907

www.cambium-env.com

EXECUTIVE SUMMARY

The Township of Bonnechere Valley is located in Renfrew County in eastern Ontario and was formed in 2001 through the amalgamation of the following geographic townships: South Algona, Sebastopol and Gratton as well as the Village of Eganville. A review of the waste disposal capacity in the Township of Bonnechere Valley indicated that the existing municipal waste disposal sites have a remaining collective capacity for approximately 5 or 6 years. The Township of Bonnechere Valley initiated the Environmental Screening Process in accordance with Ontario Regulation 101/07 under the *Environmental Assessment Act* to determine the feasibility of a capacity expansion at the Ruby Road Waste Disposal Site as a long-term (25-year) solution to best meet the needs of the municipality with respect to the management of municipal solid waste generated within its boundaries. Regulation 101/07 is directed partially at small, rural waste disposal sites and select waste projects are deemed exempt from Part II of the Environmental Assessment Act if the Environmental Screening Process is completed.

This report was prepared by Cambium Environmental Inc. to summarize the study of the environmental impact of a capacity expansion at the Ruby Road Waste Disposal Site and has been completed in compliance with Ontario Regulation 101/07 under the Environmental Assessment Act. The project falls under Part B in the *Guide to Environmental Assessment Requirements for Waste Management Projects* mandated by Regulation 101/07 and therefore requires that the project follow the prescribed screening process to ensure an overall environmental impact is acceptable as per the criteria set out in the guide.

The “Notice of Commencement of Environmental Screening Process” was initially published on November 12, 2007. The screening included preliminary consultation with key interested agencies including the Ministry of Natural Resources and the Ministry of Environment.

Local citizens and stakeholders were invited to the first of four public consultation events on February 20, 2008 and were provided information about the study and the opportunity to discuss their concerns about the project. Two additional public consultation events were held in 2008 following project milestones, in July and November, to update the public about the project progress and new information pertaining to the undertaking. The fourth and final public consultation event was held on May 7, 2011, following the completion of additional studies. The results of the environmental screening process were conveyed to the public at this time, and the public were requested to submit any further comments or concerns with respect to the process or the results of the environmental screening.

Various net effects were identified during the study development that required further assessment; namely the potential for hydrogeologic impacts, surface water impacts and noise emissions. Further assessment was conducted through detailed studies of hydrogeology, ecological impacts, noise, and archaeology. These studies were submitted directly to the province for technical review and comment.

The screening checklist (as provided in the *Guide to Environmental Assessment Requirements for Waste Management Projects;* MOE 2007) identified aspects that had a potential risk for environmental effects as a result of the undertaking. The results of the screening checklist were used to develop the basis for the possible net effects of the proposed undertaking. The checklist reflects an indication of potential environmental impacts of the project at the various phases in its life cycle, independent of the application of any mitigation measures. For all items that were identified to present a possible risk of environmental effects, the 'Additional Information' section of the checklist provides direct reference to the appropriate section in this report, thereby facilitating review of the impact, the choice of appropriate mitigation strategy, and the expected net impact after mitigation. Net impacts are also summarized in the 'Additional Information' section of the checklist, with these aspects reflecting the overall net impact once the appropriate mitigation measures have been implemented.

Please note that this report is governed by the attached Qualifications and Limitations. If you have questions or comments regarding this document, please do not hesitate to contact the undersigned at (705) 742-7900 ext. 202.

Respectfully submitted by:

CAMBIUM ENVIRONMENTAL INC.

ORIGINAL SIGNED

John Desbiens, P.Eng.
President

ORIGINAL SIGNED

Sadie Bachynski, P.Eng.
Environmental Engineer

ORIGINAL SIGNED

Andrea Zavitz, B.A. Hon, Dipl.
Project Coordinator

JPD/slb/azc

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1.0 INTRODUCTION

The *Environmental Screening Process for Waste Management Projects* (ESP), which is applicable to undertakings designated under Part III of Ontario Regulation 101/07 (O.Reg. 101/07)[1], is a self-assessment process with fourteen (14) mandatory steps requiring a minimum of two (2) consultation periods. In the case that a proponent fails to comply with the requirements outlined in the ESP, the proponent may become subject to the Environmental Assessment Act (EAA).

Some of the key steps in the screening process require a proponent to:

- Consult on all aspects of the proposed project, including plans for establishing, constructing, operating, changing, expanding or retiring the project;
- Identify the potential negative and positive environmental impacts on: surface and ground water, land, air and noise, the natural environment (biology), resources, cultural and archaeological heritage and Aboriginal communities, and any socio-economic issues;
- Conduct studies to determine what the impacts will be, and detail what mitigation and/or monitoring measures will be required;
- Following consultation on the studies and identification of mitigation and/or monitoring measures, assess the advantages and disadvantages of the project, and any concerns brought forward by stakeholders. Proponents may determine that additional studies are required to address concerns; and
- Once the screening process is complete, prepare an environmental screening report and make the report accessible to government agencies, interested persons and Aboriginal communities for a 60-day comment period. If there are no comments, the proponent can proceed with a statement of completion. At this point, the project may proceed subject to any other required approvals.

The goal of the Corporation of the Township of Bonnechere Valley (the Township), is to meet the waste management needs of its residents through the continued provision of waste management services. To achieve this goal, the Township contracted Cambium Environmental Inc. (Cambium) to assess the viability of the expansion of the Ruby Road Waste Disposal Site (Site) following the ESP.

As the potential waste disposal site expansion (the project) would result in a total waste disposal capacity increase of between 40,000 and 100,000 cubic metres (m^3), the project is classified under O.Reg. 101/07 as a project exempted from Part II of the EAA. As such, the proponent is subject to fulfilling the requirements of the ESP[1]. Under O.Reg. 101/07, in pursuing this exemption from the EAA, the Township is legally obligated to meet the requirements of the ESP. The ESP is detailed further in the *Guide to Environmental Assessment Requirements for Waste Management Projects* (the Guide)[2].

This report and the associated appendices have been completed in accordance with Part III of O.Reg. 101/07 and the Guide to provide documentation of the technical investigations completed, data collected and the consultation undertaken at various stages and steps of the ESP.

For ease of review and to promote clarity, this Environmental Screening Report (ESR) is structured to correspond to each of the items listed in Step 11 within the Guide[2].

1.1 BACKGROUND INFORMATION

1.1.1 CURRENT MUNICIPAL WASTE OPERATIONS

The current waste management operations within the Township includes six (6) waste disposal site (WDS) locations which include; two (2) active landfills identified as Sand Road WDS and Eganville WDS, and four (4) transfer stations identified as Ruby Road WDS; Lake Clear WDS; McGrath Road WDS; and Highway 41 WDS. Waste from the McGrath Road WDS is transferred to the Lake Clear WDS where it is then transported to the Ottawa Valley Waste Recovery Centre (OVWRC) for disposal. Household waste from the Highway 41 WDS and the Ruby Road WDS are currently emplaced of at the operational Sand Road WDS. All recyclable materials generated within the Township are transferred to the OVWRC.

The existing waste management system within the Township has enough capacity to operate for only five (5) to six (6) additional years, based on the existing capacities at the active WDS's. The Sand Road WDS had an anticipated remaining site life of 3.9 years in November of 2010, based on the average annual interment rates and the estimated residual capacity[3]. The anticipated volume of waste produced will cause the Sand Road WDS to reach its maximum approved capacity in approximately 2015.

The remaining waste disposal capacity at the Eganville WDS has been calculated to be approximately 19,120 m^3 as of November 2010[4]. The average annual waste deposition rate from the previous four (4) years was determined to be 2,150 m^3. This equates to a remaining site life of approximately nine (9) years[4], although actual site life is dependent on the true annual fill rates and cover/compaction methods.

The waste generation rate within the Township fluctuates from year to year. Therefore, a three (3) year average of the waste disposed of at the Lake Clear WDS and the Sand Road WDS, which are the transfer station and WDS (respectively) which process the waste from all other WDS within the Township, was utilized to determine the average waste generated. In addition, a three (3) year average from the Eganville (Snodrifters) facility of construction and demolition waste was calculated and used to contribute to the overall average of waste generated. From these averages, the amount of total waste landfilled was determined to be approximately 1,200 tonnes per year. A similar calculation was performed for the average diversion in the Township over the past three (3) years and it was determined that approximately 400 tonnes per year was diverted. These values result

in an average estimated waste generation of 1,600 tonnes per year within the Township, with 1.10 kilograms (kg) per capita generated per day.

1.2 PROJECT DESCRIPTION AND PURPOSE

1.2.1 RUBY ROAD WASTE DISPOSAL SITE

The study area for this environmental screening included the Ruby Road WDS and its surrounding lands, located at 2213 Ruby Road, Lot 27, Concession 11, in the geographic Township of South Algona, in the amalgamated Township of Bonnechere Valley, in the County of Renfrew.

The proposed expansion is situated on a lot that currently operates the Ruby Road WDS and was previously a sand and gravel pit. The surrounding landscape is described as vacant, rural, coniferous forest with pasture land to the south and west. Landfilling operations have occupied a portion of the 33 hectare (ha) lot since 1971 with an approved fill area of 0.5 ha. The process of active waste internment was concluded in 2003 with the conversion of the Site into a transfer station due to the lack of an appropriate buffer zone to be maintained or acquired. The Site currently operates as an active waste transfer station that receives household non-hazardous waste from surrounding residents and businesses. The waste is contained onsite until it can be transferred to Sand Road WDS where it is processed and emplaced, and from which recyclable material is shipped to the OVWRC.

The theoretical maximum approved existing capacity of the Ruby Road WDS was reported in a 1999 Capacity Study[5] to be 47,650 m³ (m^3). The Capacity Study assumed the existing waste volume placed on site was approximately 17,000 m^3 resulting in a remaining 30,650 m^3 available for waste disposal. The Site was closed in 2003 and therefore the remaining capacity was expected to be close to the volume recognized as 30,000 m^3. The maximum theoretical capacity of 47,650 m^3 was reviewed and accepted by the Ministry of the Environment (MOE) with an Amendment to the Provisional Certificate of Approval (P CofA) on January 17, 2008 (Appendix A). The Township would like to reopen the Ruby Road WDS to active waste internment as a natural attenuation WDS, which will make use of the remaining capacity of 47,650 m^3 approved by the MOE through the Amendment to the P CofA.

Considerable effort and cost has been expended on the monitoring and maintenance of the current facility at the Ruby Road WDS, and on further investigation pertaining to the specific details of the Site. A network of groundwater monitoring wells provides data from past years of routine monitoring conducted at the Site, which provides a good understanding of the surface and groundwater conditions in the area, as related to potential impacts from the Site. Borehole logs for the on-site monitoring wells provide a summary of subsurface conditions, and have been included as Appendix B.

1.2.2 RATIONALE FOR THE UNDERTAKING

Since there is an estimated remaining capacity for waste management in the Township for approximately five (5) more years, it is imminently necessary to develop a plan to address the long-term solid waste management needs of the Township beyond this period (see Figure 1 Regional Location Plan).

The Township initiated the ESP in accordance with O.Reg. 101/07 under the *Environmental Assessment Act* (EAA) in November 2007. The goal of the ESP is to determine the feasibility of a capacity expansion at the Ruby Road WDS (the Site) as a long-term (25-year) solution that will best address the need to manage the municipal solid waste generated within the Township boundaries.

Prior to the initiation of the ESP, potential waste management alternatives were considered and each landfill and transfer station was evaluated as a possibility for expansion. The current operations within the Township include two (2) active WDS and four (4) transfer stations as described in Section 1.1.1. Excluding the Ruby Road WDS, the other existing WDS were deemed unsuitable due to existing constraints at each of the locations. Both Sand Road and Lake Clear sites are located adjacent to surface water bodies and an increase in capacity could not be justified due to the increased risk of negative net effects to surface water. Mitigation of the negative impacts associated with an expansion at either of these sites would be difficult and costly.

A new, previously undeveloped (Greenfield) site was also considered but no appropriate lands were identified and/or available at the time of deliberation. In addition, the cost associated with the development of such a site was determined to be considerably greater due to the likelihood of property acquisition, and the necessary construction of infrastructure, and the clearing and development of the land to accommodate the operation of a waste management facility. Incineration and exportation of the waste were also investigated and were found to be cost prohibitive to the Township based on the relatively small population and waste generation rates.

1.2.3 PROJECT DESCRIPTION

A capacity expansion at the Ruby Road WDS has been a carefully considered concept that has undergone comprehensive study to determine its feasibility as a long-term solution to the Township's waste management needs. The Site is already long established as a WDS and the surrounding lands are available for purchase to serve as a contaminant attenuation zone (CAZ). Preliminary information suggested that there existed an adequate depth of overburden and sufficient depth to the aquifer bed to protect groundwater resources at the property. The property is also relatively isolated and not located in unreasonable proximity to neighbouring residences or commercial operations.

The Ruby Road WDS was initially identified as the preferred location to address the Township's waste management needs for the following reasons:

- The Township has the ability to acquire the 33 ha property surrounding the existing WDS;

- The property is geographically located within the Township boundaries (see Figure 1 for the Regional Location Plan);
- The property is located on an established access route and is isolated from other, potentially conflicting, developments (an Aerial Photograph is available in Figure 2);
- A section of the property was previously operated as an active WDS and is now a waste transfer station operating under the Provisional CofA No. A411501 (see Appendix A);
- Preliminary information about the hydrogeology of the Site gained from current and historical waste disposal operations indicated:
    - the natural overburden material on site is suitable for excavation and use as cover material for waste disposal operations;
    - there is a significant depth (approximately 9 to 30 metres) of unsaturated overburden from the land surface to the unconfined aquifer present beneath the Site;
- The area is sparsely populated with the closest residence located more than 500 m from the proposed landfilling area; and
- The natural topography and vegetative cover of the Site has the ability to naturally conceal the operations that are proposed, preventing negative aesthetic impacts.

The Township has dedicated staff and resources to the completion of the ESP to ensure appropriate due diligence was employed in the evaluation and selection of the most suitable alternative, and that the waste management needs of the service area would be met through cost effective methods. The Township is focused on implementing a project that is in the best interest of the community, to the greatest extent possible, by providing a solution to manage the waste generated within the Township. The Township is committed to providing a sensible and sustainable waste management alternative in the most environmentally secure and fiscally responsible manner.

If the Site is constructed as proposed in this report, based on the best available estimates of waste generation rates the capacity will be exhausted approximately twenty five (25) years after the Site has been reopened. The life expectancy of the landfill may be extended with continual improvements to diversion of waste which will be in contrast to pressures that could arise from population increases within the Township. Based on population data obtained from Statistics Canada, there is not likely to be a significant increase in the population as suggested by the population growth rate of 1.2% from 1996 to 2006[6].

2.0 DESCRIPTION OF THE LOCAL ENVIRONMENT AND CONDITIONS

For the purpose of this document the definition of 'environment' is the same as the broad definition contained within the EAA and includes the social, cultural and economic environment in addition to natural environment (flora, fauna, land, air and water). Below is a discussion of the various baseline environmental conditions at the potential expansion site and its surroundings that are outlined to follow Schedule I (Screening Criteria Checklist) within the Guide. The Screening Criteria Checklist is included as Appendix C.

2.1 SURFACE WATER

There are no surface water features on the subject property or along the boundary of any part of the property. The nearest surface water feature is a small ephemeral drainage watercourse located 165 metres (m) to the west of the proposed expansion boundary (Figure 3).

2.1.1 ASSESSMENT OF SURFACE WATER FEATURES

An Initial Environmental Impact Study (EIS) was conducted in April 2008 by Snider's Ecological Services[7] and field investigations of the Site and the adjacent areas indicated that there are no wetland habitats on or immediately adjacent to the subject property, and the Site itself was noted to be well drained. During the time in which the field work took place, it was noted that the water levels appeared to be at or near their maximum as assessed from weather and flood reports.

Further field investigations and study were conducted in June and July 2008 by Snider's Ecological Services[8] in order to assess the probability of fish habitat in nearby watercourses. According to Snider (November, 2008), the watercourses of the nearest stream system to the Site are intermittent. It was determined that the closest water feature to the west of the property was observed to be a shrub swamp which was not flooded with open water during any of the four (4) observation time periods. Golden Lake is the nearest large surface water body, located approximately 1.7 kilometres (km) to the north of the Site. Both of the above mentioned studies are provided in Appendix D.

Due to the lack of surface water on the Site and in the proximate surrounding area, surface water quality in the general vicinity of the Site is indeterminable.

2.2 GROUNDWATER

The Ruby Road waste disposal site lies within the Precambrian uplands physiographic region and is dominated by Precambrian Shield. The Precambrian Shield consists of a rugged upland composed of ancient igneous and metamorphic rocks. It is a region of shallow soils, glacial till, extensive forest, sparse agricultural settlement,

dispersed urban centres, and is characterized by high, rolling and often flat-topped hills of Precambrian granite, marble or gneiss bedrock.

Ontario Geological Survey Maps 2459 (Pembroke) and 2460 (Coben) describe the bedrock in the area of the Site as being a medium to coarse grained feldspar-rich metamorphic arkose, subarkose and/or siliceous marble. The bedrock is overlain by glaciofluvial kame moraine sands and gravels, described by OGS Map P3125, to be gravely sand, sand, silt, minor clay, and till. The soil is part of the White Lake group and the parent material of the soil is calcareous coarse gravel and rock with good drainage. Groundwater movement through the overburden is expected to be governed by the relatively high permeability of the glaciofluvial materials.

The stratigraphy of the Site was obtained from four (4) existing monitoring wells located at the Site (i.e. BH1, BH2, BH3 and BR1), drilling activities in May 2008 and December 2009 which resulted in the installation of four (4) additional monitoring wells (i.e. MW4, MW5, MW6, and MW7) to the south of the Site, the installation of two (2) monitoring wells northeast of the Site (i.e. MW8-1 and MW8-2) in October 2011, and the installation of three (3) monitors south of the Site in July 2012 (i.e. MW9, MW10, and MW11). During the installation of these wells, no shallow aquifer was identified. This information in combination with regional water well records provided by the MOE, indicate the Site does not harbour any shallow groundwater systems and that the deep aquifer system does not discharge to surface on the Site or the surrounding lands (see Appendix B).

The overburden was observed to be typically composed of dry, silty fine sand that is poorly sorted and loose. The silty sand is underlain with sand and gravelly granite and boulders from 8.6 to 30 metres below ground surface (m bgs). The borehole logs (Appendix B) indicate that the Site specific bedrock consists of light to medium grey granitic gneiss bedrock with quartz and biotite, layered with pink granite. Also, at one (1) location south of the Site, some seams of green marble were observed in the upper portions of the bedrock. The bedrock was investigated up to 28 metres and was observed to become more competent with depth. Monitoring well borehole logs of all the wells at the proposed Site are available in Appendix B and can be cross referenced with the corresponding locations shown on Figure 4, Figure 5, and Figure 6. Each borehole log provides a description of the overburden layers encountered, indicates the depth to bedrock, and the groundwater elevation at each of the wells.

2.2.1 GROUNDWATER QUANTITY AND MOVEMENT

The aquifer at the Site has been observed through groundwater elevation monitoring, to be typically just above the bedrock surface, primarily in the overburden and sand and gravel materials, with some flow in the upper portions of fractured bedrock. The granitic bedrock was observed to become competent with depth (Cambium Environmental Inc., 2009). Results from historical slug testing (2008 through 2010) determined that the Site geological materials were variable in nature. The overburden is represented by silty sand with sand and gravel lens, ranging in hydraulic conductivities of 2.61×10^{-7} to 8.85×10^{-6} metres per second (m/s). The most

conductive zone, and the zone which is likely to facilitate a majority of the leachate impacted groundwater at the Site, is the fractured bedrock zone and/or the interface zone. The conductivity here is observed to be 1.81 x 10^{-5} to 5.85 x 10^{-5} m/s. The values for the bedrock material were determined to be between 5.85 x 10^{-5} to 2.62 x 10^{-6} m/s. The addition of monitoring wells in 2011 and 2012 were consistent with the hydraulic conductivities historically observed at the Site. Using all monitoring wells installed on and adjacent to the Site, the bedrock and overburden were observed to have average hydraulic conductivities of 3.7 x 10^{-6} and 4.4 x 10^{-6} m/s, respectively. The interface zone, that which is inferred to be the primary path of groundwater and leachate flow, was observed to have an average hydraulic conductivity of 2.8 x 10^{-5} m/s.

Based on the existing monitoring well network, the sand and gravel overburden is approximately 30 metres deep; the groundwater table is at a depth of approximately 26 metres.

Historically, the regional direction of groundwater flow has been interpreted to be towards the northeast with a component flowing to the north in the overburden. Based on the data collected in 2012, the general direction of groundwater flow was interpreted to continue to be to the northeast on the Site with an easterly component to the east of the Site. The horizontal hydraulic gradient beneath the Site in 2012 was approximately 0.020. The hydraulic gradients observed in 2012 were slightly less than historical values; however, this is believed to be a result of the addition of monitoring wells MW8-1 and MW8-2 which provide a better representation of overall groundwater flow direction and gradients in the vicinity of the Site.

Groundwater elevation data collected was used to determine the vertical gradients at the Site. At both locations, that is BH-1/BR-1 and MW8-1 and MW8-2, a downward vertical gradient is generally observed; in 2012 a slightly upward gradient was observed at BH-1/BR-1 in April. The vertical gradients in 2012 are summarized below:

Monitor No.	Vertical Gradients +downwards, -upwards					Between Units
	19-Apr-11	21-Jul-11	21-Oct-11	16-Apr-12	16-Jul-12	
BR-1	0.016	0.005	0.009	-0.002	0.009	Bedrock
BH-1						Overburden
MW8-1	-	-	0.020	0.020	0.022	Bedrock
MW8-2						Overburden

The general downward vertical gradients observed are consistent with the variations in relief on-site and with historical results indicating impact in the bedrock below the Site. Due to the increasing competency in the bedrock with depth, it is expected even with the downward vertical gradient, that the potential for impact vertically would be limited and the primary path for leachate will be in the highly fractured zone at the surface of the bedrock.

2.2.2 GROUNDWATER QUALITY

Historical water quality results indicate that a dilute leachate plume from the existing waste emplaced on-site extends from the current waste disposal area towards monitoring well BR-1 (see Figure 6). The extent of the existing leachate plume has been determined in the past as no monitoring wells have been authorized on neighbouring property downgradient of the existing waste disposal area. With the addition of monitoring wells MW8-1 and MW8-2 in 2011, water quality downgradient of the Site has now been investigated. Water quality at these monitors have been observed to have most leachate indicator parameters greater than background; however, the water quality was observed to be better than that observed at monitor BH-1 and no exceedances of the ODWS were observed. This indicates that although leachate impacts are observed at least 50 metres down-gradient of the Site, attenuation is occurring at the Site. Furthermore, as there are no down-gradient users of the groundwater within 500 metres, unless the water quality is observed to worsen with time at this location, no other actions are required at this time.

2.3 LAND

The surrounding regional landscape is generally comprised of coniferous forest or vacant rural pastureland (see aerial photo for the proposed Site and its surroundings current landscape in Figure 2) with some wetlands. Topographic and aerial maps show the Site and its surroundings as hilly terrain with extensive vegetative cover.

2.3.1 SUBSURFACE CONDITIONS AND TOPOGRAPHY

The Ruby Road waste disposal site is located on a local topographic high. The proposed expansion of the Site lies within the Precambrian uplands physiographic region and is dominated by Precambrian Shield. The Precambrian Shield consists of a rugged upland composed of ancient igneous and metamorphic rocks. It is a region of shallow soils, glacial till, extensive forest, sparse agricultural settlement, dispersed urban centres, and is characterized by high, rolling and often flat-topped hills of Precambrian granite, marble or gneiss bedrock. The region immediately surrounding the project area is dominated by a gravelly, sandy loam-rocky phase materials derived from the gneissic and granitic rocks of the Precambrian shield. The dominant White Lake soils at the Site possess a rougher topography and have a restricted use as arable agricultural land[9]. The soil on the property is part of the White Lake group characterized as a gravely sandy loam. The parent material of the soil is calcareous coarse gravel and rock with good drainage.

The geologic stratigraphy at the Site consists of silty sand, and layered sand and gravel, overlaying fractured granite which becomes competent with depth. Borehole logs for the monitoring wells installed on-site are included in Appendix B. The sand and gravel overburden is approximately 27 m deep. The groundwater table is at a depth of approximately 25 m. The waste footprint itself is relatively flat, but the ground surface slopes gently upwards towards adjacent pasture lands immediately to the northeast (Figure 6).

2.3.2 SURROUNDING LAND USES

Several surrounding land use maps were analyzed to determine the adjacent structures, natural features, and zoning of the proposed expansion. See Appendix E for the Maps of Interest used for the initial classification of the Site. The County of Renfrew developed an Official Land Use Plan (Appendix E) to provide a policy framework for growth and development. This incorporates local land use policies and required provincial policies and designates the land use throughout the Site property as "Mineral Aggregate". The Zoning By-law Schedule "A-1" for South Algoma, also available in Appendix E, characterizes the lands of the Site property as "Extractive Industrial Reserve". Current surrounding land use designations include "Rural Zones" surrounding the "Extractive Industrial Reserve" area with a "County Forested" area to the north and "Rural Residential" locations scattered on the lots to the east.

2.3.3 PROVINCIAL POLICY STATEMENT AND RESOURCE MANAGEMENT PLANS

The Planning Act[10] administered by the Ministry of Municipal Affairs and Housing (MMAH), sets out the requirements for land use planning in Ontario and establishes how land uses may be controlled and who may control them. This Act provides the basis for consideration of provincial interests related to municipal land use planning, such as management of natural resources and farm land, preparation of official policies and plans to guide future development, and regulation and control of land use.

The planning and approval of a landfill site often involves the Planning Act when the purchase of property is required for landfilling purposes. If the existing land use for the property as described by the zoning by-law and/or Official Plan does not conform to this type of land use, a zoning change or Official Plan amendment by the municipal government is necessary.

The MMAH Provincial Policy Statement[11] (PPS) of 2005 states in Policy 1.6.8.1 that *"Waste management systems need to be provided that are of an appropriate size and type to accommodate present and future requirements, and facilitate, encourage and promote reduction, reuse and recycling objectives"*, and that *"Waste management systems shall be located and designed in accordance with provincial legislation and standards."*

It is the interest of the Township to ensure that its waste management systems continue to meet the standards set in the PPS. An expansion at the Ruby Road WDS would be designed in accordance with provincial legislation and standards and would fulfill Section 1.6.8.1 of the PPS. Furthermore, the Site currently hosts an active waste disposal facility and will maintain consistency with the policies contained within Section 2.1 (natural heritage), Section 2.2 (water) and Section 2.5 (mineral aggregate resources).

2.3.4 MUNICIPAL LAND USE POLICIES

The County of Renfrew's Official Plan[12] works to establish criteria for the location of a new WDS to ensure that appropriate regulations are adopted to prevent serious social or environmental disturbance from the operation or

establishment of waste disposal facilities. Currently, the Official Plan designation for the Ruby Road WDS property is "Active Waste Disposal Site" and the property containing the proposed waste disposal area expansion has a separate "Mineral Aggregate" description.

The County of Renfrew Official Plan states that a minimum separation distance of 30 m from any existing or proposed residential, commercial institutional, or recreational land use is required for waste disposal sites to be permitted[13]. There are approximately five (5) residential lots within 500 m of the Site boundary; however, each of the associated five (5) residential buildings is located more than 500 m from the proposed future waste disposal area expansion (see Figure 7). No commercial, institutional or recreational land uses exist within 500 m of the Site boundary, and all are well outside of the minimum separation distance of 30 m.

2.3.5 ZONING

The current zoning category for the existing Ruby Road WDS property is "Disposal Industrial". The lands immediately surrounding the existing waste disposal area is presently zoned as "Open Space" and the remainder of the subject Site is classified as "Extractive Industrial Reserve" (see Appendix E for the South Algona Zoning Map).

The Ministry of Natural Resources (MNR) has stated in correspondence dated August 17, 2007 (available in Appendix F) that the MNR is not opposed to the rezoning of a portion of the property for waste disposal and a contaminant attenuation zone. The MNR has also indicated the preference that rezoning should not take place until the studies are completed which indicate the specific areas of land required, and they further requested that the remaining property area should maintain its designation as "Aggregate Extraction". Based on this correspondence, the land may be rezoned to meet the requirements of the ESP.

2.3.6 LAND USE HAZARDS AND CONTAMINATED LAND

The subject property proposed for the Ruby Road WDS expansion is not situated within identified hazardous or unstable lands, nor is hazardous material transported to the Site for disposal; however, the lot does contain household waste generated in the area from 1971 to 2003. As such, a small portion of the subject property is recognized as contaminated by the existing emplaced waste. However, the Ruby Road WDS has been closed to operations since 2003; therefore the formerly active waste disposal area and any impacted areas downgradient are progressively improving through the natural decomposition and attenuation that occurs in the subsurface environment.

Hazardous sites are defined as property or lands that could be unsafe for development and site alteration due to naturally occurring hazards. Under the PPS these hazards include unstable soils (sensitive marine clays [leda], organic soils) or unstable bedrock (karst topography). The County of Renfrew has recently released a discussion paper about issues and options for reviewing planning applications in karst areas of Renfrew County[14]. This

document contains topographical karst mapping which displays areas of known, inferred and potential karst formations. The Ruby Road WDS is not located in a defined karst area.

2.4 AIR AND NOISE

2.4.1 AIR QUALITY

Currently, there are negligible negative effects to air quality at the proposed location due to emissions. Due to the fact that the Site is currently operated as a transfer station, parameters such as temperature, nitrogen dioxide, residual oxygen, opacity, hydrogen chloride, suspended particulates or other contaminants are not currently an issue.

2.4.2 GREENHOUSE GASES

The current operations at the Site permit residential vehicles to enter the Site to unload waste into the bins. The engine emissions from vehicles that remain idle for any given time while the residents are onsite would include 'greenhouse gases' (i.e. carbon dioxide, nitrous oxide, methane, and hydrofluorocarbons). Trucks also enter the Site to remove the waste and recyclable matter from the bins and have the potential to discharge engine emissions in the form of greenhouse gases to the environment.

2.4.3 DUST AND ODOUR

Dust may be generated at the existing transfer station on dry days due to the groundcover being composed of sandy soil. The vehicular traffic entering the Site has the ability to drive on the loose soil areas which may agitate particulates to be carried in the air. Apart from the actively used transportation areas, the remainder of the proposed Site is covered in vegetation such as grass or trees and does not have the potential to generate dust.

Waste is currently contained on the Site in bins and is likely to generate odours from the decaying organic materials. This negative effect would be most prominent on warmer days and is currently managed by the removal of the stored waste twice per week throughout the summer months for disposal at an active landfill. During the remaining colder months of the year, odours are less of an issue and the waste is transferred offsite when the bins are filled. Also, the current bins utilized on the Site are fitted with lids that remain closed at all times aside from when waste is being deposited into them. The bin lids mitigate the dispersion of odours into the surrounding environment.

2.4.4 NOISE

The noise currently generated at the Site is produced by vehicles that bring waste to the Site and those vehicles that transfer it offsite. Background noise readings were measured at the existing transfer site with no vehicles of waste management equipment on Site and were found to be 45 decibels (A-weighted) (dBA). There are five (5)

residents located in the vicinity of the proposed expanded Site. These residents are situated 620 m, 640 m, 590 m, 810 m and 715 m from the eastern property boundary of the Site. See Figure 7 for the Residential Locations in the Vicinity of the Proposed Site that would have any potential to be affected by noise producing equipment on the Site.

2.4.5 LIGHT POLLUTION

There is currently no equipment onsite that produces any light pollution that would be bothersome to residents in the area. The transfer station is operated only during daylight hours and there is no need for lights to be used during the evening hours. An expanded WDS would similarly not require artificial lighting to support waste disposal operations.

2.5 NATURAL ENVIRONMENT

Several studies (Appendix D) have been completed by Snider's Ecological Services which have provided an enhanced understanding of the ecological surroundings of the Site. These studies have been completed to consider the presence of all natural heritage features, as well as other natural features, on and around the Site. The studies were conducted to determine what potential impacts, if any, to natural heritage features may result from an expansion of the Ruby Road WDS. These potential impacts were considered in order to determine if any issues exist on or near the Site that could not be addressed or mitigated when considering the WDS expansion. Where sufficient information was not available to fully assess particular features or to assess potential impacts to those features, supplemental studies were completed.

The overall results determined that no significant natural features are currently present on the Site. More detailed results are summarized in the sections below and the full reports are available for review in Appendix D. The natural heritage features examined included significant wetlands, fish habitat, Areas of Natural and Scientific Interest (ANSI's), threatened and endangered species habitat, significant woodlands, significant valleylands, and significant wildlife habitat. In addition, linkages between natural features were investigated. Figure 3 illustrates the surface water, topographic, and vegetation features of the Site and surrounding area.

2.5.1 VEGETATION

The Site is currently rough pasture that is in the process of early natural succession to a forested habitat. Open non-forested habitats are underlain primarily by light sandy soils. These areas are being invaded by shrub and tree species dominated by white pine (*Pinus strobus*). The ecosite types identified by Snider's Ecological Services, based on the Ecological Classification System for Southern Ontario First Approximation[15], contained various species of trees and herbaceous vegetation. Vegetation of the study area includes:

- an open non-forested habitat identified as an old field meadow presently being used for rough pasture;

- a White Pine-Red Pine ecosite;
- a sugar Maple-Beech-Red Oak ecosite;
- a Sugar Maple-Hemlock-Yellow Birch ecosite; and
- a Sugar Maple-White Birch-Poplar-White Pine ecosite.

The vegetation communities present onsite promote the existence of a stable existing vegetative cover that will aid in the maintenance of the land structures surrounding the proposed Site. The forested areas protect the Site and surrounding area from sedimentation or soil erosion; also acting as a natural buffer between the Site and the surrounding land uses.

2.5.2 RARE, THREATENED OR ENDANGERED SPECIES

Through MNR correspondence dated February 29, 2008 (Appendix F), it was confirmed that there are no known occurrences of threatened or endangered species within the potential landfill expansion area or on the lands immediately surrounding the Site. There is a high potential for American Ginseng and butternut to be present in the local region of the County, as was noted in the data received from the MNR. Therefore, it was suggested that investigation for these species, protected under the Endangered Species Act (2008), would require additional evaluation.

Further onsite studies were requested by Cambium to supplement the Initial EIS by Snider's Ecological Services. The supplemental studies (Appendix D) concluded that:

- there are no prairie, savannah, alvar, bog, fen or other rare vegetation types located in the study area and the vegetation communities onsite were all considered common and widespread in the area;
- butternut and American ginseng, two (2) endangered species, were not found on or around the Site;
- the breeding bird survey did not identify any threatened or endangered species or species of special concern or provincially significant species;
- the vascular plant survey did not identify any threatened or endangered species, species of special concern or provincially significant species; and,
- no critical habitat of threatened or endangered species or significant wildlife habitat were identified within the study area.

Other wildlife that are rare or of special concern that the MNR has reported to generally be known in the region of the proposed landfill expansion include, but are not limited to; milksnake, redheaded woodpecker, southern flying squirrel, eastern wolf, read-shouldered hawk, and monarch butterfly.

A geographic query of the Natural Heritage Information Center (NHIC) database was done by Snider's Ecological Services (Appendix C) which indicated that there are no records of rare or at risk species on or near the Site. Species records maintained by NHIC indicated that there are no significant bird species, species of special concern, or provincially rare species present on the Site that could reasonably be expected to be affected by the potential expansion at the Ruby Road Site. Further seasonal studies including a Breeding Bird Survey and Other Possible Species at Risk were suggested to further assess the potential for significant species within the study area. These additional studies, which were also conducted by Snider's Ecological Services, established that there were no rare or at risk wildlife detected other than the ubiquitous monarch butterfly.

2.5.3 PROTECTED NATURAL AREAS

Snider's Ecological Services' investigations confirmed that there are no provincial or federal parks, Important Bird Areas of Canada (IBA), International Biological Sites (IBP) or Areas of Natural and Scientific Interest (ANSI) in the vicinity of the Site. There is also no Environmental Protection Areas (EPA) anywhere within the general surroundings of the Site.

2.5.4 DESIGNATED WETLANDS

There are no known wetlands on the subject property. A document dated February 29, 2008 from the MNR (Appendix F) states that the closest Provincially Significant Wetland (PSW) is the Silver Creek Wetland, located approximately 800 m to the south of the subject Site property boundary (i.e. at O'Connor Road). It has been documented that there are no large unevaluated wetlands within or proximate to the Site.

Snider's Initial EIS (Appendix D) confirms that there are no wetland habitats on the proposed Site and the lands are well drained. One wetland habitat was identified as being to the west of the southern portion of the potential expansion site and approximately 365 m from the lot boundary. This wetland area was found to be limited in size and lacking any known significant wetland features. In the professional opinion of Snider's Ecological Services, it has been deemed unlikely that this wetland would be a provincially significant wetland if formally evaluated under the MNR protocol.

2.5.5 WILDLIFE HABITAT, POPULATIONS, CORRIDORS OR MOVEMENT

The project property was originally identified to be within a possible deer wintering area. The MNR reported that the Forest Resource Inventory (FRI) indicated that the Site is likely dominated by sugar maple and beech with patches of hemlock and yellow birch. Within these vegetation types, the hemlock patches are likely to provide important winter thermal cover and bedding areas which could allow deer to winter there (Appendix F). The referenced forest area comprises approximately half of the property with the other half being open field or meadow.

Field investigations by Snider's Ecological Services (Appendix D) indicated that there was no evidence of significant deer wintering activity at the project Site, or elsewhere on the property. It was indicated that there were no winter deer droppings or evidence of heavy browsing activity on the forage shrubs present in the area. Although the lot does contain some areas of hemlock that could provide thermal cover; it was evident that deer were not using the areas. No other information suggested a significant seasonal concentration of wildlife.

The habitat of threatened and endangered species are considered Significant Wildlife Habitat and further assessment was recommended by the MNR to determine their presence or absence on the property as part of the ESP (Appendix F). As indicated in Section 2.5.2, no other wildlife that are rare or of special concern that the MNR has reported to generally be known in the region of the proposed landfill has been identified at the Site with the exception of the monarch butterfly.

2.5.6 FISH AND FISH HABITAT

There are no known streams within the Site; however, the MNR has stated that there are tributaries of Golden Lake located on adjacent properties (Appendix F), but the permanency of these tributaries is undocumented. Golden Lake, a coldwater lake online within the Bonnechere River, is known to support walleye, northern pike, yellow perch, rock bass, pumpkinseed, lake whitefish, cisco (lake herring), burbot (ling), common shiner, golden shiner, brown bullhead, grass pickerel, black crappie, rainbow smelt, smallmouth bass, largemouth bass, white sucker, and shorthead redhorse. Whitefish and walleye are known to spawn below the Tramore dam upstream of the Golden Lake on the Bonnechere River. Many of the Golden Lake tributaries are thermally defined coldwater aquatic habitats and are reported to be known to support brook trout.

The MNR reports that Silver Creek and Silver Lake are part of the Zummachs Creek system that flows into the west side of Golden Lake. Both Silver Creek and Silver Lake are located to the south of the proposed landfill expansion, however they are not in the same watershed; therefore, there is no direct hydrologic connection between the proposed Ruby Road WDS expansion Site and the Silver Creek-Zummachs Creek system.

Snider's Ecological Services completed an Initial EIS (May, 2008) and recommended that a supplementary Fish Habitat Study should be conducted in the warm month of July 2008. Additional investigations were conducted on June 20 and July 30, 2008 which concluded that the watercourses on the adjacent property west of the potential expansion area were intermittent and seasonal, did not contain any fish, and are not considered to be an important fish habitat.

2.5.7 LOCALLY IMPORTANT (VALUED) ECOSYSTEMS OR VEGETATION

There are no known locally important (valued) ecosystems or vegetation on the Site or in the general surroundings. NHIC, which tracks rare ecosystems and vegetation communities, was consulted with respect to the potential expansion, and no records of such communities are documented for the Site or surrounding area.

Correspondence with the MNR did not reveal the presence of any locally important ecosystems or vegetation, nor did the studies completed by Sniders Ecological Services (Appendix D).

2.5.8 BIRD HAZARDS

The nearest airport to the proposed Site is approximately 70 km away and no other hazard exists that would impact the surrounding land use with respect to bird populations in the area. Regardless, the covering of emplaced waste mitigates the attraction and presence of scavenging birds.

2.6 RESOURCES

2.6.1 WASTE STUDIES OR WASTE DIVERSION TARGETS

Materials such as scrap metal, rubber tires, and clean lumber/brush are collected at all the WDS's within the Township and are directed to a designated area at each site for proper management to promote reduction, reuse and recycling.

Recyclable materials are currently collected at the Ruby Road WDS and later transferred to a waste recovery center for proper reuse. Mixed containers, mixed glass and fibres are source separated in bins, and old appliances, tires and scrap metal are deposited and maintained in the respective locations onsite sorted by material type. When the containers are filled to capacity or the stipulated storage period has elapsed, the wastes are removed from the Site to be salvaged accordingly.

The Township is consistent in the promotion and implementation of waste diversion and currently has an overall waste diversion rate of approximately 36%. This value is based on the average waste generation rates over the past few years, amounts of recyclables transferred, and the quantity of scrap metals, tires, and white goods also diverted from disposal.

2.6.2 ENERGY GENERATION AND RECAPTURE

Currently, no landfill gas recovery systems are installed at any Township WDS. Regulation 232/98 requires a WDS larger than 1,500,000 m^3 to have landfill gas collection systems in place. The same regulation also acknowledges that if the nature and quantity of landfill gas generated at the site is not likely to be of significant concern based on the characteristics of a site, the type of waste to be deposited, and the rate of waste deposition; then the MOE may agree to waive the requirement to collect the gas emitted. Given that the total volume of waste that would be ultimately be emplaced at the Site is well below the regulatory threshold (150,000 m^3, or less than 10% of the regulatory limit), it would not be necessary (or reasonable) to attempt to capture the landfill gas. The U.S. Environmental Protection Agency (EPA) recommends that at least 1,000,000 tonnes of waste be in place with a minimum depth of 12 m in order to be practical to capture the gas and utilize it for energy. For these reasons, it would be ineffective and unjustifiable to install a landfill gas collection system at the Ruby Road WDS.

2.6.3 REQUIRED INFRASTRUCTURE

The expanded waste disposal area is proposed to be located at the Ruby Road WDS which is located in the upper north-west region of the Township where waste operations have existed since 1971. The Site is easily accessible from Ruby Road and access to the transfer station consists of a driveway entrance with a lockable gate. The driveway is oriented in such a way that the flow of water is diverted away from the entrance access to the Ruby Road WDS. A perimeter fence isolates the existing WDS and designated bins are used for waste and recyclables collection. A Quonset hut and an attendant shelter are also positioned at the entrance of the existing WDS. No other buildings or paths currently exist on the lot away from the transfer station.

The Site is conveniently located and is easily accessible to permanent and seasonal residents, local business and industry. The existing road infrastructure to the Site has been the established route for waste disposal since 1971 and has been appropriate in construction to accommodate the vehicles travelling to the Site. The County has committed, in its capital plan, to the complete reconstruction of Ruby Road beginning with design in 2011 and reconstruction over the next three years.

2.6.4 CANADA LAND INVENTORY CLASS 1 TO 3 AGRICULTURAL LANDS

The Canada Land Inventory is a comprehensive federal-provincial survey of land capability and is used for regional resource and land-use planning established under the Agricultural Rehabilitation and Development Act in 1961. There are seven (7) classes used to rate agricultural land capability. Class 1 lands have the highest and Class 7 lands the lowest capability to support agricultural land use activities. Subclasses are used to identify specific limiting factors for each class.

The proposed WDS is located in an area with a Class 6 agricultural land use designation which can be interpreted as having severe limitations that makes the land generally unsuitable for agricultural cultivation. Due to the agricultural land use capability designation of the Site, the expansion is not in conflict with the potential for agricultural use. See Figure 8 for the Agricultural Land Classification Surrounding the Proposed Site.

2.6.5 AGRICULTURAL PRODUCTION

The Site and its surroundings are designated as “Extractive Industrial Reserve” (Appendix E) and as stated above the soils in this area are of Class 6 agricultural land use designation, are marginally capable of producing perennial forage crops, and soil improvement practices are deemed to be unfeasible. The Site and the surrounding lands have historically been utilized as pastureland for cattle.

2.7 SOCIO-ECONOMIC

The demographic of the Township is well described by data obtained from Statistics Canada[16]. Using the most recent census data available (2006), an increase in population of 2.1% was observed between 2001 and 2006 to

a total population of 3,665. The largest demographic group was men and women aged 45-60 and the male and female population across all demographic groups is approximately equal.

2.7.1 NEIGHBOURHOOD OR COMMUNITY CHARACTER

The Township of Bonnechere Valley consists of the previous Townships of South Algona, Sebastopol, Grattan, and the Village of Eganville as well as numerous small rural communities. This amalgamation was formally recognized on January 1, 2001. The community is supported by recreational facilities, clubs, minor sports affiliations, associations, churches, schools and parks. The neighborhood of the Site is made up of a community with generations of family history in the region and seasonal tourists from other areas. Family demographics include 76% of the total population being classified as a married couple family and 23% of all households have one or more children[20].

2.7.2 AESTHETICS

The existing waste disposal area at the WDS is accessible and visible from Ruby Road. The two (2) waste disposal bins are located in the center of the WDS with storage areas of tires, scrap metal, and white goods all positioned on the south side of the WDS. The operations are partially screened from Ruby Road by vegetation.

The lands surrounding the remainder of the Site consist of forested areas with extensive tree cover on the east and south sides. Approximately sixty (60) percent of the lot is tree covered with the additional area of the property being moderately hilly terrain used historically as pasture for livestock.

2.7.3 LOCAL BUSINESSES, INSTITUTION OR PUBLIC FACILITIES

No local business, institutions or public facilities exist within the 500 m radius surrounding the Site. Land use designations, as outlined in Section 1.1, do not support the establishment of activities for these purposes on any land surrounding the Site.

2.7.4 RECREATION, COTTAGING OR TOURISM

There are no areas used for recreation, cottaging or tourism within 500 m surrounding the Site; however, there is one property located 1.8 km to the north of the Ruby Road WDS that has been designated “Tourist Commercial” on the Township’s Comprehensive Zoning By-law (Appendix E). The designated area is occupied by a seasonal cottage resort located on a lot on the south shore of Golden Lake. Golden Lake is surrounded by many cottages and small tourist attractions. The next closest areas similarly zoned as “Tourist Commercial” are located 2.7 and 3.1 km away.

2.7.5 COMMUNITY SERVICES AND INFRASTRUCTURE

There are no community facilities proximate to the Ruby Road WDS and according to the Comprehensive Zoning By-law Schedule "A-1" (Appendix E) the nearest community service infrastructure is located 9.2 km to the south-east of the Site.

2.7.6 ECONOMIC BASE OF MUNICIPALITY OR COMMUNITY

Industrial activity is varied, ranging from 3% of industrial activity in finance and real estate, to 13% in manufacturing and business. Industrial activity in a sector not listed by the census (Other) was 22%. Small manufacturing plants, multiple tourism and hospitality operations, a service sector and various industries are established in the County of Renfrew[17].

2.7.7 LOCAL EMPLOYMENT AND LABOUR SUPPLY

The employment rate in the Township is 53.9%, and employment is primarily in the sales and service, trade and business sectors. Agriculture, manufacturing and construction are the main sources of employment in South Algona[18]. Approximately one third of the population is within the age groups of 0 to15, and, 65 to greater than 75 years of age, and therefore do not contribute directly to the labour supply. Municipal services are not considered to be a significant employer within the Township. Operational decisions by the municipality will determine whether the expanded WDS operations will require the hiring of an additional person to municipal staff within the Township.

2.7.8 TRAFFIC

The existing Ruby Road WDS is open for one (1) full day and two (2) part-time days for two (2) hours during the summer, and is reduced to one (1) full day only throughout the winter season. Solid waste is accepted during these times as residential vehicles come to the station to drop off household waste and recyclable materials. Waste disposal trucks are utilized to remove the contents of the household waste bin and transfer the waste to the active Sand Road WDS for disposal. The removal of waste from the bins occurs approximately one (1) time per week during the summer months and when the bins reach capacity during all other times of the year. An OVWRC truck brings an empty recyclable bin to the Site when it collects the full bin approximately one (1) time per month. Projected traffic impact data is included in Appendix G.

2.7.9 AIRPORTS

The closest airport is the Pembroke Municipal Area Airport which is located approximately 70 km to the north of the Site.

2.7.10 PUBLIC HEALTH OR SAFETY

The Ruby Road WDS is operated in accordance with federal, provincial and local regulations specifically designed to protect public health and the environment. Ongoing monitoring of groundwater is conducted to confirm that the facility is not adversely impacting neighbouring uses of the groundwater. Groundwater monitoring is required during the operation of waste disposal sites in Ontario and is maintained after waste disposal site closure for a period of time determined by the MOE. No other health or safety concerns exist that are related to the current operation of the Ruby Road WDS.

Vectors, such as bears, small mammals and birds are discouraged from frequenting the WDS by best management practices which make the waste inaccessible to animals as much as possible.

2.8 HERITAGE AND CULTURE

2.8.1 HERITAGE AND ARCHAEOLOGICAL SITES

There are no heritage buildings, structures, archaeological sites, areas of archaeological importance or cultural heritage landscapes located on the Site or in the proximate surrounding area. A Stage I and II Archaeological Study was performed for the Site area to ensure that the proposed WDS capacity expansion will not impact any known, or previously undiscovered archaeological sites. The Archaeological Study can be viewed in Appendix H. The study has confirmed that significant First Nations pre-contact or historic archaeological sites are unlikely to be found in any undisturbed ground within the proposed development area of the Ruby Road WDS.

2.8.2 SCENIC LANDSCAPES

The Township consists of many small rural communities surrounded by vast open spaces, hilly terrain and treed landscapes. Many lakes can be found throughout the Township with the most well known being Lake Clear, Golden Lake, Constant Lake and Silver Lake. Scenic landscapes exist throughout the Township. No distinct scenic landscapes exist on the Site, and no vistas to the abundant lakes in the Township are possible from the Site. Much of the Site is not directly visible from any scenic lookouts due to topography, tree cover and distance from scenic features.

2.9 ABORIGINAL

A map of First Nations communities, outlining the location of each community within Ontario, is included in Appendix E. Indian and Northern Affairs Canada (INAC), the Ministry of Aboriginal Affairs (MAA), and the Ministry of the Attorney General (MAG) were contacted to identify any potential conflicts between the proposed Site expansion, and Aboriginal use of, and claims to, land in the vicinity of the subject property. Correspondence with these agencies is included in Appendix F. Direct correspondence with Aboriginal communities and groups is included in Appendix I.

Responses from these government agencies indicate that there is one First Nation community in the general area of the subject property. The Algonquins of Pikwakanagan are located in the area of Golden Lake. Chief Kirby Whiteduck of the Algonquins of Pikwakanagan, and representatives of the community, were consulted throughout the ESP. The Township met with Chief Whiteduck to discuss future waste management in the Township. Correspondence with the Algonquins of Pikwakanagan has been included in Appendix I.

The federal and provincial agencies INAC and MAA also confirmed that the government of Canada, government of Ontario, and Algonquins of Eastern Ontario are in the process of negotiating a Comprehensive Land Claim which covers the area for this project. The Algonquins of Eastern Ontario have requested that Chief Kirby Whiteduck and the consultant of the Algonquins of Eastern Ontario be kept informed of project developments.

Aboriginal communities and related government departments have been involved throughout the consultation process. No concerns have been raised to date that would limit the suitability of the Ruby Road WDS for the proposed expansion. All correspondence with Aboriginal communities and agencies is included in Appendix I.

2.10 OTHER POTENTIAL IMPACTS

2.10.1 CREATION OF NON-HAZARDOUS WASTE

Expansion of the Site will require the removal of a limited amount of vegetation in the area where the expanded waste disposal footprint will be located and for the short access road to that location. The vegetation that will be removed will be chipped and used as cover material at the Site. All non-hazardous waste that is created as a result of the expansion will be utilized on Site.

2.10.2 CREATION OF HAZARDOUS WASTE

The Ruby Road WDS would continue to operate as a non-hazardous solid waste disposal site and as such would not emplace hazardous waste on-site. The Township conducts regularly scheduled household hazardous waste days, whereby residents are able to drop off hazardous materials at a predefined location for transfer to an approved hazardous waste management facility. No hazardous waste materials are intended to be emplaced at the Ruby Road WDS.

2.10.3 POTENTIAL FOR OTHER NEGATIVE ENVIRONMENTAL EFFECTS

No additional negative environmental effects as a result of the proposed WDS capacity expansion have been identified.

3.0 DESCRIPTION OF OTHER REQUIRED APPROVALS AND PERMITS

O.Reg. 101/07 requires the completion of the Screening Level Environmental Assessment for the proposed expansion of the Ruby Road WDS. However, in addition to this requirement, there is a variety of other legislation and regulations that may be applicable to a waste management project of this nature. The sections below outline various Acts and Regulations applicable to the waste management sector in Ontario. Each piece of legislation is described and a brief discussion of its applicability to the proposed landfill development project is presented.

3.1 ENVIRONMENTAL PROTECTION ACT

In Ontario, landfilling sites and other waste management activities are subject to Part V of the *Environmental Protection Act* (EPA) and the regulations made under this Act. The framework for approvals is set out under Part V of the Act and the regulatory requirements for the design and operation of a landfill are included in Regulation 347 under the same Act. Regulation 232/98 supersedes any of the commonly prescribed standards for landfills presented in Regulation 347 for new or expanding landfills. Correspondence with the MOE, which administers the EPA and its regulations, has been ongoing throughout the screening process and has been included as Appendix J.

3.1.1 SECTION 27 CERTIFICATE OF APPROVAL AMENDMENT

Section 27 of the EPA requires that a Provisional Certificate of Approval (P CofA) be amended by the MOE to incorporate the necessary changes to the terms and conditions of the proposed revised operations; including the maximum approved capacity of the Site. The P CofA process utilizes the basic landfill regulations and their intents to refine the CofA to reflect the particular conditions of an individual landfill. The P CofA defines how large the site can be, the types of waste accepted and any necessary conditions for the design and operation of the landfill. The P CofA also describes how the site is to be closed and the measures that are required following closure to ensure the site is properly maintained and monitored in the long term.

The Ruby Road WDS currently operates under a revised Provisional CofA (A 411501) which was issued on September 16, 1974. Approval was granted for the establishment and operation of a transfer station at the Site on December 18, 2002 and was then further amended on January 17, 2008 to include the additional maximum theoretical capacity of the Site as 47,650 m^3. The latest version of the P CofA states that "The landfill site shall not be re-opened to utilize the remaining capacity unless the Corporation of the Township of Bonnechere Valley submits to the Ministry a complete application and supporting documentation for the Director's approval." Therefore the Ruby Road WDS expansion project will require an amendment of the existing CofA because of the alteration of the landfilling practices and site activities that would result from the proposed Site expansion.

3.1.2 DESIGN

Parts III and V of Regulation 232/98[19] are followed closely when the design and operations concerning a landfill are considered. The design specifications and operations scheduling take into account all factors that are consistent with landfilling sites and are well thought-out for the purpose of this project. The details related to the proposed development and operations are outlined below in subsections of this report when the proposed design or expected operations relate specifically to the mitigation of a potential environmental effect.

3.1.3 AIR AND NOISE EMISSIONS APPROVAL

Section 9 of the EPA forms the basis for the Air and Noise Approval Program in Ontario. The text within Section 9 suggests that unless explicitly exempted, most industrial processes require the submission of an application for a CofA if there is to be an emission of noise, gas or dust. The need for approval is stated in Sections 9(1) and 9(7) of the EPA.

For this project, a CofA for air and noise is not required due to the low potential for impacts as a result of the Site expansion. Levels of noise are within the allowable limits at the closest sensitive receptor, as is explained in detail in Section 7.4 and in the Noise Impact Assessment[20] completed for the Site, which has been included as Appendix K.

3.2 ONTARIO WATER RESOURCES ACT

The Ontario Water Resources Act (OWRA), specifically Section 53, addresses the requirements for permitting approval to discharge to a surface water body. The proposed Ruby Road WDS expansion will not involve the discharge of any substance or material directly to a surface water body. As a result, the landfill will not be required to obtain Section 53 approval under the OWRA for the proposed expansion.

4.0 SCREENING CRITERIA CHECKLIST

The Screening Criteria Checklist (the Checklist) was completed as Step 3 of the ESP. The objective of completing the checklist was to identify potential environmental effects of the project and the environmental aspects affected. The completed Checklist is found in Appendix C of this report. The responses to the Checklist items were prepared based on existing knowledge of waste disposal and landfilling operations in Ontario and specifically within the municipality, the known physical and hydrogeological information in relation to the Ruby Road property, and the preliminary investigations. Preliminary investigations included correspondence with interested persons, research on the Site location and regional area, a topographic study, and a review of previous knowledge pertaining to the Site.

Where there was uncertainty regarding a response to a Checklist item, it was necessary to conduct further studies or consultation to appropriately address the specific aspect. As the initial screening only focused on the identification of the potential for negative environmental effects resulting from the project; mitigation of the impact measures were not considered at that stage. The mitigation of identified potential impacts was considered in Screening Step 7 (of the Guide), once all studies and assessments of the potential environmental effects were considered.

Negative environmental effects consist of the negative impacts that a project has, or could potentially have, directly or indirectly on the environment. This may include, but is not limited to: the harmful alteration, disruption, destruction, or loss of natural features, flora or fauna and their habitat, ecological functions, natural resources, air or water quality, and cultural or heritage resources in a magnitude that is proportionately unjustified. Negative environmental effects may also include the displacement, impairment, conflict or interference with existing land uses, approved land use plans, business or economic enterprises, recreational uses or activities, cultural pursuits, social conditions, or economic structure.

Each screening criterion was given either a “Yes” or “No” response, based on whether the expansion of capacity at the Ruby Road WDS has the potential for an environmental effect related to that specific criterion. Each screening criterion has been considered objectively, independent of all other criteria.

A Hydrogeological examination, an initial environmental impact assessment, supplementary environmental analysis, a noise impact assessment and archaeological studies as well as extensive background research and data collection were necessary to understand and assess whether the project would potentially result in any negative environmental effect.

The following sections incorporate the criterion in the Checklist and address the information obtained from all studies completed to identify the mitigation plans that are required in order to minimize the impact on the environment and the potential net effects that may result if the proposed expansion were to proceed.

5.0 UNDERSTANDING THE "NO" RESPONSES

As discussed in Section 4.0 above, the Checklist has been completed as per the ESP, and for each response that was answered with a "No" potential for environmental effect, a statement demonstrating an understanding or justification of the "No" response was placed in the additional information column. Again, please refer to Appendix C for the tabulated Screening Criteria Checklist.

6.0 DESCRIPTION OF THE POTENTIAL NEGATIVE ENVIRONMENTAL EFFECTS IDENTIFIED

Outlined below is a description of the potential environmental impacts, concerns or issues that have been identified through the ESP. Their initial identification had warranted further investigation and led to the development of impact management measures (including mitigation measures) and operational statements.

The Checklist was used to initially identify the conditions under which there is potential to cause an environmental effect in the following manner:

- By surface, groundwater, land, air and noise contamination;
- Through the destruction of natural resources;
- Via socio-economic issues; and
- From damage to heritage, culture or Aboriginal communities.

These criteria were examined and the significance of each was assessed. Several key studies were completed to assess the potential for negative environmental effects from the proposed project on those items identified in the Checklist. These included:

- A hydrogeological assessment;
- Biological impact studies;
- A traffic impact study;
- A noise impact assessment; and
- Archaeological investigations.

The information collected and the results of these studies concerning the existing environmental conditions and potential environmental effects related to the project are provided in the following sections.

6.1 SURFACE AND GROUNDWATER

Screening Checklist Item 1.1 – *Might the project cause negative effects on surface water quality, quantities or flow?*

A landfill (expansion) has the potential to cause negative effects on surface and groundwater quality through the migration of overland runoff that has come into contact with waste materials and the potential for discharge of leachates, generated within the waste, into groundwater and downgradient surface water systems. The changes to topography as a result of the landfill development may also change historic overland drainage flows by redirection. The factors for consideration include the quantity and destinations of overland flow and the ability to

maintain separation between drainage and emplaced waste to limit the potential for surface water drainage to come into contact with waste.

Screening Checklist Item 1.2 – *Might the project cause negative effects on ground water quality, quantity or movement?*

The management of a long-term landfill operation may have the potential to contaminate the groundwater due to precipitation percolating through the emplaced waste. The precipitation has the ability to assimilate contaminants as the water moves through the overburden and/or bedrock toward the groundwater table. Factors that must be addressed when assessing the potential for such contamination are the location of the nearest surface water body, soil permeability, the hydraulic conductivity of various underlying geological layers, the depth and direction of groundwater flow, and the surficial and bedrock topography.

Valuable knowledge and understanding of the hydrogeologic characteristics of the proposed Site and the surrounding area have been acquired over the past number of years. Annual monitoring of the water chemistry and water elevation data has enabled the identification of potential concerns with respect to leachate migration.

Screening Checklist Item 1.4 – *Might the project cause negative effects on surface or ground water from accidental spills or releases (i.e. leachate) to the environment?*

The proposed project has the potential to cause negative effects on groundwater from accidental spills or releases (i.e. leachate) to the environment. The potential for accidental occurrences such as spills and releases can be greatly reduced by implementing standard waste management procedures as effective mitigation options.

6.2 AIR AND NOISE

Screening Checklist Item 3.3 – *Might the project cause negative effects from the emission of dust or odour?*

Any large area in which the land is disturbed and is subject to vehicular traffic has the ability to generate suspended particulate matter in air. Daily cover material stockpiles and the delivery of dusty loads of waste are other potential sources of dust related to the proposed project. The magnitude of impact depends on the type and size of the operations, the prevailing wind speed and direction, location of dust sensitive places, topography, occurrence of natural wind breaks and wind-abatement measures or buffers. Landfills must also be managed to prevent the offensive or noxious odours of waste from being released beyond the boundary of the landfill facility.

Factors to consider when assessing the potential for impacts include the rate at which landfilling will occur, the management of cover material and the predominant Site conditions.

Screening Checklist Item 3.4 – *Might the project cause negative effects from the emission of noise?*

Landfill operations may utilize noise generating equipment which may impact the surrounding areas. Sources of noise at a landfill include waste disposal truck noise and mobile machinery used to transfer items around the Site

and cover the waste. Factors to consider when assessing noise emissions include the type of equipment, frequency of operation, distance to neighbouring receptors, noise barriers, and topography.

6.3 SOCIO-ECONOMIC

Screening Checklist Item 6.1 – *Might the project cause negative effects on neighbourhood or community character?*

Neighborhood character is an amalgam of the many factors that combine to give an area its distinctive personality. These components include land use, scale and type of development; historic features; patterns and volumes of traffic; noise levels; and other physical or social characteristics that help define a community. Not all of these elements affect neighborhood character in all cases; a neighborhood usually draws its distinctive character from a few determining elements.

The landfill expansion may have the potential to interfere with current social networking or interactions within the local community. The development of the proposed landfill expansion will transform an existing open area on the subject property into an active area of landfill operations.

Screening Checklist Item 6.2 – *Might the project result in aesthetic impacts (e.g., visual and litter impacts)?*

Aesthetic impacts may include a scenic alteration for those persons living in the vicinity of the proposed Site or travelling near the Site. Impacts may consist of the ability to see the waste mound or litter in areas surrounding the landfill. Vectors, such as bears, small mammals and birds have the ability to transport waste from within the Site boundaries, which may result in a localized impact to aesthetics.

Screening Checklist Item 6.11 – *Might the project cause negative effects on public health and safety?*

With the expansion of a landfill there is potential for direct or indirect negative effects on public health and safety. Factors to consider when assessing the potential impacts include the potential of the waste disposal site to impact the groundwater and contaminate nearby residential wells, and the increased potential of animals (i.e. bears) that may scavenge in and around the Site resulting in closer than desired contact between bears and humans.

6.4 HERITAGE AND CULTURE

Screening Checklist Item 7.2 – *Might the project cause negative effects on scenic or aesthetically pleasing landscapes or views?*

The process of landfilling involves the strategic placement of waste on a portion of land for disposal by burial. The processing of this waste has the potential to cause a negative effect on scenic or aesthetically pleasing landscapes due to the addition of a waste pile and landfilling operations in that environment. Factors for consideration when assessing the impact to a scenic landscape are the actual visibility of the landfilling operations

from vantage points around the site, the historic appreciation of the region for its aesthetics, and the local topography.

6.5 OTHER

Screening Checklist Item 9.1 – *Might the project result in the creation of non-hazardous waste materials requiring disposal?*

With the construction of the Site, vegetative matter has been proposed to be removed to create an open area for landfilling activities. The removed vegetation and brush would constitute a creation of non-hazardous materials requiring disposal.

7.0 IMPACT MANAGEMENT FOR POTENTIAL NEGATIVE ENVIRONMENTAL EFFECTS

The potential to cause negative effects on the environment as a result of the proposed landfill expansion project was discussed in Section 6.0 of this document. The following sections detail the impact management measures currently in place for the operation of the existing Site and also describe additional impact management or mitigation measures that are proposed as part of the landfill expansion activities.

The proponent understands that the impact management and mitigation measures outlined in this section are binding and are required to be completed for the landfill expansion project to proceed.

Please refer to Section 9.0 for a detailed discussion of the monitoring requirements presently imposed under the current CofA for the landfill, and a proposal to implement additional monitoring activities if the proposed expansion project proceeds.

7.1 SURFACE WATER IMPACT MANAGEMENT AND MITIGATION MEASURES

With respect to surface water, mitigative measures have been considered to include the establishment and implementation of a surface water monitoring program complete with associated trigger mechanisms and contingency plans.

The proposed construction and operations of the Site will have established the necessary steps to mitigate potential negative effects on surface drainage movement and quality as it may affect surrounding surface water bodies. The placement of the waste mound expansion will be strategically positioned on the Site and would be properly sloped when the fill material is placed, in order to minimize excessive surface water runoff. The diversion of the runoff will be directed toward several low lying catchment areas located within the buffer zone of the surrounding proposed active WDS. The surface water management system includes a storm drainage system to manage runoff during storm events. Each of these elements is necessary to direct on-site surface water to a suitable location, to contain it and to allow for its infiltration into the ground within the property boundary. During the assumed 25 years of operation any surface water that collects onsite will be monitored for potential impacts to water quality.

No changes are anticipated to be made to the infiltration capacity of the soil and no water will be required to be taken from or added to the surface water systems currently surrounding the property. Once operations on the Site conclude, the potentially impacted surface water bodies existing on and close to the Site will continue to be monitored until the MOE considers it to no longer be necessary.

Impacts to surface water on neighbouring properties caused by drainage from the Site are not probable due to the highly permeable soils which promote subsurface infiltration, and the vegetative buffer that surrounds the existing WDS. Surface water quantity and flows on neighbouring properties would not reasonably be expected to be

interrupted or altered as a result of the proposed undertaking. Future development of the Site is not reasonably anticipated to have a negative impact on surface water quality based on the same natural features.

7.2 GROUNDWATER IMPACT MANAGEMENT AND MITIGATION MEASURES

As discussed, hydrogeological monitoring, assessment, and reporting has been completed over the operational life of the existing WDS. Both MOE Guideline B-7 Reasonable Use Policy values and trigger-response mechanisms have been developed for the Site and are applied during the evaluation of annual groundwater monitoring data. See Section 2.2 for the details related to the monitoring wells present on the Site which can be reviewed in conjunction with the borehole logs (Appendix B) and Existing Site Plan (Figure 6) which illustrates the location of each of the monitoring wells. These monitoring wells have been useful tools to properly assess and collect site-specific information with respect to subsurface characteristics (soil types, groundwater flow direction, hydraulic conductivity, groundwater quality, etc.)

A Numerical Hydrogeological Modeling Report was completed to assess the feasibility of a proposed capacity expansion at the Ruby Road Site (Appendix L). Visual MODFLOW was used to develop the numerical hydrogeological model to predict the pathway and travel time for chemical constituents that may be released by the emplaced waste and to determine the required contaminant attenuation zone to accommodate the capacity expansion at the Site. The leachate contaminant plume simulations are used to determine if the expected leachate contaminant plume will extend beyond the proposed property boundary such that concentrations of contaminants would or would not exceed the MOE Reasonable Use Criteria (RUC) as defined by MOE Guideline B-7. The aforementioned guideline establishes the basis for determining the acceptable "reasonable use" limitations to groundwater on properties adjacent to sources of contaminants, and determining the contaminant impact considered acceptable by the province.

The groundwater model was constructed using Visual MODFLOW, a graphical pre- and post-processor for the MODFLOW, MODPATH and RT3D numerical codes. MODFLOW and MODPATH were developed by the United States Geological Survey (USGS) to simulate three-dimensional groundwater flow and advection transport in complex geological settings under a variety of boundary conditions and hydrogeological stresses. For this model, RT3D v2.5 was used. RT3D is a program for simulating reactive multi-species transport in three-dimensional groundwater aquifers and was first developed by P.T. Clement in 1997 for the Battelle Memorial Institute, Pacific Northwest National Laboratory, and was subsequently released into public domain and quickly became an accepted standard for reactive transport modeling.

Through model development, the following environmental protection measures related to groundwater at the Site were considered:

- separation distance of the bottom of the WDS from the regional groundwater table;

- operations plan, including a restriction on the types of waste placed; and,
- monitoring plan(s) and contingency plan(s).

In an effort to understand the groundwater flow and plume contamination at the Site, a conceptual model of the Site was created. Geologic data from aerial photographic interpretation, bedrock mapping, borehole drilling and water well records were used to conceptualize the overall geology of the Site. This geological framework, together with information from the monitoring well installations, water-level monitoring over the past four (4) years, and in-situ testing (i.e. slug tests at the wells) was then used to develop a numerical model of the Site hydrogeology, including the delineation of hydrostratigraphic units and the occurrence and direction of groundwater flow. Once the numerical model was created, the model was calibrated as defined by the United States Geological Survey (USGS) Guidelines for Evaluating Ground-Water Flow Models (2004); meaning that the model was calibrated to match the field measurements at the Site.

Once the calibrated flow model was completed and verified to be an accurate representation of the flow regime, a hypothetical transport model was completed using chloride as a contaminant tracer to represent the forefront of the leachate plume. The transport model was used to generate various simulations to determine the potential contaminant attenuation zone requirements and to confirm that the proposed Ruby Road WDS capacity expansion is not anticipated to produce leachate concentrations in the groundwater regime that are greater than the RUC when migrating past the property boundary.

The transport model was simulated for the proposed 25-year operational life of the Ruby Road WDS. To simulate the proposed expansion, the chloride constant concentration boundary of 590 mg/L was applied across the entire proposed waste fill area, located in the uppermost water table layer, to represent an extreme leachate impact from the expansion footprint at full capacity.

Under these conditions, the modelled plume concentration is more than the RUC at the proposed property boundary for the conservative, non-reactant containment chloride. If the Township were to acquire the groundwater rights or property in the north half of Lot 26, Concession 9 (South Algona), the expansion would be considered feasible. The Township is currently in negotiations for the groundwater rights for this land, which will serve as the contaminant attenuation zone.

Assuming the Township acquires the rights for the groundwater in the north half of Lot 26, Concession 9, under these conditions, the modelled plume concentration will be less than the RUC at the proposed contaminant attenuation zone for the conservative, non-reactant containment chloride. Breakthrough at the proposed contaminant attenuation zone will not occur. The breakthough curve does however indicate that the peak concentration reached at the proposed contaminant attenuation zone occurred at 36 years, at a concentration of 115 mg/L; therefore, the concentrations would not be expected to increase beyond the 36 year time period. It is

noted, due to the precautionary approaches applied, it is expected that the concentration represented by the model are much greater than those actually expected at the Site.

The following assumptions support the opinion that the model scenario is appropriate, conservative, and suitably precautionary:

1. A sensitivity analysis was completed for applicable input parameters (recharge, dispersion, porosity, and specific yield) to determine the values that yielded the most conservative result (i.e. the largest leachate plume) while remaining representative of Site conditions, which were then used as in the input parameter values in the model.

2. The modelling was conducted without including any processes such as sorption, retardation or degradation, thereby making the predictions conservative by nature; however, chloride was used to model the forefront of the leachate plume, such that the model predications could still be considered realistic and representative as chloride is largely transported by dispersion.

3. A constant concentration scenario was used which represents a homogeneous contaminant concentration applied directly to the water table. This effectively ignores any attenuation that would occur in the migration of the leachate through the 10 to 30 metres of sand and gravel overburden material to the water table. In addition, the model was run for the total Site life and the expected contaminating lifespan of the Site, without reducing the concentration below the waste; this is not a realistic scenario but a very conservative approach.

   The source constant concentration used in the proposed waste disposal site of 590 mg/L is believed to be very conservative and precautionary. Firstly, the value determined from the methodology used, as described in the Modelling report (Cambium Environmental Inc., 2012; Appendix L) incorporates a safety concentration of 370 mg/L. The maximum chloride concentrations observed at the Ruby Road WDS, the Eganville WDS, and the Sand Road WDS are included in Table 1 and show the typical concentrations of chloride observed in leachate produced from waste deposited by residents of the Township of Bonnechere Valley. It can be seen that the constant concentration value of 590 mg/L used in the model is 14 times greater than concentrations observed at the Ruby Road WDS and is more than three (3) times greater than any chloride concentrations observed with the Township of Bonnechere Valley

Table 1 Contaminant Concentration Values Summary

Concentration Source	Chloride Concentration (mg/L)
Maximum Concentration Observed at Existing Ruby Road Site[1]	42
Maximum Concentration Observed at the Eganville Site	180
Maximum Concentration Observed at the Sand Road Site	150
Value Used for Proposed Expanded Footprint Simulations	590

Notes:

1. Maximum historical value from monitoring well BH-1 at the existing Ruby Road waste disposal site.

In addition to the above, Table 2 summarizes chloride concentrations derived from Cambium's records and from O. Reg. 232/98. Based on this information, a concentration of 291 mg/L would be adequately conservative; therefore, Cambium maintains that the concentration of 590 m/L is more than adequate to assess the feasibility of the Site to accept typical waste from the Township.

Table 2 Chloride Concentrations Derived from Eastern Ontario, the Township of Bonnechere Valley, and O. Reg. 232/98

Source of Concentration	*Concentration (mg/L)*
Peak Chloride Concentrations in Leachate observed at any one site of 31 sites in Eastern Ontario	*517*
Average Peak Chloride Concentrations in Leachate – 31 sites in Eastern Ontario	*165*
Maximum Average Chloride Concentration in Leachate observed at any one site of 31 sites in Eastern Ontario	*294*
Average Chloride Concentration in Leachate – 31 sites in Eastern Ontario	*81*
Peak Chloride Concentration in Leachate observed in any one of the Township of Bonnechere Valley WDS	*180*
Peak Chloride Concentration in Leachate observed at the Ruby Road WDS	*43*
Average Chloride Concentration in Leachate observed in the Township of Bonnechere Valley	*71*
Average Chloride Concentration in Leachate observed at the Ruby Road WDS	*33*
Typical Chloride Concentrations in Leachate - Landfill Guidance Document, 1993	*20-2500*
Typical Chloride Concentrations in Leachate – Landfill Guidance Document, 2010 (and Reg. 232/98) based on waste loadings of 150,000 to 250,000 tonnes/hectare	*1500 – 2500*
Design Chloride Concentration using ratio of 1:100** (concentration : waste loading; 1,500 mg/L : 150,000 tonnes/hectare)	***291***

***Proposed Waste Loading of Ruby Road WDS:*	
Assumed Waste Density (truck compactor)	*710 kg/m³*
Proposed Average Depth of Waste	*4.1 m*
Proposed Footprint Area	*25,000 m²*
Proposed Volume of Waste	*102,500 m³*
Waste loading	*29,110 tonnes/hectare*

Based on the above assumptions and modelling results, the implementation of this project would result in a net effect in groundwater to remain on the Site within the available CAZ. Contingency plans would be developed to control and restrict leachate produced in a quantity greater than expected and/or of a quality worse than predicted that includes specification and descriptions in sufficient detail. For example, the use of low-permeability cover on the active face at intermittent stages throughout the operation of the landfill (generally on a daily or weekly basis), as well as the installation of the final cover can reduce the precipitation infiltration through the waste; thereby reducing the leachate generation. Details of reasonable contingency plans are included in Section 10 of the Numerical Hydrogeological Modeling Report (Appendix L) and include the following:

1. Acquisition of additional land to extend the CAZ.

2. Application of a low-permeability cover material to reduce infiltration through the waste fill areas that have reached final contours.
3. Installation of a leachate collection system consisting of purged wells and/or collection pipes located at the periphery of the operational area.

Additionally, no impacts to the groundwater quantity or movement is expected since no facilities are currently being proposed as part of the project that would require the extraction of groundwater nor are any changes planned to the surface that would significantly alter the infiltration of rainwater at the surface. The quantity of waste will not be significant enough to result in compaction of the overburden that would inhibit the flow of groundwater, nor will material be placed beneath the ground surface to a depth that natural groundwater flow patterns could be obstructed.

7.3 AIR IMPACT MANAGEMENT AND MITIGATION MEASURES

The small quantity of waste accepted for disposal at the Site must be disposed of within the waste fill zone and covered at the end of each working day with daily cover in accordance with Section 28 of Ontario Regulation 232/98. With the placement of daily cover, odour issues will be greatly lessened. The predominant wind direction frequency distribution is from the south-west and south-east with an average wind speed of 2.71 m/s at 10 m above the ground[21]. Therefore, any odours that would potentially be generated would travel primarily to the north and are expected to have a marginal effect, if any, upon the neighbouring residents given that their location is predominantly to the south and east of the Site.

The natural topography of the Site is favourable in that it is hilly terrain; on the north and south sides of the proposed location of the landfilling activities, higher land elevations have the ability to act as a natural wind barrier diverting wind around the waste mound rather than through it. Additional obstruction is provided by the tree cover to the east and the south of the lot. Tree cover will be maximized by the installation of additional vegetation immediately surrounding the active landfilling area on the north, west and south side. These natural topographic and vegetative barriers will aid in the impedance of any dust and odour that may occur throughout the life of the expanded WDS.

All net effects on air quality are marginal and may be disregarded based on air quality standards and the planned use of appropriate best practices for operations and maintenance to be implemented at the Site.

7.4 NOISE IMPACT MANAGEMENT AND MITIGATION MEASURES

Given the relatively isolated location of the property and the proximity of the nearest residential receptor (greater than 590 m from the proposed active waste disposal area), it is recognized as unlikely that the operations would cause an annoyance at any sensitive receptor; but, Site specific background noise has been established and the

noise impact has been assessed to confirm the lack of negative impact. The proposed operations will involve the use of a loader around the Site and waste disposal trucks for transporting material on and off-site.

The MOE sound level limits represent the lowest criteria that can be applied at a point of reception. The sound level limits applicable to stationary noise sources at the residential points of reception are presented in the MOE Publication NPC-232[22], *Sound Level Limits for Stationary Source in Class 3 Areas (Rural),* October 1995. The Ruby Road Site is categorized as a Class 3 area since it is considered "a rural area with an acoustical environment that is dominated by natural sounds having little or no road traffic". Class 3 areas have the following standard minimum sound level limits expressed as a One Hour Equivalent Sound Level (L_{eq}):

- 45 dBA in any one hour of the day (0700 to 1900); and
- 40 dBA in any one hour of the night (1900 to 0700).

Also, the sound level limits applicable to landfill operations at the residential points of reception are presented in section 4.13.2 of the *Landfill Standards a Guideline on the Regulatory and Approval Requirements for new or expanding Landfilling Sites* (Landfill Standards Guideline)[23]. The applicable limits for landfill operations are expressed in terms of L_{eq} as 45 dBA in any one hours of the night (1900-0700) and 55 dBA for any hours of the day (0700 to 1900).

Measurements and analysis has been completed in a Noise Impact Assessment (Appendix K) which concludes that the proposed sound emissions at the Site would not be greater than the sound level limits outlined by the MOE during normal 'predictable works case' operations at the nearest residential receptors. Based on calculations of maximum sound pressure levels, it is anticipated that 38 to 41 dBA may potentially be emitted to the surrounding residential locations when a worst case scenario (no tree cover or topographical variations) were modeled. This corresponds to approximately 25 to 30 percent below the lowest applicable limits set by the MOE. In the case of this proposed development, both tree cover and topographical variation exist that would reduce the noise transmitted. As such, noise levels are not anticipated to have a negative impact on surrounding land uses.

7.5 SOCIO-ECONOMIC IMPACT MANAGEMENT AND MITIGATION MEASURES

The potential impacts of this change in land use relative to community character have been assessed in detail through studies and extensive public consultation. A Public Liaison Committee consisting of two (2) members of Council, one (1) member of Township staff, and eight (8) members of the public was formed to act on behalf of public interest, and regular meetings were held to facilitate communication with the public.

The Township hosted a total of four (4) Public Consultation Events throughout the ESP and received detailed public feedback throughout. Presentations, flyers, handouts, questionnaires, and question and comment periods supplied the interested public with informative details pertaining to the project while providing the Township with feedback about the concerns of the nearby residents. Interested parties, including the Ministry of Aboriginal

Affairs and the Indian and Northern Affairs Canada have been included in correspondence in reference to the project and have been informed about specific details throughout the duration of the project.

The studies performed for the ESP, which bore in mind the proposed conceptual design, have addressed all concerns related to the character of the Site. It has been determined that an increase in demand for community services is not expected as a result of the proposed project, since the proposed works involve the expansion of an existing waste facility. There is no direct or indirect displacement of residences or businesses with the proposed project, nor is there any impact on socioeconomic resources. The roads around the project Site are expected to be improved regardless of the presence of an active waste site and it is expected that a minimal amount of additional traffic will result.

The character of the existing landscape setting has been evaluated; taking into account the various natural and anthropogenic features; such as topography, landform, vegetation, land-use, built environment, etc. together with the visibility of and the views to and from the Site. Based on the limited visibility of the proposed development, the modifications to the Site would not impart a visual impact to the surrounding residences.

All aspects that concern community character can be mitigated and the scope of the project is appropriate for the surrounding area and land use.

The proposed WDS expansion capacity would gradually fill over time and once the final capacity is attained it would result in a fill area of 2.47 ha with a maximum waste mound height of eight (8) m above the original ground level. The lines of sight from the nearby residences to the area in which the final stages of landfilling are expected to occur have been drafted. The locations considered include a residence at the corner of Bonnechere Lodge Road and Ruby Road (R1), a residence at 2018 Ruby Road (R2), a hunting camp to the south of the property at 195 O'Connor Road (R3) and a residence/hunt camp at 269 O'Connor Road (R4). These locations were utilized to portray the visual effects of the proposed landfill on the landscape at various views around the Site. Figure 9 shows the Profile Views of the Proposed Site and Nearby Residents R1, R2, R3, R4 and R5.

When the volume of waste to be disposed of has reached its maximum capacity, the figures show the final scenic landscapes visible from all points of reference would resemble that which is currently viewed from those locations. These figures do not consider the additional proposed screening provided by tree cover, yet still show that landfilling operations will not likely be visible from the residents near to the Site. In fact, a substantial community of trees is an aspect of the landscape that exists between the proposed Site and those surrounding residences which acts to further conceal any view to the WDS. To further reduce the potential for aesthetic impacts, housekeeping practices will be detailed in the operations plan to include litter management in and around the Site.

With respect to the health and safety concerns related to the proposed expansion, the probability of groundwater contamination has been extensively studied and as discussed in Section 7.2 does not pose a concern based on the site specific modelling completed and the mitigative measures proposed to be implemented at the Site.

A electric bear exclusion fence placed around the waste disposal site prior to the commencement of waste emplacement on the active face would discourage scavenging and reduce the quantity of waste transported off site by these and similar vectors. Early implementation of the electric fence will prevent bears from establishing a scavenging habit, thereby decreasing the human health and safety risks associated with their occupation and use of the WDS.

7.6 HERITAGE AND CULTURE IMPACT MANAGEMENT AND MITIGATION MEASURES

As discussed previously, a schematic of the current location and the expected end result has been provided from five (5) viewpoints surrounding the Site. The lines of sight from the nearby residences to the area in which the final stages of landfilling are expected to occur have been portrayed. The figures (Figure 9) show that the final landscape, from all points of reference, will resemble that which is currently viewed from those locations.

It is proposed that only approximately 2.5 ha of the 32.8 ha Site will be dedicated to waste disposal within an operational area (including buffer) of 6.8 ha. Access to the active waste disposal face will be separate from the public waste receiving area. Waste would continue to be accepted at the current transfer station (waste receiving area) and would then be periodically transferred to the active face for disposal by the Township. Renovations to the current transfer station would improve the aesthetics and functionality of the open area located near the road which the residents and tourists observe when they enter the Site.

Additional tree cover is proposed to be planted to the north and south of the expanded waste disposal area and on the west side of the Site in an area that is bordered on the south and north sides by areas of relatively elevated topography. The east side of the active area is screened by elevated topography and existing tress.

It is proposed that the waste mound will be filled in two (2) cells comprised of two (2) lifts each over a period of not less than 25 years. The waste mound will reach a maximum final height of approximately 8 m above the original ground.

See Appendix K for the Noise Impact Assessment which illustrates the mitigation measures proposed for incorporation into the development and operations of the Site. These details are expected to provide the necessary items to limit and even eliminate the negative aesthetic impact that the waste disposal site may have on the surrounding landscape or views.

7.7 OTHER IMPACT MANAGEMENT AND MITIGATION MEASURES

The vegetative matter that is proposed to be removed from the Site has been determined to be potentially useful as cover material to be applied to the waste mound once landfilling operations begin.

8.0 NET EFFECTS

The impact management measures described in Section 7.0 will mitigate the potential for off-site net negative environmental effects as a consequence of the proposed Ruby Road WDS expansion. In fact, it is the Township's commitment that appropriate mitigation measures and controls will be established prior to commencement of operations at the Site to bar the potential of off-site impacts.

The project design and operations plans, including mitigation measures as discussed, will safeguard against the occurrence of unacceptable negative impacts. Minimal net effects within the acceptable limits include the alteration of the landscape on the subject property and the potential contamination of the subsurface environment within Site boundaries. These net effects are not considered to be unreasonable given they will be contained on the Site, and will be monitored and mitigated through the design and operation plan of the WDS and will adhere to the Provisional CofA for the Site.

9.0 COMMITMENTS TO MONITORING

9.1 GROUNDWATER MONITORING

The Ruby Road Waste Disposal Site currently operates under revised Provisional CofA A411501 which was issued on September 16, 1974. An amendment was issued on December 18, 2002. This amendment granted approval for the establishment and operation of a transfer station at the Site. An expansion of the existing Site will result in increased precipitation infiltration through the additional waste material causing the potential for leachate generation and possible groundwater contamination. The proponent will continue to conduct monitoring at the Site on a biannual basis and submit an annual monitoring report as required by the CofA. Condition 32 and Schedule "C" of Notice No. 2 outlines the annual reporting requirements and the associated groundwater monitoring program, respectively, which are to be implemented at the Site. The annual report on the activities of the Site, following the structure outlined below, is to be submitted to the MOE by March 31 of each year and shall contain the following minimum amount of information:

(a) Executive Summary

i. summary of findings, conclusions and recommendations;

(b) Site Operations

i. A summary of the type and quantity of all incoming and outgoing wastes;

ii. Any operational problems, that could negatively impact the environment, encountered during the operation of the Transfer Station and mitigative action taken;

iii. An assessment as to whether or not the Owner is operating the Site in compliance with the Conditions of the Certificate;

(c) Environmental Quality Monitoring

i. Assessment of the physical condition of the groundwater monitoring well installations;

ii. Analysis and interpretation of groundwater monitoring data;

iii. Discussions on the extent of the contaminant plume(s) resulting from landfill leachate;

iv. Discussion on compliance with Reasonable Use Guideline B-7;

(d) Recommendations

i. Recommendations respecting any proposed changes to the groundwater monitoring program or any repairs required to the monitoring well network;

ii. Recommendations respecting any proposed changes to the operation of the Site;

iii. Recommendations respecting the requirement for nay remedial works or contingency actions based on the monitoring results or operation of the Site.

The groundwater monitoring program is to occur two (2) times throughout the year and should be conducted during periods of high flow (April, May or November) and low flow (July, August, December or January). The

parameters to be tested as outlined in Schedule "C" of Notice No. 2 of the Provisional CofA has recently been updated as per MOE approval (June 11, 2009). The groundwater parameter list is now reduced to include Column 2 of Schedule 5 of the Landfill Standards Guideline[23] plus the addition of hardness. Groundwater samples are currently submitted in the spring and summer of each year. Water levels, field temperature, pH, and conductivity measurements are also taken during sampling.

In addition to the existing Site monitoring requirements, a number of changes to the monitoring program and trigger mechanisms are proposed. It is proposed that:

- It is the Townships intention to implement additional monitoring wells that will be strategically placed in and around the proposed active waste disposal site and along the CAZ boundary should the proposed expansion be deemed viable. Were significant saturated zones are encountered in the overburden, multi-level monitors will be installed. These wells will be monitored with the existing network.
- The Township will commit to a revised parameter list, to include Column 1 of Section 5 within the Landfill Standards Guideline[23], to be assessed at each of the newly constructed wells that are proposed to be constructed and are presumed to be directly impacted by the active waste disposal site.
- If at any time in the future the monitoring results indicate that leachate is migrating offsite, all potentially affected users will be informed of this possibility and further downgradient wells will be constructed to assess the extent of migration. At this time, a specific contingency plan would be determined that best suits the Township and the potentially affected users.
- Prior to the proposed landfill expansion project, a revised trigger mechanism and contingency plan will be developed and presented to the MOE for review.
- Detailed design and operational details will be provided at the time of P CofA amendment application. It is proposed that a phased development approach will be taken, in conjunction with detailed monitoring, to ensure the predictive model is accurate. Should actual site conditions be observed to not mirror the model, contingency planning will be put in place and remodelling will be completed to update the site conceptual model.

9.2 SURFACE WATER MONITORING

In the past, no surface water features were present on or around the existing waste mound located to the north of the proposed waste mound location. It is understood that surface water drained away from the historical location due to the natural topography and inherent permeability of the sandy soil.

The Township has considered that any surface water generated from the construction of the proposed WDS expansion needs to be directed and contained in a catchment area on the Site. It is expected a suitable location will be identified that the surface water will be directed to, which will contain it and allow for its infiltration into the ground within the property boundary. Any surface water that is collected onsite will be monitored. It is also the

commitment of the Township to monitor any off site surface waters that have the potential to be impacted by the proposed placement of waste. At this time, no surface water features are expected to be impacted due to the natural slope of the land and the surface water collection features proposed to be implemented. The proposed development and grading of the Site will take into consideration the proper sloping of the waste mound at various stages of the filling process, and will include the design of swales for diversion and the implementation of low lying areas for catchment of the diverted water.

With respect to properly identifying the background data of the surface water around the Site, the Township suggests that the annual monitoring program also include the establishment of several surface water monitoring stations on watercourses that are close to the Site (presumably on the property to the west) to understand the baseline surface water conditions.

10.0 CONSULTATION

10.1 PUBLIC AND GOVERNMENT AGENCY CONSULTATION

In accordance with the Guide[2], the Township was required to consult with interested parties throughout the ESP when:

- The Notice of Commencement was published;
- The issues/or concerns related to the potential environmental effects were identified;
- The impact management measures were developed; and
- The Notice of Completion was published and the opportunity to review the ESR was made available.

The Township has conducted a comprehensive consultation program throughout the ESP to determine if the capacity expansion at the Ruby Road WDS is a feasible option. The consultation program was extensive beyond what is described within the Guide as being necessary, and major Public Consultation Events (PCE) were held at milestones throughout the process.

Consultation during the ESP was conducted with the following groups:

- The Ontario Ministry of the Environment (MOE) (Appendix J);
- Government agencies on the municipal/regional, provincial, and federal levels, identified as having known or potential interest in the project (Appendix F);
- Aboriginal peoples with interest (land claims, cultural significance, etc.) in the study area (Appendix I);
- The public liaison committee and stakeholder groups in general and specifically to those members of the public and stakeholder groups that expressed interest in the ESP (Appendix M); and
- Other interested agencies and groups not identified above, which include local private interest groups (Appendix N).

Several methods of consultation were used by the Township throughout the ESP in an effort to inform and engage various agencies, groups, and interested parties in the development of the project. A summary of these methods are included in the following sections. It was the Township's objective to ensure that the ESP, the associated work program and the consultation program were open and transparent, and that interested parties could maintain involvement in, and knowledge of, the project.

10.1.1 PROJECT INITIATION

10.1.1.1 NOTICE OF COMMENCEMENT

A public notice of the commencement of the ESP was required, which represented the first point of consultation for the project. The notice was published twice in two (2) local papers and on the Township's web page (www.bonnecherevalleytwp.com). Notices were mailed to the MOE Regional Coordinator, affected government agencies and municipalities, Aboriginal groups, and public interest groups.

The notice identified the rationale of the ESP and informed those interested that public consultation would be ongoing throughout the process and directed people to the Township's website for further information. A copy of the Notice of Commencement that was published in the two (2) local newspapers (Barry's Bay This Week and The Eganville Leader) is available in Appendix O and a copy of the letter sent to a list of presumed interested parties has been included in Appendix F.

A separate notice was provided to federal and provincial First Nation agencies. These agencies were contacted to gain contact information for potentially affected Aboriginal communities in the project area. A list of all agencies contacted is provided in Appendix F. The agencies will be kept appraised of developments with respect to the project. All responses from agencies relating to First Nations, and documentation with respect to the direct consultation with First Nations, are included as Appendix I.

10.1.1.2 REQUEST FOR INFORMATION

Shortly after the project was initiated, information was requested in a written letter from forty-two (42) various presumed interested parties. Responses were received, documented, and taken into consideration throughout the screening and evaluation of the project. A sample of the request for information letter, a list of the parties it was sent to, and the responses received is documented in Appendix F.

10.1.2 CONSULTATION ACTIVITIES AND EVENTS

Local newspapers are an integral means of communication with the public in a small, rural municipality such as the Township of Bonnechere Valley. For the ESP, three (3) newspapers were fundamental in the provision of information to the public: The Eganville Leader, the Renfrew Weekender and Barry's Bay This Week. Advertisements of PCEs were broadcast on three local radio stations which included: My FM (104.9fm and 96.1fm), STAR 96fm and Valley Heritage Radio (98.7fm).

Other media approaches were also utilized to provide information to the public and to communicate upcoming PCEs, and other waste management matters. These efforts included:

- Press releases in the local newspapers, at specific milestones in the ESP and in preparation for upcoming PCEs;

- Radio announcements on local stations providing notice to the public of upcoming PCEs;
- "Waste Matters in the Township of Bonnechere Valley" newsletters providing project status reports and notification of upcoming events, educational insights, and other information pertinent to the ESP;
- The establishment and on-going management of an information "base station" related to the EA at the Township office and on the Township's internet webpage: http://www.bonnecherevalleytwp.com/environment/environmental.html. This webpage holds all pertinent information related to the project for public viewing; and
- In special cases, direct (or electronic) mailings were utilized to ensure PLC members, stakeholders, and the public were notified of various stages of the ESP and/or upcoming PLC meetings and PCEs.

Appendix M contains a summary all of the information provided to the public over the course of the project. All published notices and articles that are relevant to the project are included in Appendix O.

The Township hosted a total of three (3) PCEs during the course of the ESP. PCE No. 1 was held upon Notice of Commencement, and the subsequent two (2) PCEs were held during the ESP at appropriate milestones in the development of the project.

The format for PCEs 1 through 3 was as follows:

- A slide presentation outlining the key aspects of the ESP process, the results of any technical work or studies completed to date, requirements for additional studies, importance of public involvement, and next steps in the project;
- A question and answer session where attendees could provide any comments or inquiries with respect to the project; and
- An open house, where attendees could view the poster boards available with information on the project and have direct discussions with respect to the ESP process.

The fourth and final PCE was held in open house format, with twenty-five (25) informative poster boards describing the progress of the ESP and the results of the technical studies completed throughout the process. Representatives of the Township and Cambium were available during the PCE to answer any questions brought forward by the attendees.

The Township also prepared questionnaires, which were available at each PCE for completion and return to the Township. Questionnaires could be returned during the PCE or to the Township after the event, within a specified time period (usually two (2) to three (3) weeks from the date of the PCE). From the questionnaires, comments, and questions received, a summary of each PCE was prepared.

10.1.2.1 PUBLIC CONSULTATION EVENT NO. 1

With the Notice of Commencement of the ESP for the Ruby Road WDS the Township hosted PCE No. 1 on February 20, 2008 to consult with the public on their interests and concerns, and to gather input from the public about specific aspects of the project that were deemed important in the study area.

Notice of PCE No. 1 was provided by the Township as follows:

- Newspaper Notices: Barry's Bay This Week and Eganville Leader on February 6, 2008 and February 13, 2008.
- Radio Ads: MyFM Pembroke, MyFM Renfrew, Heritage FM, Star FM on February 16, 2008 and February 19, 2008.
- Posting on Township Webpage.

Complete summary information from PCE No. 1 and some of the items listed above are included in Appendix M. A brief overview of information gathered at the first PCE includes:

- Forty (40) questionnaires were received from permanent (75%) and seasonal (25%) residents.
- Seventy-three (73) percent of respondents did not agree that the expansion of capacity at the Ruby Road WDS is the best solution for waste management in the Township.
- The public was most concerned with potential impacts to the natural environment including potential groundwater, surface water and biological impacts. Respondents were also significantly concerned with potential impacts to property values and increases in odour.
- The public does not have confidence in the ESP process with fifty (50) percent indicating not very confident and twenty-nine (29) percent indicating no confidence.

10.1.2.2 PUBLIC CONSULTATION EVENT NO. 2

A second PCE was held at the Eganville Curling Club on July 26, 2008 in order to provide interested persons with the facts pertaining to the ESP activities to date and review the details of the findings that are associated with the potential expansion of the waste disposal site. A review of background information, the findings of the completed studies, and the future of the project and further studies to be completed were presented to better inform the attendees. Members of the public were given the opportunity to identify specific concerns and ask questions regarding a theoretical expansion of the Ruby Road WDS. A questionnaire was distributed to attendees to solicit additional comments and offer feedback with respect to the assessment.

Notice of PCE No. 2 was provided by the Township as follows:

- Newspaper Notices: Barry's Bay This Week and Eganville Leader on July 16, 2008 and July 23, 2008 and The Renfrew Weekender on July 18, 2008 and July 25, 2008.
- Radio Ads: MyFM Pembroke, MyFM Renfrew, Heritage FM, Star FM on July 23, 2008 and July 25, 2008.
- Posting on Township Webpage.
- Unaddressed Ad-mail Canada Post flyer.

Summary information from PCE No. 2 and some of the items listed above have been included in Appendix M of this report. A brief overview of information gathered at the second PCE includes:

- Approximately one hundred ten (110) people attended PCE No. 2, and seventy-seven (77) completed questionnaires. Sixty (60) percent of respondents were permanent residents, and forty (40) percent were seasonal. Thirty nine (39) percent of attendees previously attended PCE No 1.
- Seventy six (76) percent of respondents currently dispose of their waste at the Ruby Road WDS.
- Seventy seven (77) percent of respondents stated that they understood the objectives of the Ruby Road WDS Capacity Expansion Screening.
- Greater than eighty (80) percent of respondents indicated that they are very concerned with regard to the potential risk of ecological, surface water, groundwater and socio-economic impacts.

10.1.2.3 PUBLIC CONSULTATION EVENT NO. 3

The Township held PCE No.3 on Tuesday, November 25, 2008, to discuss the results of the studies completed, the preliminary design and operations of the proposed Site and the next steps in the ESP. Members of the public were given the opportunity to identify specific concerns and ask questions regarding the proposed operations at the Ruby Road WDS. A questionnaire was distributed to attendees to solicit additional comments and offer feedback with respect to the assessment.

Notice of PCE No. 3 was provided by the Township as follows:

- Newspaper Notices: Barry's Bay This Week and Eganville Leader on November 12, 2008 and November 19, 2008 and The Renfrew Weekender on November 14, 2008 and November 21, 2008.
- Radio Ads: MyFM Pembroke, MyFM Renfrew, Heritage FM, Star FM on November 22, 2008 and November 24, 2008.
- Posting on Township Webpage.
- Unaddressed Ad mail Canada Post flyer.
- Email to those addresses supplied at previous PCEs.

Summary information from PCE No. 3 and the items listed above have been included in Appendix M of this report. A brief overview of information gathered at the third PCE includes:

- Approximately fifty-five (55) people attended PCE No. 3. A total of fifteen (15) questionnaires were received from permanent residents.
- Sixty (60) percent of respondents utilize the Ruby Road WDS.
- Fifty-three (53) percent of respondents attended PCE No. 1 and seventy-three (73) percent attended PCE No. 2.
- Fifty–three (53) percent of respondents indicated that some details of the ESP had not been addressed to their satisfaction.
- Concerns expressed are primarily related to potential negative impacts to groundwater quality, and a desire for waste disposal using a technology other than natural attenuation.

10.1.2.4 PUBLIC CONSULTATION EVENT NO. 4

The Township held PCE No.4 on Saturday May 7, 2011, to present the results of the studies completed, the preliminary design and operations of the proposed Site and to notify the public of the next steps in the ESP. Members of the public were given the opportunity to identify specific concerns and ask questions regarding the proposed operations at the Ruby Road WDS. A questionnaire was distributed to attendees to solicit additional comments and offer feedback with respect to the assessment.

Notice of PCE No. 4 was provided by the Township as follows:

- Newspaper Notices: Renfrew Mercury (Weekender) and Eganville Leader on April 28, 2011, and May 5, 2011, and April 27, 2011 and May 2, 2011, respectively.
- Radio Ads: MyFM Pembroke, MyFM Renfrew, Heritage FM, Star FM on April 30, 2011 and May 2, 2011.
- Posting on Township Webpage.
- Email to those addresses supplied at previous PCEs.

Summary information from PCE No. 4 and the items listed above have been included in Appendix M of this report. A brief overview of information gathered at the fourth PCE includes:

- Approximately twenty (20) people attended PCE No. 4. A total of ten (10) questionnaires were received from permanent residents.
- Seventy five (75) percent of respondents utilize the Ruby Road WDS.

- Fifty six (56) percent of respondents attended PCE No. 1, seventy (70) percent attended PCE No. 2 and one hundred (100) percent attended PCE No. 3. A total of two (2) people, apart from Township staff and representatives, attended all four of the PCEs.
- Sixty-seven (67) percent of respondents indicated that some details of the ESP had not been addressed to their satisfaction.
- Concerns expressed are primarily related to the potential for leachate migration and potential impacts to groundwater as well as the general opinion that the concerns outlined in the report prepared by the Golden Lake Property Owners Association (GLPOA) had not been adequately addressed.

Notification of results of questionnaire responses were sent to interested members of the public following each PCE.

10.1.2.5 ADDITIONAL PUBLIC CORRESPONDENCE

Additional public correspondence included articles and letters to the editor published in newspapers, newsletters, emails, and other forms of communications in which the Township and interested persons were able to express concerns and comment on the ongoing project. These items have been included in Appendix O.

10.1.3 PUBLIC LIAISON COMMITTEE

Upon commencement of the project the Township invited interested parties to be part of the Public Liaison Committee (PLC), tasked with a specific mandate and responsibilities with respect to the ESP. It was decided that the Township's Working Group would met regularly with the PLC to discuss project progress and any public comments or concerns that have been raised outside of the formal PCEs. Agendas for each of the meetings held with the PLC have been included in Appendix M.

The PLC was formed with several members of the public and two members of Council. The role of the PLC was to provide organized and regular communication between the Township, government agencies, and the general public for the duration of the process. Members of the PLC were responsible for:

- Attending regular open meetings to disseminate and collect information from the public about the Environmental Screening;
- Bringing forward public inquiries and concerns about the proposed project to the PLC; and
- Working with the Township, government agencies, local stakeholders, and the general public to identify viable solutions to concerns that may arise during the process.

The working group was led by two (2) Councillors and the PLC had seven (7) members from the public. Representatives from Cambium were in attendance at all PLC meetings. Members of the PLC were asked to attend the PCEs to provide continuity and familiarity to members of the public.

The PLC formally met on five (5) occasions in 2008, on; January 22, April 29, June 9, August 18, and November 6. PLC meetings were held at the Township Office.

Primary topics covered at each of the PLC meetings are outlined in brief below.

PLC Meeting No. 1

- Discussion of the termination of the Individual Environmental Assessment process to undertake the Environmental Screening Process as a result of the exemption of the project from the former.
- The mandate and responsibilities of the PLC were discussed, and members of the PLC were introduced.
- The Screening Criteria Checklist was reviewed and commented on.
- A member of the Algonquins of Pikwakanagan was invited to attend the meeting, but declined.

PLC Meeting No. 2

- The expansion of the Ruby Road WDS was identified as the preferred long term waste management option for the Township.
- A discussion of natural attenuation landfills and engineered landfills was undertaken.
- Forthcoming studies were identified to address potential impacts as a result of the proposed expansion.
- Advertising options for the next PCE were discussed.

PLC Meeting No. 3

- Once the ESP is completed, if the Township decides to proceed with the expansion of Ruby Road WDS, a CofA will be required from the MOE.
- Interest was expressed in pursing OVWRC for waste management for the Township. The Township was waiting for a revised costs and conditions for a proposal submitted to OVWRC.
- Inquiry into the potential for a county wide solution to waste management. Resolved by acknowledgement that this approach was proposed and rejected in 1998.
- Many PLC members expressed concerns that the Township residents had significant concerns with the Ruby Road WDS expansion, and that they did not feel that they had adequate information with regard to the project.

PLC Meeting No. 4

- Discussion of PCE No. 2 (held July 29, 2008). Recognition of public opposition to the Ruby Road WDS expansion.
- The potential for groundwater impacts were identified as the major concern for area residents. A commitment was made to a detailed modeling study to illustrate the groundwater conditions and a continuous monitoring program to identify any potential impacts.
- Concerns were raised by residents to members of the PLC that the impression to the public is that the Township is not seriously considering any other options for waste disposal. Most members of the public do not have a clear understanding of the ESP process, and resultantly their confidence in the process was low.
- Correspondence continued to be sent to the Pikwakanagan Band Council, but no further responses had been received.

PLC Meeting No. 5

- Findings of Supplemental EIS were discussed.
- The hydrogeological report preliminary findings were discussed.
- The proposed location of the new waste mound was identified and discussed. There will be one internment per week of the waste collected during that week. Cover material will be applied each week after internment.
- The next PLC meeting will be held when the draft report is complete.

10.1.4 INTERESTED PARTIES

Interested parties included select government agencies on the municipal/regional, provincial, and federal levels, which may have direct involvement with the project or study area. The following correspondence was sent to the interested parties at different stages in the project soliciting comments:

- Request for Information (RFI): select agencies were contacted to collect background information for the various technical aspects, site locations, etc. that were being considered in the development of the project.

Comments from the interested parties were used to assist in the various technical studies completed and identify areas in potential need of mitigation.

10.1.4.1 GOVERNMENT AGENCY CONSULTATION

The following government agencies were consulted over the course of the ESP to contribute comments and expertise in their respective areas of jurisdiction:

- Ministry of Natural Resources (MNR)
- Ministry of the Environment (MOE)
- Indian and Northern Affairs Canada (INAC)
- Ministry of Aboriginal Affairs (MAA)
- Ministry of the Attorney General (MAG)

The following government agencies were notified of the ESP to identify potential concerns with the project that fall within their jurisdiction. A complete list of all government agencies contacted can be found in Appendix F.

- Canadian Environmental Assessment Agency (CEAA)
- Environment Canada (EC)
- Fisheries and Oceans Canada (DFO)
- Health Canada (HC)
- Hydro One
- Ministry of Agriculture Food and Rural Affairs (OMAFRA)
- Ministry of Culture (MOC)
- Ministry of Education (EDU)
- Ministry of Energy and Infrastructure (MEI)
- Ministry of Health and Long-term Care (MHLC)
- Ministry of Public Infrastructure Renewal (MPIR)
- Ministry of Municipal Affairs and Housing (MMAH)
- Ministry of Northern Development and Mines (MNDM)
- Ministry of Tourism and Recreation (MTR)
- Ministry of Transportation (MTO)
- Ontario Power Generation (OPG)
- Ontario Realty Corporation (ORC)
- Transport Canada (TC)

The following adjacent Townships were also contacted with respect to the proposed undertaking:

- Township of Killaloe, Hagarty, Richards
- Township of Greater Madawaska Valley
- Township of Brundenell, Lyndoch & Raglan
- Township of North Algona-Wilberforce

10.1.5 RESOLUTION OF PUBLIC AND GOVERNMENT AGENCY CONCERNS

All responses to the RFIs sent to the agencies listed above, and additional comments received with regard to the proposed undertaking, can be found in Appendix J and are summarized in Table 3.

Copies of all technical reports were forwarded to the MOE for review. The MOE reviewed only the Noise Impact Assessment (Appendix K) and the Hydrogeological Study (Appendix L).

10.1.5.1 NOISE IMPACT ASSESSMENT

The noise impact assessment, as reviewed by the MOE, was accepted without further comment. The MOE has no objection to the acceptance of the ESP from a noise perspective provided that the undertaking is conducted as detailed in the report.

10.1.5.2 HYDROGEOLOGICAL STUDY

The MOE is satisfied with the hydrogeological modeling approach and with the hydrogeological investigation completed to date to demonstrate the feasibility of the expansion of the Ruby Road waste disposal site. The Township has been authorized to proceed with completing the Environmental Screening Process as stated in correspondence from the MOE dated December 8, 2010 (Appendix J).

10.2 CONSULTATION WITH ABORIGINAL COMMUNITIES AND AGENCIES

As part of the consultation program of the ESP, the proponent is required to consult with Aboriginal peoples that may be affected by, or interested in, the project. Aboriginal consultation in the ESP is intended to allow the proponent to identify and address the concerns and issues of Aboriginal peoples and to provide them with an opportunity to receive information about and provide meaningful input into the project review and development.

Upon commencement of the project, the Ministry of Aboriginal Affairs (MAA) identified a local Aboriginal community that may have interest in the study area, and recommended that the Township consult directly with that group, which was identified as the Algonquins of Pikwakanagan First Nation. The Township included this group in all formal correspondence throughout the ESP and a representative of the community was invited to participate as a member of the PLC. Complete correspondence with Aboriginal communities is included in Appendix I.

The following Aboriginal communities and groups were consulted within the ESP:

- MAA
- INAC
- Algonquins of Pikwakanagan First Nation
- Algonquins of Ontario (as represented by Jp2g Consultants Inc.)

Consultation with local First Nations in the development of the project has included the following aspects:

- Requests for and the provision of background information related to cultural and/or heritage values as it pertains to the study area, the Ruby Road WDS, and potential areas of First Nation significance.
- Invitation to actively participate in all ESP activities pertaining to the role outlined above.

The federal agency INAC submitted correspondence on January 29, 2008 indicating that INAC is not likely to require an environmental assessment under section 5(1) of the Canadian Environmental Assessment Act and will not be a responsible authority for this project. However, it was also stated that it is important to contact all potentially interested First Nation communities directly. To assist with identifying Aboriginal communities within the vicinity of a specific proposed project, INAC provided the following information sources:

- The Chiefs of Ontario website (http://www.chiefs-of-ontario.org) provides a directory of contact information for all First Nations and Chiefs, as well as a map of the locations of all Ontario First Nations.
- Natural Resources Canada produced provincial maps, showing all First Nation reserve lands, are available for purchase at: http://cccm.nrcan.gc.ca/english/canada_lands_index_e.asp
- Natural Resources Canada's online *Historical Indian Treaties* map, showing historical First Nation treaties across Canada, is available at: http://atlas.nrcan.gc.ca/site/english/maps/historical/indiantreaties/historicaltreaties
- A search by place name at the Canadian Geographical Names database (http://geonames.nrcan.gc.ca/search/search_e.php) will generate a map which shows any nearby Indian reserve lands in grey.
- The Métis Nation of Ontario (http://www.metisnation.org/) may be able to provide information regarding Métis interests with respect to a particular project.
- The Ontario Federation of Indian Friendship Centres website provides a list of all friendship centres in Ontario, at: http://www.ofifc.org/Centres/OfficeList.asp?Region='ON'

Due to the elapsed time from the initial notification and requests to the issuance of the ESP document for public review and comment, Cambium issued a status update letter to all previously contacted First Nations

communities and agencies on November 20, 2012. At the time of report production, the only comments received were from the Algonquins of Pikwakanagan, which are further discussed in the following section.

10.2.1 COMMENTS RECEIVED FROM ABORIGINAL COMMUNITIES

In 2007, the Township and Chief Kirby Whiteduck entered into discussion surrounding the potential for the Township and the Algonquins of Pikwakanagan to establish a partnership with respect to waste management. Correspondence dated July 26, 2007 (Appendix I) states that the Township would accept the waste from the Algonquins of Pikwakanagan community based on a cost sharing arrangement that would be dependent on the percentage of the total volume of waste that was received from the First Nation. Costs would be incurred by the First Nation on a per tonne basis. No further comment was received from Chief Whiteduck and later telephone correspondence with the Manager of Public Works for the First Nation revealed that the cost sharing arrangement proposed, while based on site use as represented on a cost per tonne basis, was too costly for the First Nation to consider.

At the time of report preparation, no direct comments had been received from the Algonquins of Pikwakanagan or the Algonquins of Eastern Ontario, or their representatives. The Manager of Public Works for the Algonquins of Pikwakanagan contacted Cambium on November 27, 2012, upon receipt of the project status update letter sent to his attention on November 20, 2012. Several informal comments were received during the telephone conversation, which have been summarized in Table 4. During the telephone conversation, Cambium was informed that an advisor of the Ontario First nations Technical Service Corporation would be reviewing the ESP and all associated documentation when it was made available for review. The Township committed to providing the Algonquins of Pikwakanagan copies of the ESP, all associated technical reports and the most recent correspondence of the PLC, which is a commitment that was honoured prior to the formal release of the ESP to the public.

All correspondence and direction from associated government agencies was adhered to throughout the ESP.

10.2.2 RESOLUTION OF CONCERNS

No concerns were identified.

10.3 OTHER AGENCIES AND GROUPS

10.3.1 CITIZENS FOR THE PRESERVATION OF BONNECHERE VALLEY

Concerned residents in the area of the Site have formed an organization identified as the *Citizens for the Preservation of Bonnechere Valley* (CPBV). This group has carried out various efforts to communicate their views and concerns related to the proposed expansion. Correspondence initiated by the CPBV group includes

presentations made to Township council, newsletters sent to the public, and newspaper articles written regarding the group's efforts. Appendix N provides a summary of all the correspondence with respect to the CPBV.

10.3.2 GOLDEN LAKE PROPERTY OWNERS ASSOCIATION

In 2008, the Golden Lake Property Owners Association (GLPOA) requested a consultation event for its membership regarding the project. On July 17, 2008 a presentation followed by a question and answer period was conducted. No further information requests or correspondence followed directly from that event.

During late 2010, the GLPOA Board agreed to engage a hydrogeologist to conduct an independent review of the documentation supporting the capacity expansion of the Ruby Road WDS. The hydrogeologist was retained to review the landfill proposal from the perspective of potential impacts on off-site groundwater and surface water with the potential to impact the quality of water in Golden Lake. The hydrogeologist provided his report dated February 18, 2011 to the GLPOA entitled, *"Independent Review of Hydrogeological Issues Pertaining to the Proposed Ruby Road Landfill near Golden Lake, Ontario."*[24] A copy of the GLPOA report is included in Appendix N.

The GLPOA report was carefully reviewed and where differing opinions were offered by the author regarding values used for hydraulic conductivities, evapotranspiration and recharge rates, depths of overburden, parameter concentrations, etc. those offered opinions were not supported by credible sources, site-specific measured data, onsite test results, or studies. Nonetheless, every attempt has been made to recognize and address the broader concerns regarding surface water and groundwater contamination beyond the Site boundaries. A summary table identifying the key concerns expressed within the GLPOA report and information as to how these concerns have been addressed, has been included in Appendix N.

11.0 ENVIRONMENTAL EFFECTS TO BE ADDRESSED THROUGH OTHER REQUIRED APPROVALS

11.1 PROVISIONAL CERTIFICATE OF APPROVAL MUNICIPAL SOLID WASTE

As previously mentioned, an amendment to the P CofA for the Ruby Road WDS would be required if the Site is approved for expansion as a result of this ESP. The amendments to the P CofA must be obtained prior to using, operating, establishing, altering, enlarging or extending a waste management system or a waste disposal site. The conditions included in a CofA for Municipal Solid Waste are specified on a site specific basis and can impose additional requirements or emphasize important features of site design, monitoring and operations[25]. The amended CofA will govern; the quantity and type of waste that can legally be accepted at the Site, the extent (footprint) of the waste disposal area, the duration of service, the monitoring program, site design and operation, and site closure plans as well as any other information deemed to be important by the MOE.

11.2 CERTIFICATE OF APPROVAL AIR/NOISE

Due to the lack of potential for negative impact with regard to air and noise outlined in Section 6.2, no CofA for Air/Noise is required for the Site. Consideration will be given within the design and operation plan for the Site to minimize concerns with regard to air and noise. Due to the low potential for impact as a result of these aspects, the P CofA for Municipal Solid Waste will be sufficient to address air and noise.

12.0 TECHNICAL REPORTS SUPPORTING THE SCREENING LEVEL FINDINGS

Technical reports prepared to satisfy the requirements of the ESP included:

- *Environmental Impact Study* (Snider's Ecological Services May, 2008)
- *Supplemental Environmental Impact Studies* (Snider's Ecological Services November, 2008)
- *Noise Impact Assessment* (Cambium Environmental Inc. October, 2008)
- *Numerical Hydrogeological Modelling Report for Expansion Feasibility of the Ruby Road Waste Disposal Site* (Cambium Environmental Inc., September, 2012)

Additional technical reports used in the research in support of the findings of the ESP included:

- *2008 Annual Report, Sand Road Waste Disposal Site and Highway No. 41 Waste Transfer Station* (Cambium Environmental Inc. March, 2009)
- *2008 Annual Report, Eganville Waste Disposal Site (*Cambium Environmental Inc. March, 2009)
- *Ruby Road Landfill Provisional Certificate No. 411501 Site Capacity Study* (The Greer Galloway Group Inc. July, 1999)
- *South Algona Landfill Site Hydrologic Evaluation* (Robinson Consultants Inc. April, 2002)
- *Ruby Road Waste Disposal Site Township of Bonnechere Valley, Certificate of Approval No. A411501 2003 Annual Report* (Jp2g Consultants Inc. March, 2004)
- *2008 Annual Report Ruby Road Waste Disposal Site* (Cambium Environmental Inc. March, 2009)

13.0 ASSESSMENT OF ENVIRONMENTAL ADVANTAGES AND DISADVANTAGES OF THE PROJECT

13.1 ADVANTAGES

The following advantages of the project have been clearly identified:

- The Ruby Road WDS is conveniently located on a County road for use by seasonal and permanent residents and businesses. The Ruby Road is scheduled for reconstruction in the near future which is expected to be completed in time for the proposed capacity expansion.
- The Site is appropriately zoned, is surrounded by compatible land uses, and is presently occupied by an operational transfer station. The expansion of the Site is in compliance with the PPS.
- The Site possesses a P CofA for Municipal Solid Waste with a Waste Disposal Site designation (P CofA No. A411501).
- The expansion and operation of the Ruby Road WDS is a fiscally viable option for the Township.
- The natural topography of the Site screens the proposed waste disposal area from view. Views of the Site based on final contours are not significantly different from the pre-development condition of the waste disposal area.
- There are no surface water bodies, watercourses or resulting fisheries on the Site property.
- The potential for negative impacts to noise and air are minimal.
- There are no species at risk, or rare ecosystems on or directly surrounding the Site property.
- The Site has already been exposed to waste management practices, including landfilling. Overall environmental impacts would be expected to be greater with a Greenfield site.
- There are no archaeological concerns, as confirmed by the Stage I and II Archaeological Studies.
- There will be no loss of prime agricultural land or activity.
- The Numerical Hydrogeological Modelling Report confirms that the proposed expansion is within the Reasonable Use Guidelines established by the MOE.
- There are no protected natural areas in the vicinity of the Site, nor are there PSWs on adjacent lands.
- The required infrastructure to support the operation of the Ruby Road WDS as an operational landfill.
- There are no residences within 500 m of the proposed active waste disposal area.

13.2 DISADVANTAGES

The following disadvantages to the project have been identified:

- Public opposition to the proposed Site expansion remains strong.
- The use of the County Road by heavy trucks and personal vehicle traffic to the Site may result in more frequent maintenance of the municipal road (Ruby Road). The Township is aware of, and committed to, this increase in maintenance recognizing that there will be coincident fiscal responsibility for this service.
- As with any solid waste disposal site, the subsurface environment and the topography within property bounds will be altered. The Township intends to thoroughly monitor the condition of the aquifer beneath the Site; though as modelling suggests, offsite impacts as a result of the Site expansion are not anticipated.

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GLOSSARY OF TERMS

Active Face/Area
The portion of the landfill facility where waste is currently being deposited, spread and/or compacted prior to the placement of cover material.

Adverse Environmental Impact
Any direct or indirect undesirable effect on the environment resulting from an emission or discharge which is caused or likely to be caused by human activity.

Annual Report
Report documenting the results of water quality, environmental quality, and operations monitoring for the year, or for a period as prescribed in the Certificate of Approval.

Approved Design and Operations Plan
The design of a landfill site and it's facilities which have been submitted along with the application documents for which formal MOE approval has been issued through the Certificate of Approval.

Approved Site or Facility
A landfill site/facility for which there is an existing and current Certificate of Approval.

Aquifer
A geologic unit (soil or rock) that contains sufficient saturated permeable material to yield measurable quantities of water to wells and springs.

Attenuation
Natural process through which the concentrations of landfill generated contaminants are reduced to safe levels.

Borehole
Is a hole drilled for soil sampling purposes.

Buffer Area
An area of land situated within the peripheral area surrounding an active filling area, but limited in extent to the property boundary, assigned to provide space for remedial measures, contaminant control measures, and for the reduction or elimination of adverse environmental impact caused by migrating contaminants.

Certificate of Approval
The license or permit issued by the MOE for the operation of a landfill site. Issued to the owner of the site with conditions of compliance stated therein.

Contaminant
A compound, element or physical parameter, usually resulting from human activity, or found at elevated concentrations, which have or may have a harmful effect on public health or the environment.

Contaminant Migration Path
Route by which a contaminant will move from the site into adjacent properties or the natural environment. Usually a route that offers the least resistance to movement.

Contamination Attenuation Zone
The zone beneath the surface, located beyond the landfill site boundary, where contaminants will be naturally attenuated to predetermined levels. Also, see Reasonable Use Policy.

Contingency Plan
A documented plan detailing a co-ordinated course of action to be followed to control and remediate occurrences such as a fire, explosion, or release of contaminants in an uncontrolled manner that could threaten the environment and public health.

Cover Material
Material approved by the MOE that is used to cover compacted solid waste. Usually, a soil with suitable characteristics for specific end-use.

Site Development Plan and Operations Report
Development and Operations Plan or Report is a document detailing the planned sequence of activities through the landfill site's active life including the control systems, site facilities and monitoring systems, that are necessary. This document is required for obtaining a Certificate of Approval.

Design Capacity
The maximum amount of waste that is planned to be disposed of at a landfill site.

Detection Limit
Concentration under which a parameter cannot be quantitatively measured.

EAA or EA Act
Environmental Assessment Act, Revised Statutes of Ontario, 1990. One of the primary acts of legislation intended to protect, conserve and wisely manage Ontario's environment through regulating planning and development.

EPA
Environmental Protection Act, Revised Status of Ontario, 1990. EPA is another of the primary pieces of Provincial legislation governing the protection of the natural environment of the Province.

Evapotranspiration
The evaporation of all water from soil, snow, ice, vegetation and other surfaces, including the water absorbed by plants, that is released to the atmosphere as vapour.

Fill Area
The area of a landfill site designed and designated for the disposal of waste.

Final Cover
Soil material or soil in combination with synthetic membranes, overlain by vegetation in a planned landscape, placed over a waste cell that has reached the end of its active life.

Groundwater
Subsurface water that occurs beneath the water table in soils and rocks that are fully saturated.

Hydraulic Conductivity
The rate of flow of water through a cross-section under a specific hydraulic gradient. It is a property of the geologic formation and the fluid, in hydrogeologic applications where the fluid is water. (Units of m/day or cm/s).

Hydraulic Gradient
The head drop per unit distance in the direction of flow, the driving force for groundwater flow.

Hydrogeology
The study of subsurface waters and related geologic aspects of surface waters.

Impermeable Fill
Soil material that is placed as filling material that is sufficiently cohesive and fine grained to impede and restrict the flow of water through it.

In situ Testing
Testing done on-site, in the field, of material or naturally occurring substances in their original state.

Landfill Gas
Combustible gas (primarily methane and carbon dioxide) generated by the decomposition of organic waste materials.

Landfill Site
A parcel of land where solid waste is disposed of in or on land for the purposes of waste management.

Leachate
Water or other liquid that has been contaminated by dissolved or suspended particles due to contact with solid waste.

Leachate Breakout
Location where leachate comes to the ground surfaces; a seep of spring.

Limit of Filling
The outermost limit at which waste has been disposed of, or approved or proposed for disposal at a landfill.

MOE
Ontario Ministry of the Environment.

Monitoring
Regular or spontaneous procedures used to methodically inspect and collect data on the performance of a landfill site relating to environmental quality (i.e. air, leachate, gas, ground or surface water, unsaturated soils, etc.).

Monitoring Well
Is the constructed unit of casing and screen installed in a borehole.

Multi-Level Monitoring Well
More than one monitoring well installed at a given test well location.

Native Soil
Soil material occurring naturally in the ground at a location.

Natural Attenuation
Where contaminants are reduced to acceptable concentration levels by natural mechanisms (dilution, absorption onto the soil matrix, etc.), biological action, and chemical interaction.

Occupational Health and Safety Act
The primary act of legislation enacted by Ontario Ministry of Labour to regulate and control the safety in the workplace, also Occupational Health and Safety Act, Revised Statutes of Ontario, 1990.

Odour Control
Minimizing or eliminating the nuisance and undesirable impact of objectionable or unpleasant odours arising from waste disposal operations.

Open Burning
Burning any matter whereby the resultant combustion products are emitted directly to the atmosphere without passing through an adequate stack, duct, or chimney.

Operations Plan
A document detailing the waste disposal operations in a planned, and if necessary, a staged manner, that ensure compliance with regulatory provisions concerning the operations of a landfill site.

Operator (Site Operator)/Attendant
The individual or organization who, through ownership or under contract, manages and operates a landfill site for the purpose of waste disposal.

Owner
A person, persons, organization or municipal authority who own a landfill facility or part of a landfill facility, and in whose name the Certificate of Approval for the site is issued.

Percolation
The movement of infiltrating water through soil.

Permeability
Often used interchangeable with hydraulic conductivity, but not strictly correct. Permeability is a property of the porous media only. Dependent upon media properties that affect flow, diameter, sphericity, roundness and packing of the grains.

Piezometer
A well that intersects a confined aquifer.

Provisional Certificate of Approval (Provisional C of A)
Same as Certificate of Approval.

Reasonable Use Policy
A policy developed by the Ministry to stipulate limits to the level of groundwater quality impairment that may be permitted to occur at site property boundaries, to allow the reasonable use of adjacent properties or land without adversely affecting public health and the environment.

Recharge Zone
An area where precipitation or surface run-off infiltrates into the ground and then, through natural percolation enters an aquifer.

Recycling
Sorting, collecting or processing waste materials that can be used as a substitute for the raw materials in a process or activity for the production of (the same or other) goods. For example, the "Blue Box" system, in-plant scrap handling, or raw material recovery systems. Recycling is also the marketing of products made from recycled or recycled materials.

Reduction (of waste or component of 3Rs program)
Those actions, practices or processes which result in the production or generation of less waste.

Remedial Action
Corrective action taken to clean-up or remedy a spill, an uncontrolled discharge of a contaminant, or a breach in a facility or its operations, in order to minimize the consequent threat to public health and the environment.

Representative Sample
A small portion of soil, water, etc. which can be subjected to testing and analysis, that is expected to yield results that will reliably represent the identical characteristics of the source of the material or of a larger body of material.

Reuse (component of 3Rs program)
The use of an item again in its original form, for a similar purpose as originally intended, or to fulfil a different function.

Run-off
The part of precipitation (rain water, snow melt) that flows overland and does not infiltrate the surface material (soil or rock).

Saturated Zone
The zone of a subsurface soil where all voids are filled with water.

Sedimentation
The deposition of fine grained soil in an undesirable location, caused by the scouring, erosion and transportation of earth materials by surface run-off.

Sensitive Land Use
A land use where humans or the natural environment may experience an adverse environmental impact.

Settlement
The subsidence of the top surface and underlying waste of a landfill or waste cell as a result of densification under its own weight.

Site Capacity
The maximum amount of waste that is planned to be disposed (design capacity) or that has been disposed of at a landfill site.

Site Closure
The planned and approved cessation or termination of landfilling activities at a landfill site upon reaching its site capacity.

Site Life
The period of time from its inception through active period of waste disposal, to the time when a landfill site reaches its' site capacity, when it ceases to receive any further waste, including and up to closure.

Solid Waste
Any waste matter that cannot be characterized by its physical properties as a liquid waste product.

Solid Waste Disposal Site or Facility
A site or facility such as a landfill site where solid waste is disposed of.

Source Separation
The separation of various wastes at their point of generation for the purposes of recycling or further processing.

Standpipe
A monitoring well which intersects the water table aquifer.

Stormwater
Run-off that occurs as a direct result of a storm event or thaw.

Stormwater Detention
Control of stormwater by the construction of impoundments of structures for the purpose of regulating stormwater flows during high intensity rainfall events that would otherwise transport excessive amounts of sediment, cause soil erosion or cause flooding.

Stratigraphy
The geologic sub-structuring, usually layered with different distribution, deposition and age.

Surface Run-off (Drainage)
See Run-off.

Surface Water
Water that occurs at the earth's surface (ponds, streams, rivers, lakes, oceans).

Sub-Soil
Soil horizons below the topsoil.

Test hole
Is a hole drilled for soil sampling purposes.

Topsoil
The uppermost layer of the soil containing appreciable organic materials in mineral soils. Adequate fertility to support plant growth.

Unsaturated Zone
(also vadose zone) - The zone in a porous sub-soil, where the voids are not completely water-filled, but contain some air-filled voids. Limited above by the land surface and below by the water-table.

Vector
A disease carrier and transmitter; usually an insect or rodent.

V.O.C.
Volatile organic compounds are those compounds which will readily volatilize (convert from liquid to gas phase) at conditions normally found in the environment.

Waste
Ashes, garbage, refuse, domestic waste, industrial waste, or municipal refuse and other used products as are designated or interpreted by the provisions of the Environmental Protection Act.

Waste Disposal Site (Facility)
Any land or land covered by water upon, into, in or through which, or building or structure in which, waste is deposited or processed and any machinery or equipment or operation required for the treatment or disposal of waste.

Waste Management System
All facilities, equipment and operations for the complete management of waste, including the collection, handling, transportation, storage, processing and disposal thereof, and may include one or more waste disposal sites.

Water Table
The water level attained in a monitoring well which screens the surficial unconfined aquifer.

Water Balance
Amounts of water to various components in a system so that water entering the system equals the amount of water contained within and discharged out of a system.

Water Level
The level of water in a well.

Well Casing
The pipe that is used to construct a well.

Well Screen
A filtering device used to keep sediment from entering a well.

Wetlands
Areas where water is at, near or above the land surface long enough to be capable of supporting aquatic or hydrolytic vegetation, and which have soils indicative of wet conditions.

ABBREVIATIONS

RFP	Request For Proposal	**µS**	microSiemens
MOE	Ontario Ministry of the Environment	**ODWS**	Ontario Drinking Water Standards
MNR	Ontario Ministry of Natural Resources	**PWQO**	Provincial Water Quality Objectives
PCofA	Provisional Certificate Of Approval	**TOC**	Total Organic Carbon
EPA	Environmental Protection Act	**VOC**	Volatile Organic Compounds
EAA	Environmental Assessment Act	**BTU**	British Thermal Unit
MW	monitor well	**°C**	temperature in degrees Celsius
masl	metres above sea level	**N/A**	not available
kg	kilogram	**%**	percent
mm	millimetres	**cfm**	cubic feet per minute
m	metres	**ppmdv**	part per million by dry volume
km	kilometres	**ppmv**	part per million by volume
ha	hectare	**ppm**	part per million
m^3	cubic metres	**min**	minimum
m^2	square metres	**max**	maximum
mg/l	milligrams per litre		

UNITS OF MEASUREMENT AND CONVERSIONS

Length

1 metre (m)	=	3.28 feet
1 millimetre (mm)	=	0.039 inches
1 kilometre (km)	=	0.621 miles

Area

1 hectare (ha)	=	2.47 acres
1 square metre (m^2)	=	10.76 square feet

Volume

1 cubic metre(m^3)	=	35.29 cubic feet
1 litre(L)	=	0.220 gallons

Mass

1 metric ton (tonne)	=	1.10 Imperial tons
1 kilogram (kg)	=	2.20 lbs
pound (lb)	=	453.6 g
gram (g)	=	---
milligrams (mg)	=	1 x 10^{-3} g
microgram (µg)	=	1 x 10^{-6} g
nanogram (ng)	=	1 x 10^{-9} g
kilogram (kg)	=	1000 g
pictogram (pg)	=	1 x 10^{12} g
metric tonne (t)	=	1000 kg

QUALIFICATIONS AND LIMITATIONS

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In performing work on behalf of a client, Cambium Environmental relies on its client to provide instructions on the scope of its retainer and, on that basis, Cambium Environmental determines the precise nature of the work to be performed. Cambium Environmental undertakes all work in accordance with applicable accepted industry practices and standards. Unless required under local laws, other than as expressly stated herein, no other warranties or conditions, either expressed or implied, are made regarding the services, work or reports provided.

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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 Cambium Environmental's work or report considers any locations or times other than those from which information, sample results and data was 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 extrapolations.

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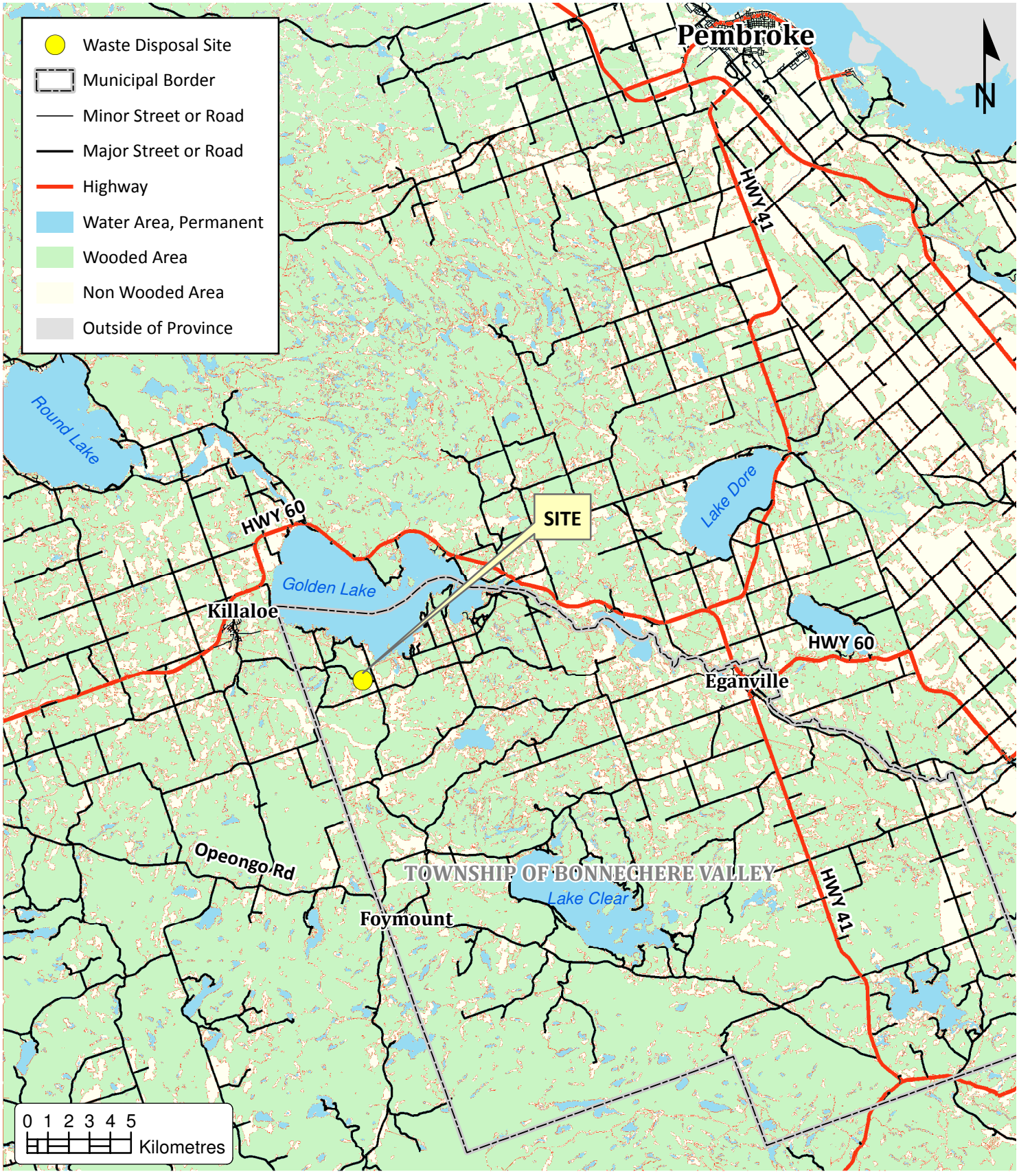
Appended Figures



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P.O. Box 325, 52 Hunter Street East
Peterborough, Ontario, K9H 1G5
Tel: 1 (705) 742.7900 Fax: 1 (705) 742.7907
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Created by: GMH	Project No. : 1219-001
Checked by: JPD	Scale: 1:250,000
Date: December 2012	

REGIONAL LOCATION PLAN
RUBY ROAD WASTE DISPOSAL SITE

Township of Bonnechere Valley

Figure: **1**

Source: © Queen's Printer of Ontario, 2010 *(this does not constitute an endorsement by the MNR or the Ontario Government)*; 2008 Aerial photograph acquired from Google Earth.

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Checked by: JPD	Scale: 1:5,000
Date: December 2012	

AERIAL PHOTOGRAPH

Ruby Road WDS
Township of Bonnechere Valley, ON

Figure: **2**

Source: © Queen's Printer of Ontario, 2010 *(this does not constitute an endorsement by the MNR or the Ontario Government)*

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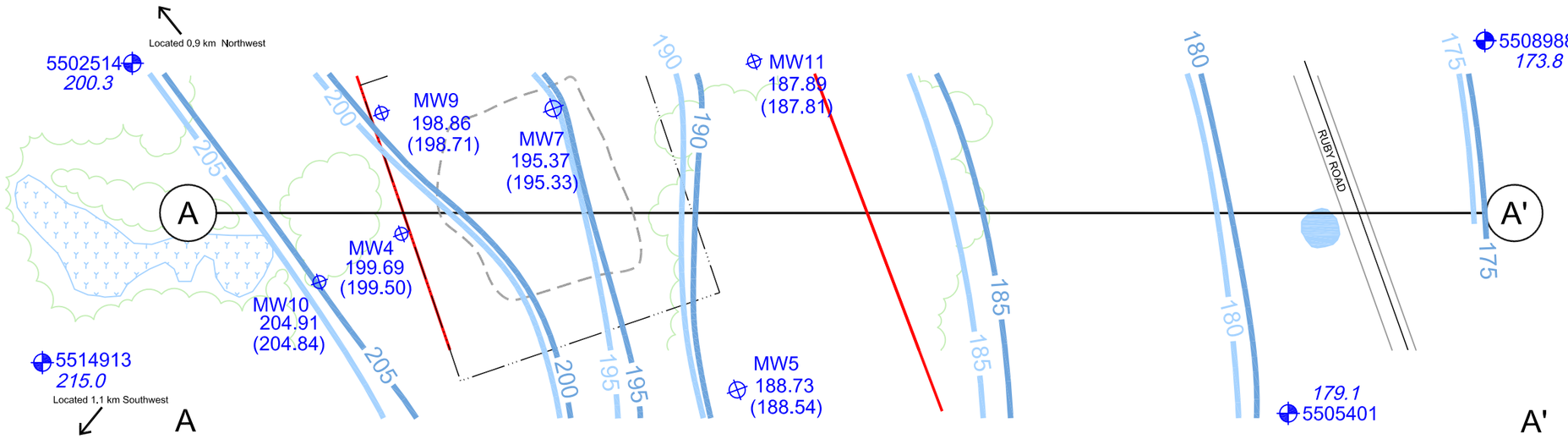
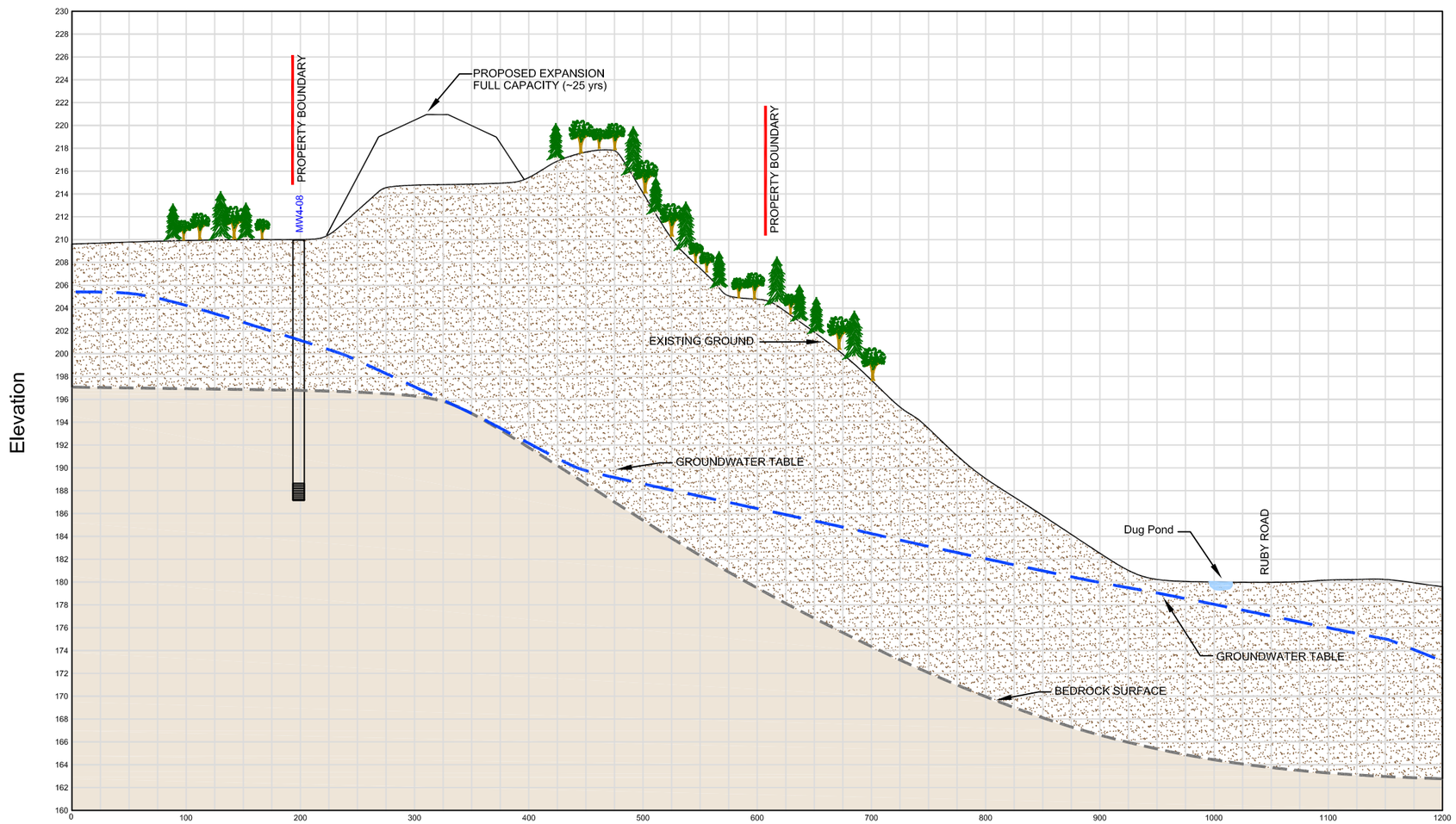
Checked by: JPD	Scale: 1:50,000
Date: December 2012	

NATURAL ENVIRONMENT

Ruby Road WDS
Township of Bonnechere Valley, ON

Figure: **3**





Note: Monitoring well MW4 was determined to be in a seperate aquifer; therefore, is not included in the groundwater elevation table determinations.

RUBY ROAD
WASTE DISPOSAL SITE

Township of Bonnechere Valley
County of Renfrew

LEGEND

- On-site Monitoring Well
- MOE Water Well
- 187.6 — On-site Groundwater Elevation (July 2012)
- (187.6) — On-site Groundwater Elevation (October 2012)
- *200.3* — Groundwater Elevation Determined from MOE Well Record
- Regional Water Table (July 2012)
- Regional Water Table (October 2012)
- Overburden Material
- Bedrock

Notes:
1. Survey completed by Cambium Environmental Inc. September 14, 2004.
2. Regional Water Table determined from water elevations observed on-site October 2012 and Ministry of the Environment water well records.
3. Distances on this plan are in metres and can be converted to feet by dividing by 3.048.

Benchmarks:
1. Nail and washer in southeast corner of pressure treated wood base of Quonset hut. Elevation 215.477 m.

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P.O. Box 325, 52 Hunter Street East
Peterborough, Ontario, K9H 1G5
Tel: 705-742-7900 Fax: 705-742-7907
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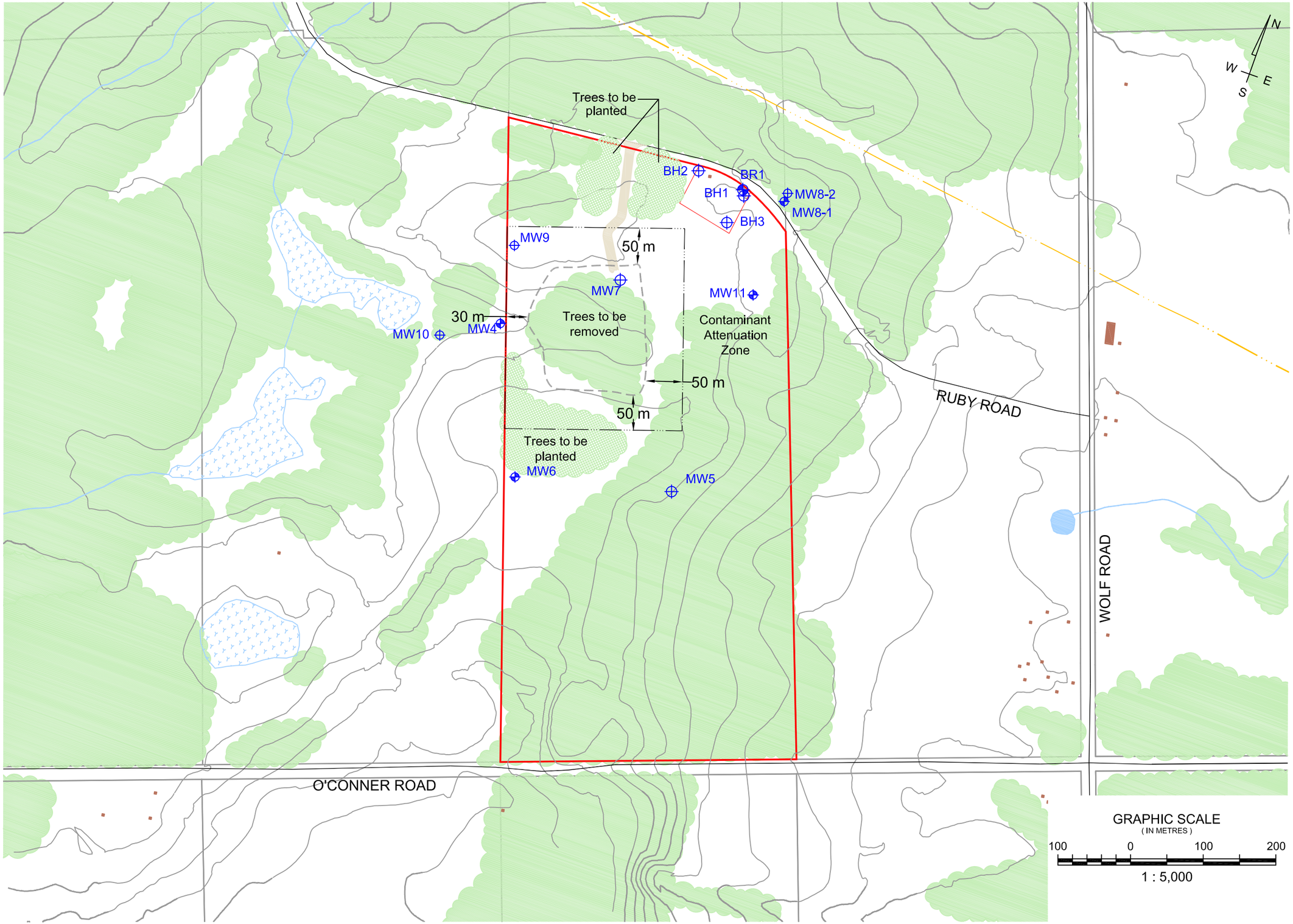
REGIONAL WATER TABLE CROSS SECTION

Drawn By: SNR	Checked By: JPD	Scale: HORZ: 1:4,500 VERT: 1:450
Date: December 2012		
Revision Date:		Figure: 4
Project No.: 1219-001		

RUBY ROAD
WASTE DISPOSAL SITE

Township of Bonnechere Valley
County of Renfrew



GRAPHIC SCALE
(IN METRES)

100 0 100 200

1 : 5,000

LEGEND

- BR1 — Groundwater Monitoring Well Location
- Proposed Property Boundary (32.8 ha.)
- Existing Property Boundary (0.5 ha.)
- Proposed Operational Buffer (5.9 ha.)
- Proposed Limit of Waste (2.5 ha.)
- Proposed Entrance (185 m x 12 m)

Notes:
1. Survey completed by Cambium Environmental Inc. May 29, 2008.
2. Distances on this plan are in metres and can be converted to feet by dividing by 3.048.

Benchmarks:
1. Nail and washer in southeast corner of pressure treated wood base of Quonset hut. Elevation 100.477 m.

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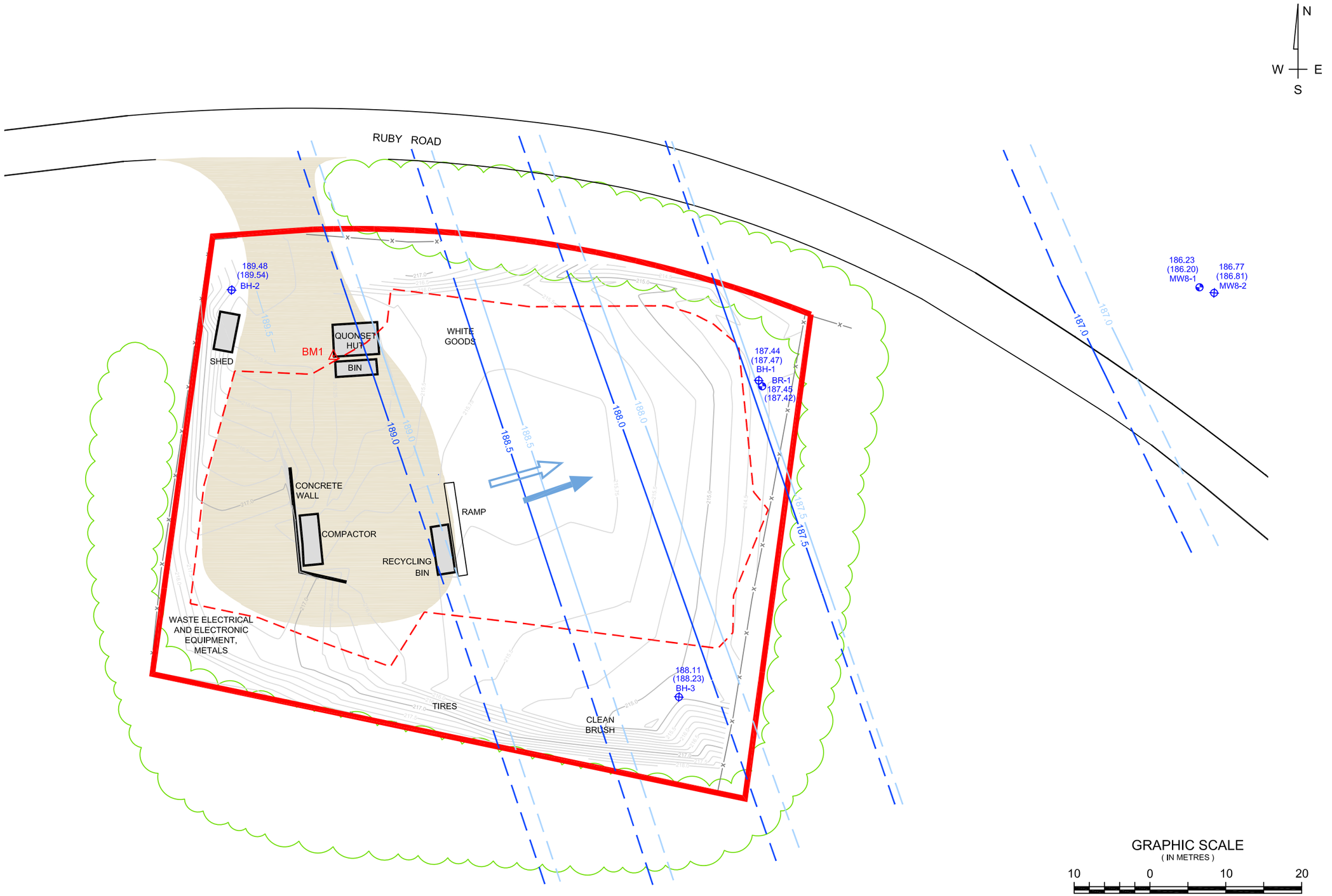
www.cambium-env.com

PROPOSED PROPERTY PLAN

Drawn By: GMH	Checked By: JPD	Scale: HORZ: 1:5,000 VERT: N/A
Date: December 2012		
Revision Date:		Figure: 5
Project No.: 1219-001		



RUBY ROAD
WASTE DISPOSAL SITE

Township of Bonnechere Valley
County of Renfrew

LEGEND

- BR-1 — Deep Monitoring Well Location
- BH-1 — Shallow Monitoring Well Location
- 187.49 (187.52) — Groundwater Elevation April 16, 2012 (July 16, 2012)
- BM1 — Benchmark
- Primary Topographic Contour Line
- Secondary Topographic Contour Line
- Property Boundary
- Existing Limit of Waste
- On-site Road
- Approximate Tree Line
- Groundwater Contour (April 16, 2012)
- Groundwater Contour (July 16, 2012)
- Interpolated Groundwater Contour (April 16, 2012)
- Interpolated Groundwater Contour (July 16, 2012)
- Groundwater Direction (April 16, 2012)
- Groundwater Direction (July 16, 2012)

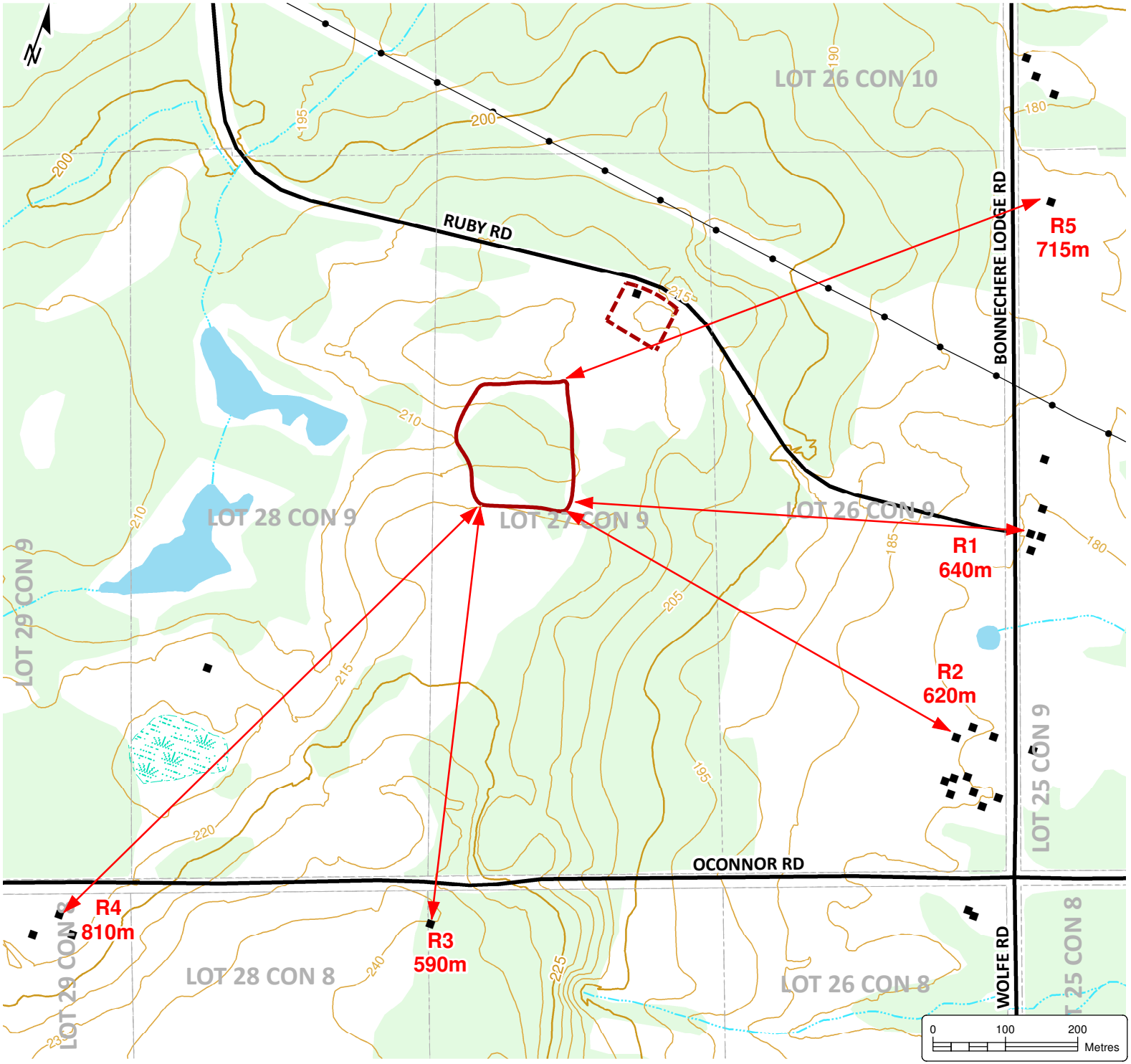
Notes:
1. Survey completed by Cambium Environmental Inc. September 14, 2004.
2. Distances on this plan are in metres and can be converted to feet by dividing by 0.3048.

Benchmarks:
1. Nail and washer in southeast corner of pressure treated wood base of Quonset hut. Elevation 215.477 m.

CAMBIUM ENVIRONMENTAL
P.O. Box 325, 52 Hunter Street East
Peterborough, Ontario, K9H 1G5
Tel: 705-742-7900 Fax: 705-742-7907
www.cambium-env.com

EXISTING SITE CONDITIONS

Drawn By: NLB	Checked By: DFB	Scale: HORZ: 1:500 VERT: N/A
Date: December 2012		
Revision Date:		Figure: 6
Project No.: 1219-001		



RUBY ROAD
WASTE DISPOSAL SITE

Township of Bonnechere Valley

Legend

- Building
- Utility Line
- Exisiting Landfill
- Proposed Addition
- Road
- Watercourse, Intermittent
- Contour (index)
- Contour (5m)
- Lot
- Water Area, Permanent
- Wetland Area, Permanent
- Wooded Area

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Fax: 1 (705) 742.7907
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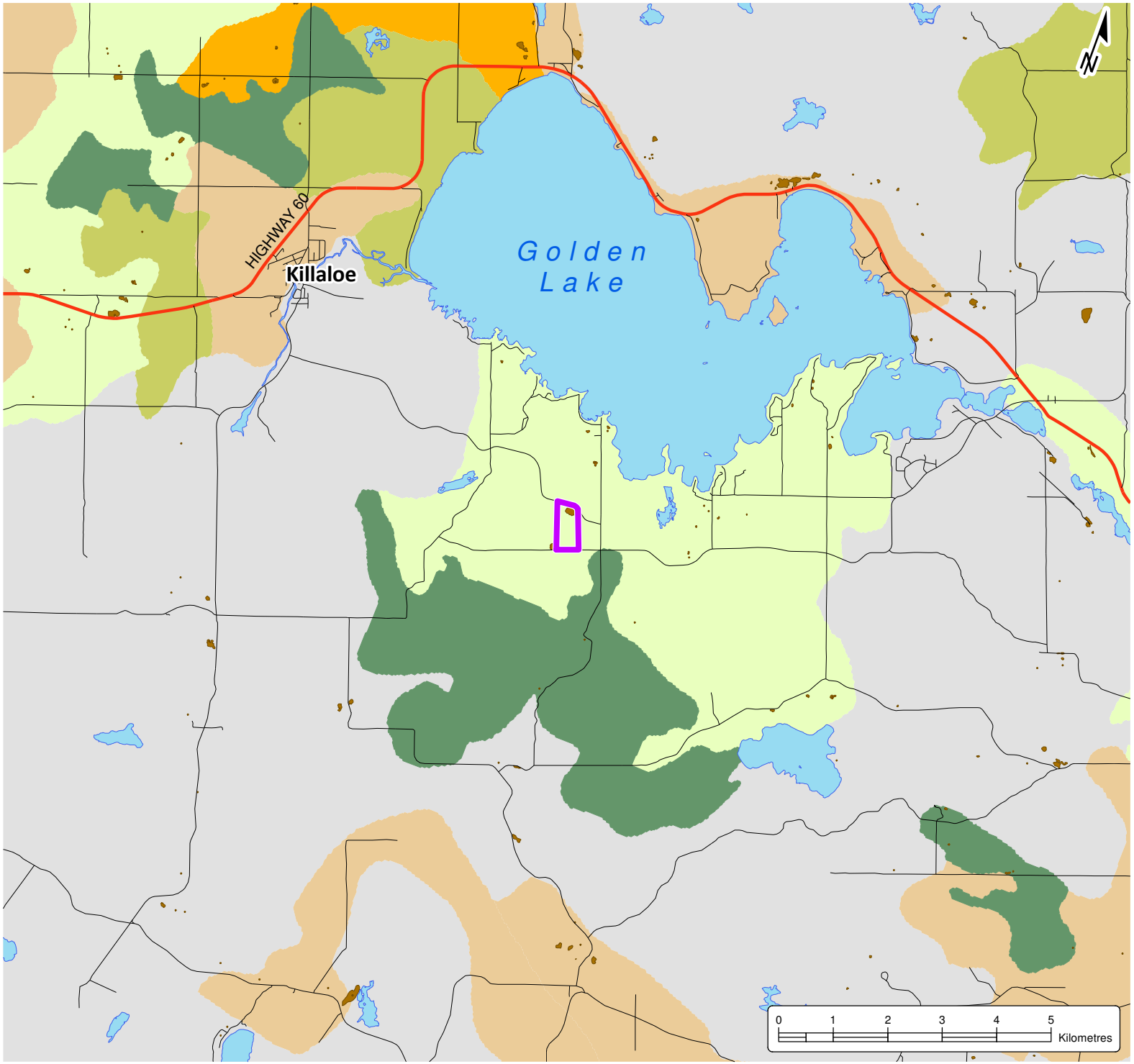
NOISE RECEPTOR LOCATIONS

Project No.:	Date:
1219-001	December 2012
Scale: 1:7,500	Projection: NAD 1983 UTM Zone 18N
Created by: GMH	Checked by: JPD
Figure: 7	



RUBY ROAD WASTE DISPOSAL SITE

Township of Bonnechere Valley

Legend

- Site
- Streets
- Expressway / Highway
- Pit or Quarry
- Water Area

Agricultural Land Classification

- Class 3
- Class 4
- Class 5
- Class 6
- Class 7
- Organic

Source: © Queen's Printer of Ontario, 2010
(this does not constitute an endorsement by the MNR or the Ontario Government)

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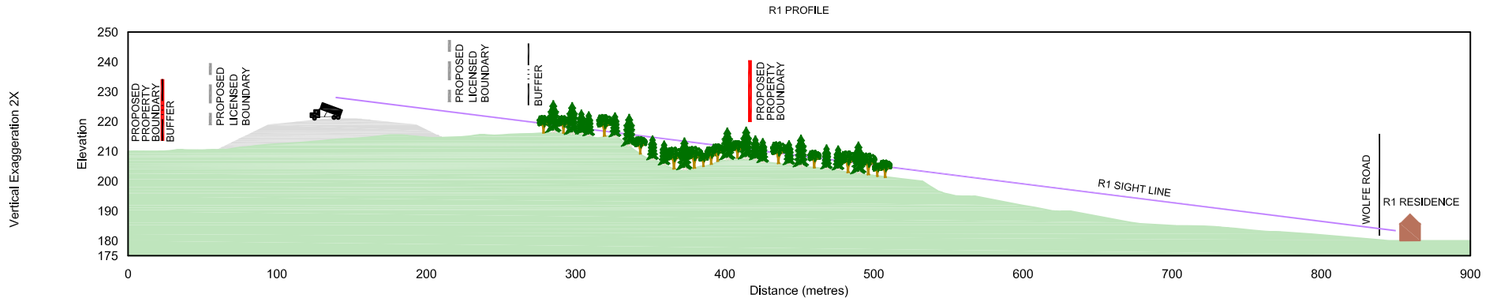
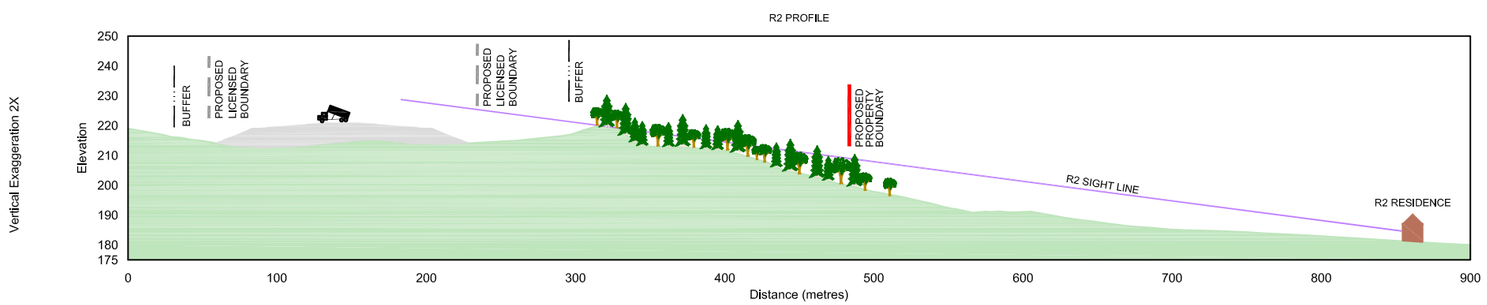
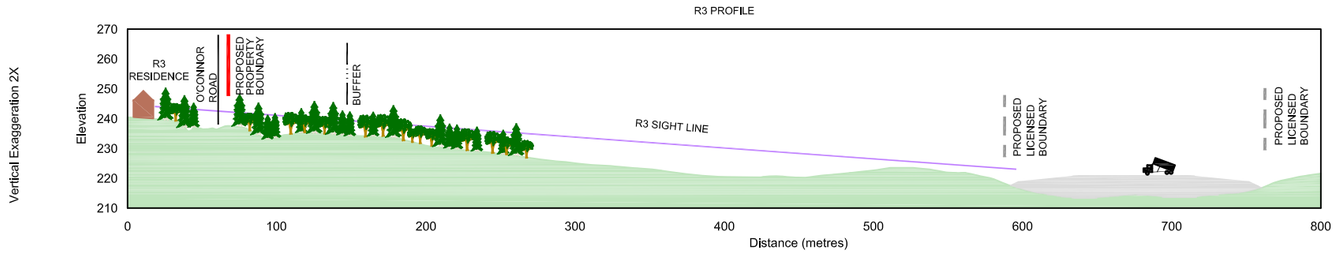
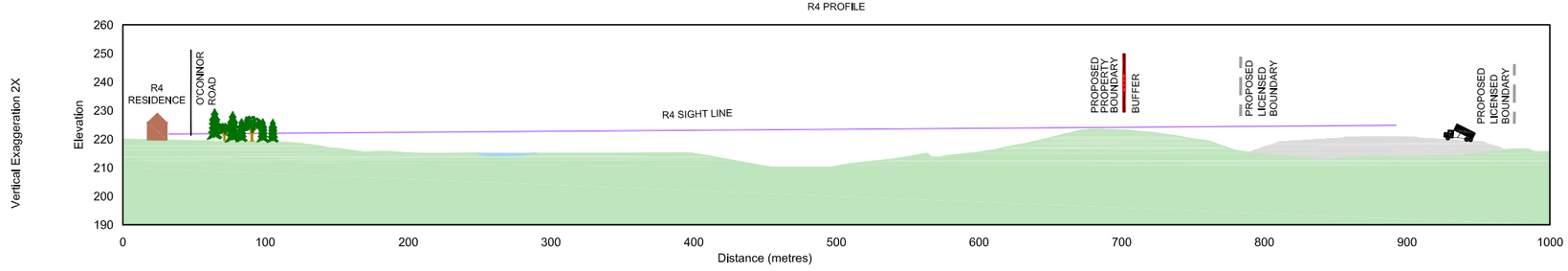
AGRICULTURAL LAND CLASSIFICATION SURROUNDING THE PROPOSED SITE

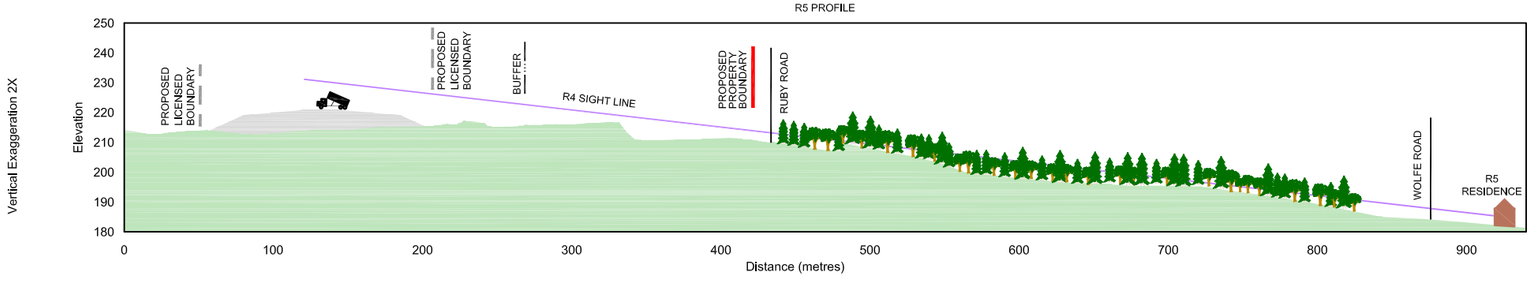
Project No.:	Date:
1219-001	December 2012
Scale:	Projection:
1:100,000	NAD 1983 UTM Zone 18N
Created by: GMH	Checked by: JPD	Figure: 8











RUBY ROAD
WASTE DISPOSAL SITE

Township of Bonnechere Valley
County of Renfrew

LEGEND

Notes;
1. Survey completed by Cambium Environmental Inc. September 14, 2004.
2. Distances on this plan are in metres and can be converted to feet by dividing by 3.048.

Benchmarks;
1. Nail and washer in southeast corner of pressure treated wood base of Quonset hut.
Elevation 100.477 m.

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PROFILE VIEWS OF THE PROPOSED SITE AND NEARBY RESIDENTS

Drawn By: SNR	Checked By: JPD	Scale: HORZ: 1:4000 VERT: 1:2000
Date: December 2012		
Revision Date:		Figure: 9
Project No.: 1219-001		

Appended Tables

Table 3. Summary of Comments Received from Regulatory Agencies

Agency	Submitted to	Submission (Date)	Response From	Date of Response	Summary of Comments
Indian and Northern Affairs Canada (formerly Department of Indian and Northern Affairs) Lands and Trusts Services	Mr. Glenn Gilbert	RFI (November 7, 2007)		27-Nov-07	- For this project, INAC is not likely to require an EA under S. 5(1) of the CEAA. - INAC will not be an expert federal authority and further involvement is not necessary. - Contact all potentially interested First Nations communities directly. - Provided some information sources for identifying First Nations and other Aboriginal groups within the vicinity of the project area.
Indian and Northern Affairs Canada (formerly Department of Indian and Northern Affairs) Specific Claims Branch	Mr. Don Boswell	RFI (November 7, 2007)		20-Nov-07	- No specific claims submitted in area of interest. However, cannot make any comment on potential or future claims. - Algonquins of Pikwakanagan are in general area of the project. - Suggested consulting the "Public Information Status Report" on all claims submitted to date.
Indian and Northern Affairs Canada (formerly Department of Indian and Northern Affairs) Claims East of Manitoba, Comprehensive Claims Branch	Ms. Louise Trepanier	RFI (November 7, 2007)		16-Nov-07	- Does not have a direct interest and does not seek to participate in this project. - The government of Canada, government of Ontario, and Algonquins of Eastern Ontario are negotiating a Comprehensive Land Claim which covers the area for this project. - Listed several First Nations within the Algonquins of Eastern Ontario.
Indian and Northern Affairs Canada (formerly Department of Indian and Northern Affairs) Litigation Management and Resolution Branch	Mr. Fraklin Roy	RFI (November 7, 2007)			- No response received
Ministry of Aboriginal Affairs (formerly Ontario Native Affairs Secretariat) Policy and Relationships Branch	Mr. Alan Kary	RFI (November 7, 2007)		3-Dec-07	- This project appears to be located within an area where the Algonquins of Ontario have asserted rights. - Algonquins of Ontario have asked that notice of proposed projects be given to their consultant, Jp2g, with a copy to Algonquins of Pikwakanagan. - The Government of Canada sometimes receives claims that Ontario does not receive. Therefore, should contact INAC. - MAA requests to remain on contact list to receive updates about this project.
Ministry of the Attorney-General	Ms. Ria Tzimas	RFI (November 7, 2007)			- No response received
Algonquin's of Pikwakanagan First Nations	Chief Kirby Whiteduck	RFI (January 11, 2008)			- No response received
Canadian Environmental Assessment Agency Ontario Region	Ms. Louise Knox	RFI (January 11, 2008)			- No response received
Canadian Nuclear Safety Commission Process Facilities and Technical Support Division	Mr. Henry Rabski	RFI (January 11, 2008)			- No response received
CN Rail Engineering and Environmental Services	Mr. Dave Reynolds	RFI (January 11, 2008)			- No response received
Department of Indian and Northern Affairs Lands and Trusts Services	Mr. Glenn Gilbert	RFI (January 29, 2008)	Mr. Daniel Johnson	29-Jan-08	- Not likely to require an EA - Will not be a responsible authority - Provided contacts for enquires regarding land claims within the project area

Table 3. Summary of Comments Received from Regulatory Agencies

Agency	Submitted to	Submission (Date)	Response From	Date of Response	Summary of Comments
Department of Indian and Northern Affairs	Ms. Cheyenne Loon	RFI (January 11, 2008)			- No response received
Department of Indian and Northern Affairs Specific Claims Branch	Mr. Don Boswell	RFI (January 11, 2008)	Mr. Fred Hosking	28-Jan-08	- No specific claims submitted in area of interest. However, cannot make any comment on potential or future claims - Advised Township to contact the Algonquins of Pikwakanagan - Cannot comment on potential or future claims
Department of Indian and Northern Affairs Comprehensive Claims Branch	Ms. Louise Trepanier	RFI (January 11, 2008)			- No response received
Department of Indian and Northern Affairs Litigation Management and Resolution Branch	Mr. Franklin Roy	RFI (January 11, 2008)			- No response received
Environment Canada, Ontario Region, Environmental Assessment Section	Mr. Rob Dobos	RFI (January 11, 2008)			- No response received
Fisheries and Oceans Canada Southern Ontario District Office Fish Habitat Management	Mr. Paul Savoie	RFI (January 11, 2008)			- No response received
Fisheries and Oceans Canada	Mr. Ray Amell	RFI (January 11, 2008)	Mr. Mark Scott	27-Aug-08	- Proposed works not likely to result in impacts to fish and fish habitat -No formal approval from Fisheries and Oceans Canada is required
Health Canada Ontario Region	Ms. Kitty Ma	RFI (January 11, 2008)			- No response received
Health Canada Canadian Environmental Assessment Act Division	Ms. Carolyn Dunn	RFI (January 11, 2008)			- No response received
Hydro One Inc.	Mr. Tony Ierullo	RFI (January 11, 2008)			- No response received
Ministry of Aboriginal Affairs Policy and Relationships Branch	Mr. Alan Kary	RFI (January 11, 2008)			- No response received
Ministry of Aboriginal Affairs Policy and Relationships Branch	Mr. Surinder Singh Gill	RFI (January 11, 2008)			- No response received
Ministry of Aboriginal Affairs Policy and Relationships Branch	Mr. Alan Kary	Project Status Update (November 20, 2012)			- No response received
Ministry of Agriculture, Food and Rural Affairs Agricultural Land Use	Mr. David Cooper	RFI (January 11, 2008)			- No response received
Ministry of Culture Heritage and Operations Section	Mr. Chris Anderson	RFI (January 11, 2008)			- No response received
Ministry of Education Pupil Accommodations Unit	Mr. Steven Mitchell	RFI (January 11, 2008)			- No response received
Ministry of Education Renfrew County District School Board	Mr. Wilmer Verch	RFI (January 11, 2008)	Mr. Wilmer Verch	16-Jan-08	- At this time no school using the site so changes will not have impact on them - Expressed interest in what is going on - Appreciate opportunity to comment
Ministry of Education Renfrew County Catholic District School Board	Mr. Ivan Johnston	RFI (January 11, 2008)			- No response received
Ministry of Education CSD de LEst de'lÓntario (59)	Mr. Francois Benoit	RFI (January 11, 2008)			- No response received
Ministry of Education CSD catholique de LEst Ontarien (65)	Mr. Roger Paul	RFI (January 11, 2008)			- No response received
Ministry of Energy Energy Conservation Branch	Mr. Neil Hutchings	RFI (January 11, 2008)			- No response received

Table 3. Summary of Comments Received from Regulatory Agencies

Agency	Submitted to	Submission (Date)	Response From	Date of Response	Summary of Comments
Ministry of Energy Strategic Policy Branch	Mr. Kevin Pal	RFI (January 11, 2008)			- No response received
Ministry of Health and Long-Term Care Safe Water and Environmental Health and Toxicology Unit	Mr. Fred Ruf	RFI (January 11, 2008)			- No response received
Ministry of Health and Long-Term Care Renfrew County District Health Unit	Dr. Michael Corriveau	RFI (January 11, 2008)			- No response received
Ministry of Health and Long-Term Care Renfrew County District Health Unit	Mr. Robert Schreader	RFI (January 11, 2008)			- No response received
Ministry of Health and Long-Term Care Renfrew County District Health Unit	Mr. Jack Wilson	RFI (January 11, 2008)			- No response received
Ministry of Health and Long-Term Care Eastern Ontario Health Unit	Mr. Robert Bourdeau	RFI (January 11, 2008)			- No response received
Ministry of Health and Long-Term Care Eastern Ontario Health Unit	Ms. Leslie Shaughnessay	RFI (January 11, 2008)			- No response received
Ministry of Infrastructure Renewal Growth Planning, Policy and Analysis	Ms. Tija Dirks	RFI (January 11, 2008)			- No response received
Ministry of Municipal Affairs and Housing Eastern Municipal Services Office	Ms. Margo Lienhard	RFI (January 11, 2008)			- No response received
Ministry of Natural Resources Pembroke District	Ms. Joanna Gaweda	RFI (January 11, 2008)	Erin Malloy	29-Feb-08	- See below
Ministry of Natural Resources Pembroke District	Ms. Erin Malloy	RFI (January 11, 2008)	Erin Malloy	29-Feb-08	- 4 page document outlined with headings of streams/fish habitat, wetlands, PSWs, significant wildlife habitat, habitat of threatened or endangered species, aggregate resources. - Potential for fish to access tributaries surrounding site but no known streams on the property - Location corresponds to several stream systems and groundwater connections - No known wetlands on lot - Closest provincially significant wetland approximately 800m to south of the lot - Large portion of land within a deer wintering area - No know occurrences of threatened or endangered species - Need for further investigation on all accounts to properly mitigate
Ministry of Natural Resources Pembroke District Pembroke District	Mr. Kirby Punt	RFI (January 11, 2008)	Erin Malloy	29-Feb-08	- See above
Ministry of Northern Development and Mines Corporate Policy Secretariat	Ms. Joan Van Kralingen	RFI (January 11, 2008)			- No response received
Ministry of the Attorney-General	Ms. Ria Tzimas	RFI (January 11, 2008)			- No response received
Ministry of Tourism and Recreation Crown Law Office – Civil	Ms. Mary Beach	RFI (January 11, 2008)			- No response received
Ministry of Transportation Eastern Region	Mr. Meter Makula	RFI (January 11, 2008)			- No response received
Ministry or Environment Ottawa District Office	Mr. Marc LeSieur	RFI (January 11, 2008)			- No response received
Ministry of the Environment EAAB	Ms. Agatha Garcia-Wright	Letter to amend PC of A (October 31, 2007)			- Further information required.
Ministry of the Environment EAAB	Ms. Agatha Garcia-Wright	Response to additional information requested for PC of A amendment (November 15, 2007)			- Further information required.

Table 3. Summary of Comments Received from Regulatory Agencies

Agency	Submitted to	Submission (Date)	Response From	Date of Response	Summary of Comments
Ministry of the Environment EAAB	Mr. Nafiseh Pourhassani	Fax. Addition of explicit approved capacity (December 21, 2007)	Tesfaye Gebrezghi	17-Jan-08	- Approval of Amendment to PC of A received from MOE January 17, 2008.
Ministry of the Environment Kingston Regional Office	Ms. Alida Mitton	Summary of ESP to date and request for notification of further requirements (January 6, 2008)	Alida Mitton	26-Aug-09	- List of items to be completed for ESP.
Ministry of the Environment Eastern Region Technical Support Section	Mr. Marc-Etienne Lesieur	Submission of Numerical Hydrogeological Modeling Report (January 15, 2009)	Shawn Kinney	29-Jun-09	- Needs further information to confirm that the provided numerical model emulates existing sitte conditions well enough to serve as a predictive tool.
Ministry of the Environment Eastern Region Technical Support Section	Ms. Alida Mitton	Response to Technical Support Section Comments (July 30, 2009)	Ms. Alida Mitton	19-Nov-09	- MOE aggreed with proposed approach for further works outlined in the response to the TSS comments submitted July 30, 2009.
Ministry of the Environment Kingston Regional Office	Ms. Alida Mitton	Submission of Revised Numerical Hydrogeological Modeling Report (December 22, 2009)	Ms. Alida Mitton	1-Apr-10	- MOE required further modifications to the model.
Ministry of the Environment Kingston Regional Office	Ms. Alida Mitton	Submission of Revised Numerical Hydrogeological Modeling Report (May 7, 2010)	Ms. Alida Mitton	8-Dec-10	- MOE is satisfied with the hydrogeological modeling investigation. The Township can proceed with completing the ESP.
Ministry of the Environment Eastern Region Technical Support Section	Ms. Vicki Mitchell	Submission of Draft ESR (June 1, 2011)	Shawn Kinney	28-Jul-11	- Needs further information to confirm that the provided numerical model emulates existing sitte conditions well enough to serve as a predictive tool.
Ministry of the Environment Eastern Region Technical Support Section	Ms. Vicki Mitchell	Submission of Draft ESR (June 1, 2011)	Laurel Grills	18-Oct-11	- Needs further information to confirm that the provided numerical model emulates existing sitte conditions well enough to serve as a predictive tool.
Ministry of the Environment Eastern Region Technical Support Section	Mr. Bryan Martin	Submission of Draft ESR (June 1, 2011)	Vicki Mitchell	15-Nov-11	- Additional information requried prior to the finalization of the ESR including hydrogeological assessment and information on Aboriginal consultation.
Ministry of the Environment Eastern Region Technical Support Section	Ms. Vicki Mitchell	Response to MOE Comments in 2011 dated July 28, October 18, and November 15, Environmental Screening of Capacity Expansion at Ruby Road Waste Disposal Site (January 19, 2012)	Kyle Stephenson	26-Apr-12	- Needs further information to confirm that the provided numerical model emulates existing sitte conditions well enough to serve as a predictive tool.
Ministry of the Environment Eastern Region Technical Support Section	Ms. Vicki Mitchell	Response to MOE Comments in 2011 dated July 28, October 18, and November 15, Environmental Screening of Capacity Expansion at Ruby Road Waste Disposal Site (January 19, 2012)	Laurel Rudd (formerly Grills)	30-Apr-12	- Needs further information to confirm that the provided numerical model emulates existing site conditions well enough to serve as a predictive tool.
Ministry of the Environment Environmental Assessment and Approvals Branch	Ms. Vicki Mitchell	Response to MOE Comments dated April 26, 2012 (May 8, 2012)	Kyle Stephenson	11-May-12	- Provide rational for waste density used in contaminant lifespan calculation and a reduced chloride concentration

Table 3. Summary of Comments Received from Regulatory Agencies

Agency	Submitted to	Submission (Date)	Response From	Date of Response	Summary of Comments
Ministry of the Environment Environmental Assessment and Approvals Branch	Mr. Kyle Stephenson	Constant Chloride Concentrations - Hydrogeological Modelling Environmental Screening of Capacity Expansion at Ruby Road Waste Disposal Site (May 31, 2012)	Dale Gable	20-Jun-12	- MOE is satisfied with the proposed constant chloride concentration.
Ministry of the Environment Eastern Region Technical Support Section	Mr. Kyle Stephenson	Numerical Hydrogeological Modelling Report for Expansion Feasibility of the Ruby Road Waste Disposal Site (June 27, 2012)	Kyle Stephenson	9-Aug-12	- Clarification requested on some items throughout report via email. Clarification was provided via teleconference and final Modelling report was submitted to Ms. Mitchell September 7, 2012.
Ministry of the Environment Eastern Region Technical Support Section	Ms. Vicki Mitchell	Numerical Hydrogeological Modelling Report for Expansion Feasibility of the Ruby Road Waste Disposal Site (September 7, 2012)	Kyle Stephenson	10-Oct-12	- One (1) additional round of groundwater elevations was recommended.
Ministry of the Environment Eastern Region Technical Support Section	Mr. Kyle Stephenson	Letter - Hydrogeological Modelling - Groundwater Elevations (October 18, 2012)	Kyle Stephenson	13-Nov-12	- Technical Support Section Eastern Region is satisfied with the hydrogeological modeling investigation. The Township can proceed with completing the ESP.
Ministry of the Environment Eastern Region Technical Support Section	Mr. Kyle Stephenson	Letter - Hydrogeological Modelling - Groundwater Elevations (October 18, 2012)	Vicki Mitchell	14-Nov-12	- MOE is satisfied with the hydrogeological modeling investigation. The Township can proceed with completing the ESP.
Ontario Power Generation Sustainable Development	Mr. Steve Hounsell	RFI (January 11, 2008)			- No response received
Ontario Realty Corporation Planning	Mr. John Mackenzie	RFI (January 11, 2008)			- No response received
Township of Adamston-Bromley	Ms. Beverly Briscoe	RFI (January 11, 2008)			- No response received
Township of Bonnechere Valley Bonnechere Valley Fire Department	Mr. Michael Lett	RFI (January 11, 2008)			- No response received
Township of Brudenell, Lyndoch & Raglan	Ms. Michelle Mantifel	RFI (January 11, 2008)			- No response received
Township of Greater Madawaska	Mr. John Baird	RFI (January 11, 2008)			- No response received
Township of Killaloe, Hagarty and Richards	Ms. Lorna Hudder	RFI (January 11, 2008)			- No response received
Township of North Algona-Wilberforce	Ms. Marylin Scruder	RFI (January 11, 2008)			- No response received
Transport Canada Environmental Affairs Programs Branch	Ms. Monique Mosseau	RFI (January 11, 2008)	Mr. Jeremy Craigs		- Requested to prepare and submit an application in accordance with the requirements as outline in Application Guide (attached) if any of the related project elements or activities may cross or affect a potentially navigable waterway - Does not appear to have an effect on the land of the former Bonnechere Airport

Table 4. Summary of Correspondence with Aboriginal Communities

Organization	Date	Type of Correspondence	Comments
Department of Indian and Northern Affairs - Environment Unit	7-Nov-07	Notice of Commencement	
	29-Jan-08	Letter	Letter received from Daniel Johnson. Indian and Northern Affairs Canada will not be an expert federal authority and further involvement is not necessary
Department of Indian and Northern Affairs - Specific Claims Branch	7-Nov-07	Notice of Commencement	
	28-Jan-08	Letter	Requested that Cambium contact the Algonquins of Pikwakanagan
Department of Indian and Northern Affairs - Comprehensive Claims Branch	7-Nov-07	Notice of Commencement	
	16-Nov-07	Letter	Correspondence received from Kevin Clement representing Lynn Bernard. Comprehensive Claims Branch of Indian and Northern Affairs Canada does not have a direct interest and does not seek to participate in the Environmental Screening
Department of Indian and Northern Affairs - Litigation Management and Resolution Branch	7-Nov-07	Notice of Commencement	
Ministry of Aboriginal Affairs - Policy and Relationships Branch	7-Nov-07	Notice of Commencement	
	3-Dec-07	Letter	Requested Cambium to contact Algonquins of Ontario and Chief Kirby Whiteduck of Algonquins of Pikwakanagan
	20-Nov-12	Project Status Update	
Ministry of the Attorney-General	7-Nov-07	Notice of Commencement	
Algonquins of Pikwakanagan	26-Jul-07	Letter	From Township of Bonnechere Valley outlining potential for cooperation in waste management between the Township and the Algonquins of Pikwakanagan
	11-Jan-08	Email	Notice of Commencement
	11-Jan-08	Email	Request for Information
	22-Jan-08	PLC Meeting 1 Minutes	Representative of the Algonquins of Pikwakanagan was invited to participate in the PLC, but declined due to time constraints
	13-Feb-08	Letter	Public Consultation Event (PCE) 1 Invitation
	20-Feb-08	Meeting	Merv Sarazin from Algonquins of Pikwakanagan attended PCE 1
	28-Feb-08	Email	Thanks to PLC Members for attendance at Public Consultation Event 1
	2-May-08	Email	Materials from Public Liason Committee meeting provided to the Algonquins of Pikwakanagan. No representative from the First Nation attended the meeting.
	12-May-08	Email	PLC Meeting 1 Minutes; items of note from PLC Meeting 2; notification of PLC Meeting 3
	2-Jun-08	Email	Notification of PLC Meeting 3
	17-Jun-08	Email	Notification of PCE 2
	7-Aug-08	Email	Notification of PLC Meeting 4
	2-Sep-08	Email	Minutes from PLC Meeting 3
	31-Oct-08	Email	Notification of PLC Meeting 5
	11-Nov-08	Email	Minutes from PLC Meeting 4
	8-Jun-09	Email	Project Status Update
	20-Nov-12	Letter	Project Status Update
	27-Nov-12	Telephone	Merv Sarazin from Algonquins of Pikwakanagan contacted Cambium to discuss the status of the project and to request the ESP document, all associated technical reports and the most recent correspondence of the PLC. He indicated that a representative of the Ontario First Nations Technical Service Corporation would be reviewing the ESP documents and making comments on behalf of the Algonquins of Pikwakanagan. He indicated that the community may be interested in entering into an agreement with the Township for waste management, since their internal waste site will be closing within the next 5 years.
	11-Dec-12	ESP Materials Provided	ESP document, supporting reports and recent correspondence were provided to the Algonquins of Pikwakanagan on a CD.
Algonquins of Ontario	13-Feb-08	Letter	Public Consultation Event (PCE) 1 Invitation
	20-Nov-12	Letter	Project Status Update

Township Initiated Correspondence	
Agency/Community Response	