GEMTEC
www.gemtec.ca

Septic Impact Assessment
Zoning By-Law Amendment
5384 Boundary Road
Ottawa, Ontario

GEMTEC Project: 100011.122

GEMTEC
www.gemtec.ca

Submitted to:

Novatech Engineering Consultants Limited
240 Michael Cowpland Drive, Suite 200
Ottawa, Ontario
K2M 1P6

Septic Impact Assessment
Zoning By-Law Amendment
5384 Boundary Road
Ottawa, Ontario

March 4, 2026
GEMTEC Project: 100011.122

experience • knowledge • integrity

GEMTEC Consulting Engineers and Scientists Limited
32 Steacie Drive
Ottawa, ON, Canada
K2K 2A9

March 4, 2026 File: 100011.122 – R0

Novatech Engineering Consultants Limited
240 Michael Cowpland Drive, Suite 200
Ottawa, Ontario
K2M 1P6

Attention: Ryan Poulton, MCIP, RPP, Project Manager

Re: Septic Impact Assessment
Zoning By-Law Amendment
5384 Boundary Road
Ottawa, Ontario

Please find enclosed our septic impact assessment report for the above noted project, in accordance with proposal P100011.122 dated March 24, 2025. This report was prepared by Jason KarisAllen (P.Eng.) and reviewed by Andrius Paznekas (P.Geo.). We trust this report provides sufficient information for your present purposes. If you have any questions concerning this report, please do not hesitate to contact the undersigned.

LICENSED PROFESSIONAL ENGINEER
J. J. KARISALLEN
100634006
March 4, 2026
PROVINCE OF ONTARIO

Jason KarisAllen, M.A.Sc., P.Eng.
Water Resources Engineer

Andrius Paznekas, M.Sc., P.Geo.
Hydrogeologist

JKA/AP

PROFESSIONAL GEOSCIENTIST
ANDRIUS PAZNEKAS
PRACTISING MEMBER
3154
March 4, 2026
ONTARIO

Enclosures
N:\Projects\100000\100011.122\05_Technical Work\HydroG\Reporting\100011.122_RPT_Hydrog_2026-03-04_Rev0.docx

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES (APPENDIX B)

LIST OF APPENDICES

1.0 INTRODUCTION

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) was retained by Novatech Engineering Consultants Limited (Novatech) to carry out a septic impact assessment of the property located at 5384 Boundary Road, in Ottawa, Ontario (hereafter referred to as the 'Site') to support a Zoning By-Law Amendment Application. The proposed zoning is Rural Commercial (RC), which generally permits the following uses if constraints do not apply:

- amusement centre;
- amusement park;
- animal care establishment;
- animal hospital;
- artist studio;
- automobile rental establishment;
- automobile dealership;
- automobile service station;
- bar;
- campground;
- car wash;
- click and collect facility;
- detached dwelling;
- dwelling unit;
- gas bar;
- heavy equipment and vehicle sales, rental and servicing;
- hotel;
- kennel;
- parking lot;
- restaurant;
- retail food store, limited to a farmers' market;
- retail store;
- storefront industry; and
- warehouse.

The objectives of this investigation are to:

- Review available background information to assist in characterization of subsurface conditions in the vicinity of the Site;
- Identify and characterize the subsurface conditions on the Site as they relate to the suitability of on-Site septic sewage disposal systems; and
- Assess the potential for impact on the receiving aquifer(s) and any nearby surface water features from on-Site septic disposal systems.

Following a review of available background information and analysis of the results of the field investigation, conclusions and recommendations for the proposed Zoning By-Law Amendment Application are provided.

This report is subject to the *Conditions and Limitations of This Report* provided in Appendix A, which are considered an integral part of this report.

1.1 Technical Pre-consultation

A technical pre-consultation was held between GEMTEC and the City of Ottawa on August 21, 2025; Travis Smith was present as the technical representative of the City. The scope of the workplan was discussed. A summary of the key points discussed was delivered to Travis Smith on August 25, 2025, without corrective feedback:

- The scope of work is limited to a D-5-4 septic impact assessment, as the Site is serviced by the Carlsbad Trickle Feed System, which provides up to 2,700 L/day of drinking water.
- The D-5-4 commercial/industrial nitrate predictive assessment will be used. Alternatively, if system isolation is considered, a follow-up consultation will be requested to discuss the methodology/approach.
- There may be some Site-specific considerations depending on zoning.
    - Zoning RC with Site-specific zoning exemption
    - The uses will be limited by the number of service connections that are permitted to the Carlsbad Springs Trickle Feed System.
- The City does not have any relevant water quality data in the vicinity of the Site.
- It was noted that there is at least one overburden well located at 100 Entrepreneur Drive.

This report was prepared with consideration of the feedback and input provided by the City during the technical pre-consultation and subsequent email correspondence with Novatech.

1.2 Existing Reports

GEMTEC performed a Phase One and Two Environmental Site Assessment (ESA), an Environmental Impact Statement (EIS), and a wetland delineation report in conjunction with the hydrogeological investigation reported on herein, the results of which are presented in the following reports:

- GEMTEC (2025a). *Phase One Environmental Site Assessment, 5384 Boundary Road, Ottawa, Ontario* (Project Number 100011.122). Ottawa, Ontario. June 2, 2025.
- GEMTEC (2025b). *Novatech - Wetland Boundary Assessment, 5384 Boundary Road, Carlsbad Springs, Ontario* (Project Number 100011.122). Ottawa, Ontario. August 20, 2025.

- GEMTEC (2025c). *Environmental Impact Statement, Proposed Zoning By-Law Amendment, 5384 Boundary Road, Ottawa, Ontario* (Project Number 100011.122). Ottawa, Ontario. August 26, 2025.

- GEMTEC (2025d). *Phase Two Environmental Site Assessment, 5384 Boundary Road, Ottawa, Ontario* (Project Number 100011.122). Ottawa, Ontario. October 29, 2025.

This report is prepared from a hydrogeological perspective and is not meant to alter or supersede the existing environmental reports.

2.0 FIELD METHODS

2.1 Boreholes and Monitoring Wells

Five boreholes (labelled BH25-01 through BH25-05) were advanced to depths ranging between 3.05 and 4.75 metres below ground surface (mbgs) on August 18, 2025. Boreholes were advanced by a direct-push drill supplied and operated by Strata Drilling Group under the supervision of GEMTEC technical staff as part of the Phase Two ESA (GEMTEC, 2025d). Borehole locations are presented on Figure B.1, Appendix B.

Monitoring wells (i.e., MW25-02, MW25-03, and MW24-05) were installed in three boreholes for water level monitoring and groundwater quality sampling, as shown on Figure B.1, Appendix B. Wells were constructed with 51-mm diameter, schedule 40, PVC slotted well screens and riser pipes. The annular space of the screened interval was filled with silica filter sand to at least 0.30 m above the well screen and sealed with bentonite to ground surface. The wells were completed with flushmount protective caps, and their risers were sealed with J-plugs. Well construction details are presented in the borehole logs in Appendix D.

2.2 Soil Sampling

Direct push technology was used for soil recovery during drilling. Soils were logged in all boreholes and soil samples were returned to the GEMTEC Ottawa soils lab for detailed characterisation. Descriptions of the subsurface materials encountered in the boreholes are included in Appendix D.

2.3 Water Quality Sampling

Monitoring wells were developed on August 21, 2025, which included removing water from the well equivalent to a minimum of three well volumes or to dry three times. Well development activities were performed using dedicated Waterra® tubing and foot valves.

Subsequent monitoring, well purging, and sampling was conducted on August 22, 2025, using low-flow techniques with an EZYflow peristaltic pump. Physical parameters pH, temperature, EC, DO, and REDOX were monitored and relatively stable before groundwater samples were

collected. Groundwater samples were submitted to Paracel Laboratories Limited in Ottawa for the analysis of nitrate concentrations to support the terrain analysis (results provided in Appendix E).

2.4 Geospatial Surveying

The ground surface elevations at the location of the boreholes (ground surface) and monitoring wells (with elevations from the PVC risers) were determined using a Trimble R10 global positioning system. The coordinates of the boreholes are referenced to NAD83 (CSRS) Epoch 2010, vertical network CGVD28 and are considered to be accurate within the tolerance of the instrument. The locations of the boreholes and monitoring wells advanced on-Site are shown on Figure B.1, Appendix B.

3.0 PROJECT SETTING

3.1 Site Geometry and Location

The Site is in Carlsbad Spring, a rural village in the Osgoode Ward in the east portion of the City of Ottawa, Ontario. The Site is near-rectangular and approximately 1.99 hectares (ha). It is bounded by Boundary Road to the east, a residential and commercial property to the north, and by the South Bear Brook Wetland to the south and west.

3.2 Land Use and Land Cover

The Site is situated within a small commercial area that is surrounded by wetland, forested, and agricultural areas. The existing land use designation from the City of Ottawa is general rural area. It is understood that the Site is currently developed with one residential dwelling, two office buildings, one shop, and nine sea cans used for residential and commercial/industrial purposes. Most of the site is gravel or paved driveway, which is typically regarded as impermeable material.

3.3 Existing Septic System

The current loading of the site and capacity of the existing septic system is not known, However, information about the existing system was provided by Novatech and is included following the nitrate dilution calculations in Appendix F. The following is known about the existing septic system:

- The septic system serves a single-family dwelling;
- The dwelling has 3-bedrooms;
- There is an existing on-site well (no associated well record available, construction details unknown).
    - Septic records indicate an existing dug well, with the proposed septic leaching field having a minimum separation distance of 30 metres.;
- The existing system is a conventional buried absorption trench (Class 4);

- The drainage field is approximately 20 by 8 metres and is located on the north side of the residential dwelling on the Site;
- The septic system design flow is less than 4,500 L/day; and
- The septic system was issued a Certificate of Approval and a Use Permit (Permit #82-286 on September 21, 1982) by the MECP under Section 65 of the Environmental Protection Act, confirming that it was suitably constructed for the proposed use at the time of construction.

3.4 Topography, Drainage, and Water Features

The topography of the Site is relatively flat with elevations ranging from 77 to 78 metres above mean sea level CGVD28 (masl), according to the provincial digital elevation model (MNRF, 2025). No watercourses are mapped on the Site. A provincially significant wetland (South Bear Brook Wetland) is mapped on and around the Site that continues to the west. The boundaries of this wetland were revised through Site investigations performed by GEMTEC (2025b). Shallow drainage from the Site would be anticipated to flow towards the wetland, whereas deeper groundwater units would be anticipated to flow northeast towards the Ottawa River.

3.5 Regional Surficial and Bedrock Geology

The Site is located within the Russell and Prescott Sand Plains physiographic region (Chapman and Putnam, 2007).

Mapped surficial geology from the Ontario Geological Survey (OGS) in the vicinity of the Site consists of medium-to fine-grained, high-permeability sand of deltaic and estuarine origin. South and east of the Site, fine-grained offshore marine deposits are mapped, which may be anticipated to underly the coarser sand deposits (OGS, 2010). Available drift thickness mapping (Gao et al., 2006) indicates that overburden within 100 metres of the Site ranges from approximately 20 to 23 mbgs.

The uppermost bedrock layer underlying the overburden consists of dark grey shale, siltstone and/or limestone of the Carlsbad Formation (Armstrong and Dodge, 2007). Regionally, the bedrock is mapped sloping downward northwest towards the Mer Bleu wetland and Ottawa River (Gao et al., 2006).

Available karst mapping (Brunton & Dodge, 2008) does not indicate any areas of any inferred or potential karstic features within 500 metres of the Site.

3.6 Ontario Ministry of Environment, Conservation and Parks Water Well Records

Public Ministry of Environment, Conservation and Parks (MECP) water well records (MECP, 2021, updated August 2025) reported within 500 m of the Site were reviewed and their

as-reported locations are shown on Figure B.1, Appendix B. Appendix C includes a summary of information included in these well records. As water quantity assessments are beyond the scope of this report, the information from the records considered relevant to the septic impact assessment included:

- A total of 29 records were identified within 500 m of the Site:
  - One was for a domestic only well;
  - Three were for commercial wells;
  - Fifteen were for monitoring wells;
  - Three were decommissioning records for monitoring wells; and
  - Seven well records had no data entered in the wells database.
  - None of the wells were bored or dug.
- All of the commercial and monitoring wells were cased down to at least the bedrock overburden interface.
- Static water level measurements ranged from 0.8 to 9.6 mbgs, with a median value of 2.9 mbgs (n = 5).
- Bedrock depths are reported between 22.3 and 33.2 mbgs, with a median value of 23.5 mbgs (n = 5). This is generally consistent with geological mapping for the area.
- The local water supply aquifers consist of an interface aquifer composed of gravel and sand (potentially glacial till) overlying (likely) fractured bedrock surface and a fractured shale and limestone bedrock aquifer with water-yielding fractures at greater depths.
- All of the supply wells report a thick deposit of clay overlying the (inferred) glacial till.

The low number of well records is symptomatic of the low-density rural environment and the fact that the area is serviced by the Carlsbad Trickle Feed System. The Carlsbad Trickle Feed System is a low-capacity watermain system connected to the City's central distribution system to address widespread well-water quality and quantity problems in the area. Capacity limits and approval of new connections to the system are managed by the City and depend on the pipe characteristics, network configuration, and spatial distribution of demands.

3.7 Designated Areas

The Site is located within the Bear Brook quaternary catchment, within the Lower Ottawa River subwatershed, both of which are under the regulatory authority of the South Nation Conservation Authority.

The Site was not located within a well head protection area or intake protection zone (MECP, 2024b).

The Site is considered a significant groundwater recharge area and a highly vulnerable aquifer, which is consistent with the coarse soils encountered in the boreholes. However, these soils have

been shown to be underlain by a clay layer – so significant deeper recharge is unlikely on the Site.

No Areas of Natural and Scientific Interest (ANSI) were identified within two kilometres of the Site (MNRF, 2022). The nearest ANSI is the Mer Bleu Bog approximately 4 kilometres north, which is reported to be non-sensitive but of provincial significance.

3.8 Environmental Approvals

The Environmental Site Registry database (MECP, 2024a) was reviewed, and there are no active Permits to Take Water (PTTW) within 1.0 km of the Site, the nearest being approximately 1.5 km northeast for golf course irrigation. However, there are several Environmental Activity and Sector Registrations (EASR) and Environmental Compliance Approvals (ECA) reported within 1.0 km associated with commercial/industrial properties along Boundary Road. EASRs for water taking or waste management and ECAs for sewage works are listed in Table 3.1 for reference.

Table 3.1 Environmental Approvals within 1.0 km of the Site (excluding EASR-AIR)

Approval Number	Approval Type	Business Name	Approximate Distance from Site (m)
9233-CN2RN5	ECA: Industrial Sewage Works	RKK Developments Inc.	200
3478-6FDNY7	ECA: Industrial Sewage Works	Krzysztof Jablonski	200
4538-B8EMLT	ECA: Waste Disposal Sites	Taggart Miller Environmental Services Inc	25
4006-8SEPQJ	ECA: Industrial Sewage Works	954192 Ontario Ltd.	475
9716-AJVR63	ECA: Industrial Sewage Works	JNorm Rentals Inc.	600
R-004-3113456350	EASR: Waste Transportation System	Pro-X Excavation Inc.	675
R-009-6110604370	EASR: Water Taking, Construction Dewatering	Taggart Construction Limited	200

3.9 Environmental Site Assessments

The results of the Phase One and Phase Two ESA's are presented under separate covers, in the reports listed in Section 1.2. GEMTEC performed a Phase One ESA for the Site that identified the presence of four areas of potential environmental concern associated with the presence of:

- Historic development of the property with fill of unknown quality;
- Maintenance of landscaping equipment in on-site shop;
- On-site vehicle maintenance; and
- Presence of gasoline Underground Storage Tanks (USTs) located at 5425 Boundary Road.

Accordingly, a Phase Two ESA was completed by GEMTEC to investigate the areas of potential environmental concern. Based on the results of the soil samples and groundwater samples submitted as part of this Phase Two ESA, the following was noted:

- Chromium and Thallium were elevated in groundwater sample from MW25-02.
- Anthracene impacts were noted in the soil in the vicinity of BH25-05.
- Electrical conductivity and sodium adsorption ratio were elevated across the Site due to historical and ongoing salt storage on the Site.
- All soil and groundwater results were considered to comply with applicable standards with the exception of anthracene in soil, which is not anticipated to pose an environmental concern provided the current site use remains unchanged.
- It was reported by the property owner that the on-site well was dug/bored. However, the residence is serviced by municipal water.

4.0 TERRAIN ANALYSIS

4.1 Soils Characterisation

This section presents an overview of the subsurface conditions inferred across the Site, as presented in the environmental boreholes (Appendix D) advanced during the Phase 2 ESA performed by GEMTEC (2025d). The following can be said about the subsurface materials:

- A thin layer of asphalt was noted in the driveway of the residence. At the sampling location, it was approximately 5 cm thick.
- Topsoil would be anticipated on the lawn of the residence and in the forested areas, but was not noted at sampling locations.

- The Site was covered in coarse fill material and sandy glaciomarine deposits. These deposits together are anticipated to be between 1 and 2 metres thick across the Site. These deposits would control infiltration processes at surface.

- Beneath the fill and sand, a thick layer of clay was noted, consistent with the well records review.

- Based on the well records nearby, the thick clay is underlain by (inferred) glacial till atop the bedrock at depth.

4.2 Groundwater Conditions

Water levels were measured in the Site monitoring wells (Figure B.1). Groundwater elevations ranged from 76.0 to 76.1 masl on August 22, 2025. These elevations generally correspond with the upper surface of the clay materials. The differences in the measured groundwater elevations across the Site were small, and provincial mapping suggests a mild topographical high near the center of the Site; these conditions made the available data insufficient to confidently interpret groundwater flow direction(s).

5.0 GROUNDWATER IMPACT ASSESSMENT

The potential risk to groundwater resources on and off the subject site was assessed in accordance with Ministry of Environment Procedure D-5-4: Technical Guideline for Individual On-Site Sewage Systems: Water Quality Impact Risk Assessment and the Ottawa “Hydrogeological and Terrain Analysis Guidelines” dated March 2021. To evaluate the groundwater impacts, the Predictive Assessment (industrial/commercial development) outlined in MECP Procedure D-5-4 was followed to determine the maximum allowable septic flow for the site and number of septic users.

Considering that there is an on-Site dug well, isolation is not being considered as part of this investigation. Similarly, commenting on the suitability of the existing septic system to accommodate the current uses is beyond the scope of this report.

5.1 Hydrogeological Sensitivity

The hydrogeological sensitivity of the Site was evaluated. Areas of thin soil cover, fractured bedrock exposed at ground surface, and karst environments contribute to the hydrogeological sensitivity of a site. Where present, these conditions may not allow for sufficient attenuative processes for on-site septic systems, resulting in negative impacts to the receiving aquifer. Areas of thin soil cover, generally taken to be less than two metres, were not encountered on the Site (refer to Appendix D), and geological mapping reflects thick deposits of low-permeability overburden. As such, the Site is not considered hydrogeologically sensitive.

5.2 Overburden Nitrate Concentrations

Groundwater samples were collected during the Phase 2 ESA (GEMTEC, 2025d) from the three on-Site monitoring wells screened within the overburden. Groundwater samples were submitted to a CALA-accredited laboratory for analysis of nitrate. All of the reported nitrate concentrations were below the detection limit of 0.1 mg/L, and the laboratory Certificates of Analyses are provided in Appendix D. Accordingly, no indication of septic impacts were identified from on-Site or adjacent septic systems.

5.3 Annual Dilution Potential

The maximum allowable concentration of nitrate in the groundwater at the boundaries of a subject property is 10 mg/L, as per the MECP Procedure D-5-4. The nitrate concentration at the boundaries was estimated adopting the information in Table 5.1.

Table 5.1 – Nitrate Dilution Assumptions

Parameters	Site Descriptions
Site Area (m^2)	19,342 m^2
Infiltration Area (m^2)	10, 216 m^2
Impermeable Area (m^2)	9,126 m^2 *Buildings, gravel parking and driveways (refer to Novatech's Surface Types Figure in Appendix F)*
Water Holding Capacity (mm)	Urban lawn (50%) = 75 mm Mature Forest (50%) = 300 mm *Sandy Loam is a conservative representation of the sand and gravel identified on site.*
Annual Water Surplus[(1)] (mm/year)	Sandy Loam (urban lawn) = 380 Sandy Loam (mature forest) = 299
Topography Factor (TF)	0.20 *'Rolling lands' with slope between 2.8m to 3.8m/km considered to be representative of topography*
Soil Factor (SF)	0.35 *Open Sandy Loam*
Cover Factor (CF)	0.15 *Rural Lawns and Woodland 0.2*
Site Average Infiltration Factor[(2)] (TF + SF + CF)	0.70

1. Annual water surplus based on Environment Canada Water Surplus Datasheets (Appendix E) for Ottawa International Airport (1939-2020) weather station.
2. Infiltration factors based on information provided in MOEE, 1995.
3. Conservative assumptions regarding the soil compositions were made in lieu of hydraulic testing and grain-size data.

As presented in Table 6.1 above, assumptions for the nitrate dilution calculations include:

- Water surplus of 340 mm/year and water holding capacity of 75 or 300 mm
  - The available infiltration area was estimated as 50% mature forest and 50% urban lawns.
  - Soil samples indicated that the uppermost soil types across the site consisted of sand and gravel, which was conservatively considered as sandy loam.
- Infiltration area of 10,216 m^2
  - Excludes the hard surfaced areas including driveway, gravel parking areas and buildings.
- Driveway and building footprint of approximately 9,216 m^2.
- Cover factor assumes that half of the permeable property areas are tree covered, and the other half are grassed, consistent with the water holding capacity assumption.

The calculated available infiltration for the Site is 6,652 L/day.

5.4 Maximum Allowable Septic Flow

The predictive assessment is conducted using a mass balance calculation to determine the sewage loading for nitrate at the property boundary:

$$C_{Nitrate} = \frac{Mass}{Volume} = \frac{Annual\ Nitrate\ Loading(grams/year)}{Annual\ Dilution\ Volume(cubic\ metres/year)} = \frac{grams}{cubic\ metre} = \frac{mg}{L}$$

The nitrate dilution calculations are provided in Appendix F, and the results are summarized in Table 5.2 below.

Table 5.2 Maximum Allowable Septic Flow and Number of Users

Parameters	Treatment System	
	Conventional	Tertiary
Maximum Allowable Septic Flow (L/day)	2,217	6,652
Maximum Number of Users	30	89

Note: 1. An advanced septic system capable of reducing nitrate by 50%, relative to a conventional septic system. Theses systems should be NSF or BNQ certified.

The nitrate concentration in the groundwater at the boundaries of the Site is anticipated to remain below 10 mg/L for total septic flows under 2,217 L/day for conventional systems and 6,652 L/day for tertiary systems. For the purposes of re-zoning, the septic impact assessment demonstrates that the Site can support rural commercial usage using conventional septic systems with limits on the maximum septic flow and associated number of users.

It is noted that the existing conventional septic system design flow is 4,500 L/day, which exceeds the maximum allowable septic flow. However, when considering the number of users (1 x

residential dwelling and 4 employees), the existing usage is within the maximum allowable septic flows for conventional systems. This is based on 1,000 L/day for the residential dwelling and 300 L/day for four employees (75 L/person/day). The site can support up to 16 employees (1,200 L/day), plus the residential dwelling (1,000 L/day) while maintaining a total septic flow of less than 2,217 L/day. Thus, the Procedure D-5-4 nitrate predictive assessment suggests that the existing usage meets the 10 mg/L limit at the property boundary.

6.0 CONCLUSIONS

Based on the results of the hydrogeological investigation, the following conclusions and professional opinions are provided:

6.1 Groundwater Impact Assessment

- Overburden thicknesses are sufficient to meet the minimum overburden thickness required for on-Site septic systems. Shallow groundwater depths during wet years may warrant a partially or fully-raised septic leaching bed. The historical performance of the existing leaching bed, if known, can be leveraged to inform the design of future systems.
- There is a shallow dug well on the Site, suggesting that the shallow coarse unit operates as an aquifer unit usable in some capacity. No signs of nitrates impacts were identified in the overburden wells due to the existing system or adjacent properties on the sand overburden unit that would be receiving septic discharge.
- The more common aquifers reported in this area are at the bedrock interface (glacial till) or deeper in the bedrock. These water yielding units are not anticipated to be susceptible to septic loading from the Site, as there is a thick deposit of clay noted beneath the sands in the area. The Site is serviced by the Carlsbad Trickle Feed System, so the on-Site dug well is not anticipated to be used as a drinking water supply in the future.
    - If the dug well is not being used for water supply purposes, it is recommended that the well be decommissioning by a licensed well technician.
- The MECP Procedure D-5-4 nitrate dilution Predictive assessment for commercial and industrial properties demonstrates that the site can accommodate septic flows of up to 2,217 L/day (30 employees at 75 L/day) and 6,652 L/day (89 employees at 75 L/day) based on conventional and tertiary septic treatment systems, respectively.
    - Calculations were based on the current site conditions (i.e., hard surface vs permeable surface cover), which would be a reasonable estimate of future commercial uses (i.e., roughly 47% impermeable surface area). Further decreases in permeable surface area would be anticipated to reduce the available infiltration of the site.
    - Calculations do no account for the 1,000 L/day of loading assumed for the existing residential septic system.

- Calculations assume that there are no baseline nitrates in the receiving system, consistent with the results of the field sampling.

6.2 Rezoning

- The results of the septic impact assessment suggest that the Site can accommodate septic loading above the residential uses to support a commercial development under the applicable MECP Procedure D-5-4 requirements, and the City of Ottawa Hydrogeological Guidelines dated March 2021.
- The water quantity limit of the trickle feed system is more likely to constrain the kind and/or magnitude of the development that the Site can sustain before the septic loading is constraining.
- The capacity of the trickle feed system is estimated to be 2,700 L/day and may limit the Site's ability to accommodate some of the heavier water uses (e.g., restaurants) typically permitted under RC zoning.

7.0 RECOMMENDATIONS

The following provides recommendations regarding new septic systems, if applicable:

7.1 Septic System Construction Recommendations

- All septic systems shall maintain a minimum setback distance of 15 m from any surface water feature or drilled well and 30 m from any dug or bored well.
- A Site-specific investigation should be conducted for the design of any new septic system.
- Septic systems are to be installed by a licensed septic system contractor ensuring that all applicable regulations are met and required permits are obtained.
- If the property owner(s) choose to install tertiary treatment septic systems, it is recommended that they enter a maintenance agreement with authorized agents of the system manufacturer for the service life of the system.

7.2 Septic Ownership Recommendations

- It is recommended that the property owners construct, maintain, and check their on-Site septic system in accordance with the Ontario Building Code.

8.0 REFERENCES

Armstrong, D.K., & Dodge, J.E.P. (2007). *Paleozoic geology of southern Ontario*. Ontario Geological Survey, Miscellaneous Release--Data 219. Ontario, Canada.

Brunton, F.R., & Dodge, J.E.P. (2008). *Karst of southern Ontario and Manitoulin Island*. Ontario Geological Survey, Groundwater Resources Study 5. ISBN 978-1-4249-8376-6 (ZIP FILE); ISBN 978-1- 4249-8375-9 (DVD). Ontario, Canada.

Gao, C., Shirota, J., Kelly, R.I., Brunton, F.R. & van Haaften, S. (2006). *Bedrock topography and overburden thickness mapping, southern Ontario.* Ontario Geological Survey, Miscellaneous Release—Data 207. ISBN 1-4249-2550-9. Ontario, Canada.

GEMTEC Consulting Engineers and Scientists (GEMTEC). (October 29, 2025). *Phase Two Environmental Site Assessment, 5384 Boundary Road, Ottawa, Ontario* (Project Number 100011.122). Ottawa, Ontario.

GEMTEC Consulting Engineers and Scientists (GEMTEC). (August 26, 2025). *Environmental Impact Statement, Proposed Zoning By-Law Amendment, 5384 Boundary Road, Ottawa, Ontario* (Project Number 100011.122). Ottawa, Ontario.

GEMTEC Consulting Engineers and Scientists (GEMTEC). (August 20, 2025). *Novatech - Wetland Boundary Assessment, 5384 Boundary Road, Carlsbad Springs, Ontario* (Project Number 100011.122). Ottawa, Ontario.

GEMTEC Consulting Engineers and Scientists (GEMTEC). (June 2, 2025). *Phase One Environmental Site Assessment, 5384 Boundary Road, Ottawa, Ontario* (Project Number 100011.122). Ottawa, Ontario.

Ontario Geological Survey (OGS). (2010). *Surficial geology of Southern Ontario*. Ontario Geological Survey, Miscellaneous Release-Data 128-Revision 1. Ontario, Canada.

Ontario Ministry of Environmental, Conservation and Parks (MECP). (2024a). *Access Environment: Environmental Site registry* [interactive digital map]. https://www.lioapplications.lrc.gov.on .ca/Access_Environment/index.html?viewer=Access_Environment.AE&locale=en-CA

Ontario Ministry of Environmental, Conservation and Parks (MECP). (2024b). *Source Protection Information Atlas* [interactive digital map]. https://www.lioapplications.lrc.gov.on.ca/Source WaterProtection/index.html?viewer=SourceWaterProtection.SWPViewer&locale=en-CA

Ontario Ministry of Environmental, Conservation and Parks (MECP). (1996). *Procedure D-5-5, Technical Guideline for Private Wells: Water Supply Assessment*. Ontario, Canada.

Ontario Ministry of Environmental, Conservation and Parks (MECP). (1996). *Procedure D-5-4, Technical Guideline for Individual On-Site Sewage Systems: Water Quality Impact Risk Assessment*. Ontario, Canada.

Ontario Ministry of Municipal Affairs and Housing (MMAH). (2022). *2012 Building Code Compendium: January 1, 2022 update (Containing O. Reg. 867/21)*. Ontario, Canada.

Ontario Ministry of Natural Resources and Forestry (MNRF). (2025). *Provincial Digital Elevation Model (PDEM)*. https://geohub.lio.gov.on.ca/maps/882a9059ec7c4881abbdb6afa0ae73e6/explore?location=48.523544%2C-84.540620%2C6

APPENDIX A

Conditions and Limitations of this Report

CONDITIONS AND LIMITATIONS OF THIS REPORT

1. **Standard of Care:** GEMTEC has prepared this report in a manner consistent with generally accepted engineering or environmental consulting practice in the jurisdiction in which the services are provided at the time of the report. No other warranty, expressed or implied is made.
2. **Copyright:** The contents of this report are subject to copyright owned by GEMTEC, save to the extent that copyright has been legally assigned by us to another party or is used by GEMTEC under license. To the extent that GEMTEC owns the copyright in this report, it may not be copied without our prior written agreement for any purpose other than the purpose indicated in this report. The methodology (if any) contained in this report is provided to the Client in confidence and must not be disclosed or copied to third parties without the prior written agreement of GEMTEC. Disclosure of that information may constitute an actionable breach of confidence or may otherwise prejudice our commercial interests.
3. **Complete Report:** This report is of a summary nature and is not intended to stand alone without reference to the instructions given to GEMTEC by the Client, communications between GEMTEC and the Client and to any other reports prepared by GEMTEC for the Client relative to the specific site described in the report. In order to properly understand the suggestions, recommendations and opinions expressed in this report, reference must be made to the whole of the report. GEMTEC cannot be responsible for use of portions of the report without reference to the entire report.
4. **Basis of Report:** This Report has been prepared for the specific site, development, design objectives and purposes that were described to GEMTEC by the Client. The factual data, interpretations and recommendations pertain to a specific project as described in this report and are not applicable to any other project or site location. The applicability and reliability of any of the findings, recommendations, suggestions, or opinions expressed in the document, subject to the limitations provided herein, are only valid to the extent that this report expressly addresses the proposed development, design objectives and purposes. Any change of site conditions, purpose or development plans may alter the validity of the report and GEMTEC cannot be responsible for use of this report, or portions thereof, unless GEMTEC is requested to review any changes and, if necessary, revise the report.
5. **Time Dependence:** If the proposed project is not undertaken by the Client within 18 months following the issuance of this report, or within the timeframe understood by GEMTEC to be contemplated by the Client, the guidance and recommendations within the report should not be considered valid unless reviewed and amended or validated by GEMTEC in writing.
6. **Use of This Report:** The information, recommendations and opinions expressed in this report are for the sole benefit of the Client. No other party may use or rely on this report or any portion thereof without GEMTEC's express written consent. If the report was prepared to be included for a specific permit application process, then upon the reasonable request of the client, GEMTEC may authorize in writing the use of this report by the regulatory agency as an Approved User for the specific and identified purpose of the applicable permit review process.

   Contractors bidding on, or undertaking the work, should rely on their own investigations, as well as their own interpretations of the factual data presented in the report, as to how subsurface conditions may affect their work, including but not limited to proposed construction techniques, schedule, safety and equipment capabilities.
7. **No Legal Representations:** GEMTEC makes no representations whatsoever concerning the legal significance of its findings, or as to other legal matters touched on in this report, including but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and change. Such interpretations and regulatory changes should be reviewed with legal counsel.
8. **Decrease in Property Value:** GEMTEC shall not be responsible for any decrease, real or perceived, of the property or site's value or failure to complete a transaction, as a consequence of the information contained in this report.
9. **Reliance on Provided Information:** The evaluation and conclusions contained in this report have been prepared on the basis of conditions in evidence at the time of site inspections and on the basis of information provided to us. We have relied in good faith upon representations. information and instructions provided by the Client and others concerning the site. Accordingly, we cannot accept responsibility for any deficiency, misstatement or inaccuracy contained in this report as a result of misstatements, omissions,

misrepresentations. or fraudulent acts of the Client or other persons providing information relied on by us. We are entitled to rely on such representations, information and instructions and are not required to carry out investigations to determine the truth or accuracy of such representations, information and instructions.

10. **Investigation Limitations:** Site investigation programs are a professional estimate of the scope of investigation required to provide a general profile of subsurface conditions but even a comprehensive investigation, sampling and testing program may fail to detect all or certain subsurface conditions.

    The data derived from the site investigation program and subsequent laboratory testing are interpreted by trained personnel and extrapolated across the site to form an inferred geological representation and an engineering opinion is rendered about overall subsurface conditions and their likely behaviour with regard to the proposed development. Conditions between and beyond the borehole/test hole locations may differ from those encountered at the borehole/test hole locations and the actual conditions at the site might differ from those inferred to exist, since no subsurface exploration program, no matter how comprehensive, can reveal all subsurface details and anomalies. Accordingly, GEMTEC does not warrant or guarantee the exactness of of the subsurface descriptions.

    Soil and groundwater conditions shown in the factual data and described in the report are the observed conditions at the time of their determination or measurement. Unless otherwise noted, those conditions form the basis of the recommendations in the report. Groundwater conditions may vary between and beyond reported locations and can be affected by annual, seasonal and meteorological conditions. The condition of the soil, rock and groundwater may be significantly altered by construction activities (traffic, excavation, groundwater level lowering, pile driving, blasting, etc.) on the site or on adjacent sites. Excavation may expose the soils to changes due to wetting, drying or frost. Unless otherwise indicated the soil must be protected from these changes during construction.

    In addition, fill of variable physical and chemical composition can be present over portions of the site or on adjacent properties. The professional services retained for this project include only the geotechnical aspects of the subsurface conditions at the site, unless otherwise specifically stated and identified in the report. The presence or implication(s) of possible surface and/or subsurface contamination resulting from previous activities or uses of the site and/or resulting from the introduction onto the site of materials from off-site sources are outside the terms of reference for this project and have not been investigated or addressed.

11. **Sample Disposal:** GEMTEC will dispose of all uncontaminated soil and/or rock samples 60 days following issue of this report or, upon written request of the Client, will store uncontaminated samples and materials at the Client's expense. In the event that actual contaminated soils, fill materials or groundwater are encountered or are inferred to be present, all contaminated samples shall remain the property and responsibility of the Client for proper disposal.

12. **Follow-Up and Construction Services:** All details of the design were not known at the time of submission of GEMTEC's report. GEMTEC should be retained to review the final design, project plans and documents prior to construction, to confirm that they are consistent with the intent of GEMTEC's report.

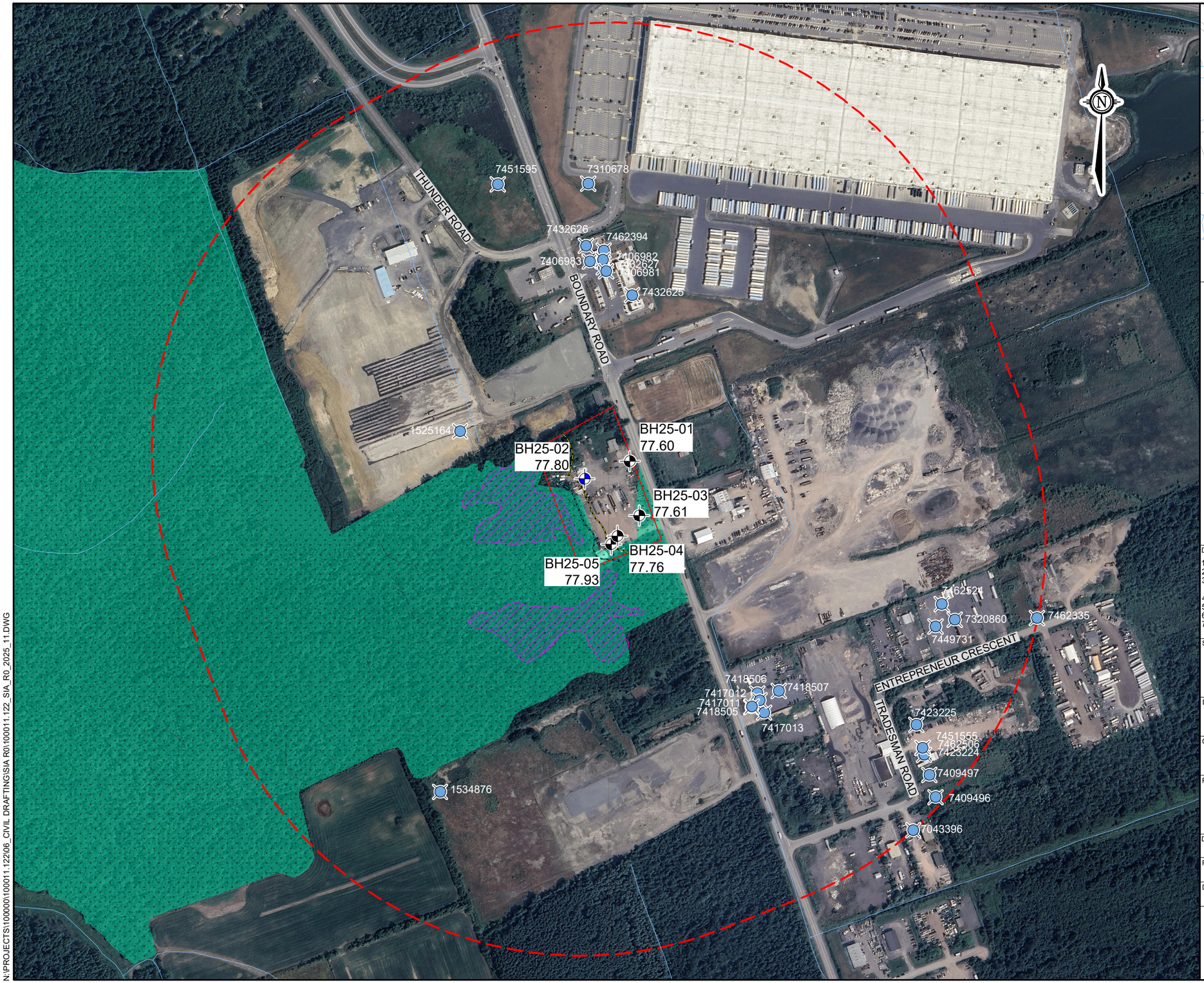
    During construction, GEMTEC should be retained to perform sufficient and timely observations of encountered conditions to confirm and document that the subsurface conditions do not materially differ from those interpreted conditions considered in the preparation of GEMTEC's report and to confirm and document that construction activities do not adversely affect the suggestions, recommendations and opinions contained in GEMTEC's report. Adequate field review, observation and testing during construction are necessary for GEMTEC to be able to provide letters of assurance, in accordance with the requirements of many regulatory authorities. In cases where this recommendation is not followed, GEMTEC's responsibility is limited to interpreting accurately the information encountered at the borehole locations, at the time of their initial determination or measurement during the preparation of the Report.

13. **Changed Conditions:** Where conditions encountered at the site differ significantly from those anticipated in this report, either due to natural variability of subsurface conditions or construction activities, it is a condition of this report that GEMTEC be notified of any changes and be provided with an opportunity to review or revise the recommendations within this report. Recognition of changed soil and rock conditions requires experience and it is recommended that GEMTEC be employed to visit the site with sufficient frequency to detect if conditions have changed significantly.

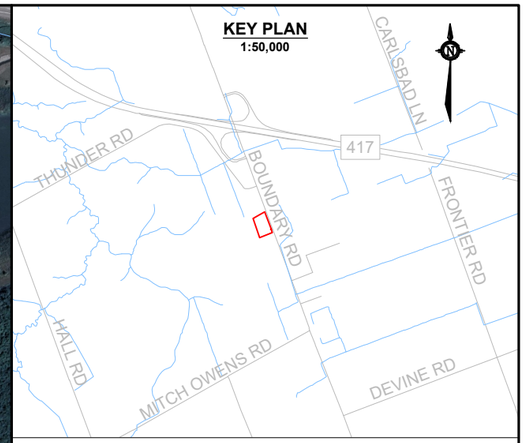
14. **Drainage:** Drainage of subsurface water is commonly required either for temporary or permanent installations for the project. Improper design or construction of drainage or dewatering can have serious consequences. GEMTEC takes no responsibility for the effects of drainage unless specifically involved in the detailed design and construction monitoring of the system.

APPENDIX B

Site Map



KEY PLAN
1:50,000



LEGEND

- BH # — BOREHOLE ID
- XX.XX — GROUND SURFACE ELEVATION, IN METRES GEODETIC DATUM
- BOREHOLE LOCATION
- MONITORING WELL LOCATION
- MECP PUBLIC WELL RECORDS
- SITE BOUNDARY
- 500 m RADIUS AROUND SITE BOUNDARY
- 15 m SETBACK (GEMTEC, 2025)
- 30 m SETBACK (GEMTEC, 2025)
- WATERBODY
- WETLAND BOUNDARY (GEMTEC, 2025)
- PROVINCIALLY SIGNIFICANT WETLAND (NHIC)

DATA SOURCES AND REFERENCES

1. Coordinate system: NAD83 (CSRS), UTM ZONE 18N
2. Distances, elevations, and coordinates are shown in metres unless denoted otherwise
3. This drawing is a schematic representation and should not be taken as a substitute for a legal survey.
4. Image @2025 Google Maps, CNES / Airbus, First Base Solutions, Maxar Technologies
5. Contains information licensed under the Open Government Licence – Ontario
6. Geographic dataset source: Ontario GeoHub
7. Ground surface contour elevation derived from Provincial Digital Elevation Model, CGVD28

SCALE
1:5,000

0 100 200 300m

DRAWING
SITE PLAN

CLIENT
NOVATECH ENGINEERS, PLANNERS & LANDSCAPE ARCHITECTS

PROJECT
SEPTIC IMPACT ASSESSMENT
ZONING BY-LAW AMENDMENT
5384 BOUNDARY ROAD
OTTAWA, ONTARIO

DRAWN BY	CHECKED BY
SL	JKA
PROJECT NO. 100011.122	REVISION NO. 0
DATE NOVEMBER 2025	FIGURE NO. **FIGURE B.1**

GEMTEC
Consulting Engineers and Scientists
32 Steacie Drive
Ottawa, ON, K2K 2A9
Tel: (613) 836-1422
www.gemtec.ca
ottawa@gemtec.ca

N:\PROJECTS\100000\100011.122\06_CIVIL DRAFTING\SIA R0\100011.122_SIA_R0_2025_11.DWG

APPENDIX C

MECP Water Well Records Summary Table

MECP Online Well Database Summary (500-m Radius)

ID	Township	Completion Date (yyyy-mm-dd)	Water Use	Well Depth (m)	Bedrock Depth (m)	Minimum Casing Depth (m)	Static Water Levels (m)	Water Types and Bearing Zone Depths (ft)	Stratigraphic Layers (ft)
1525164	GLOUCESTER TOWNSHIP OF 09 001	1990-05-03	CO	30.5	23.5	23.5	1.8	SU 0095	YLLW SAND LOAM LOOS 0002 BLUE CLAY DNSE 0070 GREY TILL PCKD 0077 GREY LMSN LYRD 0100
1534876	GLOUCESTER TOWNSHIP OF 09 001	2004-05-27	DO	33.5	33.2	33.2	0.8	SA 0110	BRWN SAND LOAM CLAY 0005 GREY CLAY 0015 BLUE CLAY 0095 GREY HPAN GRVL 0109 GREY ROCK 0110
7043396	CUMBERLAND TOWNSHIP 11 002	2007-04-26	CO	32.4	32.0	31.5	2.9	SU 0103	BRWN CLAY 0003 RED CLAY 0012 GREY CLAY 0099 GREY GRVL 0105 GREY SHLE 0106
7310678	CUMBERLAND TOWNSHIP CON 11	2018-03-23	MO	61.0	22.3	25.0	3.8	UT 0069 UT 0171	BRWN FILL CLAY STNS 0006 BRWN CLAY SILT HARD 0013 GREY CLAY SOFT 0069 GREY GRVL SILT SAND 0073 GREY SHLE LYRD 0200
7320860	CUMBERLAND TOWNSHIP	2018-10-05	DO CO	28.9	22.6	23.1	9.6	UT 0089	BRWN CLAY SILT STNS 0012 GREY CLAY SILT SOFT 0070 GREY GRVL SAND PCKD 0074 GREY SHLE 0095
7406981	CUMBERLAND TOWNSHIP	2021-11-09	MO	4.0		0.9			BRWN SAND FIll 0002 BRWN CLAY SILT 0004 GREY SILT CLAY 0006 GREY SILT CLAY 0013
7406982	CUMBERLAND TOWNSHIP	2021-11-09	MO	4.0		0.9			BRWN SAND FIll 0002 BRWN CLAY SILT 0004 GREY SILT CLAY 0013
7406983	CUMBERLAND TOWNSHIP	2021-11-09	MO	4.0		0.9			BRWN SAND FIll 0002 BRWN CLAY SILT 0004 GREY SILT CLAY 0013
7409496	CUMBERLAND TOWNSHIP CON 11 024	2021-12-14	MO	4.6		1.5			BRWN SAND FIll 0002 BRWN CLAY SILT 0005 GREY SILT CLAY 0015
7409497	CUMBERLAND TOWNSHIP CON 11 023	2021-12-14	MO	4.6		1.5			BRWN SAND GRVL 0003 GREY CLAY 0015
7409499	CUMBERLAND TOWNSHIP CON 11 023	2021-12-14	MO	4.6		1.5			BRWN SAND GRVL 0003 GREY CLAY 0015
7417011	CUMBERLAND TOWNSHIP CON 11 023	2022-04-18	MO	3.0		0.8			BRWN SAND CLAY 0010
7417012	CUMBERLAND TOWNSHIP CON 11 023	2022-04-18	MO	3.0		0.8			BRWN SAND CLAY 0010

AC = Cooling and A/C
CO = Commercial
DE = Dewatering
DO = Domestic
IN = Industrial
IR = Irrigation
MN = Municipal
MO = Monitoring
MT = Monitoring and Test Hole
NU = Not Used
OT = Other
PS = Public
ST = Livestock
TH = Test Hole

MECP Online Well Database Summary (500-m Radius)

ID	Township	Completion Date (yyyy-mm-dd)	Water Use	Well Depth (m)	Bedrock Depth (m)	Minimum Casing Depth (m)	Static Water Levels (m)	Water Types and Bearing Zone Depths (ft)	Stratigraphic Layers (ft)
7417013	CUMBERLAND TOWNSHIP CON 11 023	2022-04-19	MO	4.6		1.5			GREY FILL 0012 GREY CLAY 0015
7418505	CUMBERLAND TOWNSHIP CON 11 023	2022-05-05	MO	3.0		0.8			BRWN CLAY 0010
7418506	CUMBERLAND TOWNSHIP CON 11 023	2022-05-05	MO	3.0		0.8			BRWN CLAY 0010
7418507	CUMBERLAND TOWNSHIP CON 11 023	2022-05-05	MO	3.0		0.8			BRWN CLAY 0010
7423224	CUMBERLAND TOWNSHIP	2022-05-15	MO	4.6		1.5			BRWN SOIL 0001 BRWN SAND SILT 0008 GREY CLAY SILT 0015
7423225	CUMBERLAND TOWNSHIP	2022-05-15	MO	4.6		1.5			BRWN SOIL 0001 BRWN SAND SILT 0008 GREY CLAY SILT 0015
7432625	CUMBERLAND TOWNSHIP CON 11 022	2022-09-01	NU						
7432626	CUMBERLAND TOWNSHIP CON 11 022	2022-09-01	NU						
7432627	CUMBERLAND TOWNSHIP CON 11 022	2022-09-01	NU						
7449731	CUMBERLAND TOWNSHIP	2023-03-13							
7451555	CUMBERLAND TOWNSHIP	2022-05-04							
7451595	CUMBERLAND TOWNSHIP	2023-03-02							
7462524	CUMBERLAND TOWNSHIP CON 11 023	2023-08-23							
7462506	CUMBERLAND TOWNSHIP CON 11 023	2023-07-13							
7462335	CUMBERLAND TOWNSHIP CON 11 023	2023-09-14							
7462394	CUMBERLAND TOWNSHIP CON 11 021	2023-07-19							

AC = Cooling and A/C
CO = Commercial
DE = Dewatering
DO = Domestic
IN = Industrial
IR = Irrigation
MN = Municipal
MO = Monitoring
MT = Monitoring and Test Hole
NU = Not Used
OT = Other
PS = Public
ST = Livestock
TH = Test Hole

APPENDIX D

Record of Borehole Logs
(GEMTEC, October 29, 2025)

RECORD OF BOREHOLE 25-01

CLIENT: NOVATECH Engineers, Planners & Landscape Architects
PROJECT: 5384 Boundary Road
JOB#: 100011.122
LOCATION: See Borehole Location Plan, Figure A.2

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Aug 18 2025

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	SOIL PROFILE: STRATA PLOT	SOIL PROFILE: ELEV. / DEPTH (m)	SAMPLE DATA: NUMBER	SAMPLE DATA: TYPE	SAMPLE DATA: RECOVERY (mm)	SAMPLE DATA: BLOWS/0.3m	SAMPLE DATA: LABORATORY ANALYSES	COMBUSTIBLE VAPOUR CONCENTRATION (ppm)	ODOUR	TPH (mg/kg)	MONITORING WELL INSTALLATION AND NOTES
		Ground Surface		77.60									
0		Black/brown sand, some gravel		76.84	1		455		Metals, ORPs, PHCs, BTEX, PAHs	HEX: 0; IBL: 42			
1		Brown sand		0.76 / 76.08	2		405			HEX: 20; IBL: 551			
		Brown sand, some clay		1.52 / 75.90	3A		180			HEX: 30; IBL: 139			Native backfill
2		Grey CLAY		1.70	3B		585			HEX: 25; IBL: 96			
					4		760			HEX: 25; IBL: 62			
3		End of Borehole		74.55 / 3.05									

GEMTEC
Consulting Engineers and Scientists

LOGGED: JG
CHECKED: NS

ENV - BOREHOLE LOG 100011.122_ESA_TWO_2025_08.GPJ GEMTEC 2018.GDT 29/10/25

RECORD OF BOREHOLE 25-02

CLIENT: NOVATECH Engineers, Planners & Landscape Architects
PROJECT: 5384 Boundary Road
JOB#: 100011.122
LOCATION: See Borehole Location Plan, Figure A.2

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Aug 18 2025

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLE DATA: NUMBER	TYPE	RECOVERY (mm)	BLOWS/0.3m	LABORATORY ANALYSES	COMBUSTIBLE VAPOUR CONCENTRATION (ppm)	ODOUR	TPH (mg/kg)	MONITORING WELL INSTALLATION AND NOTES
		Ground Surface		77.80									
0		Asphalt		77.75 / 0.05									
		Brown/grey sand, some gravel, trace bricks			1		510			HEX: 35; IBL: 416			Bentonite Seal
				77.04									
1		Brown sand		0.76	2		355		Metals, ORPs, PHCs, BTEX, PAHs	HEX: 35; IBL: >2000			
				76.28									
		Brown sand, some grey clay, trace gravel		1.52	3A		255			HEX: 25; IBL: 763			▽
				76.02									
2		Grey clay		1.78	3B		510			HEX: 20; IBL: 1639			
					4		760		Metals, PHCs, VOCs, PAHs	HEX: 15; IBL: >2000			Filter Sand
3					5		760			HEX: 20; IBL: 437			
				73.99									
		Grey clay, some sand, trace silt		3.81	6		760			HEX: 10; IBL: 143			Filter Sand
4				73.23									
		End of Borehole		4.57									

GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEVATION (m)
Aug. 21/25	1.72 ▽	76.08

GEMTEC
Consulting Engineers and Scientists

LOGGED: JG
CHECKED: NS

ENV - BOREHOLE LOG 100011.122_ESA_TWO_2025_08.GPJ GEMTEC 2018.GDT 29/10/25

RECORD OF BOREHOLE 25-03

CLIENT: NOVATECH Engineers, Planners & Landscape Architects
PROJECT: 5384 Boundary Road
JOB#: 100011.122
LOCATION: See Borehole Location Plan, Figure A.2

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Aug 18 2025

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLE DATA: NUMBER	TYPE	RECOVERY (mm)	BLOWS/0.3m	LABORATORY ANALYSES	COMBUSTIBLE VAPOUR CONCENTRATION (ppm)	ODOUR	TPH (mg/kg)	MONITORING WELL INSTALLATION AND NOTES
		Ground Surface		77.61									
0		Brown sand and gravel		76.85	1		100			HEX: 105; IBL: 4			Flush Mount; Bentonite Seal
1		Brown sand		0.76 / 76.09	2		760		Metals, ORPs, PHCs, BTEX, PAHs + duplicate	HEX: 55; IBL: 90			
		Brown sand and grey/red clay		1.52 / 75.88	3A		205		Metals, PHCs, VOCs, PAHs	HEX: 35; IBL: 167			
2		Grey/red clay, trace sand		1.73 / 75.32	3B		560			HEX: 25; IBL: 62			
		Grey clay		2.29	4		760			HEX: 25; IBL: 48			Filter Sand
3					5		760			HEX: 20; IBL: 193			
4					6		760			HEX: 20; IBL: 63			Filter Sand
		Bottom of Borehole		73.04 / 4.57									

GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEVATION (m)
Aug. 21/25	1.61 ▽	76.00

GEMTEC
Consulting Engineers and Scientists

LOGGED: JG
CHECKED: NS

ENV - BOREHOLE LOG 100011.122_ESA_TWO_2025_08.GPJ GEMTEC 2018.GDT 29/10/25

RECORD OF BOREHOLE 25-04

CLIENT: NOVATECH Engineers, Planners & Landscape Architects
PROJECT: 5384 Boundary Road
JOB#: 100011.122
LOCATION: See Borehole Location Plan, Figure A.2

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Aug 18 2025

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLE DATA: NUMBER	TYPE	RECOVERY (mm)	BLOWS/0.3m	LABORATORY ANALYSES	COMBUSTIBLE VAPOUR CONCENTRATION (ppm)	ODOUR	TPH (mg/kg)	MONITORING WELL INSTALLATION AND NOTES
		Ground Surface		77.76									
0		Grey gravel, some sand, trace clay		77.28	1A		205			HEX: 25; IBL: 2			
		Grey gravel, trace sand, trace clay, trace asphalt		0.48 / 77.00	1B		230			HEX: 25; IBL: 98			
1		Brown sand		0.76	2		760		Metals, ORPs, PHCs, BTEX, PAHs	HEX: 10; IBL: 123			
		Brown sand, trace clay		76.24 / 1.52 / 75.98	3A		255			HEX: 15; IBL: 18			
2		Grey clay		1.78	3B		510		PHCs, BTEX	HEX: 20; IBL: 260			Native backfill
					4		760			HEX: 10; IBL: 230			
3					5		760			HEX: 25; IBL: 40			
				73.95									
4		Grey clay, trace sand, trace silt		3.81	6		760			HEX: 15; IBL: 23			
				73.19									
		End of Borehole		4.57									

GEMTEC
Consulting Engineers and Scientists

LOGGED: JG
CHECKED: NS

ENV - BOREHOLE LOG 100011.122_ESA_TWO_2025_08.GPJ GEMTEC 2018.GDT 29/10/25

RECORD OF BOREHOLE 25-05

CLIENT: NOVATECH Engineers, Planners & Landscape Architects
PROJECT: 5384 Boundary Road
JOB#: 100011.122
LOCATION: See Borehole Location Plan, Figure A.2

SHEET: 1 OF 1
DATUM: CGVD28
BORING DATE: Aug 18 2025

DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE: DESCRIPTION	STRATA PLOT	ELEV. / DEPTH (m)	SAMPLE DATA: NUMBER	TYPE	RECOVERY (mm)	BLOWS/0.3m	LABORATORY ANALYSES	COMBUSTIBLE VAPOUR CONCENTRATION (ppm)	ODOUR	TPH (mg/kg)	MONITORING WELL INSTALLATION AND NOTES
		Ground Surface		77.93									
0		Grey gravel and brown/grey sand		77.17	1		510		Metals, ORPs, PHCs, BTEX, PAHs	HEX: 20; IBL: 155			Flush Mount; Bentonite Seal
1		Brown sand		0.76 76.41	2		255			HEX: 30; IBL: 67			
		Brown sand, some grey/red clay		1.52 76.20	3A		230			HEX: 65; IBL: 50			
2		Grey clay		1.73	3B		535			HEX: 55; IBL: 10			
					4		760			HEX: 60; IBL: 23			Filter Sand
3					5		760			HEX: 55; IBL: 90			
				74.12									
4		Grey clay, trace, silt, trace sand		3.81	6		760		PHCs, BTEX	HEX: 20; IBL: 132			Filter Sand
				73.36									
		End of Borehole		4.57									

GROUNDWATER OBSERVATIONS

DATE	DEPTH (m)	ELEVATION (m)
Aug. 21/25	1.83 ▽	76.10

GEMTEC
Consulting Engineers and Scientists

LOGGED: JG
CHECKED: NS

ENV - BOREHOLE LOG 100011.122_ESA_TWO_2025_08.GPJ GEMTEC 2018.GDT 29/10/25

ABBREVIATIONS AND TERMINOLOGY USED ON RECORDS OF BOREHOLES AND TEST PITS

SAMPLE TYPES	
AS	Auger sample
CA	Casing sample
CS	Chunk sample
BS	Borros piston sample
GS	Grab sample
MS	Manual sample
RC	Rock core
SS	Split spoon sampler
ST	Slotted tube
TO	Thin-walled open shelby tube
TP	Thin-walled piston shelby tube
WS	Wash sample

SOIL TESTS	
w	Water content
PL, w_p	Plastic limit
LL, w_L	Liquid limit
C	Consolidation (oedometer) test
D_R	Relative density
DS	Direct shear test
G_S	Specific gravity
M	Sieve analysis for particle size
MH	Combined sieve and hydrometer (H) analysis
MPC	Modified Proctor compaction test
SPC	Standard Proctor compaction test
OC	Organic content test
UC	Unconfined compression test
γ	Unit weight

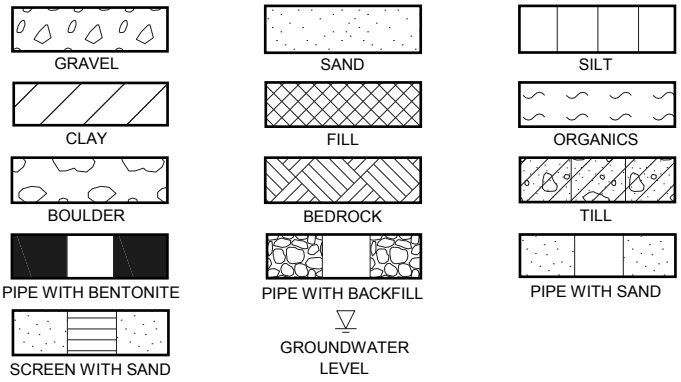
PENETRATION RESISTANCE

Standard Penetration Resistance, N
The number of blows by a 63.5 kg (140 lb) hammer dropped 760 millimetres (30 in.) required to drive a 50 mm split spoon sampler for a distance of 300 mm (12 in.). For split spoon samples where less than 300 mm of penetration was achieved, the number of blows is reported over the sampler penetration in mm.

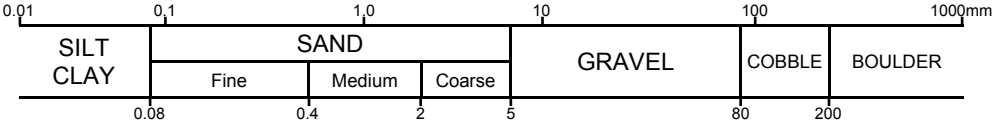
Dynamic Penetration Resistance
The number of blows by a 63.5 kg (140 lb) hammer dropped 760 mm (30 in.) to drive a 50 mm (2 in.) diameter 60° cone attached to 'A' size drill rods for a distance of 300 mm (12 in.).

WH	Sampler advanced by static weight of hammer and drill rods
WR	Sampler advanced by static weight of drill rods
PH	Sampler advanced by hydraulic pressure from drill rig
PM	Sampler advanced by manual pressure

COHESIONLESS SOIL Compactness		COHESIVE SOIL Consistency	
SPT N-Values	**Description**	**Cu, kPa**	**Description**
0-4	Very Loose	0-12	Very Soft
4-10	Loose	12-25	Soft
10-30	Compact	25-50	Firm
30-50	Dense	50-100	Stiff
>50	Very Dense	100-200	Very Stiff
		>200	Hard

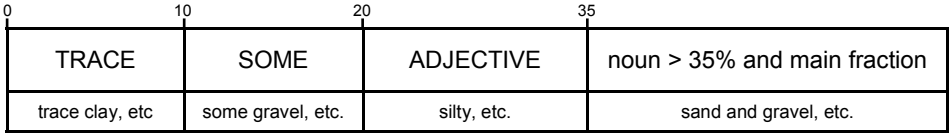


GRAIN SIZE



DESCRIPTIVE TERMINOLOGY

(Based on the CANFEM 4th Edition)



APPENDIX E

Nitrate Groundwater Sampling Results

Paracel Laboratories Limited

PARACEL LABORATORIES LTD.
TRUSTED. RESPONSIVE. RELIABLE.

300 - 2319 St. Laurent Blvd
Ottawa, ON, K1G 4J8
1-800-749-1947
www.paracellabs.com

Certificate of Analysis

GEMTEC Consulting Engineers and Scientists Limited
32 Steacie Drive
Kanata, ON K2K 2A9
Attn: Nicole Soucy

Client PO:
Project: 100011.122
Custody: 149882

Report Date: 26-Aug-2025
Order Date: 22-Aug-2025

Order #: 2534509

This Certificate of Analysis contains analytical data applicable to the following samples as submitted:

Paracel ID	Client ID
2534509-01	MW25-03
2534509-02	MW25-02
2534509-03	MW25-05
2534509-04	Field Blank
2534509-05	Trip Blank

Approved By:

Dale Robertson, BSc
Senior Technical Advisor

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Anions	EPA 300.1 - IC	25-Aug-25	25-Aug-25
BTEX by P&T GC-MS	EPA 624 - P&T GC-MS	25-Aug-25	25-Aug-25
Metals, ICP-MS	EPA 200.8 - ICP-MS	25-Aug-25	25-Aug-25
PHC F1	CWS Tier 1 - P&T GC-FID	25-Aug-25	25-Aug-25
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	23-Aug-25	25-Aug-25
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	25-Aug-25	26-Aug-25
REG 153: VOCs by P&T GC/MS	EPA 624 - P&T GC-MS	25-Aug-25	25-Aug-25

	Client ID:	MW25-03	MW25-02	MW25-05	Field Blank	-	-
	Sample Date:	22-Aug-25 12:40	22-Aug-25 02:00	22-Aug-25 01:20	22-Aug-25 12:40		
	Sample ID:	2534509-01	2534509-02	2534509-03	2534509-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Anions							
Nitrate as N	0.1 mg/L	<0.1	<0.1	<0.1	-	-	-
Metals							
Antimony	0.5 ug/L	<0.5	<0.5	-	-	-	-
Arsenic	1 ug/L	1	<1	-	-	-	-
Barium	1 ug/L	58	114	-	-	-	-
Beryllium	0.5 ug/L	<0.5	<0.5	-	-	-	-
Boron	10 ug/L	60	64	-	-	-	-
Cadmium	0.1 ug/L	<0.1	<0.1	-	-	-	-
Chromium	1 ug/L	<1	<1	-	-	-	-
Cobalt	0.5 ug/L	0.7	3.7	-	-	-	-
Copper	0.5 ug/L	0.7	6.5	-	-	-	-
Lead	0.1 ug/L	0.2	<0.1	-	-	-	-
Molybdenum	0.5 ug/L	4.7	3.2	-	-	-	-
Nickel	1 ug/L	2	6	-	-	-	-
Selenium	1 ug/L	<1	<1	-	-	-	-
Silver	0.1 ug/L	<0.1	<0.1	-	-	-	-
Sodium	200 ug/L	54200	144000	-	-	-	-
Thallium	0.1 ug/L	<0.1	<0.1	-	-	-	-
Uranium	0.1 ug/L	1.8	1.6	-	-	-	-
Vanadium	0.5 ug/L	1.4	1.0	-	-	-	-
Zinc	5 ug/L	5	<5	-	-	-	-
Volatiles							
Acetone	5.0 ug/L	<5.0	<5.0	-	-	-	-
Benzene	0.5 ug/L	<0.5	<0.5	-	-	-	-
Bromodichloromethane	0.5 ug/L	<0.5	<0.5	-	-	-	-

	Client ID:	MW25-03	MW25-02	MW25-05	Field Blank	-	-
	Sample Date:	22-Aug-25 12:40	22-Aug-25 02:00	22-Aug-25 01:20	22-Aug-25 12:40		
	Sample ID:	2534509-01	2534509-02	2534509-03	2534509-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Volatiles							
Bromoform	0.5 ug/L	<0.5	<0.5	-	-	-	-
Bromomethane	0.5 ug/L	<0.5	<0.5	-	-	-	-
Carbon Tetrachloride	0.2 ug/L	<0.2	<0.2	-	-	-	-
Chlorobenzene	0.5 ug/L	<0.5	<0.5	-	-	-	-
Chloroform	0.5 ug/L	<0.5	<0.5	-	-	-	-
Dibromochloromethane	0.5 ug/L	<0.5	<0.5	-	-	-	-
Dichlorodifluoromethane	1.0 ug/L	<1.0	<1.0	-	-	-	-
1,2-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,3-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,4-Dichlorobenzene	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,1-Dichloroethane	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,2-Dichloroethane	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,1-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	-	-	-
cis-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	-	-	-
trans-1,2-Dichloroethylene	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,2-Dichloropropane	0.5 ug/L	<0.5	<0.5	-	-	-	-
cis-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	-	-	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,3-Dichloropropene, total	0.5 ug/L	<0.5	<0.5	-	-	-	-
Ethylbenzene	0.5 ug/L	<0.5	<0.5	-	-	-	-
Ethylene dibromide (dibromoethane,	0.2 ug/L	<0.2	<0.2	-	-	-	-
Hexane	1.0 ug/L	<1.0	<1.0	-	-	-	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	<5.0	<5.0	-	-	-	-
Methyl Isobutyl Ketone	5.0 ug/L	<5.0	<5.0	-	-	-	-
Methyl tert-butyl ether	2.0 ug/L	<2.0	<2.0	-	-	-	-

	Client ID:	MW25-03	MW25-02	MW25-05	Field Blank	-	-
	Sample Date:	22-Aug-25 12:40	22-Aug-25 02:00	22-Aug-25 01:20	22-Aug-25 12:40		
	Sample ID:	2534509-01	2534509-02	2534509-03	2534509-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Volatiles							
Methylene Chloride	5.0 ug/L	<5.0	<5.0	-	-	-	-
Styrene	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	<0.5	<0.5	-	-	-	-
Tetrachloroethylene	0.5 ug/L	<0.5	<0.5	-	-	-	-
Toluene	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,1,1-Trichloroethane	0.5 ug/L	<0.5	<0.5	-	-	-	-
1,1,2-Trichloroethane	0.5 ug/L	<0.5	<0.5	-	-	-	-
Trichloroethylene	0.5 ug/L	<0.5	<0.5	-	-	-	-
Trichlorofluoromethane	1.0 ug/L	<1.0	<1.0	-	-	-	-
Vinyl chloride	0.5 ug/L	<0.5	<0.5	-	-	-	-
m,p-Xylenes	0.5 ug/L	<0.5	<0.5	-	-	-	-
o-Xylene	0.5 ug/L	<0.5	<0.5	-	-	-	-
Xylenes, total	0.5 ug/L	<0.5	<0.5	-	-	-	-
4-Bromofluorobenzene	Surrogate	98.4%	99.5%	-	-	-	-
Dibromofluoromethane	Surrogate	98.6%	102%	-	-	-	-
Toluene-d8	Surrogate	104%	105%	-	-	-	-
Benzene	0.5 ug/L	-	-	<0.5	<0.5	-	-
Ethylbenzene	0.5 ug/L	-	-	<0.5	<0.5	-	-
Toluene	0.5 ug/L	-	-	<0.5	<0.5	-	-
m,p-Xylenes	0.5 ug/L	-	-	<0.5	<0.5	-	-
o-Xylene	0.5 ug/L	-	-	<0.5	<0.5	-	-
Xylenes, total	0.5 ug/L	-	-	<0.5	<0.5	-	-
Toluene-d8	Surrogate	-	-	104%	103%	-	-
Hydrocarbons							

	Client ID:	MW25-03	MW25-02	MW25-05	Field Blank	-	-
	Sample Date:	22-Aug-25 12:40	22-Aug-25 02:00	22-Aug-25 01:20	22-Aug-25 12:40		
	Sample ID:	2534509-01	2534509-02	2534509-03	2534509-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Hydrocarbons							
F1 PHCs (C6-C10)	25 ug/L	<25	<25	<25	<25	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	<100	<100	-	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	<100	<100	-	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	<100	<100	-	-	-
Semi-Volatiles							
Acenaphthene	0.05 ug/L	<0.05	<0.05	-	-	-	-
Acenaphthylene	0.05 ug/L	<0.05	<0.05	-	-	-	-
Anthracene	0.01 ug/L	<0.01	<0.01	-	-	-	-
Benzo [a] anthracene	0.01 ug/L	<0.01	<0.01	-	-	-	-
Benzo [a] pyrene	0.01 ug/L	<0.01	<0.01	-	-	-	-
Benzo [b] fluoranthene	0.05 ug/L	<0.05	<0.05	-	-	-	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	<0.05	-	-	-	-
Benzo [k] fluoranthene	0.05 ug/L	<0.05	<0.05	-	-	-	-
Chrysene	0.05 ug/L	<0.05	<0.05	-	-	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	<0.05	-	-	-	-
Fluoranthene	0.01 ug/L	<0.01	<0.01	-	-	-	-
Fluorene	0.05 ug/L	<0.05	<0.05	-	-	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	<0.05	-	-	-	-
1-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	-	-	-	-
2-Methylnaphthalene	0.05 ug/L	<0.05	<0.05	-	-	-	-
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	<0.10	-	-	-	-
Naphthalene	0.05 ug/L	<0.05	<0.05	-	-	-	-
Phenanthrene	0.05 ug/L	<0.05	<0.05	-	-	-	-
Pyrene	0.01 ug/L	<0.01	<0.01	-	-	-	-
2-Fluorobiphenyl	Surrogate	60.2%	57.0%	-	-	-	-

	Client ID:	MW25-03	MW25-02	MW25-05	Field Blank	-	-
	Sample Date:	22-Aug-25 12:40	22-Aug-25 02:00	22-Aug-25 01:20	22-Aug-25 12:40		
	Sample ID:	2534509-01	2534509-02	2534509-03	2534509-04		
	Matrix:	Ground Water	Ground Water	Ground Water	Ground Water		
	MDL/Units						
Semi-Volatiles							
Terphenyl-d14	Surrogate	77.9%	79.8%	-	-	-	-

	Client ID:	Trip Blank				-	-
	Sample Date:	20-Aug-25 00:00					
	Sample ID:	2534509-05					
	Matrix:	Ground Water					
	MDL/Units						
Volatiles							
Benzene	0.5 ug/L	<0.5	-	-	-	-	-
Ethylbenzene	0.5 ug/L	<0.5	-	-	-	-	-
Toluene	0.5 ug/L	<0.5	-	-	-	-	-
m,p-Xylenes	0.5 ug/L	<0.5	-	-	-	-	-
o-Xylene	0.5 ug/L	<0.5	-	-	-	-	-
Xylenes, total	0.5 ug/L	<0.5	-	-	-	-	-
Toluene-d8	Surrogate	104%	-	-	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	25 ug/L	<25	-	-	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions								
Nitrate as N	ND	0.1	mg/L					
Hydrocarbons								
F1 PHCs (C6-C10)	ND	25	ug/L					
F2 PHCs (C10-C16)	ND	100	ug/L					
F3 PHCs (C16-C34)	ND	100	ug/L					
F4 PHCs (C34-C50)	ND	100	ug/L					
Metals								
Antimony	ND	0.5	ug/L					
Arsenic	ND	1	ug/L					
Barium	ND	1	ug/L					
Beryllium	ND	0.5	ug/L					
Boron	ND	10	ug/L					
Cadmium	ND	0.1	ug/L					
Chromium	ND	1	ug/L					
Cobalt	ND	0.5	ug/L					
Copper	ND	0.5	ug/L					
Lead	ND	0.1	ug/L					
Molybdenum	ND	0.5	ug/L					
Nickel	ND	1	ug/L					
Selenium	ND	1	ug/L					
Silver	ND	0.1	ug/L					
Sodium	ND	200	ug/L					
Thallium	ND	0.1	ug/L					
Uranium	ND	0.1	ug/L					
Vanadium	ND	0.5	ug/L					
Zinc	ND	5	ug/L					
Semi-Volatiles								
Acenaphthene	ND	0.05	ug/L					
Acenaphthylene	ND	0.05	ug/L					
Anthracene	ND	0.01	ug/L					
Benzo [a] anthracene	ND	0.01	ug/L					
Benzo [a] pyrene	ND	0.01	ug/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [b] fluoranthene	ND	0.05	ug/L					
Benzo [g,h,i] perylene	ND	0.05	ug/L					
Benzo [k] fluoranthene	ND	0.05	ug/L					
Chrysene	ND	0.05	ug/L					
Dibenzo [a,h] anthracene	ND	0.05	ug/L					
Fluoranthene	ND	0.01	ug/L					
Fluorene	ND	0.05	ug/L					
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L					
1-Methylnaphthalene	ND	0.05	ug/L					
2-Methylnaphthalene	ND	0.05	ug/L					
Methylnaphthalene (1&2)	ND	0.10	ug/L					
Naphthalene	ND	0.05	ug/L					
Phenanthrene	ND	0.05	ug/L					
Pyrene	ND	0.01	ug/L					
Surrogate: 2-Fluorobiphenyl	*13.1*		*%*	*65.6*	*50-140*			
Surrogate: Terphenyl-d14	*16.8*		*%*	*84.2*	*50-140*			
Volatiles								
Acetone	ND	5.0	ug/L					
Benzene	ND	0.5	ug/L					
Bromodichloromethane	ND	0.5	ug/L					
Bromoform	ND	0.5	ug/L					
Bromomethane	ND	0.5	ug/L					
Carbon Tetrachloride	ND	0.2	ug/L					
Chlorobenzene	ND	0.5	ug/L					
Chloroform	ND	0.5	ug/L					
Dibromochloromethane	ND	0.5	ug/L					
Dichlorodifluoromethane	ND	1.0	ug/L					
1,2-Dichlorobenzene	ND	0.5	ug/L					
1,3-Dichlorobenzene	ND	0.5	ug/L					
1,4-Dichlorobenzene	ND	0.5	ug/L					
1,1-Dichloroethane	ND	0.5	ug/L					
1,2-Dichloroethane	ND	0.5	ug/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
1,1-Dichloroethylene	ND	0.5	ug/L					
cis-1,2-Dichloroethylene	ND	0.5	ug/L					
trans-1,2-Dichloroethylene	ND	0.5	ug/L					
1,2-Dichloropropane	ND	0.5	ug/L					
cis-1,3-Dichloropropylene	ND	0.5	ug/L					
trans-1,3-Dichloropropylene	ND	0.5	ug/L					
1,3-Dichloropropene, total	ND	0.5	ug/L					
Ethylbenzene	ND	0.5	ug/L					
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.2	ug/L					
Hexane	ND	1.0	ug/L					
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L					
Methyl Isobutyl Ketone	ND	5.0	ug/L					
Methyl tert-butyl ether	ND	2.0	ug/L					
Methylene Chloride	ND	5.0	ug/L					
Styrene	ND	0.5	ug/L					
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L					
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L					
Tetrachloroethylene	ND	0.5	ug/L					
Toluene	ND	0.5	ug/L					
1,1,1-Trichloroethane	ND	0.5	ug/L					
1,1,2-Trichloroethane	ND	0.5	ug/L					
Trichloroethylene	ND	0.5	ug/L					
Trichlorofluoromethane	ND	1.0	ug/L					
Vinyl chloride	ND	0.5	ug/L					
m,p-Xylenes	ND	0.5	ug/L					
o-Xylene	ND	0.5	ug/L					
Xylenes, total	ND	0.5	ug/L					
Surrogate: 4-Bromofluorobenzene	*76.0*		*%*	*95.0*	*50-140*			
Surrogate: Dibromofluoromethane	*72.6*		*%*	*90.7*	*50-140*			
Surrogate: Toluene-d8	*83.8*		*%*	*105*	*50-140*			
Benzene	ND	0.5	ug/L					
Ethylbenzene	ND	0.5	ug/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Toluene	ND	0.5	ug/L					
m,p-Xylenes	ND	0.5	ug/L					
o-Xylene	ND	0.5	ug/L					
Xylenes, total	ND	0.5	ug/L					
Surrogate: Toluene-d8	*83.8*		*%*	*105*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Nitrate as N	8.46	0.1	mg/L	8.51			0.6	20	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
Metals									
Antimony	ND	0.5	ug/L	ND			NC	20	
Arsenic	5.5	1	ug/L	5.6			1.9	20	
Barium	263	1	ug/L	266			1.1	20	
Beryllium	ND	0.5	ug/L	ND			NC	20	
Boron	54	10	ug/L	55			0.8	20	
Cadmium	ND	0.1	ug/L	ND			NC	20	
Chromium	ND	1	ug/L	ND			NC	20	
Cobalt	2.07	0.5	ug/L	2.08			0.5	20	
Copper	0.62	0.5	ug/L	0.64			3.5	20	
Lead	ND	0.1	ug/L	ND			NC	20	
Molybdenum	10.8	0.5	ug/L	10.7			0.2	20	
Nickel	5.1	1	ug/L	5.1			1.4	20	
Selenium	ND	1	ug/L	ND			NC	20	
Silver	ND	0.1	ug/L	ND			NC	20	
Sodium	252000	372	ug/L	216000			15.5	20	
Thallium	ND	0.1	ug/L	ND			NC	20	
Uranium	1.4	0.1	ug/L	1.4			0.7	20	
Vanadium	ND	0.5	ug/L	ND			NC	20	
Zinc	ND	5	ug/L	ND			NC	20	
Volatiles									
Acetone	ND	5.0	ug/L	ND			NC	30	
Benzene	ND	0.5	ug/L	ND			NC	30	
Bromodichloromethane	ND	0.5	ug/L	ND			NC	30	
Bromoform	ND	0.5	ug/L	ND			NC	30	
Bromomethane	ND	0.5	ug/L	ND			NC	30	
Carbon Tetrachloride	ND	0.2	ug/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Chlorobenzene	ND	0.5	ug/L	ND			NC	30	
Chloroform	ND	0.5	ug/L	ND			NC	30	
Dibromochloromethane	ND	0.5	ug/L	ND			NC	30	
Dichlorodifluoromethane	ND	1.0	ug/L	ND			NC	30	
1,2-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,3-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
trans-1,2-Dichloroethylene	ND	0.5	ug/L	ND			NC	30	
1,2-Dichloropropane	ND	0.5	ug/L	ND			NC	30	
cis-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Ethylene dibromide (dibromoethane, 1,2-)	ND	0.2	ug/L	ND			NC	30	
Hexane	ND	1.0	ug/L	ND			NC	30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND			NC	30	
Methyl Isobutyl Ketone	ND	5.0	ug/L	ND			NC	30	
Methyl tert-butyl ether	ND	2.0	ug/L	ND			NC	30	
Methylene Chloride	ND	5.0	ug/L	ND			NC	30	
Styrene	ND	0.5	ug/L	ND			NC	30	
1,1,1,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2,2-Tetrachloroethane	ND	0.5	ug/L	ND			NC	30	
Tetrachloroethylene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
1,1,1-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
1,1,2-Trichloroethane	ND	0.5	ug/L	ND			NC	30	
Trichloroethylene	ND	0.5	ug/L	ND			NC	30	
Trichlorofluoromethane	ND	1.0	ug/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Vinyl chloride	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	ND	0.5	ug/L	ND			NC	30	
o-Xylene	ND	0.5	ug/L	ND			NC	30	
Surrogate: 4-Bromofluorobenzene	*78.3*		*%*		*97.9*	*50-140*			
Surrogate: Dibromofluoromethane	*77.7*		*%*		*97.2*	*50-140*			
Surrogate: Toluene-d8	*82.2*		*%*		*103*	*50-140*			
Benzene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	ND	0.5	ug/L	ND			NC	30	
o-Xylene	ND	0.5	ug/L	ND			NC	30	
Surrogate: Toluene-d8	*82.2*		*%*		*103*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Nitrate as N	9.51	0.1	mg/L	8.51	100	77-126			
Hydrocarbons									
F1 PHCs (C6-C10)	39	25	ug/L	ND	97.7	85-115			
F2 PHCs (C10-C16)	1530	100	ug/L	ND	95.8	60-140			
F3 PHCs (C16-C34)	3850	100	ug/L	ND	98.1	60-140			
F4 PHCs (C34-C50)	2110	100	ug/L	ND	85.0	60-140			
Metals									
Antimony	40.7	0.5	ug/L	ND	80.5	80-120			
Arsenic	53.5	1	ug/L	5.6	95.7	80-120			
Barium	46.1	1	ug/L	ND	92.3	80-120			
Beryllium	49.8	0.5	ug/L	ND	99.5	80-120			
Boron	99	10	ug/L	55	87.6	80-120			
Cadmium	39.7	0.1	ug/L	ND	79.4	80-120			QM-07
Chromium	55.3	1	ug/L	ND	111	80-120			
Cobalt	52.8	0.5	ug/L	2.08	101	80-120			
Copper	47.4	0.5	ug/L	0.64	93.5	80-120			
Lead	42.2	0.1	ug/L	ND	84.3	80-120			
Molybdenum	56.0	0.5	ug/L	10.7	90.6	80-120			
Nickel	53.8	1	ug/L	5.1	97.5	80-120			
Selenium	42.4	1	ug/L	ND	84.4	80-120			
Silver	34.0	0.1	ug/L	ND	67.9	80-120			QM-07
Sodium	9430	200	ug/L	ND	94.3	80-120			
Thallium	43.7	0.1	ug/L	ND	87.4	80-120			
Uranium	49.6	0.1	ug/L	1.4	96.4	80-120			
Vanadium	56.3	0.5	ug/L	ND	112	80-120			
Zinc	42	5	ug/L	ND	77.9	80-120			QM-07
Semi-Volatiles									
Acenaphthene	3.65	0.05	ug/L	ND	72.9	50-140			
Acenaphthylene	3.82	0.05	ug/L	ND	76.5	50-140			
Anthracene	3.89	0.01	ug/L	ND	77.8	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Benzo [a] anthracene	4.17	0.01	ug/L	ND	83.5	50-140			
Benzo [a] pyrene	4.08	0.01	ug/L	ND	81.6	50-140			
Benzo [b] fluoranthene	4.51	0.05	ug/L	ND	90.2	50-140			
Benzo [g,h,i] perylene	4.76	0.05	ug/L	ND	95.1	50-140			
Benzo [k] fluoranthene	4.35	0.05	ug/L	ND	87.0	50-140			
Chrysene	4.41	0.05	ug/L	ND	88.2	50-140			
Dibenzo [a,h] anthracene	5.10	0.05	ug/L	ND	102	50-140			
Fluoranthene	4.23	0.01	ug/L	ND	84.7	50-140			
Fluorene	3.55	0.05	ug/L	ND	71.0	50-140			
Indeno [1,2,3-cd] pyrene	4.83	0.05	ug/L	ND	96.6	50-140			
1-Methylnaphthalene	4.15	0.05	ug/L	ND	83.0	50-140			
2-Methylnaphthalene	4.52	0.05	ug/L	ND	90.5	50-140			
Naphthalene	4.00	0.05	ug/L	ND	80.1	50-140			
Phenanthrene	4.15	0.05	ug/L	ND	83.1	50-140			
Pyrene	4.22	0.01	ug/L	ND	84.5	50-140			
Surrogate: 2-Fluorobiphenyl	*13.4*		*%*		*67.2*	*50-140*			
Surrogate: Terphenyl-d14	*17.3*		*%*		*86.3*	*50-140*			
Volatiles									
Acetone	131	5.0	ug/L	ND	131	50-140			
Benzene	43.6	0.5	ug/L	ND	109	60-130			
Bromodichloromethane	49.3	0.5	ug/L	ND	123	60-130			
Bromoform	42.0	0.5	ug/L	ND	105	60-130			
Bromomethane	36.6	0.5	ug/L	ND	91.4	50-140			
Carbon Tetrachloride	50.7	0.2	ug/L	ND	127	60-130			
Chlorobenzene	46.4	0.5	ug/L	ND	116	60-130			
Chloroform	47.1	0.5	ug/L	ND	118	60-130			
Dibromochloromethane	42.4	0.5	ug/L	ND	106	60-130			
Dichlorodifluoromethane	37.6	1.0	ug/L	ND	93.9	50-140			
1,2-Dichlorobenzene	36.8	0.5	ug/L	ND	91.9	60-130			
1,3-Dichlorobenzene	37.2	0.5	ug/L	ND	93.1	60-130			
1,4-Dichlorobenzene	37.4	0.5	ug/L	ND	93.5	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,1-Dichloroethane	48.7	0.5	ug/L	ND	122	60-130			
1,2-Dichloroethane	43.8	0.5	ug/L	ND	109	60-130			
1,1-Dichloroethylene	39.5	0.5	ug/L	ND	98.8	60-130			
cis-1,2-Dichloroethylene	45.0	0.5	ug/L	ND	113	60-130			
trans-1,2-Dichloroethylene	42.0	0.5	ug/L	ND	105	60-130			
1,2-Dichloropropane	45.4	0.5	ug/L	ND	113	60-130			
cis-1,3-Dichloropropylene	47.4	0.5	ug/L	ND	119	60-130			
trans-1,3-Dichloropropylene	46.1	0.5	ug/L	ND	115	60-130			
Ethylbenzene	44.2	0.5	ug/L	ND	110	60-130			
Ethylene dibromide (dibromoethane, 1,2-)	37.1	0.2	ug/L	ND	92.7	60-130			
Hexane	43.9	1.0	ug/L	ND	110	60-130			
Methyl Ethyl Ketone (2-Butanone)	119	5.0	ug/L	ND	119	50-140			
Methyl Isobutyl Ketone	115	5.0	ug/L	ND	115	50-140			
Methyl tert-butyl ether	108	2.0	ug/L	ND	108	50-140			
Methylene Chloride	38.0	5.0	ug/L	ND	95.1	60-130			
Styrene	43.6	0.5	ug/L	ND	109	60-130			
1,1,1,2-Tetrachloroethane	38.8	0.5	ug/L	ND	97.1	60-130			
1,1,2,2-Tetrachloroethane	39.3	0.5	ug/L	ND	98.3	60-130			
Tetrachloroethylene	35.8	0.5	ug/L	ND	89.4	60-130			
Toluene	41.2	0.5	ug/L	ND	103	60-130			
1,1,1-Trichloroethane	47.6	0.5	ug/L	ND	119	60-130			
1,1,2-Trichloroethane	48.7	0.5	ug/L	ND	122	60-130			
Trichloroethylene	49.1	0.5	ug/L	ND	123	60-130			
Trichlorofluoromethane	46.2	1.0	ug/L	ND	116	60-130			
Vinyl chloride	30.3	0.5	ug/L	ND	75.7	50-140			
m,p-Xylenes	96.0	0.5	ug/L	ND	120	60-130			
o-Xylene	42.8	0.5	ug/L	ND	107	60-130			
Surrogate: 4-Bromofluorobenzene	*77.5*		*%*		*96.9*	*50-140*			
Surrogate: Dibromofluoromethane	*95.1*		*%*		*119*	*50-140*			
Surrogate: Toluene-d8	*82.1*		*%*		*103*	*50-140*			
Benzene	43.6	0.5	ug/L	ND	109	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Ethylbenzene	44.2	0.5	ug/L	ND	110	60-130			
Toluene	41.2	0.5	ug/L	ND	103	60-130			
m,p-Xylenes	96.0	0.5	ug/L	ND	120	60-130			
o-Xylene	42.8	0.5	ug/L	ND	107	60-130			
Surrogate: Toluene-d8	*82.1*		*%*		*103*	*50-140*			

Qualifier Notes:

Login Qualifiers :

Sample - Filtered and preserved by Paracel upon receipt at the laboratory - Metals by ICP-MS, sample submitted unpreserved and not field filtered.

Applies to Samples: MW25-02

QC Qualifiers:

QM-07 The spike recovery was outside acceptance limits for the MS and/or MSD. The batch was accepted based on other acceptable QC.

Sample Data Revisions:

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

Source Result: Data used as source for matrix and duplicate samples

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.

- F1 range corrected for BTEX.

- F2 to F3 ranges corrected for appropriate PAHs where available.

- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.

- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.

- When reported, data for F4G has been processed using a silica gel cleanup.

APPENDIX F

Nitrate Dilution Calculations

Incl. Water Surplus Data Sheets &

Existing Septic System Information Package

Report to: Novatech Engineering Consultants Limited
GEMTEC Project: 100011.122 (March 4, 2026)

Allowable Flows - Commercial Septic System

Site	Area m^2	Topography Factor	Soil Factor	Cover Factor	Infiltration Factor	Annual Water Surplus (m^3/year)	Infiltration Volume (m^3/year)
5384 Boundary Road	19,342	0.20	0.35	0.15	0.70	0.340	6567

Hard Surface Area m2	Available Infiltration [1] (litres per day)	Maximum Septic Flow- Conventional (litres per day)[2]	Maximum Number of Users[3]	Maximum Septic Flow- Advanced[3] (litres per day)	Maximum Number of Users[3]
9,126	6652	2217	30	6652	89

Notes:

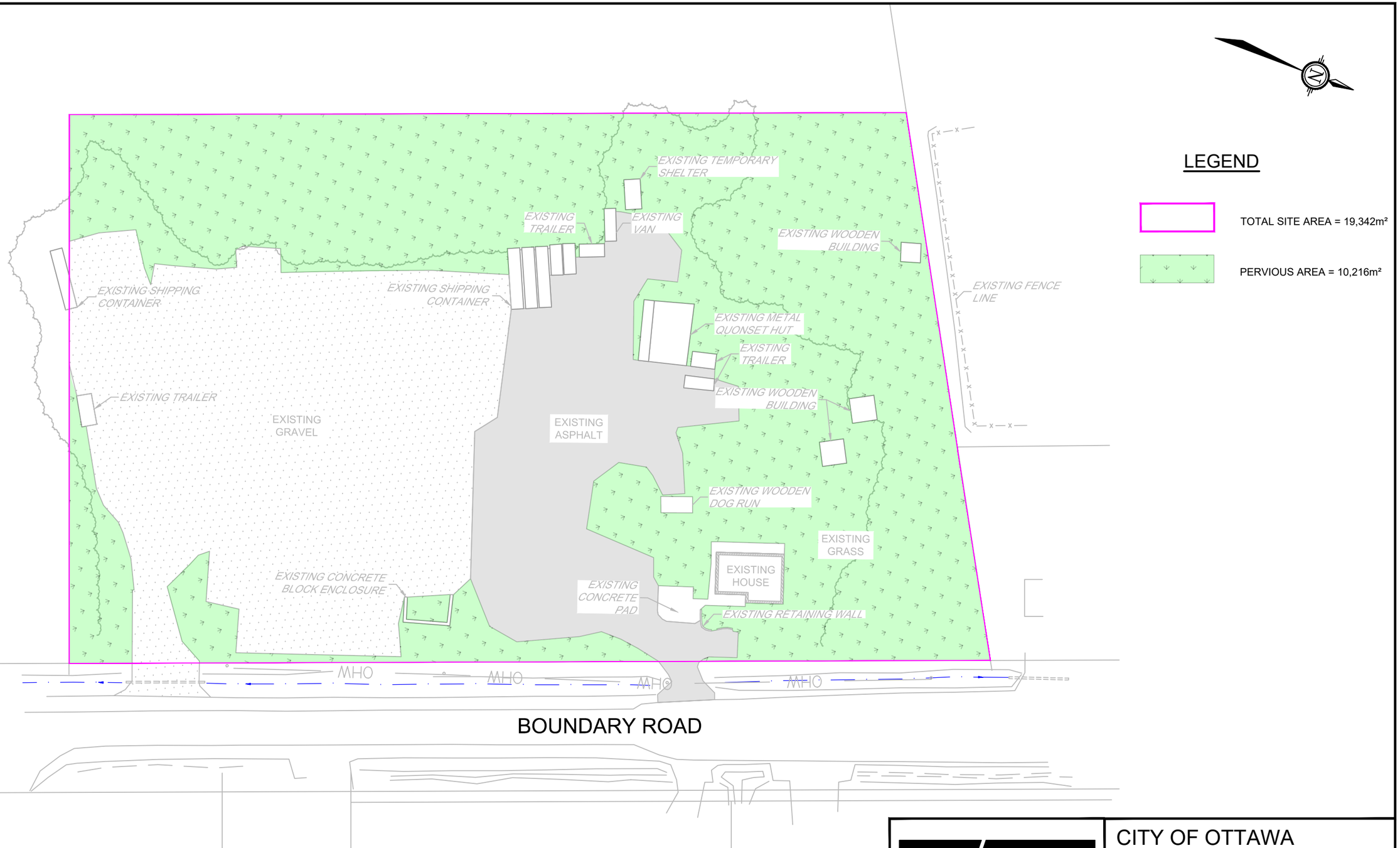
1. Available infiltration (litres per day) = [Infiltration volume (m^3/year) x (1000 litres/m^3) / (365 days/year) x (1 - %hard surface area) x Infiltration Factor] - 1000 L/day for the existing household system

2. Is equal to the available infiltration divided by 3, as per MECP Procedure D-5-4 guidelines.

3. Incorporates a value of 20 mg/L nitrate in the discharged effluent from the tertiary treatment system. The calculated maximum allowable flow is based on a simplification of the formula for a conventional system.

4. Assumes 75 litres per day per person

5. Calculations assume no baseline nitrate concentration in the recieving groundwater system (overburden), based on field sampling.



LEGEND

TOTAL SITE AREA = 19,342m²

PERVIOUS AREA = 10,216m²

SOURCE REFERENCE:
Legal & Topographic Information: *Topographical Plan of Survey*
Annis, O'Sullivan, Vollebekk Ltd. / Jan 16, 2026 / MTM Zone 9, NAD83 ORIG

NOVATECH
Engineers, Planners & Landscape Architects
Suite 200, 240 Michael Cowpland Drive
Ottawa, Ontario, Canada K2M 1P6
Telephone (613) 254-9643
Facsimile (613) 254-5867
Website www.novatech-eng.com

CITY OF OTTAWA
5384 BOUNDARY ROAD

SURFACE TYPES

SCALE 1 : 750 (0, 10, 20, 30)
DATE FEB 19/26
JOB 124202
FIGURE 124202-ST

Mississippi Valley Conservation Authority

Rideau Valley Conservation Authority

SEPTIC RECORDS SEARCH FORM (1974 TO PRESENT)

SEND TO: MVCA mrsso@mvc.on.ca or **RVCA** septic@rvca.ca

Complete, save and email this form to your municipal approval agent. **NOTE: NON-REFUNDABLE FEE REQUIRED UPON SUBMISSION.** Form is to be completed in full. Incomplete information may cause delays or inaccurate file searches. Requests that have been processed and returned to clients are considered to be closed.

Requestor Information — Section 1

Requested by: Lisa Bowley

Telephone: 613-254-9643 x246 Date: (mm/dd/yyyy) 11/20/2025

File Search Response & Attached Septic Records to be

- [x] Emailed to: l.bowley@novatech-eng.com
- [ ] Mailed to:

Present Owner's Name: 11190300 Canada Inc., Attn: Mike Dokmajian

Applicant's Reference File 124202

File Search Property Information - Reference title and deed — Section 2

Municipal Address: 5384 Boundary Road

Roll #: 0614.600.230.12700.0000

Lot: Part of Lot 1 Concession: 9 (Ottawa Front)

Subdivision Lot/Parts: Plan:

Approximate Date of System Installation and/or Replacement: unknown

Owner at Time of Installation: unknown

Payment Information — Section 3

The Septic Office will contact for payment upon completion of File Search.

Office use only

File Search Request #: 250T173F Date: Nov. 20 / 2025

Response — Section 4

- [x] To our knowledge there are no outstanding work orders against this system
- [ ] Outstanding work orders against this system exist - see attachment for details.
- [ ] No records match with the information provided.

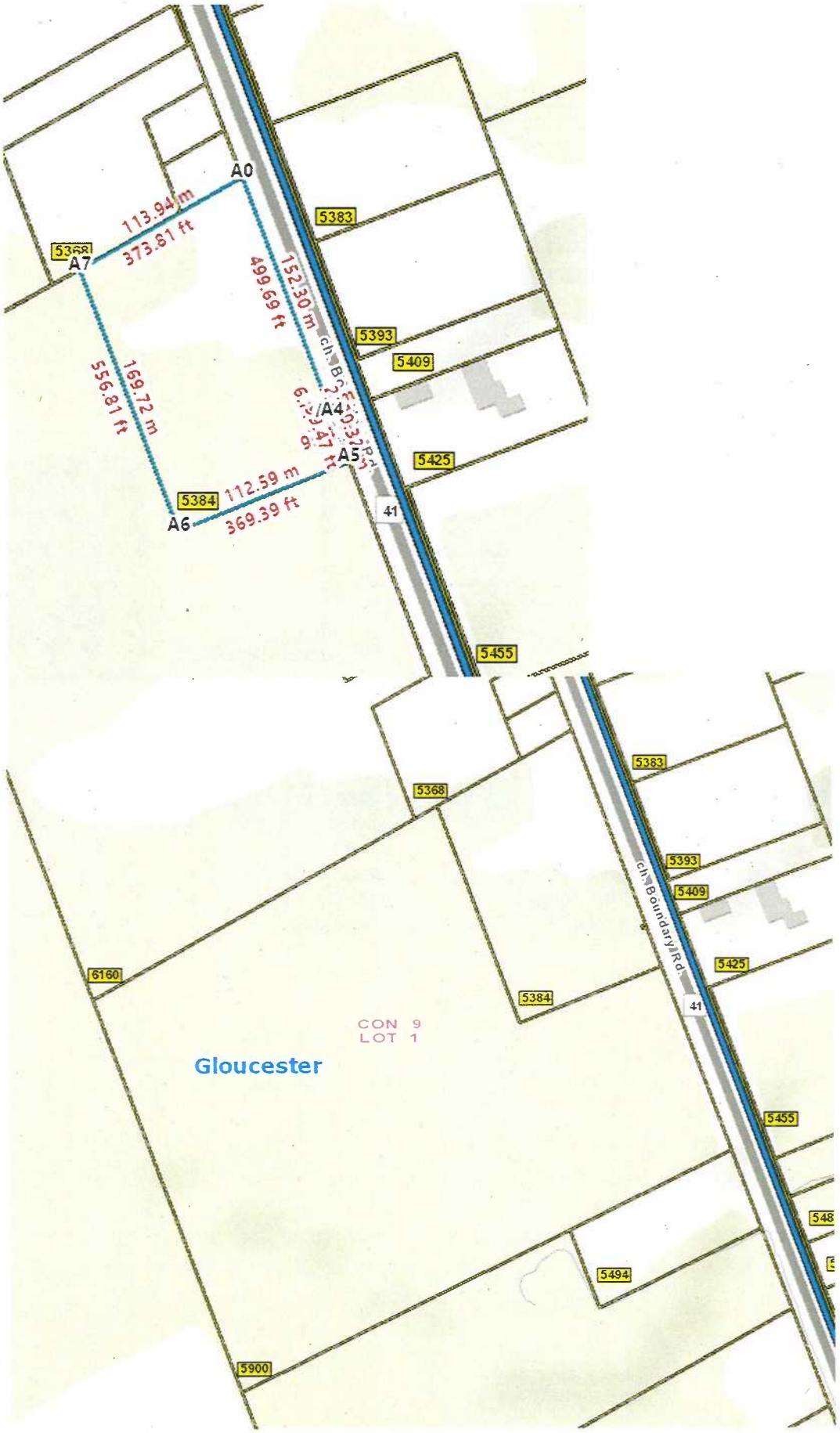
- [x] Existing Permit attached
  Permit # 82-286

Inspector Approval: Ryan Hunstead Date: Nov 20, 2025

Comments:

NOTE: Life Expectancy of a sewage system is dependent on past usage and maintenance.

Personal information on this form is collected under the authority of the Health Protection and Promotion Act S.O. 1983 C 10 and the Environmental Protection Act R.S.O. 1980 C141 and will be used for the provision of the recording Environmental Health Services. Questions concerning the collection of this information should be directed to the Rideau Valley Conservation Authority, 3889 Rideau Valley Drive, P.O. Box 599, Manotick, ON K4M 1A5. The forgoing information is given for your convenience only. It should be clearly understood that you must satisfy yourself as to whether the premises and existing or proposed use thereof is or would be in conformity with all applicable regulations.


A0
A7
A4
A5
A6
113.94 m
373.81 ft
152.30 m
499.69 ft
169.72 m
556.81 ft
112.59 m
369.39 ft
5383
5393
5409
5425
5455
5384
41
5368
6160
CON 9
LOT 1
Gloucester
5494
5900
Boundary Rd.

Ministry of the Environment
Ontario

USE PERMIT
FOR CLASS 4, 5, 6 SEWAGE SYSTEMS

APPLICATION NO. 75(1-IX)286

	TIME	DATE	WEATHER
INSPECTION DETAILS	12:45 pm	21 SEPT 82	
REPRESENTING:	THE OWNER		THE INSTALLER

1. Work authorized by the Certificate of Approval has been satisfactorily completed and includes:

a) Septic tank/holding tank of working capacity of _____ Imp. Gals. constructed of steel ☐ concrete ☐ fibreglass ☐ on site ☐ or prefabricated ☐ to serve _____ (no. of bedrooms or units).

MAKE AND MODEL, IF PREFABRICATED TANK: EXISTING

b) Leaching bed of total 120 ~~lineal feet~~ m of 3 inch diameter distribution pipe of _____ (type and product description e.g. Canron CSA Approved PVC) laid in 6 runs and fed by (gravity), siphon, pump).

c) Proprietary Aerobic System: (Manufacturer) _____ (Model) _____

d) Other details _____

2. Location

a) System components installed as shown on application supporting Certificate of Approval ☑

b) If located other than in (a) use space below for sketch and dimensions from permanent points of reference sufficient to facilitate future location of tank and leaching bed including orientation of pipe runs.

3. The following work remains to be completed:–

☐ Backfill System and Complete

☐ Finish Grading to Shed Run-off and Divert Water Around Leaching Bed

☐ Stabilize All Sloped Surfaces

☐ Other . . . . . .

USE PERMIT

Under Section 59a of The Environmental Protection Act, 1971 and subject to the provisions of The Act and Regulations a Permit is hereby issued to (Owner) JAMES HAMELIN for the use and operation of the Class 4 sewage system constructed/installed/enlarged/extended/altered persuant to the Certificate of Approval issued under the above application number in accordance with the application and Certificate of Approval with any changes indicated above and located on Lot 1 Concession IX Ward/Township/Municipality GLOUCESTER Region/District/County RMOC Plan No. _____ Sub-Lot No. _____

INSPECTED AND RECOMMENDED BY	PERMIT ISSUED BY	DATE ISSUED
	DIRECTOR	21 Sept 82

Note: Section 57(a) of The Act provides that no change can be made to any building(s) or structure(s) in connection with which this sewage system is used, if the operation or effectiveness of the sewage system will or is likely to be affected by the change, unless a new Certificate of Approval is obtained.

Section 78 of The Act provides that an applicant for a permit may appeal a decision to refuse to issue a permit. Written notice of appeal must be forwarded to the Director (who refused to issue the permit) and to the Environmental Appeal Board, 1 St. Clair Avenue West, Toronto, Ontario, M4V 1K7 within 15 days of receipt of a permit.

Application No.	75 (1-1X) 286
Fee Receipt No.	51070
Date Received	6 Aug. 82

APPLICATION FORM AND CERTIFICATE OF APPROVAL FOR A CLASS 2-6 SEWAGE SYSTEM

(Please Print Clearly)

1. Name of Owner	Tel. No.	2. Installer's Name	Tel. No.
JAMES HAMELIN	822-0292	THOMAS SCHARFE	
Address (No., Street, City, Town, etc.) BOUNDARY ROAD CARLSBAD SPRINGS. ONT.		Address (No., Street, City, Town, etc.) EDWARDS. ONT.	

3. Propose to .... (Construct/Install/Alter/Extend/Enlarge) a Class ...... sewage system to serve SINGLE FAMILY (Facility: e.g. Single Family Dwelling, Motel, etc.)

4. Location — Region, County, District	Ward, Township, Town	Lot No.	Conc. No.	Sub.Lot. No.	Plan No.	Area of Lot (sq.ft.)
GLOUCESTER, CARLETON -		1	9			5 ACRES

5. State No. of	Bedrooms or Motel Units	People	Flush Toilets	Urinals	Washbasins	Showers and Bathtubs
	4	5	1	1	1	1

6. Water Supply
- Dug or Bored Well ☑
- Drilled Well ☐ Municipal ☐
- Other ....
- Proposed ☐ or Existing ☐

7. Attach completed sketch on Page 2 — List other attachments:

8. Relationship to Severance if applicable
- ☐ Lot Approval Pending
- ☒ Lot Approved

Under Severance Application No. ....

9. Directions to Lot:— Highway No., Secondary Roads, Signs to Follow, etc.

417 HWY EST. TO BOUNDARY ROAD SOUTH TURN RIGHT. 4TH HOUSE ON RIGHT.

10. I certify that the above information is complete and correct and that, if approved, the work will conform with Provincial requirements for sewage systems and local Municipal By-Laws. (Attach fee for Class 4, 5 or 6 systems)

Name of Agent	Tel. No.	Signature of Owner or Agent
		Ethel Hamelin
Address (No., Street, City, Town, etc.)		Date 8/6/82

11. INSPECTOR'S REPORT — Inspection Time and Date 2:14 PM Aug. 6 19 82

Weather	Representing Owner	Leaching Bed Design Criteria: Depth to Rock	Design H.W.T.
Sunny		— Ft.	— Ft.

REQUIREMENTS	Lineal ~~Feet~~ m of Distribution Pipe	Working Capacity of Septic/~~Holding~~ Tank Imp. ~~Gallons~~ ℓ
	120m	existing

Sub-Surface Conditions Encountered

Rock & G.W.T.	Elevation	Soil Type
	0, 1, 2, 3, 4, 5	Sand

Conditions of Approval and Reasons (e.g. fill, grading, drainage improvements, design sewage flows) ☒

OR

Reasons where Proposal not Acceptable (add additional pages if required) ☐

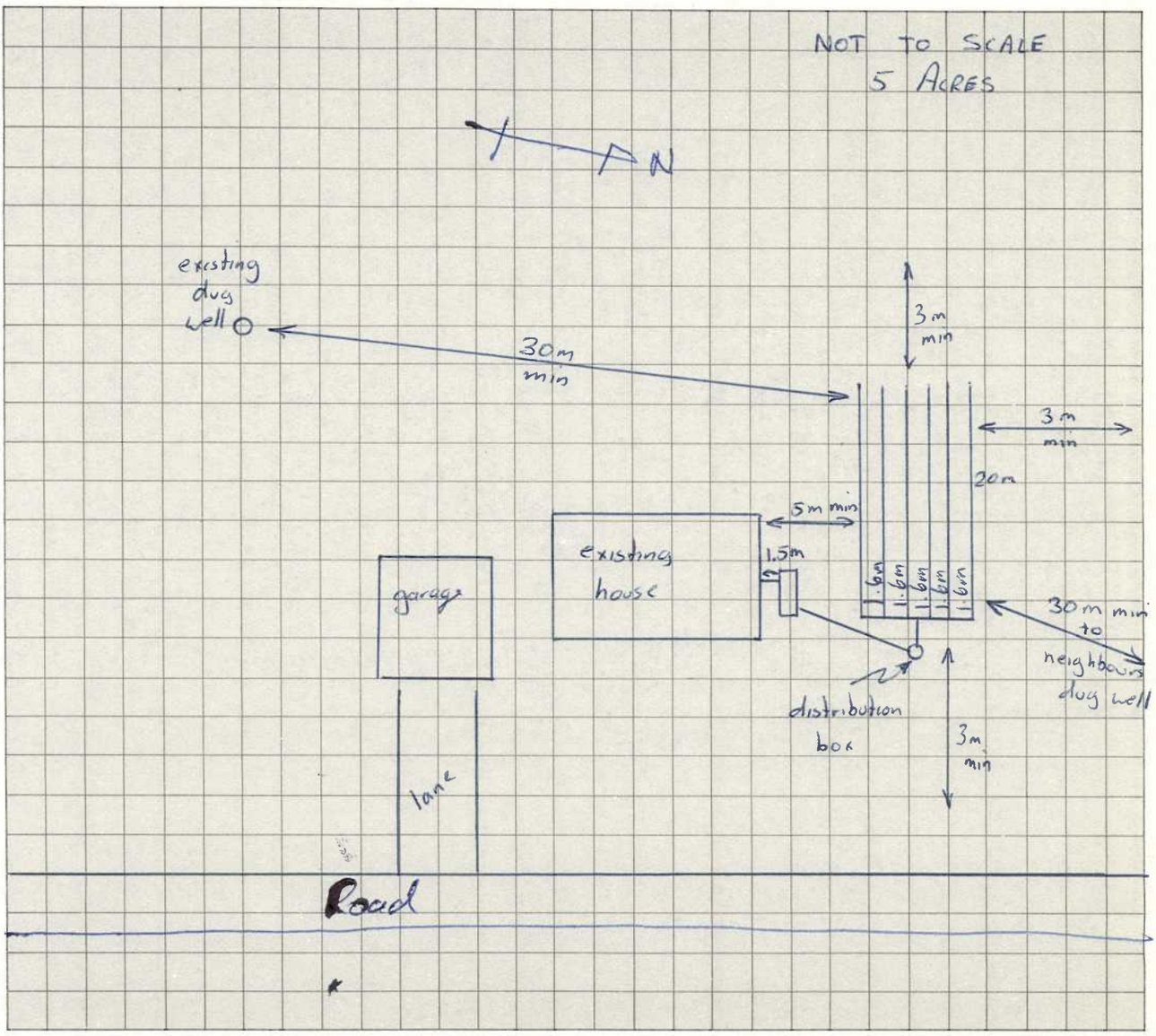
to be installed as per Appendix "A"

MOE 14-247/8/1040

OFFICE COPY

APPLICATION NO.
75(1-1x)286

12. **LOT DIAGRAM AND SEWAGE SYSTEM PLAN:** — Draw to scale indicating north point and showing:
   a) Location of sewage system components (e.g. tanks, leaching bed). Locate and show horizontal distances from system to adjacent existing or proposed buildings, water supplies (including neighbours), existing on-site sewage systems, driveways, property lines, lakes, rivers, water courses, swimming pools.
   b) Lot dimensions, topographic features (e.g. swamps, steep slopes) near system.
   c) If any part of proposal conforms to a specific standard drawing, give reference number(s).



13. **A Certificate of Approval for this application is refused for the reasons given in Section 11 Page 1**

INSPECTED AND RECOMMENDED BY	REFUSED	DATE
	DIRECTOR	

CERTIFICATE OF APPROVAL

Application approved and this Certificate of Approval under Section 65 of the Environmental Protection Act is hereby issued for the proposal outlined on Pages 1 and 2 of the application and its attachments as amended by the requirements and conditions of Section 11 provided that the sewage system shall be completed and a Use Permit issued within 12 months of the issue hereof or such extended period as the Director on application allows. DO NOT OPERATE THE SYSTEM UNTIL A USE PERMIT IS ISSUED.

INSPECTED AND RECOMMENDED BY	ISSUED	DATE
David Mott	DIRECTOR	9 Aug 82

Under Section 121 of the Environmental Protection Act, an applicant may appeal a decision by writing to the Director and to the Environmental Appeal Board, 1 St. Clair Avenue West, Toronto, Ont., M4V 1K7 within 15 days of receipt of the decision.

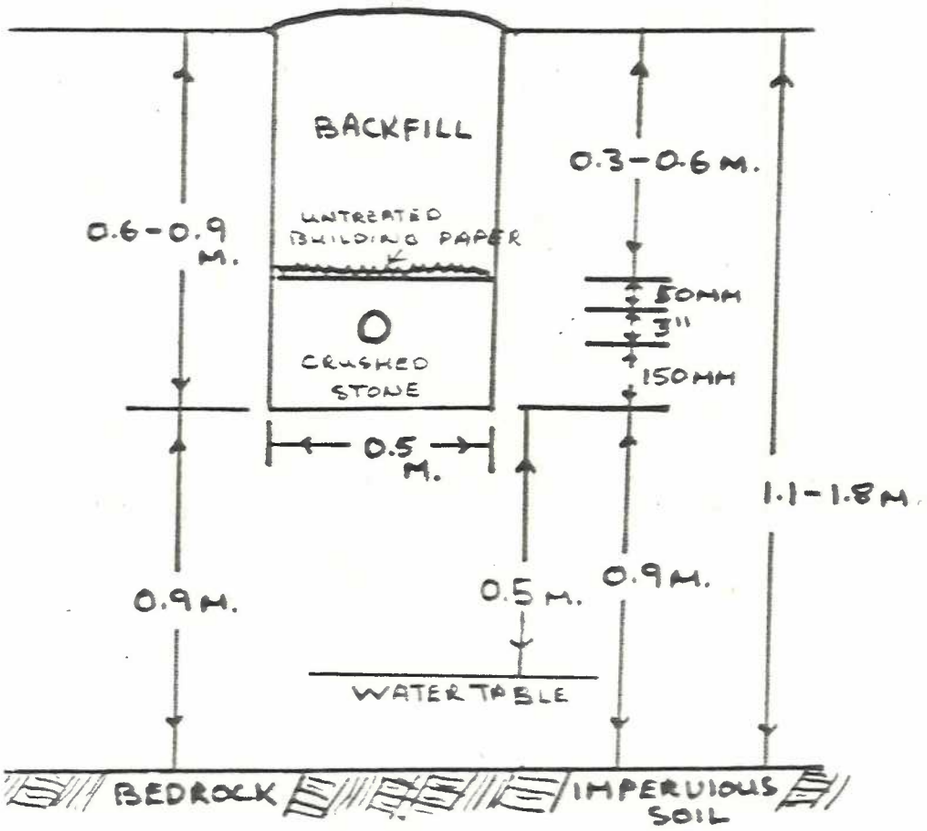
1041 3/82

OFFICE COPY

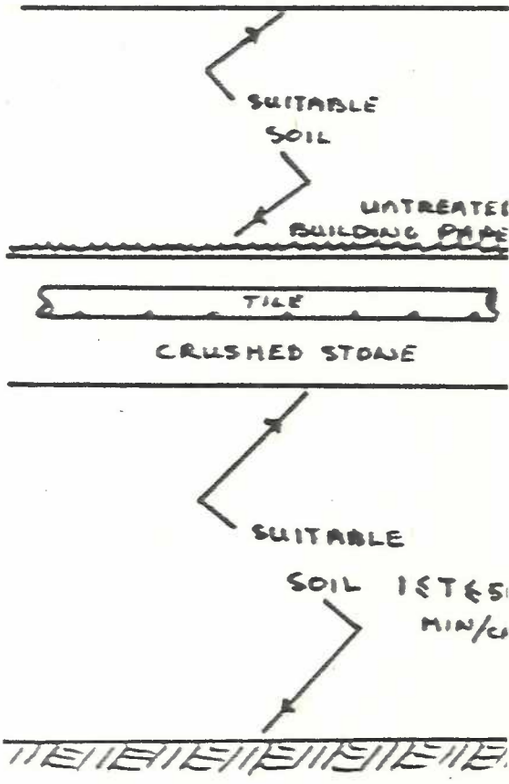
APPENDIX "A"

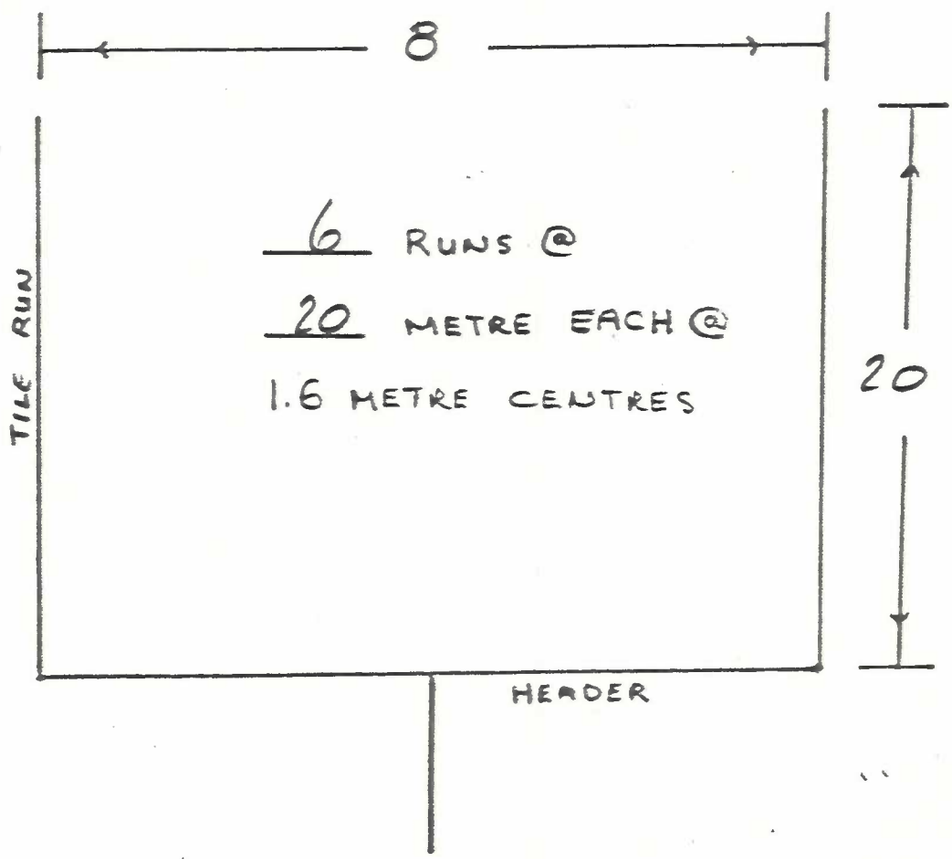
BURIED BED - ABSORPTION TRENCH METHOD

END VIEW



SIDE VIEW





APPLICANT MR. James Hamelin

MUNICIPALITY Gloucester

LOT 1 CON. 1X

R.P. _____ S. LOT _____

DATE _____ DIRECTOR _____

NOT TO SCALE

Ontario

Ministry
of the
Environment

Area Code 613
Telephone 521-3450

Municipal & Private Abatement,
2378 Holly Lane, Suite 204,
Ottawa, Ontario.
K1V 7P1

1. FEE STRUCTURE: -- (Cheque or Money Order)
Made Payable to "TREASURER OF ONTARIO"

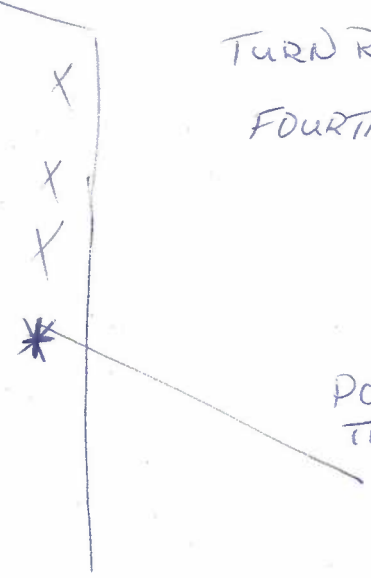
1) $35.00 For a Certificate of Approval for the installation, construction, extension, or alteration of a Class 4, 5, 6, or 7 sewage system.

2) $85.00 For a Certificate of Approval for the installation, construction, extension, or alteration of a Class A sewage system. (A Class "A" system is capable of handling sewage flows in excess of 4,500 litres (990 gallons) per day; i.e. a large commercial system.)

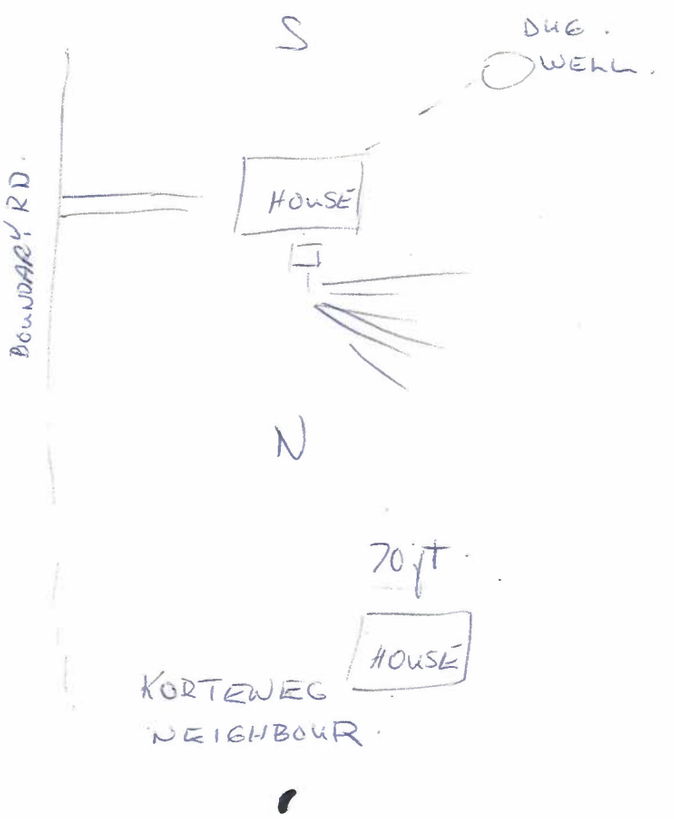
NO SITE INSPECTION WILL BE DONE UNTIL SECTIONS 2, 3, & 4 HAVE BEEN COMPLETED IN FULL

2. DIRECTIONS TO LOT: -- Directions to lot from nearest highway (give secondary roads, signs, etc.) with sketch below.

417 EAST. EXIT BOUNDARY RD.
TURN RIGHT.
FOURTH HOUSE ON RIGHT.



3. LOT DIAGRAM: -- Attach survey plan or complete a sketch here. The following information MUST be provided: Outline and give dimensions of Lot(s); north arrow; location of existing or proposed buildings, disposal systems, and water supply; distinctive topographical characteristics of lot; location of lake, river and all watercoursed; location of NEIGHBOURING water supplies and disposal systems within 300 ft. of your lot line.



4. PLEASE NOTIFY THIS OFFICE WHEN THE BELOW REQUIREMENTS HAVE BEEN MET:

1) A test pit, in the area of the proposed tile field, is to be dug to a depth of 5 feet, or to bedrock, or to the watertable, whichever is lesser. (The minimum diameter of 6 inches is required for the test pit.)

2) Lot corners must be clearly marked in the field.

3) At the entrance from the road prominently display your name and lot number.

experience • knowledge • integrity

civil	civil
geotechnical	géotechnique
environmental	environnement
structural	structures
field services	surveillance de chantier
materials testing	service de laboratoire des matériaux

expérience • connaissance • intégrité