August 14, 2024 (Revision 04: November 12, 2024)

Our File Ref.: 01348

MacEwen Petroleum Inc.
18 Adelaide Street, P.O. Box 100
Maxville, Ontario K0C 1T0

Attention: Roch Lortie,

Subject: Hydrogeological Assessment & Terrain Analysis - Proposed Fuel Dispensing Facility Re-development
5546 Albion Road South, Ottawa (Gloucester), Ontario

Dear Mr. Lortie,

LRL Engineering (LRL) was retained by MacEwen Petroleum Inc. (MPI) to complete a Hydrogeological Assessment & Terrain Analysis for the property located at 5546 Albion Road in Ottawa (Gloucester), Ontario as part of a proposed site re-development and associated Site Plan Application submission to the City of Ottawa. It is anticipated that the existing fuel dispensing facility will be re-developed to include new fuel storage and dispensing equipment, and convenience store serviced by a private water supply well and sewage disposal system.

The assessment was carried out to determine if the existing supply well can adequately and safely supply the proposed development with potable water according to the Ontario Drinking Water Standards (ODWS) and *Procedure D-5-5 Technical Guideline for Private Wells: Water Supply Assessment (August 1996)*; and that the proposed development can be serviced with a private septic system. The assessment was also intended to confirm that the construction of the supply well, and proposed construction activities, will be such as to minimize impairment to the regional aquifer, local Well Protection Area, and that it meets the current Ontario Regulation 903 requirements.

The assessment was conducted according to Ontario Ministry of the Environment, Conservation and Parks (MECP) “Hydrogeological Technical Information Requirements for Land Development Applications” (April 1995), which include the following guidelines and procedures:

- Guideline D-5 Planning for Sewage and Water Services (August 1996);
- Procedure D-5-4 Technical Guideline for Individual On-site Sewage Systems: Water Quality Impact Risk Assessment (August 1996); and
- Procedure D-5-5 Technical Guideline for Private Wells: Water Supply Assessment (August 1996).

Furthermore, the assessment was completed in accordance with the City of Ottawa’s Hydrogeological and Terrain Analysis Guidelines (March 2021).

The assessment involved a desktop review of available information on the geology and hydrogeology of the site and adjacent lands, in addition to in-situ activities and testing. Based on our review of available information, it is determined that the proposed development can be supplied with a sufficient quantity and quality of potable water, and that the site conditions are suitable for an on-site sewage disposal system.

1 SCOPE OF INVESTIGATION

LRL was retained by MacEwen Petroleum Inc. (MPI) to complete a Hydrogeological Assessment & Terrain Analysis for the property located at 5546 Albion Road in Ottawa (Gloucester), Ontario as part of a proposed site re-development and associated Site Plan Application submission to the City of Ottawa. It is anticipated that the existing fuel dispensing facility will be re-developed to include new fuel storage and dispensing equipment, and convenience store serviced by a private water supply well and sewage disposal system. Further details pertaining to the anticipated development are included in Section 3.

LRLs scope for this investigation was in general accordance with current applicable provincial guidelines, in addition to the City of Ottawa, Hydrogeological and Terrain Analysis Guideline, dated March 2021. Prior to the initiation of the scope of this investigation, a virtual meeting was held with the City of Ottawa's Hydrogeologist to review the project, discuss the Wellhead Protection Area identified across the site (discussed in greater detail in Section 2), and how this can be addressed through the pumping test of the supply well. LRLs scope for this Hydrogeological Assessment & Terrain Analysis was generally as follows:

- Conduct a search of available well information for neighbouring properties through the MECP water well records database;
- Perform a desk top review of available geological maps and local well records to obtain information pertaining to the quantity supply aquifer of the subject site;
- Conduct one (1) – six (6) hour pumping test on the existing supply well by using a submersible pump, lowered above the existing installation components, and generator.
    - As discussed with the City, and agreed upon by the client, as not to disrupt site operations, the pumping test was completed during over-night hours when the facility was closed. The pumping rate was increased throughout the shorter duration of the test (6-hours rather than the typical 8-hours recognized for a commercial establishment) to account for comparable demand volumes;
    - Manual water levels were collected from the supply well during the pumping test to analyse the hydrogeological characteristics of the aquifer onsite. A datalogger meter was also lowered in the supply well to further collect measurements of groundwater fluctuation;
    - Collect and submit water samples from the supply well periodically during the pumping test, 3-hours and 6-hours of pumping, for laboratory analysis under the subdivision package, and volatile organic compounds; and
    - Following the pumping test, record water levels for up to 24 hours or until 95% recovery has occurred.
- In conjunction with additional sub-surface investigation fieldwork, in support of the proposed development application, advance boreholes across the property to characterize the site's hydrogeological conditions as part of the Terrain Analysis study;

- Submit select soil samples collected from the various subsurface materials for grain size analysis;
- Using piezometers/monitoring wells installed as part of additional sub-surface investigation fieldwork, in support of the proposed development application, collect groundwater measurements to aid in characterizing the shallow groundwater aquifer;
- Compare the laboratory analysis results, from the supply well, to the applicable Ontario Drinking Water Standard (ODWS) and MECP D-5-5 Treatability Limits;
- Prepare a summary regarding the quality and the quantity of the supply aquifer and comparison to D-5-5 compliance requirements set forth by the City of Ottawa Technical Authority. Summarize the findings to confirm that the lot size and soil conditions are suitable to attenuate the impacts of the septic system effluent; and
- Provide recommendations on the construction of the septic system based on the information retrieved.

2 SITE AND AREA DESCRIPTION

The subject site (5546 Albion Road, herein referred to as the 'Site') is located within a generally rural residential and commercial area of Ottawa, at the northwest corner of the intersection of Albion Road, and Mitch Owens Road. The location of the Site is presented in **Figure 1**. The property is legally described as Part of Lot 30, Concession 3 (Rideau Front), Geographic Township of Gloucester, City of Ottawa with Zoning - Rural Commercial 2 (RC2). It is understood that the proposed development will not require a zoning amendment or zoning change.

The Site is irregular shaped being generally rectangular with a portion of the southeastern extent being reduced. The Site is between approximately 85 and 110 m wide (east-west) by between 90 and 115 m deep (north-south) for an approximate surface area of 11 920 m². The dimensions of the Site, and general configuration, are presented in **Figure 2**. For the purpose of this report, Albion Road will be inferred as running in a north-south direction.

2.1 Topography

The topography of the Site and neighbouring lands is generally flat. The subject Site and the neighbouring lands have a common topographic elevation of approximately 100 m above mean sea level (amsl) according to The Atlas of Canada - Toporama. More specifically, the Site has a slight slope to the south, towards Mitch Owens Road. Elevations along the southern extent of the site range between 103.7 and 102.5 m amsl according to the Annis, O'Sullivan, Vollebekk Ltd. Topographic Survey plan, dated April 18, 2022, and included in **Attachment A**.

According to The Atlas of Canada – Toporama, the regional groundwater flow direction is to the northwest towards the Rideau River, located approximately 8.5 km to the west of the Site.

2.2 Existing Development Features

The Site is presently developed and operated as a retail petroleum dispensing facility equipped with the following equipment:

- Six (6) gasoline dispensing pumps;
- One (1) diesel dispensing pump, and
- Five (5) underground storage tank located at the general southeastern portion of the Site.

No further details pertaining to the size, capacity or construction details of the storage tanks are available at this time. The fuel dispensing pumps are set over a concrete apron with an over-head canopy. A single-story convenience store is located at the approximate central portion of the Site

with pavement structure associated with parking and circulation across the central and general eastern portions of the Site. The western and northern portions of the Site is manicured grass with trees. The Site is serviced with a private sewage disposal system located at the northern portion of the property, and a supply well located at the east-central extent of the Site. Further details pertaining to the supply well on the Site is presented in Section 5.1.

2.3 Aerial Imagery

Aerial imagery was access through the City of Ottawa's on-line interactive mapping portal, geoOttawa. The available historical imagery for the Site dates back to the mid 1970's (1976) when the Site and neighbouring lands to the north, west and south following Mitch Owens Road appear undeveloped. East of the subject Site, following Albion Road, is developed with what can be assumed as commercial, or light industrial type facility with large buildings/structures present and significant cleared inferred parking and circulation area.

The subsequent 1991 aerial imagery confirms these observations. The Site is noted to be developed in the available 1999 aerial imagery, in comparable conditions and with similar features to those of present time. The 2005 aerial imagery depicts alterations, and likely re-development of the Site, with a larger parking and circulation area, a new peaked roof building, and additional underground storage tank fill ports along the south of the Site. In the 2002 aerial imagery, it is observed that development of the "Albion Sun Vista Community" residential subdivision is underway to the south of the Site, following Mitch Owens Road.

2.4 Neighbouring Properties and Land Uses

According to the City of Ottawa's Zoning information, available through the City of Ottawa's on-line interactive mapping portal, geoOttawa, the neighbouring lands are zoned as follows:

- Rural Residential Zone (RR5) to the west and north;
- Rural Heavy Industrial Zone (RH1) followed by Mineral Extraction Zone (ME2) to the east of the Site following Albion Road; and
- Rural Commercial Zone (RC and RC3) to south and southeast of the Site, respectively; and Mobile Home Zone (RM3) to the southwest.

The neighbouring land uses generally include the following:

- The neighbouring land to the south includes Mitch Owens Road followed by wooded land and high-density residential developments, including the Albion Sun Vista mobile home community, between 160 m and 400 m from the southern property limit of the Site;
- East of the Site, following Albion Road, is un-developed grass land with the exception to the portion of the land in the vicinity to the Mitch Owen Road and Albion Road intersection which includes an asphalted structure across the ground surface;
- West of the Site is wooded in addition to an unevaluated wetland, as identified by the City of Ottawa (Further details are provided in subsequent sections); and
- North of the subject Site is a residential subdivision development.

2.5 Hydrology

The Site is generally flat with a slight incline mound at the northern portion of the property, in the location of the septic disposal field. According to a topographic survey completed for the Site, included **Attachment A**, in support of the proposed re-development activities, the top of the incline is approximately 104 amsl, and the toe of the mound has an elevation of approximately 103 m amsl. The Site has a slight slope to the south, towards Mitch Owens Road. Elevations along the southern extent of the site range between 103.7 and 102.5 m amsl.

The Site is fitted with storm water structures, including catch basins and buried catchment drainage piping. These systems set in place are used to collect and control surface runoff across the Site and distributes it into accepted City services and infrastructure for further off-Site handling. No swales or drainage courses are present on the subject Site. A municipal ditch however does run in a general east-west direction along Mitch Owens Road, along the adjacent lands to the west. Based on the topography of the site, and site features, it is inferred that the property drainage pattern flows south towards Mitch Owens Road.

A watercourse is located on the neighbouring property to the west; however, the City of Ottawa identifies it as a 'ditch' in the interactive mapping system, geoOttawa. As discussed in greater detail below in Section 2.6, the wooded lands located immediately west of the Site, and the neighbouring lands to the north, are identified to contain unevaluated wetlands according to provincial mapping systems (Ministry of Natural Resources and Forestry, Make a Map: Natural Heritage Areas). The location of the wetlands identified are presented in **Figure 3**. Such natural features may be indicative of the possibility for elevated seasonal saturated conditions on, or in the vicinity of the Site. Storm water management designs are considered a suitable approach to mitigate possible concerns to the developed portion of the Site resulting from these features, in additional to recognized setbacks requirements and additional engineering controls to sensitive features (i.e. sump pumps in building basement, where applicable). Storm water management is discussed in greater detail in the Stormwater Management Report and Servicing Brief, Site Re-Development MacEwen Albion, 5546 Albion Road, Gloucester, Ontario report prepared by LRL, dated December 22, 2022, and included in the re-development application submission package to the City of Ottawa.

2.6 Natural Heritage Features

A watercourse has been identified in the vicinity of the Site, on the neighbouring land to the west. According to the City of Ottawa's interactive mapping system, geoOttawa, the watercourse is further defined as a ditch, extending approximately 5.0 m from the western Site boundary. The extents of the proposed development footprint, excluding the landscaped grassed portion of the Site, is within 30 metres of the watercourse. LRL has been requested to complete an Environmental Impact Study to provide greater detail of this natural feature and acceptable mitigation measures to reduce possible impacts to the quality of the watercourse. The findings of this study are presented in the Environmental Impact Study report, prepared by LRL, dated January 11, 2023.

The wooded lands located immediately west of the Site, and the neighbouring lands to the north, are identified to contain unevaluated wetlands according to provincial mapping systems (Ministry of Natural Resources and Forestry, Make a Map: Natural Heritage Areas). The location of the wetlands identified are presented in **Figure 3**.

GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) were retained by MacEwen Petroleum Inc. to complete a Wetland Boundary Assessment for unevaluated wetland on the neighbouring lands. The assessment was initiated to confirm the extents of the unevaluated wetland in support planning and design of the proposed re-development of the Site. The conclusions of the report revealed that the unevaluated wetland boundaries, based on vegetation species, extends approximately 30 m from the western boundary of the Site. A copy of this report is included **Attachment B**.

2.7 Geology & Hydrogeology

2.7.1 Geological Mapping

Surficial soil deposit mapping[1] indicates that the surficial geology is fine- to medium-grained sand, calcareous and commonly fossiliferous; nearshore sand generally occurs as a sheet or as bars or spits associates with glaciofluvial materials. The surficial mapping details are presented in **Figure 4**. Bedrock mapping[2] indicates that the bedrock is described as the Oxford Formation: dolomite and limestone. The bedrock mapping details are presented in **Figure 5**.

The surficial overburden, and more specifically the confining clay layer, which is anticipated to restrict impacts from the proposed Site operations to the local supply aquifer, are summarized below in the summary table. Using details revealed through the previously completed intrusive investigation on the Site, in support of the proposed re-development (Geotechnical Investigation, June 2022 as detailed in Section 4.3; and Phase II Environmental Site Assessment January 2023 as detailed in Section 4.2), the soil characteristics, including the clay layer at the northern portion of the Site, are inferred to be as follows:

- Northern extent of the Site, represented by BH2; BH3; BH22-5; and BH22-9 (as presented in **Figure 9**):

Borehole Reference Identification	Clay Characteristics
BH2	Encountered from between 2.9 and 4.4 m below grade. Grey in colour, saturated, firm with traces of sand, silty. In-situ vane shear testing readings were found to be in the range of between 30 and 38 kPa. Particle size analysis (Geotechnical Investigation, June 2022) of a sample collected from between 3.05 and 3.66 m below grade from BH2 (sample BH2-SS-5) was reported to have a D60 value of 0.0038 and a D50 value o 0.0026. No D10 value was derived in the analysis report based on the consistency of the clay. However, interpretation of the curve of the analysis for BH2-SS-5, it is found that the D10 values would be approximately 0.0003. Using the Slichter (1899) method, the hydraulic conductivity of the clay, specifically in the sample collected from depths between 3.05 and 3.66 m below grade, and is considered representative of the clay material encountered, was interpreted to be approximately $1x10^{-5}$. A copy of the particle size analysis is included in **Attachment C**.
BH3	Encountered from between 2.9 and 4.1 m below grade. Grey in colour, saturated, firm with traces of sand, silty. In-situ vane shear testing readings were found to be in the range of between 30 and 38 kPa. No particle size testing was performed on the clay encountered in BH3, however is considered comparable to that of BH2 discussed above.
BH22-9	Encountered from 3.8 m below grade, to at least 4.6 m below grade, where the borehole was terminated. Grey in colour, silty. No further in-situ testing was performed on the clay material in the location, however, based on its vicinity to BH2, the characteristics of the clay described above should be comparable.

[1] St-Onge, D.A., Surficial Geology, Lower Ottawa Valley, Ontario, Map 2140A, Geological Survey of Canada, 2009.
[2] Richards, J.H., Generalized Bedrock Geology, Ottawa-Hull, Ontario and Quebec, Map 1508A, Geological Survey of Canada, 1979.

- Clay was not encountered in borehole BH22-5, but rather glacial till, with traces of clay, beneath a sand layer extending between 0.6 and 3.6 m below grade;
- Central portion of the Site, represented by BH4; BH22-3; BH22-4; and BH22-10 (as presented in **Figure 9**). Clay was not encountered in these boreholes, which extended to depths of between 4.6 and 6.7 m below grade. Rather a glacial till, being clayey to with traces of clay, was found commencing at depth from between 3.7 and 4.5 m below grade, to the extent of the boreholes; and
- Southern extent of the Site, represented by BH22-1; BH22-2 and BH22-6 (as presented in **Figure 9**). Clay was not encountered in these boreholes, which extended to depths of between 4.6 m below grade. Rather a glacial till, with traces of clay, was found commencing at depth from between 2.8 and 3.5 m below grade, to the extent of the boreholes.

Based on the underlying overburden conditions encountered across the Site, at the time of the previous geotechnical and environmental investigations, it is anticipated that the clay confining layer is present at the northern extent of the subject property, with a hydraulic conductivity of $1x10^{-5}$. It is anticipated that this area includes the area of the proposed septic disposal system, which will act as a confining layer to the supply aquifer by possible septic effluent impacts. Select locations, namely the central and southern portion of the Site, did not encounter a district clay layer. **Figure 11** and **Figure 11A** depicts the approximately inferred extent of the clay subsurface material encountered as well as overall overburden conditions, and a further visual depiction of the underlying conditions anticipated to be present across the Site based on previous intrusive investigations. Bedrock was encountered in the on-Site supply well (discussed in Section 2.8) at a depth of 16.5 m below grade.

According to the Brunton, F.R. and Dodge, J.E.P. Karst map of Southern Ontario, including Manitoulin Island; Ontario Geological Survey, Groundwater Resource Study 5, 2008, known areas to potential areas of karst geology is present in the vicinity of the Site, namely to the south. The Site and adjacent land to the east and west are identified as “Unknown or no observed evidence of karstification due to the character of bedrock, lack of outcrop and/or relative thickness of overburden.” Based on the available well record for the on-Site supply well, bedrock on the Site is anticipated to be encountered at depths of approximately 16.5 m below grade.

2.7.2 Well Head Protection

Initial pre-consultation discussions with the City of Ottawa, September 22, 2021, revealed that the proposed development is located within the wellhead capture zone for the neighbouring Albion Sun Vista communal supply well system. This communal well is located downgradient (south) of the subject Site, following Mitch Owens Road and is sourced by the shallow bedrock aquifer which is hydraulically connected to the sand/gravel/till overburden recharge zone.

A copy of the *Wellhead Protection Area Plan, Albion Sun Vista Community & Peer Review – Albion Sun Vista Wellhead Protection Area Plan* report, prepared by Trow Associates Inc. and Jacques Whitford Environmental Limited, dated June 2004, was provided to LRL from the City of reference. The report outlines details of the identified Wellhead Protection area, as well as clearly indicating appropriate recommendations to protect the drinking water source of the communal supply well.

The study interpreted a groundwater flow model that was initiated to determine the likely time of travel within the Albion Sun Vista Community capture zones. The modeling took into consideration local potential contamination sources to evaluate the relative risk of these areas towards the communal well. Seven (7) sites were identified to have, or potentially have uses and activities with the potential for contamination impacts to the groundwater within the wellhead capture zone, the risk to the communal wells supply aquifer was considered low to moderate due to the

underlying low permeable layer present. The Site, as discussed herein, was identified as a potential for contamination impacts, based on its up-gradient location and facility operations. Based on the modelling included as part of the study, 5546 Albion Road is inferred to encompass the 50 Day – 2 Year Capture Zone, which signifies that groundwater can travel through the capture zone in less than two (2)-year time (Zone 1).

An exert of the 50 Day – 2 Year Capture Zone, as included in the Wellhead Protection Plan, is included in **Figure 6A**. Furthermore, exerts from this previous report depicting the following are included:

- The two (2) to ten (10)-year time capture zone (Zone 2) is presented in **Figure 6B;**
- The ten (10) to 25 – year time capture zone (Zone 3) is presented in **Figure 6C**; and
- The capture zone limit is included in **Figure 6D**.

Based on the pre-consultation with the City of Ottawa, it has been indicated that **the proposed re-development of the Site (pre- and post- construction activities) must follow the recommendations set out in the Wellhead Protection Area Plan documentation prepared by Trow Associates Inc. and Jacques Whitford Environmental Limited, dated June 2004 to protect the communal supply aquifer.** These recommendations are reiterated in Section 11, with greater detail on how the proposed re-development of the Site will follow the recommendations, but are summarized as follows:

- The sand and gravel unit, set over the bedrock layer, acts as the recharge area of the supply aquifer. A Spill & Risk Management shall be implemented, including the best management practices, spills prevention plan, spills response plan, staff training requirements outlined therein, during construction and throughout the operational period of the Site;
- Prior to finalization of the re-development of the Site, a sounding inspection of the exiting well grouting should be completed by a licenced well installer to confirm that the bedrock aquifer intercepted by the supply well construction is isolated from possible surficial impacts (i.e. spills);
- All underground storage tanks must be equipped with interstitial monitoring systems and the tanks and associated piping should have leak detection systems in place; and
- A monitoring program of the Site's supply well must be established to provide ongoing water quality information. This should include monitoring on an annual basis for general water quality parameters and metals in addition to parameters often associated with fuel dispensing and handling facilities: petroleum hydrocarbons (PHC) Fractions F1 through F4; and Volatile Organic Compounds (VOCs) including Benzene, Toluene, Ethylbenzene and Xylenes (BTEX).

The *Wellhead Protection Area Plan, Albion Sun Vista Community & Peer Review – Albion Sun Vista Wellhead Protection Area Plan* report is summarized in below in Section 4.1. Clear risk prevention measures with respect to the Wellhead Protection Area, specifically those to be implemented on the Site by the Owner, are generally presented in Section 9. A formal Construction Risk Management Plan for Source Water Protection, a Spills Prevention and Risk Management Plan (which will include staff training and record keeping as a risk management measure), and the Monitoring Program will be prepared.

Furthermore, to support the protection of the local communal well, as outlined in the Wellhead Protection Plan Report (Jacques Whitford, 2004), the distribution of clay encountered across the Site requires detail characterization, as provided above in Section 2.7.

A copy of this report can be made available from the City of Ottawa, upon request.

2.7.3 Recharge Areas

Locally, the groundwater recharge zone for the bedrock supply aquifer is most likely the unconfined soil conditions encountered to the north, east and west of the Site, across the vast area of wooded and undeveloped land. Surficial geological mapping available from the Ontario Ministry of Northern Development, Mines, Natural Resources and Forestry, interactive mapping system reviewed as part of this assessment, reveal that the following surficial conditions are present.

- Glaciomarine and Marine Deposits: sand, gravelly sand and gravel, nearshore and beach deposits;
- Glaciofluvial ice-contact deposits: gravel and sand, minor till, includes esker, kame, end moraine, ice-marginal delta and subaqueous fan deposits; and
- Till: undifferentiated, predominantly sandy silt to silt matrix, commonly rich in clasts, often high in total matrix carbonate content.

Each of which are considered to have a suitable permeability which could attribute to infiltration and bedrock aquifer recharge.

2.7.4 Hydrogeologically Sensitive Areas

The Site is not considered Hydrogeologically Sensitive in regard to shallow soils or bedrock outcrops. Review of geological mapping and additional supporting documents, including MECP water well records, have revealed a deposit of overburden greater than 1.5 m in thickness. This was further confirmed through the advancement of boreholes across the Site at the time of additional sub-surface investigation fieldwork completed by LRL, in support of the proposed development application. These additional investigations included a Geotechnical Investigation and a Phase II Environmental Site Assessment. No bedrock outcrops were encountered at the time of LRLs Site visits associated with the corresponding investigations and assessments.

Subsurface conditions encountered during these studies are summarized as follows, although greater detail is available in the corresponding reporting documents completed for the respective investigations. Copies of the borehole logs from the Phase II Environmental Site Assessment and Geotechnical Investigation are included in **Attachment D**, and further detail pertaining to each summary, including chemical analysis and conclusions are provided in Section 4.

Geotechnical Investigation (June 2022):

Topsoil was found to have a thickness of 75 mm in a borehole advanced at the general central portion of the Site, on the grassed landscaped area of the property. The remaining boreholes, advanced across the asphalted parking and circulation areas of the Site revealed the presence of consisting of 100 mm thickness of asphalt overlying granular material have a thickness of 300 – 400 mm. The pavement structure, and topsoil, was followed a fill material to depths ranging between 1.06 and 1.75 m bgs. The fill was generally be described as a mixture of brown sand and gravel.

Underlying the fill was sand that extended to depths ranging between 2.97 and 6.71 m bgs. This material can be described as having trace silt, trace clay, greyish brown, and wet. Two (2) boreholes advanced to the north of the existing store encountered a thin layer of silt and clay under the sand layer, to depths of between 4.12 and 4.42 m bgs. This material can be described as having trace sand, grey, and wet.

Glacial Till was encountered under the sand, or silt and clay materials which extended to a depth of 6.71 m bgs, where the boreholes were terminated. This material can be described as a mixture of silt-sand, some gravel sized stone, trace clay, grey, and wet.

As part of the investigation, select soil samples were submitted for laboratory gradation analyses. The results of these analysis are summarized as follows:

Sample Location	Depth (m)	Percent for Each Soil Gradation							Estimated Hydraulic Conductivity 'K' (m/s)
		Gravel		Sand			Silt (%)	Clay (%)	
		Coarse (%)	Fine (%)	Coarse (%)	Medium (%)	Fine (%)			
BH1	1.5 - 2.1	0.0	0.0	0.1	24.0	66.1	8.9	0.9	2×10^{-7}
BH2	3.1 - 3.7	0.0	0.0	0.2	0.4	5.4	51.6	42.4	1×10^{-7}
BH3	4.6 - 5.2	0.0	12.0	5.9	9.1	26.6	42.7	3.7	2×10^{-6}

Phase II Environmental Site Assessment (January 2023)

The subsurface soil conditions in the area investigated on the Site generally consist of asphalt structure beneath approximately 0.1 m of asphalt followed by fill to depths between 0.4 and 1.8 m bgs, sand to depths between 2.8 and 4.5 m bgs, and silty till to a depth of 4.6 where the boreholes were terminated. The fill generally consists of medium-grained sand with gravel and stones, and black silty organics. The overburden material was moist at depths between 1.2 and 1.7 m bgs and saturated at depths between 1.5 and 2.1 m bgs.

The Site is considered Hydrogeologically Sensitive due to its proximity to the wellhead capture zone for the neighbouring Albion Sun Vista communal supply well system as discussed above in Section 2.7.2.

According to the Brunton, F.R. and Dodge, J.E.P. Karst map of Southern Ontario, including Manitoulin Island; Ontario Geological Survey, Groundwater Resource Study 5, 2008, known areas to potential areas of karst geology is present in the vicinity of the Site, namely to the south. The Site and adjacent land to the east and west are identified as "Unknown or no observed evidence of karstification due to the character of bedrock, lack of outcrop and/or relative thickness of overburden."

2.7.5 Potential Sources of Contamination

As part of this assessment, a desktop review of potential sources of contamination to the supply aquifer was completed. This review was completed with general reference to Ontario Regulation 153/04, which is the provincial regulation which is most often referenced when considering the environmental conditions of a Site. The regulation outlines possible Potential Contaminating Activities (PCA) which can be associated with impairment or impacts to the quality of the subject property conditions. The review revealed the following potential sources of contamination, and the corresponding PCA as set out by Ontario Regulation 153/04.

The subject Site is presently operated as a retail fuel dispensing facility equipped with underground petroleum storage tanks, and associated petroleum dispensing equipment (piping and dispensing pumps). The property has been used for its current operations since at least the mid to late 1990's. Petroleum handling and dispensing facilities are often considered a high risk for potential impairment to subsurface quality and conditions. Ontario Regulation 153/04 considers the "*Gasoline and Associated Products Storage in Fixed Tanks*" as a PCA (PCA 28). Therefore, the Site operations have been identified as a potential source of contamination.

Confining aquifer conditions, like that present in the area of the Site, may be considered less likely to be impacted by the possible contamination sources, although in cases of damaged bedrock

supply well seals/grouting, contamination within shallow aquifers may penetrate down into deeper points.

A large aggregate extraction facility is located approximately 390 m northeast and 600 m east of the Site. Aggregate extraction (pits and quarries) is also considered a high risk for potential contaminant to the natural environment, and aquifers mainly due to the equipment usage, and activities. Disturbance to aquifers can be the result of operational de-watering activities and blasting. Mechanical and equipment malfunctions can result in chemical spills (i.e. petroleum hydrocarbons) which could infiltrate into possible drinking water sources or impair the surficial materials at the facility. Ontario Regulation 153/04 considers the "*Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems*" a PCA (PCA 52).

The historical industrial/commercial development previously occupying the property located immediately east of the Site, following Albion Road, is also identified as a potential source of contamination. Little detail regarding the historical operations which took place at the property from between at least the mid 1970's and 2019. Available aerial imagery retrieved through the City of Ottawa's interactive portal, geoOttawa, reveal the presence of a fueling station along the southern extent of the property. The storage container (tank) appeared to be above-grade, and the contents are unknow. In the 2014 aerial imagery, numerous pieces of heavy machinery and large vehicles are visible across the property. The activities, namely the inferred re-fueling station at the south of the property, are considered a potential source of contamination, generally comparable to the activities at the subject Site. PCA identified with the historical land use, as per Ontario Regulation 153/04 include "*Storage, maintenance, fuelling and repair of equipment, vehicles, and material used to maintain transportation systems*", and "*Gasoline and Associated Products Storage in Fixed Tanks*".

2.8 Ontario Water Well Records

A search was conducted of the well records from the MECP Water Well Record (WWR) department. The search by UTM coordinates covered a 500 m radius from the site. The search returned 70 WWRs. A copy of the WWRs is included in **Attachment E** and their approximately locations are presented in **Figure 7**.

The records of the wells within 500 m of the Site revealed that the wells are drilled wells extending to depths between 14.0 and 67.9 m. The well records show that that the geological conditions within 500 m are generally similar and consist of sand or sand and gravel mix, followed by clay over bedrock. Glacial till material was encountered in select wells retrieved, and additionally, clay was not identified in all locations. The bedrock typically includes limestone, sandstone, or a combination of both. Two (2) well records retrieved, Well No. 1501837 approximately 385 m north of the Site, and Well No. 1501841, the supply well for the site, have granite rock listed.

Inferred subsurface profiles cross sections are presented in **Figure 8A** through **Figure 8B** and include select wells in the vicinity of the cross-section segments as shown in **Figure 7**. The general overburden conditions encountered in the wells within 500 m of the site are as follows:

MECP Well Number	Distance and Direction From Site (m)	Depth (m)	Overburden Details						
			Topsoil/ Clayey Loam (m)	Sand/ Gravel/Till (m)	Clay (m)	Weathered Bedrock/ Bedrock (m)	Groundwater Encountered (m)	Static Water Level (m)	Type of Water
1501841	*On Site*	*41.4*	--	*0 – 3.0 (Sand)* 3.0 – 9.1 (Gravel) 9.1 – 16.4 (Till)	--	*16.4 – 41.4 (Limestone/ Sandstone/ Granite)*	*22.8* *33.5*	*5.4*	*Fresh*
1501837	435 N	25.9	0 – 7.6 (Topsoil)	7.6 – 16.7 (Gravel)	--	16.7 – 25.9 (Granite)	21.3	--	Fresh
1502207	385 N	15.8	--	0 – 1.8 (Sand Fill) 12.2 - 14.0 (Till) 14.0 – 15.8 (Gravel)	1.8 – 12.2		15.8	1.5	Fresh
1507206	410 W	17.3	--	--	0 – 15.5	15.5 – 17.3 (Limestone)	16.7	0.6	Fresh
1510978	40 E	26.5		5.7 – 9.1 (Sand)	0 – 5.8 9.1 – 16.1	16.1 – 26.5 (Limestone)	26.5	6.1	Fresh
1512040	200 N	14.0			0 – 14.0		14.0	1.8	Fresh
1514039	240 SW	31.1		0 – 19.2 (Sand)		19.2 – 31.1 (Limestone)	31.1	8.5	Fresh
1514603	440 N	31.6		0 – 11.5 (Sand) 11.5 – 14.3 (Gravel)		14.3 – 31.6 (Limestone)	28.9 31.6	1.8	Fresh
1515197	245 N	22.2		0 – 10.6 (Sand) 10.6 – 58 (Gravel)		8.5 – 22.2 (Limestone)	21.3	0.3	Fresh
1517522	150 N	19.2		0 – 0.6 (Sand Fill) 6.0 – 13.4 (Sand)	0.6 – 6.0	13.4 – 19.2 (Limestone)	19.2	Flowing	Fresh
1519504	430 W	18.2		0 – 3.6 (Sand)	3.6 – 10.9	10.9 – 18.2 (Limestone)	12.1 16.4	0.9	Fresh
1529731	430 SE	60.9		0 – 3.0 (Sand) 10.7 – 15.8 (Sand and Gravel)	3.0 – 10.6	15.8 – 60.9 (Limestone/ Sandstone)	59.4	9.4	N/A
1531934	485 SE	23.1		0 – 2.7 (Sand) 7.0 – 11.2 (Gravel and Boulders)	2.7 – 7.0	11.2 – 23.1 (Limestone)	19.8	2.5	N/A
1531972	445 SE	31.0		0 – 10.3 (Sand)		10.3 – 36.5 (Limestone/ Sandstone)	26.8 34.1	4.5	N/A
1532047	470 SE	60.9		0 – 3.6 (Sand) 7.3 – 11.8 (Sand and Gravel)	3.6 – 7.3	11.8 – 60.9 (Limestone / Sandstone)	58.2	1.8	N/A
1532048	485 SE	30.4		0 – 2.4 (Sand) 7.3 – 11.5 (Sand and Gravel)	2.4 – 7.3	11.5 – 30.4 (Limestone)	28.0	1.4	NA
1532211	360 W	42.6		0 – 2.7 7.6 – 14.6 (Sand and Gravel)	2.7 – 7.6	14.6 – 42.6 (Sandstone)	14.1	6.8	N/A

MECP Well Number	Distance and Direction From Site (m)	Depth (m)	Overburden Details						
			Topsoil/ Clayey Loam (m)	Sand/ Gravel/Till (m)	Clay (m)	Weathered Bedrock/ Bedrock (m)	Groundwater Encountered (m)	Static Water Level (m)	Type of Water
1532213	500 W	22.8		0 – 2.4 (Sand)	2.4 – 7.6	7.6 – 22.8 (Limestone)	17.9 18.8	1.8	N/A
1532594	540 SE	18.6	0 – 1.8 (Peat Moss)	0 – 10.3 (Sand)		10.3 – 18.5 (Limestone)	14.9 15.5 16.1 16.4	1.2	N/A
1533042	520 SE	31.0		0 – 8.8		8.8 – 31.0	15.2 18.5 21.9 25.9	0.9	N/A
1533068	415 SE	24.3		0 – 10.6		10.6 – 24.3	21.6	2.4	N/A
1533110	530 E	48.7			0 – 12.4	12.4 – 48.7 (Limestone/ Sandstone)	45.7	3.9	N/A
1533111	360 SE	42.6		0 – 10.9		10.9 – 42.6 (Limestone/ Sandstone)	40.5	3.6	N/A
1533215	330 SE	30.7		0 – 9.7		9.7 – 30.7 (Limestone)	15.5 19.5 20.7	1.5	N/A
1536160	500 N	52.7		0 – 1.2 (Sandy Fill) 1.2 – 4.2 (Sand) 10.0 – 14.6 (Sand and Gravel)	4.2 – 10.0	14.6 – 52.7 (Sandstone)	49.6	5.0	N/A
7042574	500 N	27.4		0 – 11.5 (Sand and Gravel)		11.5 – 27.4 (Limestone)	21.0 26.5	Flowing	N/A
7048696	500 N	53.9		0 – 13.1 (Sand, Gravel, Boulders)		13.1 – 53.9 (Limestone/ Sandstone)	56.3	3.7	N/A
7048697	405 N	36.5		0 – 6.1 (Sand)	6.1 – 15.8	15.8 – 36.5 (Limestone/ Sandstone)	33.5	4.7	N/A
7049238	500 N	48.7		0 – 3.3 (Sand) 11.5 – 13.1 (Gravel)	3.3 – 11.5	13.1 – 48.7 (Limestone/ Sandstone)	28.9	5.3	N/A
7050746	500 N	28.9		2.1 – 13.7 (Sand and Gravel)	0 – 2.1	13.7 – 28.9 (Limestone)	27.4	0.1	N/A
7050752	600 NW	24.3		0 – 3.0 (Sand) 9.1 – 10.6 (Gravel)	3.0 – 9.1	10.6 – 24.3 (Limestone/ Sandstone)	16.7 22.2	0.2	N/A
7108138	165 E	33.5		0 – 6.1 (Sand and Gravel, Boulders)		6.1 – 33.5 (Limestone)	29.8	3.2	N/A
7108364	380 N	48.7		0 – 2.4 (Sand and Gravel)	2.4 – 16.7	16.7 – 48.7 (Limestone)	22.0 41.4 45.1	5.9	N/A
7108365	505 N	50.5		0 – 3.0 (Sand) 13.7 – 14.6 (Gravel)	3.0 – 13.7	14.6 – 50.5 (Limestone / Sandstone)	29.5 48.4	6.0	N/A
7109764	550 NW	43.2		0 – 11.8 (Sand, Gravel, Boulders)		11.8 – 43.2 (Sandstone/ Limestone)	41.7	1.1	N/A
7109765	515 NW	36.5		0 – 11.5 (Sand, Gravel, Boulders)		11.5 – 36.5 (Limestone/ Sandstone)	34.4	5.1	N/A

MECP Well Number	Distance and Direction From Site (m)	Depth (m)	Overburden Details						
			Topsoil/ Clayey Loam (m)	Sand/ Gravel/Till (m)	Clay (m)	Weathered Bedrock/ Bedrock (m)	Groundwater Encountered (m)	Static Water Level (m)	Type of Water
7109766	730 NW	24.3		0 – 10.3		10.3 – 24.3 (Sandstone / Limestone)	15.8 22.5	0.1	N/A
7110787	335 N	54.8		10.3 – 17.3	0 – 10.3	17.37 – 54.8 (Limestone)	51.2	5.7	N/A
7110788	250 N	30.4			0 – 10.9	10.9 – 30.4 (Sandstone)	26.5 28.3	2.0	N/A
7110789	220 N	30.4			0 – 10.9	10.9 – 30.4 (Sandstone)	26.5 28.3	6.3	N/A
7126559	260 N	42.6		7.9 – 11.5 (Sand, Gravel, Boulders)	0 – 7.9	11.5 – 42.6 (Limestone/ Sandstone)	29.8 40.2	4.0	N/A
7126560	290 N	30.4		0 – 1.2 (Gravel) 7.9 – 12.1 (Sand, Gravel, Boulders)	1.2 – 7.9	12.1 – 30.4 (Limestone)	17.0 28.3	1.7	N/A
7126658	235 N	31.3	0 – 2.4	9.1 – 11.5 (Sand and Boulders)	2.4 – 9.1	11.5 – 31.3 (Limestone)	28.6	4.1	N/A
7132592	420 S	18.2		0 – 10.3 (Sand, Gravel, Boulders)		10.3 – 18.2 (Limestone)	14.6 15.8	2.0	N/A
7145839	280 N	18.5			0 – 8.8	8.8 – 18.5 (Limestone)	14.3 15.5 16.4	1.1	N/A
7150145	500 N	37.1		0 – 1.8 (Sand) 4.5 – 14.3 (Sand and Gravel)	1.8 – 4.5	14.3 – 37.1 (Limestone)	35.0	5.3	N/A
7151421	500 N	48.7		0 – 0.9 (Gravel Fill) 0.9 – 14.0 (Sand, Gravel, Boulders)	0.9 – 3.6	14.0 – 48.7 (Limestone / Sandstone)	25.9 41.1 46.9	5.2	N/A
7156118	400 N	67.9		0 – 1.5 (Fill) 10.6 – 17.0 (Till)	1.5 – 10.6	17.0 – 67.9 (Limestone / Sandstone)	64.9	6.8	N/A
7164576	470 N	54.5		0 – 13.3 (Sand)		13.3 – 54.4 (Limestone)	46.9 51.5	3.5	N/A
7199506	580 N	67.0		0 – 1.5 (Sand) 5.4 – 12.8 (Sand)	1.5 – 5.4	12.8– 67.0 (Sandstone)	66.4	5.5	N/A
7200357	540 NW	51.8		0 – 0.6 (Gravel) 4.5 – 13.1 (Silty)	0.6 – 4.5	13.1 – 51.8 (Sandstone)	27.7 49.9	3.8	N/A
7216304	505 NW	30.9		0 – 3.9	3.9 – 6.9	6.9 – 30.9 (Shale/ Limestone)	IL*	6.2	Fresh
7228033	510 NW	37.4		0 – 12.1		12.1 – 37.4	25.9 35.0	5.9	N/A
7234834	70 N	42.6		0 – 2.4 (Sand) 6.0 – 15.2 (Gravel)	2.4 – 6.0	15.2 – 42.6 (Sandstone with Limestone)	27.1 35.0 40.5	5.1	N/A
7234935	70N	25.9		0 – 11.5		11.5 – 25.9	20.4	3.6	Fresh
7262956	445 NW	30.4		7.6 – 12.1	0 – 7.6	12.1 – 30.4 (Limestone/ Sandstone)	28.3	0.1	N/A

MECP Well Number	Distance and Direction From Site (m)	Depth (m)	Overburden Details						
			Topsoil/ Clayey Loam (m)	Sand/ Gravel/Till (m)	Clay (m)	Weathered Bedrock/ Bedrock (m)	Groundwater Encountered (m)	Static Water Level (m)	Type of Water
7268437	275 NW	48.7		0 – 14.6 (Sand, Gravel and Clay)		14.6 – 48.7 (Limestone)	45.7 46.9	7.3	N/A
7272978	280 W	28.9			0 – 10.9 (Clay, Sand and Boulders)	10.9 – 28.9 (Limestone)	26.8 27.1	2.6	N/A
7275892	80 S	54.8		0 – 12.1 (Sand and Gravel)		12.1 – 54.8 (Sandstone)	39.0 50.2 53.0	3.1	N/A
7279254	365 NW	48.4		0 – 14.8 (Sand)		14.8 – 48.4 (Limestone)	IL*	4.3	N/A
7285355	360 W	48.7			0 – 12.8 (Clay with Sand and Gravel)	12.8 – 48.7 (Limestone)	41.7 46.6	3.5	N/A
7285357	145 N	36.5			0 – 12.1 (Clay with Sand and Gravel)	12.1 – 36.5 (Limestone with Sandstone)	34.7	2.8	N/A
7287901	375 NW	48.7		9.7 – 12.1 (Gravel and Boulders)	0 – 9.7	12.1 – 48.7 (Sandstone)	3.0 45.7	1.4	N/A
7287917	370 W	33.5		0 – 12.1		12.1 – 33.5 (Limestone/ Sandstone)	16.7 28.0 31.6	2.8	N/A
7287923	500 W	33.5		7.6 – 12.8	0 – 7.6	12.8 – 33.5 (Limestone)	27.4 31.6	3.5	N/A
7294916	715 NW	49.0			0 – 9.6	9.6 – 49.0 (Limestone)	9.6 43.0	3.1	Fresh
7324276	520 NW	32.9		0 – 11.2		11.2 – 32.9 (Limestone)	26.8 28.9	3.5	N/A
7329110	120 N	36.0		0 – 12.0		12.0 – 36.0 (Sandstone)	3.0 33.9	3.6	N/A
7330777	90 N	24.3		0 – 3.0	3.0 – 12.8	12.8 – 24.3 (Limestone)	17.9 19.8	4.9	Fresh
7359616	410 NW	25.9		0 – 12.4 (Sand, with Clay and Gravel)		12.4 – 25.3	21.0 23.4	1.5	NA

Notes:
Italics Supply Well On-Site
N/A Not Data/Not Tested

2.8.1 Water Well Record Summary

Based on the details of the well records obtained in the area (within 500 m of the Site) the aquifer can yield a sufficient amount to supply the proposed development on the Site in the long term. For example, pumping test results from select neighbouring wells within 500 m of the Site, indicate the bedrock aquifer being able achieve 189 L/min over 60 minutes utilizing approximately 84% of the available drawdown; and a pumping rate of 75.7 L/min over 60 minutes utilizing approximately 95% of the water column available. The locations of wells within 500 m are presented in **Figure 7.** A summary of the quantity of water of select neighboring wells within a 500 m radius of the Site is as follows:

MECP Well Number	Distance and Direction from Site	Depth (m)	Pump Test Details					
			Pump Rate (L/min)	Duration (min)	Drawdown (m)	Specific Capacity (L/Sec/m)	Recovery (%)	Recommended Pump Rate (L/min)
1510978	40 E	26.5	45.4	120	10.6	0.0713	--	18.9
1502207	385 N	15.8	37.8	120	--	--	--	18.9
1512040	200 N	14.0	75.7	60	9.1	0	--	18.9
1514039	240 SW	31.1	30.2	240	0	--	--	30.2
1514603	440 N	31.6	26.5	90	8.8	0.050	100	26.5
1515197	245 N	22.2	18.9	60	0	--	100	18.9
1517522	150 N	19.2	113	60	0	--	100	18.9
1519504	430 W	60.9	75.7	360	0.3	4.20	--	75.7
1529731	430 SE	60.9	18.9	60	51.5	0.006	100	18.9
1531934	485 SE	23.1	94.6	60	5.4	0.292	--	18.9
1531972	445 SE	31.0	30.2	60	25.9	0.019	100	30.2
1532047	470 SE	60.9	75.7	60	56.3	0.022	82.6	18.9
1532048	485 SE	30.4	56.7	60	27.7	0.034	75.8	18.9
1532211	360 W	42.6	75.7	60	34.4	0.036	74.1	18.9
1532213	500 W	22.8	113	60	4.2	0.448	0	18.9
1533068	415 SE	24.3	113	60	18.8	0.100	100	56.7
1533111	360 SE	42.6	189	60	32.9	0.095	100	56.7
1533215	330 SE	30.7	87.0	60	25.9	0.055	100	30.2

-- No Data is Available

xx Well Described in Greater Detail Above (available drawdown)

2.9 Shallow Overburden Groundwater Monitoring Wells

MacEwen Petroleum Inc. retained LRL to complete a Phase II Environmental Site Assessment (ESA) on the Site in the context of property redevelopment. The assessment was completed to determine if recognized potential environmental concerns have negatively impacted soil and groundwater quality of the subject Site. The potential environmental concerns identified that requires investigation includes:

- The past and present Site operations as a retail fuel outlet, and corresponding fuel dispensing equipment;
- The historical fueling station, and presence of heavy machinery on the neighbouring lands to the east following Albion Road (5545 Albion Road) encountered in aerial imagery obtained from between the period of mid 1970's and 2019; and
- The mineral aggregate operations on the neighbouring land approximately 390 m northeast.

To address these concerns, an intrusive investigation was carried out on July 28 and 29, 2022 by LRL. Further details pertaining to the findings of the Phase II Environmental Site Assessment, namely concentrations of contaminates encountered, contamination plumes, and recommendations are described below in Section 11. This section pertains solely to the geological and hydrogeological characteristics across the Site.

A total of ten (10) boreholes were advanced across the Site. The subsurface soil conditions in the area investigated on the Site generally consist of asphalt structure beneath approximately 0.1 m

of asphalt followed by fill to depths between 0.4 and 1.8 m bgs, sand to depths between 2.8 and 4.5 m bgs, and silty till to a depth of 4.6 where the boreholes were terminated. The fill generally consists of medium-grained sand with gravel and stones, and black silty organics. The overburden material was moist at depths between 1.2 and 1.7 m bgs and saturated at depths between 1.5 and 2.1 m bgs.

Four (4) boreholes were completed as monitoring wells: BH22-1, BH22-2, BH22-3 and BH22-4 (herein referred to as MW22-1, MW22-2, MW22-3, and MW22-4). Monitoring wells were constructed within the 91 mm diameter boreholes with a 51 mm slotted PVC piezometer. The top of the screen was extended to the ground surface using a solid riser pipe. Annular space around the slotted portion of the piezometer was backfilled with pre-washed and graded silica sand up to 300 mm above the top of the screen. A bentonite seal was placed above the sand pack and bentonite was used to fill the remainder of the hole to the surface. Monitoring wells were finished at the surface with a flush-mount aluminum casing.

The locations of the monitoring wells are described as follows:

Monitoring Well Identification	Location
MW22-1	Southeast portion of the Site.
MW22-2	Southeastern portion of the Site
MW22-3	Vicinity of the petroleum dispensing pump islands
MW22-4	Vicinity of the petroleum dispensing pump islands

The borehole and monitoring well locations are presented in **Figure 9**, and a copy of the borehole logs are included in **Attachment D**. Static groundwater elevations were measured at each monitoring well prior to the respective sampling activities and are summarized in the following Table. Groundwater depth measurements were between 1.77 and 1.98 m bgs, which corresponded to elevations between 98.15 and 98.43 m, with respect to an arbitrary benchmark established and assigned an elevation of 100.00 m.

The groundwater elevations and interpreted flow contours are shown in **Figure 9**. Based on these elevations the groundwater flow direction on the Site is towards the south-southwest.

Monitoring Well	Ground Surface Elevation (m)	Reference Elevation (m)	Depth to Water Table (m)		Groundwater Elevation (m)
			Reference Point	Ground Surface	
MW22-1	100.17	100.06	1.67	1.77	98.39
MW22-2	99.94	99.86	1.71	1.79	98.15
MW22-3	100.20	100.13	1.91	1.98	98.22
MW22-4	100.21	100.10	1.67	1.78	98.43

3 PROPOSED DEVELOPMENT

It is anticipated that the existing features mentioned above in Section 2 will be decommissioned or demolished, and removed from the Site accordingly, and replaced as follows:

- 400 m² single-story convenience store at the central portion of the Site;
- An approximately 525 m^2 concrete apron with overhead canopy;
- Four (4) underground storage tank, including the following:
  - 25 000 L capacity, fiberglass diesel fuel storage tank;
  - 25 000 L capacity, fiberglass super grade gasoline storage tank; and
  - Two (2) 65 000 L capacity, fiberglass regular grade gasoline storage tank.
- Six (6) fuel dispensing pumps; and
- New private sewage disposal system at the northwest portion of the Site, as described in greater detail herein.

The location and dimensions of the existing and proposed features are presented in **Figure 2** and **Figure 10,** respectively. It should be noted that during the redevelopment of the Site, soils with impacts from the on-going fuel dispensing activities (as identified in the Phase II Environmental Site Assessment, LRL, 2023) will be remediated accordingly and as considered practical, and the formal summary report will be submitted to the Technical Standards and Safety Authority (TSSA), and all other required regulatory authorities. A post re-development groundwater monitoring plan will be prepared and followed as discussed in Section 11.

Additionally, soils included in the existing sewage disposal system will be removed from the Site and disposed of accordingly. The Demolition Plan (C102) included in the proposed re-development application package to the City includes a note with reference to the area of the existing sewage disposal system to be removed.

To protect the local supply aquifer, namely that of the neighbouring residential development with a communal supply well, the low conductivity layer (clay) present at the northern portion of the Site should be protected during the redevelopment activities. The proposed construction activities associated with the re-development should not puncture the low conductivity layer, unless it is to remove known contaminates which will pose a notable risk to the environmental quality and conditions of the Site and neighbouring lands.

The proposed construction activities associated with the re-development will include:

- The removal and replacement of the underground petroleum storage tanks.
  - As presented in the included **Figure 11**, the proposed underground storage tanks will be positioned in the general same location as their existing position, with a slight shift towards the east and north, and the inclusion of two (2) additional tanks to the west of the exiting installations.
  - The excavation associated with the installation of underground storage tanks of this size (two (2) at 65,000 L capacity and two (2) at 25,000 L capacity) generally extends to a depth of approximately 4.2 m below grade, which includes 0.6 m of granular underlying the installations.
  - The majority of excavation related to the installation of the underground storage equipment will include the area presently encompassed by the current installations.

- Based on the finding of the Phase II ESA, prepared by LRL (2023), although petroleum hydrocarbon-based contamination was not identified in the sampling program completed, it was inferred that underlying soils within the existing tank nest (i.e. fill around the installations) and under the fuel dispensing pumps may be impacted. This area is estimated to be 300 m^2 (tank nest area) and 450 m^2 (pump island area). Based on the properties of petroleum-based contaminates (LNAPL), they are often limited to the depth of the groundwater table. The boreholes advanced as part of the Phase II ESA revealed that groundwater was encountered at depths of between 1.2 – 2.1 m below grade, which can suggest that impacted overburden is likely limited to these depths.
- Further discussion and procedures related to the excavation of the impacted material are included in the Construction Management Plan.

- The removal and replacement of the fuel dispensing equipment (i.e. fuel dispensing pumps and corresponding piping and lines) and the overhead canopy.
- The removal of existing asphalt and cement structure and features, as presented in the Demolition Plan (C102) included in the proposed re-development application package to the City.
- The removal and replacement of the sewage disposal system on the northern portion of the Site.
- The removal and re-construction of the convenience store.
  - It should be noted that the convenience store will be comparable to that of the existing one on the site with no significant quantities of fuels, oils or lubricants stored. Those which are present are in small quantities and contained in sealed containers for retail. No vehicle repair or carwash operations presently occur on the site, nor are they anticipated.

Further details with respect to training, construction management, spill & risk management to be followed at the Site, will be included in a Construction Risk Management Plan for Source Water Protection, a Spills Prevention and Risk Management Plan (which will include staff training and record keeping as a risk management measure), and the Monitoring Program – will be prepared and reviewed by the City as a condition of the site plan agreement.

4 PREVIOUSLY PREPARED REPORTS

4.1 Wellhead Protection Area Plan, Albion Sun Vista Community & Peer Review – Albion Sun Vista Wellhead Protection Area Plan, June 2004

The report was prepared by Trow Associates Inc. and Jacques Whitford Environmental Limited in support of a Wellhead Protection Study carried out for the water wells that supply the existing and proposed expansion of the Albion Sun Vista Community mobile home park located in the vicinity of the community now known as Greely, formerly the Osgoode Township within the City of Ottawa. The Wellhead Protection Study was completed to identify the supply aquifer which services the respective communal well for the Albion Sun Vista Community as well as to identify and locate existing and potential areas of contamination situated within the corresponding capture zone of the communal well.

The study interpreted a groundwater flow model initiated to determine the likely time of travel within the Albion Sun Vista Community capture zones. The modeling took into consideration local

potential contamination sources to evaluate the relative risk of these areas towards the communal well. The study generally concluded the following:

- Recharge zone for the supply aquifer of the communal wells includes the sand and gravel overburden layer extending approximately 1.5 km northeast of the Site;
- The presence of a low permeability zone consisting of clay and silt was identified above the deeper water supply aquifer located within the capture zone, downgradient of the corresponding communal wells recharge zone. This low permeability zone is anticipated to reduce possible impacts from surface sources;
- Although seven (7) sites were identified to have, or potentially have uses and activities with the potential for contamination impacts to the groundwater within the wellhead capture zone, the risk to the communal wells supply aquifer was considered low to moderate due to the underlying low permeable layer present; and
- The following recommendations were specified to protect the communal wells supply aquifer and source zone:
    - It was recommended that source protection measures to the sand and gravel layer should be implemented which can include limiting the land uses within the identified recharge area to those of lower risk;
    - All wells constructed within the capture zone should be constructed accordingly so that there is prevention of downward drive of contamination through the low permeable layer into the supply aquifer. Penetration of the low permeability layer can result in impacts to the underlying aquifer;
    - Installation and sealing of well casings should be completed under supervision of a qualified person, such as a professional geoscientist or a professional engineer;
    - Underground storage tanks, installed within the identified 10-year Time-of-Travel zone, should be equipped with an interstitial monitoring system. Leak detection units should equip the tanks and associated piping at these locations;
    - An on-going water quality monitoring program should be established to verify the on-going water quality of the upgradient region from the site. This includes the monitoring of the supply well at 5446 Albion Road (rather, it is inferred that this should read 5546 Albion Road), where it is recommended that annual monitoring for petroleum-based parameters be completed, including petroleum hydrocarbons and volatile organic compounds; and
    - A monitoring well should be constructed on the northern extent of the Albion Sun Vista Community property. It was recommended that samples from this monitoring wells should be collected for analysis in accordance with Schedule 13 of the Ontario Regulation 170/03 for a groundwater source. Furthermore, it was recommended that the proposed monitoring well be sampled for total petroleum hydrocarbons and select volatile organic compounds, namely BTEX, annually.

A copy of this report can be provided upon request to the City of Ottawa.

4.2 Phase II Environmental Site Assessment, 5546 Albion Road, Ottawa, Ontario, March 17, 2023

The report was prepared by LRL for MacEwen Petroleum Inc. in support of the proposed Site re-development application. The assessment was completed as per CSA Standards. The purpose of a Phase II Environmental Site Assessment (ESA) was initiated to determine if recognized

potential environmental concerns have negatively impacted soil and groundwater quality of the subject Site. The potential environmental concerns identified that requires investigation includes:

- The past and present Site operations as a retail fuel outlet, and corresponding fuel dispensing equipment;
- The historical fueling station, and presence of heavy machinery on the neighbouring lands to the east following Albion Road (5545 Albion Road) encountered in aerial imagery obtained from between the period of mid 1970's and 2019; and
- The mineral aggregate operations on the neighbouring land approximately 390 m northeast.

Contaminants of potential concern (COPCs) include: Petroleum Hydrocarbon Compounds (PHCs), Volatile Organic Compounds (VOCs), Polycyclic Aromatic Hydrocarbons (PAH), Polychlorinated Biphenyls (PCBs), metals, and inorganics.

Regulatory requirements for assessing environmental conditions of a site are established by Ontario Regulation 153/04 – Records of Site Conditions, Part XV.1 of the Environmental Protection Act (O. Reg. 153/04). Site condition standards are set out in the MECP's "Soil, Ground Water and Sediment Standards for Use Under Part IV.1 of the Environmental Protection Act", April 15, 2011, as amended. The applicable SCS used was the Table 2 Full Depth Generic Site Condition Standards in a Potable Groundwater Condition, commercial property use and coarse-textured soils.

The investigation involved advancing ten (10) boreholes across the Site at strategic locations based on areas of potential environmental concern. Four (4) of the boreholes were completed as monitoring wells to assess hydrogeological conditions and facilitate groundwater sampling.

The subsurface soil conditions in the area investigated on the Site generally consist of asphalt structure beneath approximately 0.1 m of asphalt followed by fill to depths between 0.4 and 1.8 m bgs, sand to depths between 2.8 and 4.5 m bgs, and silty till to a depth of 4.6 m where the boreholes were terminated. The fill generally consists of medium-grained sand with gravel and stones, and black silty organics. The overburden material was moist at depths between 1.2 and 1.7 m bgs and saturated at depths between 1.5 and 2.1 m bgs. No olfactory or visual evidence of petroleum hydrocarbon impacts were observed in the soils collected from all boreholes. The combustible soil vapours (CSV) concentrations measured in the soil samples collected ranged between less than the machine detection limit (<0.1 ppm) and 0.7 ppm.

Based on the groundwater elevations measured on August 2, 2022, at the time of groundwater monitoring well development, the groundwater flow direction in the overburden is interpreted to be towards the south-southwest. Headspace VOC levels in MW22-1, MW22-2, MW22-3, and MW22-4 were 0.6 ppm, 3.2 ppm, <0.1 ppm, and 0.7 ppm, respectively, prior to development of the wells. During the sampling event, following purging, the levels were <0.1 ppm, 1.0 ppm, 0.1 ppm, and 0.4 ppm, respectively.

Select soil and groundwater samples were submitted for analysis to establish if areas of potential environmental concern have negatively impacted soil and groundwater conditions. In the soil, VOC and PAH parameters analysed were not detected in any of the samples submitted for analysis. Select PHC and metals parameters analysed were detected, however levels were measured below applicable Table 2 SCS's. The general inorganic parameters analysed met the applicable standards with the exception of BH22-4-SS1A which exceeded for conductivity with a level of 1430 µS/cm, above the SCS of 1400 µS/cm.

In the groundwater, VOC, PAH, and PCB parameters were not detected in the samples submitted. PHC F3 and F4 were detected in MW22-1, however levels were measured below the SCSs of

500 µg/L. Select metal parameters were detected, however all levels are below the applicable SCS's with the exception of sodium in MW22-1, MW22-2, MW22-3 and MW22-4 with levels of 708 000 µg/L, 702 000 µg/L, 531 000 µg/L and 715 000 µg/L, respectively, above the SCS of 490 000 µg/L. The duplicate of MW22-2 was below the SCS with a level of 307 000 µg/L. Chloride exceeded the applicable SCS of 790 µg/L in MW22-1 (1500 µg/L), MW22-2 (1350 µg/L and duplicate 1360 µg/L), and MW22-3 (980 µg/L).

The report indicates that based on the observations during drilling activities, along with screening of samples and laboratory analysis, there is evidence of conductivity impacts to the surface soil in the southeast portion of the Site, and sodium and chloride impacts in the groundwater across the Site. The horizontal and vertical extent of contaminated soil has not been fully delineated; however, it is anticipated that the fill across the majority of the Site maybe contaminated. It was recommended that if groundwater monitoring wells are not required for future monitoring purposes, they should be decommissioned in accordance with O. Reg. 903.

During the proposed re-development activities of the Site, an environmental remediation program will be implemented to address the identified or anticipated impacted overburden across the southern extent of the Site. The environmental remediation program will support the future protection of the on-Site supply well, in addition to the further protection of additional natural features and aquifers from possible contamination and damage in the long term. As presented in the Phase ll Environmental Site Assessment, and discussed above in this section, generally contaminates associated with fuel handling facility were not encountered, although suspected to be present in the surrounding soils encompassing the underground storage tanks, and in the area of the pump islands, which could not be investigated due to the risk of damaging the fuel handing equipment.

Following the Technical Standards and Safety Authority's (TSSA) Environmental Management Protocol for Fuel Handling Sites in Ontario, August 2012 (formerly GA1/99), contaminated soils will be remediated to conditions which meet the corresponding site conditions standards, as best possible. Caution will be taken to not puncture the confining clay barrier, which acts as a protective layer to the neighbouring supply aquifer. Should restrictions to the excavation activities be encountered, alternative remediation methods will be implemented.

4.3 Geotechnical Investigation, Proposed Site Redevelopment, 5546 Albion Road South, Ottawa, Ontario, June 2022 (Revised November 2023)

LRL was retained by MacEwen Petroleum Inc. to perform a geotechnical investigation for the proposed site redevelopment, located at 5546 Albion Road Street South, Ottawa, Ontario. The purpose of the investigation was to identify the subsurface conditions across the Site and provide guidelines on the geotechnical engineering aspects of the design of the project, including construction considerations.

The fieldwork for this investigation was carried out on May 25, 2022. A total of four (4) boreholes, labelled BH1 through BH4, were drilled onsite to get a general representative of the Site's soil condition. The boreholes were advanced using a truck mount CME 75 drill rig equipped with 200 mm diameter continuous flight hollow stem auger supplied. Sampling of the overburden materials encountered in the boreholes was carried out at regular depth intervals using a 50.8 mm diameter drive open conventional spoon sampler in conjunction with standard penetration testing (SPT) "N" values. The SPT were conducted following the method ASTM D1586 and the results of SPT, in terms of the number of blows per 0.3 m of split-spoon sampler penetration after first 0.15 m designated as "N" value.

The boreholes were advanced to a depth of 6.71 m bgs. The subsurface conditions encountered at the time of the borehole drilling generally included the following:

- Topsoil, with a thickness of 75 mm, was encountered in a borehole advanced at the general central portion of the Site, on the grassed landscaped area of the property. The remaining boreholes, advanced across the asphalted parking and circulation areas of the Site revealed the presence of consisting of 100 mm thickness of asphalt overlying granular material have a thickness of 300 – 400 mm.
- The pavement structure, and topsoil, was followed a fill material to depths ranging between 1.06 and 1.75 m bgs. The fill was generally be described as a mixture of brown sand and gravel.
- Underlying the fill was sand that extended to depths ranging between 2.97 and 6.71 m bgs. This material can be described as having trace silt, trace clay, greyish brown, and wet.
- Two (2) boreholes advanced to the north of the existing store encountered a thin layer of silt and clay under the sand layer, to depths of between 4.12 and 4.42 m bgs. This material can be described as having trace sand, grey, and wet.
- Glacial Till was encountered under the sand, or silt and clay materials which extended to a depth of 6.71 m bgs, where the boreholes were terminated. This material can be described as a mixture of silt-sand, some gravel sized stone, trace clay, grey, and wet.

Groundwater was carefully monitored during this field investigation. During drilling, water was encountered at depths ranging between 2.9 and 3.3 m bgs.

Based on the conditions encountered at the time of the field investigation, and the results of the corresponding laboratory analysis, detailed geotechnical considerations with respect to the various aspects of the proposed construction are provided. For specific details related to these considerations, the formal report dated June 2022 (revised November 2023) should be consulted.

5 WATER QUALITY AND QUANTITY ASSESSMENT

5.1 Supply Well – 5546 Albion Road South

The supply well (1501841) which services the subject property was installed on September 1, 1965, by McLean Water Supply Ltd. Although the specified location of the supply well is different that that of the actual Site location, it is possible that references previously used at the time of the well installation have since been altered (i.e. edge of roadways). A copy of the WWR is included in **Attachment E**. The well is located along the eastern perimeter of the Site, which includes a grassed median. A curb is present on either side of median, however, the well may be prone to possible damage should an automotive incident occur. Recommendations for well placement improvement are included in Section 11. Furthermore, the proposed development grading is anticipated to be such, as presented in **Figure 10**, that runoff is away from the structure.

On November 28, 2023, PV Well Water (Carp, Ontario) conducted a camera inspection of the existing supply well to address questions related to the integrity of the existing well raised by the City of Ottawa. The details on the inspection are included in **Attachment F**. Please note that in the report, 'TOC' is an abbreviation for Top of Casing. The inspection confirmed that the casing extended to approximately 18.2 m in depth, where open hole construction was encountered. The pump was set at 22.2 m below TOC, which restricted further decent of the camera. PV Well Water concluded that the well should be extended to a minimum of 40 cm above the existing grade and completed with a vermin proof cap as per O. Reg. 903.

LRL has reached out to PV Water Well to proceed with the modification to the well. A formal quotation has been received, reviewed and accepted (stick up of the supply well casing to 74 cm to match the proposed final grade, and the addition of a vermin proof cap). The requirements for

the well modifications in accordance with O. Reg. 903 requires that post well modifications, the well will require formal disinfection. To comply with the O. Reg. 903 requirements, the chlorination requires that the well be not used for between 12 and 24 hours. This will require that the operations of the site be stopped for this duration. As the Site operates as a 24-hour fuel service station, this would require the station to close for a period which is not considered practical at this time. The importance of the well modifications is understood, and it is guaranteed that during the initial stages of the construction activities associated with the re-development (i.e. removing asphalt and cement structures), PV Water Well will be retained to complete the required modifications. **The City can request as a condition of occupancy that formal written acknowledgement and evidence that these modification have been completed.**

The annular space of the well was not confirmed through the camera inspection, nor could it be verified through a casing depth sensor inspection. PV Well Water indicated that the annular space would need to be excavated and disturbed to establish the conditions of the grout, however during initial conversations with the sub-contractor, they indicated that excavation around the well is not advisable or recommended, as it most often would result in damaging the grout thus compromising the integrity of the well construction. This could result in a potential contamination pathway into the deeper bedrock aquifer.

The well record specifies approximately 3.0 m of sand, followed by gravel and boulders to 10.0 m below grade. The sand and boulders are underlaid by till to a depth of 16.2 m followed by bedrock. The well is identified to extend to a total depth of 40.8 m below grade. Water was reported to be found between 22.5 and 33.0 m below grade and was noted to be fresh. The steel casing extends to a depth of 19.2 m below grade with the remainder of the well being assumed open hole. The well record specifies a 24-hour pumping test at a rate of approximately 90 L/minute (30 Gallons per Minute). No details pertaining to drawdown or recovery are included in the well record, however a recommended pumping rate of 30 gallons per minute was reported. A formal draw down evaluation (pumping test) was completed as part of this assessment. The findings are presented in Section 5.2.

5.2 Quantity

The proposed re-development of the Site is anticipated to include a gasoline retail outlet and convenience store; much like that of present time. The required aquifer yield has been derived from the City of Ottawa's Water Distribution Guidelines, July 2010, as amended, including the August 18, 2021, Technical Bulletin specified alterations, and the MECP's Design Guidelines for Drinking-Water Systems, 2008.

The anticipated average daily flow demands have been evaluated based on the septic design. The daily flow demand is estimated based on the total daily design sanitary sewage flow, calculated as per Table 8.2.1.3.B of the Ontario Building Code, 2012. The calculation is shown in the following table.

Occupancy Type	Column 2 (L/unit)	Column 1 (unit)	Number of units	Daily Design Flow
Service Station*	560 L	fuel outlet	7**	3 920
	950 L	water closet	4	3 800
Total Daily Demand				**7 720 L**

Notes

* Volumes listed apply to Service Stations, with no vehicle washing, as indicated in Table 8.2.1.3.B of the Ontario Building Code, 2012

** The number of fuel outlets is considered the maximum number of fuel nozzles that could be in use at the same time, as per the Table 8.2.1.3.B of the Ontario Building Code, 2012.

Therefore, based on the septic design, the anticipated daily flow demand is 7 720 L/day. The average daily flow demand was estimated based on the anticipated daily flow demand of 7 720 L/day over a 12-hour period as 17.9 L/min. Although the facility operates 24-hour daily, it is considered a more conservative approach to establish peak demand within 12-hours which is often the period which a fuel dispensing facility would encounter greater 'traffic'.

For general consideration, and although not the anticipated volume to be meet at the Site during operations, the maximum daily flow is often estimated based on a multiplier of 1.5 the average daily flow. This is intended to confirm the aquifer can meet this arbitrary value in the event of a possible isolated increase in demand. The maximum daily flow is estimated as 11 580 L/day or 16.08 L/min (1.5 times the average daily flow, over a 12-hour period) and the peak hourly flow is estimated as 19.30 L/min (1.8 times the maximum daily flow).

5.2.1 Pumping Test

To establish the hydraulic properties of the proposed supply aquifer, a 6-hr pump test was conducted on the existing supply well throughout the over-night period of October 16 and 17, 2022, as mentioned above in Section 1. As discussed with the City, and agreed upon by the client, as not to disrupt site operations, the pumping test was completed during over-night hours when the facility was closed. The pumping rate was increased throughout the shorter duration of the test (6-hours rather than the typical 8-hours recognized for a commercial establishment) to account for comparable demand volumes.

The well was pumped at a constant flow rate (±5%) of approximately 30 L/min over 6-hr period using a temporary submersible pump lowered into the well, above the existing components so not cause potential disruption to the Site operations (i.e. damage pump during the test). Drawdown was measured manually during the pumping and recovery periods using an electronic water level tape. A data logger was also submersed into the well throughout the duration of the pumping test as an additional means for data collection. Field measurements of turbidity, residual chlorine, colour, conductivity, total dissolved solids (TDS), pH and temperature were frequently collected at the pumping of the well during each pumping test. Following the pump's cessation, the supply well water level recovery was measured. Data collected in the field for the pumping test which includes the flow rate, water levels and measurement intervals, in addition to in-field quality measurements such as turbidity, are presented in **Attachment G.**

The initial static water level was measured as 2.98 m below top of casing (btc), and test well depth was measured as 30.7 m btc. As the existing supply submersible pump was left in the well throughout the duration of the test, it is likely that the well depth measurement recorded in the field is that of the set pump, as the corresponding well record indicates a depth of 41.4 m below ground surface.

The drawdown after 6-hr of pumping was 1.55 m. This represents only approximately 4.0% of the available drawdown in the well. The specific capacity of the well after 6-hr of pumping was calculated to be 0.322 L/sec/m with a long-term availability of 51.1 m³ per day. The calculation is presented in **Table 1**. The recovery was commenced at the end of the 6-hr pumping duration. The submersible pump remained in the well throughout this time so not to alter the recovery test process and measurements. After one (1) hour of recovery, the well returned to 97.4% of the initial water level (3.02 m btc).

5.2.2 Aquifer Characteristics

Following the completion of the constant rate pumping test, the data was analysed using the Aquifer Test software package, by Waterloo Hydrogeologic. The data underwent Theis and Agarwal-Theis Recovery analysis, the results of which are shown in the table below. Graphical analyses are provided for reference purposes in **Attachment H**.

Based on the information gathered from the pump test, the wells' transmissivity and coefficient of storage were calculated using the average of the Theis logarithmic approximation for the drawdown and Agarwal/Theis for the recovery. The specific yield of the well was calculated using the information obtained from the pump test, the transmissivity and coefficient of storage. The yield takes into account a minimum safety factor of 3. The characteristics of the well are summarized in the table below. The yield was calculated using the safety factor; therefore, the theoretical yields can be higher.

Parameter	**Supply Well (1501841)**
	6 Hour Test
	Theis
Transmissivity (m^2/sec)	1.00 x 10-3
Coefficient of Storage	1.00 x 10-4
Pumping Rate (L/min)	30
Available Drawdown (m) – assuming pump set at 36 m as per the water well record	33.0
Maximum Drawdown (m)	1.55
% Drawdown	4.0%
Specific Yield (L/sec/m)	0.032
Maximum Pumping Rate (L/min)	128.9
Long Term Availability (m^3/day)	185.6

Based on the observed drawdown/recovery relationship, it is concluded that the long-term yield of the test well is in excess of minimum daily demand of 7 720 L (7.72 m^3/day) and is found to be able meet a maximum pumping rate of 128.9 L/minute. This is considered sufficient to supply the inferred average and peak hourly flow demands of 16.08 L/min and 19.30 L/min, respectively.

5.3 Quality

5.3.1 Supply Aquifer – Supply Well No.1501841

The groundwater chemistry of the proposed supply aquifer for the commercial re-development was obtained by collecting water samples from the existing supply well (No. 1501841) located at the eastern perimeter of the property. The well was installed within the various bedrock formation common of the area, including limestone to between 16.2 and 29.7 m; sandstone to between 29.7 and 35.7 m; and granite to between 35.7 and 40.8 m. Water was reported to be found within the limestone and sandstone formation, as identified on the corresponding well record, at depths between 22.5 and 33.0 m.

To represent the long-term water quality of the well, samples were collected during different stages of the pump test and well development (after 3 and 6-hours of pumping). The water samples were collected using laboratory prepared bottles and were submitted to an accredited laboratory (Parcel Laboratories Ltd. of Ottawa, Ontario) for analysis of a standard "subdivision" package, and volatile organic compounds (VOCs). The laboratory certificates of analysis are included in **Attachment I**.

Table 2, **Table 4** and **Table 5** summarizes the water analysis and also includes the relative ODWS (O. Reg. 169/03) for the parameters tested. The water samples meet the ODWS parameters tested except for the following:

- Hardness was found to be 204 and 219 mg/L at 3- and 6-hours, respectively, above the ODWS operation guideline (OG) limit of 100 mg/L. High levels of hardness can lead to scale deposits and excessive utilization of regular soaps. Hardness can be reduced through the use of a water softener; however, the use of sodium chloride as a regenerant for the resins can increase the sodium content of the water. This poses a lower risk to the subject site based on it's anticipated use, although it should be noted that for individuals with sodium restricted diets, potassium chloride can be substituted for sodium in the ion exchange system to lower the hardness in the water supply.
    - The Langelier Saturation Index (LSI) is used to determine the calcium carbonate stability of water and the pH at which water is saturated with calcium carbonate (pHs). The LSI calculation is used to establish the level of saturation. The Ryznar Stability Index (RI) is used to determine the aggressiveness of water which can indicate the scale and corrosion potential. The calculations for RI and LSI are shown in **Table 3**. Using a water temperature of 10°C, the LSI was calculated for the 6-hour sample of 0.40 which indicate the water is slightly scale forming and corrosive. The RI was calculated to be 7.1 at the 6 hours sample which indicate significant corrosion potential.
- Turbidity was measured to have a level of 4.2 NTU in the 3-hour sample, and 8.8 NTU in the 6-hour sample. Both of which are above the ODWS OG of 1 NTU if the treatment system is required to provide filtration and, the 6-hour sample is above the AO of 5 NTU. The 6-hour sample level is also above the D-5-5 level considered reasonably treatable of 5 NTU. Turbidity measures the relative clarity of the water and likely represents the disturbance of the distribution system as a result of the pumping test. However, being that the water has an acceptable microbiological quality the elevated turbidity can be considered acceptable as long as the groundwater well is maintained properly. Turbidity can be reduced through proper filtration techniques.

  It should be noted that during the time of sample collection, as outlined above in Section 5.2.1, in-field turbidity measurements were recorded as 0.31 and 0.27 NTU, at the 3-hour and 6-hour sample time, respectively. It is possible that select chemicals or compounds may have reacted in the samples from between the sample collection time and the sample analysis at the laboratory. The field parameters recorded are included in **Attachment G**.
- Total Coliforms were detected in the samples collected at 3-hours and 6-hours of pumping, with values of 4 and 2 CFU/100 mL, respectively. The ODWS has a Maximum Allowable Concentration (MAC) of 0 CFU/100 mL for total coliforms in a drinking water system. According to the MECP D-5-5 guideline, a maximum concentration of 5 CFU/100 mL is considered reasonably treatable. The values obtained are considered to be reasonable treatable. Microbial impacts can be treated through the use of an ultraviolet disinfection system.
- Sulphide concentrations were below the reported detections limits by the laboratory in the sample collected after 3-hours of pumping (<0.02 mg/L). The concentrations increased to 0.12 mg/L after 6-hours of pumping, above the 0.05 mg/L ODWS aesthetic objective (AO). The presence of sulphide can lead to objectionable odours and taste in the water and black staining and deposits on fixtures. Sulphide can be reduced through aeration, which oxidizes it to sulphate, or an activated carbon filter.

- Iron levels were measured to be 0.4 and 0.9 mg/L, above the ODWS AO of 0.3 mg/L. This level is below the D-5-5 treatability limit of 10 mg/L. Iron can be reduced through the use of a water softener; however, the use of sodium chloride as a regenerant for the resins can increase the sodium content of the water. This poses a lower risk to the subject site based on it's anticipated use, although it should be noted that for individuals with sodium restricted diets, potassium chloride can be substituted for sodium in the ion exchange system to lower the hardness in the water supply.

In-field measurements, as summarized in the included **Attachment G**, were found to be generally as follows:

- Turbidity measurements collected were found to range between 1.14 NTU after one (1) hour of consecutive pumping, and 0.27 NTU after six (6) hours of pumping;
- Chlorine residual measurements were all below the machine detection limit of 0.01 mg/L, throughout the pumping test;
- Colour values were measured to be as high as 73 TCU after four (4) hours of pumping, to 13 TCU at the six (6) hour;
- pH of the water ranged between 7.99 and 8.25 pH units throughout the pumping test; and
- TDS values range from between 233 and 258 mg/L; and
- Conductivity values were measured to be between 463 and 519 µs.

LRL returned to the Site on October 21, 2022, to collect a raw water sample for Trace Metals. The laboratory certificates of analysis are included in **Attachment G**. **Table 4** summarizes the water analysis and includes the relative ODWS (O. Reg. 169/03) for the trace metal parameters tested.

All metal parameters analysed were below the respective OWDS, with the exception to Manganese which was reported with a value of 0.07 mg/L, above the ODWS of 0.05 mg/L. Elevated manganese can result in a brown or rust-colour discolouration to water and may cause staining to faucets, sinks, or laundry. As the levels are considered marginally above the ODWS, it is considered acceptable to treat these elevated concentrations with a water softener system, as mentioned above for the treatment of hardness.

5.3.2 Supply Aquifer – Additional Sampling

To address the minimum parameters outlined in the previous pre-consultation, and those outlined in the Wellhead Protection Plan Report (Jacques Whitford, 2004), LRL retuned to the Site on November 23, 2023, to collect an additional water sample from the supply well on the Site. The sample was collected directly from the pressure tank, located within the storage room of the convivence store on the Site. The tap was allowed to run for approximately ten (10) minutes, to allow for the supply line to be flushed, and to permit for a representative sample to be collected. The Site was in operation at the time of the sample collected, and throughout the initial flushing of the lines, audio observations of the pressure tank being re-filled, was encountered.

Laboratory supplied bottles were labelled clearly to indicate the sample identification, date and other required information for submission purposes. After the ten (10) minutes of the lines being flushed, new gloves were dawned, and each bottled was filled.

In field measurements revealed that chlorine residual was below the detection limit of the equipment (<0.01 mg/L). The water samples were collected using laboratory prepared bottles and were submitted to an accredited laboratory (Parcel Laboratories Ltd. of Ottawa, Ontario) for analysis of a standard "subdivision" package, VOCs, petroleum hydrocarbons (PHC) Fractions

F1 through F4, trace metals, and polycyclic aromatic hydrocarbons (PAH). The laboratory certificates of analysis are included in **Attachment I**.

Table 2, **Table 4** through **Table 6** summarizes the water analysis and also includes the relative ODWS (O. Reg. 169/03) for the parameters tested. The water samples meet the ODWS parameters tested except for the following:

- Hardness was found to be 203 mg/L, above the ODWS OG limit of 100 mg/L. High levels of hardness can lead to scale deposits and excessive utilization of regular soaps. Hardness can be reduced through the use of a water softener; however the use of sodium chloride as a regenerant for the resins can increase the sodium content of the water. This poses a lower risk to the subject site based on it's anticipated use, although it should be noted that for individuals with sodium restricted diets, potassium chloride can be substituted for sodium in the ion exchange system to lower the hardness in the water supply.
    - The Langelier Saturation Index (LSI), as presented in **Table 3**, is discussed above, with respect to the samples collected at the time of the six (6) hour pumping test. Using a water temperature of 10°C, the LSI was calculated for the 6-hour sample of 0.40 which indicate the water is slightly scale forming and corrosive. The RI was calculated to be 7.1 at the 6 hours sample which indicate significant corrosion potential.
- Total Coliforms were detected with a value of 1 CFU/100 mL, respectively. The ODWS has a MAC of 0 CFU/100 mL for total coliforms in a drinking water system. According to the MECP D-5-5 guideline, a maximum concentration of 5 CFU/100 mL is considered reasonably treatable. The values obtained are considered to be reasonable treatable. Microbial impacts can be treated through the use of an ultraviolet disinfection system.
- Iron levels were measured to be 0.5 mg/L, above the ODWS AO of 0.3 mg/L. This level is below the D-5-5 treatability limit of 10 mg/L. Iron can be reduced through the use of a water softener; however, the use of sodium chloride as a regenerant for the resins can increase the sodium content of the water. This poses a lower risk to the subject site based on it's anticipated use, although it should be noted that for individuals with sodium restricted diets, potassium chloride can be substituted for sodium in the ion exchange system to lower the hardness in the water supply.

No VOC, PHC or PAH parameters were detected in the samples collected, and all trace metals detected were below the appliable provincial drinking water standards, including manganese, which was previously detected in excess of the AO – ODWS in the October 17, 29023 sample collected.

6 WATER SUPPLY ASSESSMENT

Based on the Site's geology and hydrogeology the recommended potential supply aquifer for the Site, is the bedrock aquifer. The existing supply well currently intercepts this aquifer, and it is our understanding that the proposed re-development of the Site will utilize the existing well. The selection of this aquifer is supported by the following:

- Although the unconfined sand, gravel and boulder layer formation between 0 – 3.0 m (Sand) and 3.0 – 9.1 m (Gravel & Boulders) may be considered a suitable layer for the construction of a supply well, based on the proposed use of the Site being considered 'high risk' for possible shallow groundwater impacts, is considered unsuitable for the construction of a well within this layer. The risk to impairment of the on-Site water supply,

as well as the possible pathway for contaminates in the shallow soils is considered too great of a risk to explore this as a potential supply aquifer.

- No records of neighbouring shallow supply wells were returned which suggests it may not be a suitable source.
- The well is existing, and the client intends to keep the existing well for the proposed re-development on the site. The construction of a new supply well is not considered necessary, therefore other potential aquifers were not explored.

The water quantity assessment will demonstrate that:

- The water taking will not result in interferences which will impair existing or future on-Site and adjacent land use and groundwater use.

6.1.1 Demand

The average daily flow demand was estimated based on the anticipated daily flow demand of 7 720 L/day over a 12-hour period as 16.08 L/min. Although the facility operates 24-hour daily, it is considered a more conservative approach to establish peak demand within 12-hours which is often the time period which a fuel dispensing facility would encounter greater 'traffic'.

For general consideration, and although not the anticipated volume to be meet at the Site during operations, the maximum daily flow is often estimated based on a multiplier of 1.5 the average daily flow. This is intended to confirm the aquifer can meet this arbitrary value in the event of a possible isolated increase in demand. The maximum daily flow is estimated as 11 580 L/day or 16.08 L/min (1.5 times the average daily flow, over a 12-hour period) and the peak hourly flow is estimated as 19.30 L/min (1.8 times the maximum daily flow).

7 TERRAIN ANALYSIS

The terrain analysis was conducted to demonstrate that the unconsolidated material on the Site is appropriate for the construction of an on-Site subsurface sewage disposal system on the Site. The subject property is currently developed with a sewage disposal system, however, to support the re-development and Site up-grades, a new structure and associated components will be constructed in accordance with the Ontario Building Code, 2012. The proposed location of the newly constructed sewage disposal system is presented in **Figure 11**. Details pertaining to specific design are not included herein. A formal submission to the Ottawa Septic System Office (OSSO) has been made by the client, or those engaged on their behalf. A copy of the formally issued septic permit, as issued by the Ottawa Septic System Office (OSSO) is included in **Attachment J**.

The Site is not considered Hydrogeologically Sensitive in regard to geological formations. Review of geological mapping and additional supporting documents, including MECP water well records, have revealed a deposit of overburden greater than 1.5 m in thickness. This was further confirmed through the advancement of boreholes across the Site at the time of additional sub-surface investigation fieldwork completed by LRL, in support of the proposed development application. These additional investigations included a Geotechnical Investigation and a Phase II Environmental Site Assessment. No bedrock outcrops were encountered at the time of LRLs Site visits associated with the corresponding investigations and assessments.

Subsurface conditions encountered during these studies are summarized as follows, although greater detail is available in the corresponding reporting documents completed for the respective investigations. Copies of the borehole logs from the Phase II Environmental Site Assessment and

Geotechnical Investigation are included in **Attachment D**, and further detail pertaining to each summary, including chemical analysis and conclusions are provided in Section 4.2.

As part of the geotechnical investigation, select soil samples were submitted for laboratory gradation analyses. The results of these analysis are summarized as follows:

Sample Location	Depth (m)	Percent for Each Soil Gradation							Estimated Hydraulic Conductivity K (m/s)
		Gravel		Sand			Silt (%)	Clay (%)	
		Coarse (%)	Fine (%)	Coarse (%)	Medium (%)	Fine (%)			
BH1	1.5-2.1	0.0	0.0	0.1	24.0	66.1	8.9	0.9	2×10^{-7}
BH2	3.1-3.7	0.0	0.0	0.2	0.4	5.4	51.6	42.4	1×10^{-7}
BH3	4.6–5.2	0.0	12.0	5.9	9.1	26.6	42.7	3.7	2×10^{-6}

The subsurface conditions indicated for the Site are considered suitable for a Class IV septic sewage disposal system with a partially to fully raised leaching bed depending on the Site-specific soil and groundwater conditions at the actual location of the proposed septic system leaching bed. The leaching bed should be constructed to conform to the specifications set out in the Ontario Building Code (OBC).

As part of this assessment, an analysis was carried out to ensure that sufficient space exists at the proposed lot for the construction of a septic system in accordance with the OBC. As a conservative approach to determining the expected largest septic system envelope required to service a commercial gasoline service station establishment at the Site, a septic system envelope size was calculated assuming a fully raised bed with mantle, a percolation rate of 12 min/cm for the imported sand required and a daily sewage flow of 7 720 L.

The total length of pipe required for the septic bed, and as described in greater detail in the included approved proposed septic design, and permit (**Attachment J**), assuming imported fill, was calculated as approximately 84 m:

$L = QT/200$

where L = length of pipe (m)

Q = daily sewage flow for the proposed development (L/day)

T = percolation rate of the imported sand fill material (min/cm)

Assuming a Norweco HK 4730L-3M treatment unit is used, the anticipated pipe runs will include two (2) cells, each with 6 runs and 7 m in length. All details related to the proposed installation, sizing of the equipment, and features are included in **Attachment J**, and should be referenced as part of this Terrain Analysis. Therefore, an area of approximately 772 m² is required for the septic bed. A mantle of 15 m in length would be required along the down gradient portion of the bed. Based on the total coverage of the septic bed (raised portion and mantle plus a replacement area) would be approximately 1 784 m².

The Site has a surface 11 920 m², of which, approximately 3 525 m² is considered suitable for placement of the sewage disposal system, which encompasses the north/northwestern portion of the property. Sufficient area of replacement area and mantle exists on the Site in accordance

with the OBC to service the proposed development with a design sewage flow of up to 7 720 L/day. A proposed development layout plan is presented in **Figure 10** which provides visual support to this. A copy of the approved septic permit is included in **Attachment J**.

8 PRIVATE SEWAGE DISPOSAL SYSTEM IMPACT STUDY

Section 5.2, Groundwater Impact Assessment in Non-Designated Areas, of the MECP's Procedure D-5-4 outlines the three (3) step assessment process for evaluating the potential risk for "*every proposed development involving on-site sewage systems*". The steps are intended to be followed in succession, where the conditions established in the previous step determine whether it is necessary to move on to the next step.

Step one of the assessment processes is ***Lot Size Consideration***. If it can be demonstrated that the area of the Site is not hydrogeologically sensitive, developments with lots that average 1 hectare (with no lot smaller than 0.8 ha) may not require a comprehensive hydrogeological assessment. It is expected that attenuative processes inside a one (1) hectare parcel of land will be adequate to decrease the nitrate-nitrogen to a satisfactory focus in groundwater underneath contiguous properties. The Site has a surface area of 11 920 m² (1.19 hectare), which meets the Lot Size Consideration. However, the Site is considered Hydrogeologically Sensitive due to its proximity to the wellhead capture zone for the neighbouring Albion Sun Vista communal supply well system as discussed above in Section 2.7.2. Therefore, the proceeding steps identified in the guidelines are to be considered.

Step Two is ***System Isolation Considerations***, which evaluates the risk to groundwater from septic effluent, where geological setting and characteristics present suitable isolation conditions. Such conditions are most often supported by a lower hydraulic or physical boundary of the receiving groundwater. Such boundaries can include a thick layer of underlying soils with low permeability (i.e. clays).

As discussed above in Section 2.7.2, the subsurface conditions on the Site generally include Fill and Sand to depths between 2.8 and 6.7 m bgs. This is considered the proposed receiving layer for septic effluent based on the depths encountered and that the proposed septic bed will be a fully in-ground system (see **Attachment J** for details). Although a confining clay layer has been identified on the northern portion of the Site, it has not been confirmed as being 'widespread'' across the Site. The ***System Isolation Consideration*** approach is not considered suitable for the Site, therefore Step Three of the assessment will be applied for the Site.

The ***Contaminant Attenuation Consideration (Predictive Assessment)*** was used to determine the potential risk to groundwater resources on- and off-Site resulting from the proposed on-Site septic systems. More specifically, to confirm that the concentration of nitrates at the boundary of the Site are in accordance with the MECP's Procedure D-5-4: Technical Guideline for Individual On-Site Sewage Systems: Water Quality Impact Risk Assessment. The potential risk to off-Site receptors from the proposed upgraded sewage disposal system has been considered using the inferred nitrate contamination loading for commercial / industrial property use. Section 5.6.3 of the D-5-4 Guideline pertains to Predictive Assessment - Industrial/Commercial Development. The procedure (MECP's Procedure D-5-4 (1996)) followed for this study specifies a maximum allowable concentration of nitrate in the groundwater of 10 mg/L at the property boundary.

To support the corresponding estimation of anticipated nitrate concentration at the property boundary, nitrate dilution calculations for commercial / industrial properties were considered. The following details were included in the calculation used:

- Infiltration factors for the Site;
    - A total area of 11 920 m² (1.19 hectare);
    - Flat topography;
    - Infiltration Factors (Post Re-Development), and in accordance with Table 3.1 of the MECP Stormwater Management Planning and Design Manual (March 2003):
        i. Grain size analysis of the shallower soils more likely to intersect the septic effluent, as referenced above in Section 7, generally includes fine to medium grained sand;
        ii. Approximately 9 113 m² of the site is considered Cultivated Land, and 2 807 m^2 is considered to be woodland;
    - Moisture Surplus (Post Re-Development):
        i. The cultivated land (lawn and grassed area) is considered Shallow Rooted Crops, whereas the woodland at the general perimeter of the property is considered Deep Rooted Crops;
        ii. Laboratory grain size analysis revealed the overburden material, anticipated to be impacted by the septic bed, is sand;
    - Impervious areas (proposed development footprint) were calculated to be of 4 980 m^2 for the proposed convenience store building, pump island concrete apron and paved parking and circulation area. This equates to hard surface area, post re-development, of 41.7% of the subject property;
    - Background nitrate concentrations in the receiving aquifer will be inferred negligible (0 mg/L used in the calculation);
    - Moisture surplus values from the Ottawa weather station (Environment Canada, 2011). The moisture surplus printouts for the City of Ottawa are included in **Attachment K**; and
    - The use of an advanced tertiary treatment system, which is discussed in greater detail below, with a capability to treat nitrate concentrations of the effluent to at least 15 mg/L (67% nitrogen reduction).

The available infiltration, using the values and considerations identified above, has been calculated as 2 261 m³/year for the Site. A summary of the calculation is presented in the included **Table 4**. As indicated in Section 5.6.3 (b) of the D-5-4 Guideline, "*The maximum allowable flow for each lot or block in the industrial/commercial development can be calculated by dividing the amount of available infiltration by a factor of three*". This calculation assumes a nitrogen concentration of the effluent being 40 mg/L.

As discussed above in Section 7 and detailed in the OSSO approved Septic Permit included in **Attachment J**, an advanced tertiary treatment system is proposed as part of the Site re-development. Most often, tertiary treatment systems are considered to have the capability to reduce effluent nitrate levels to 20 mg/L from the non-treated standard value of 40 mg/L. The proposed tertiary treatment system, Norweco HK 4730L-3M, has the capability to reduce nitrates to at least 15 mg/L (67% nitrogen reduction). The specifications for the proposed unit are included in **Attachment L**.

As the septic system will be able to achieve a nitrate reduction of 67%, the factor included in the Predictive Assessment calculation has been adjusted from 3 (for conventional – non advanced treatment sewage disposal systems) to a value of 0.75. The Table below demonstrates Predictive Assessment calculation for establishing the maximum daily septic flow inferred for the Site assuming the advanced tertiary treatment system. Consideration to the use of a conventional treatment system (40 mg/L effluent nitrate concentration), as well as an alternative tertiary treatment system with a 50% nitrate reduction (20 mg/L effluent nitrate concentration) is also included in the following table, for demonstration of the value to support the proposed Norweco HK 4730L-3M unit.

Site Area (m^2)	Impervious Area (m^2)	Available Infiltration (m^3/year)	Effluent Nitrate Concentration (mg/L)	Annual septic flow required for the Site (m^3/year)[1]	Predictive Assessment Calculation Factor	Maximum allowable septic flow (m^3/year)
11 920	6 940	2 261	40	2 818	3	**754**
11 920	6 940	2 261	20	2 818	1	**2 261**
11 920	6 940	2 261	15	2 818	0.75	**3 014**

Notes

XXX	Does not meet the annual septic flow required for the Site
XXX	Meets the annual septic flow required for the Site
1	Calculated based on the assumption of 7,720 L/day, multiplied by 365 days

As presented above, the Contaminant Attenuation Consideration (Predictive Assessment) demonstrates that through the use of the advanced tertiary septic treatment system, with an effluent nitrate concentration of 15 mg/L, the risk for impairment to the groundwater is considered low. The annual septic flow for the Site of 2 818 m^3 will be meet with a calculated maximum allowable septic flow of 3 014 m^3, with nitrate reduction technologies.

Based on these considerations, the current Site conditions are suitable to attenuate the nitrate impacts generated by the septic systems on the development in accordance with current D-5-4 guidelines, provided an appropriate tertiary treatment is used and maintained. **The system must be able to treat the effluent to a nitrate level of 15 mg/L or less.** The potential impacts related to the use of the sewage disposal system on the Site, with respect to natural features, and shallow groundwater conditions is low risk. Furthermore, supply wells in the area retain their water supply from deeper bedrock aquifer which is confined by a thick overburden layer, therefore the on-Site septic system will have little to negligible impacts to the neighbouring water supply.

9 WELLHEAD PROTECTION AREA – SITE SPECIFIC RISK PREVENTION MEASURES

It is the responsibility of the Site Owner to follow and enforce the following site-specific risk prevention measures for all general daily operations, or future renovations, re-development or construction activities. At this time, the Site is owned and operated by MacEwen Petroleum Inc. If future land transactions or ease agreements occur, the following must be implemented by the respective parties overseeing, managing or operating the Site. A Construction Risk Management Plan for Source Water Protection, a Spills Prevention and Risk Management Plan (which will include staff training and record keeping as a risk management measure), and the Monitoring Program will be prepared to provide greater detail on the risk management and mitigation measures to be implemented.

WELLHEAD PROTECTION AREA – SITE SPECIFIC RISK PREVENTION MEASURES		
Responsible Party	**Risk Prevention Measure**	**Discussion**
Site Owner	Follow the specific recommendations set out in the *Wellhead Protection Area Plan* documentation prepared by Trow Associates Inc. and Jacques Whitford Environmental Limited, dated June 2004 to protect the communal supply aquifer.	Ensure that during work, or general Site operations, that source protection measures of the neighbouring supply well sand and gravel contact zone layer be implemented. These measures include: • Ensuring equipment on Site is maintained and is in property operating order. • Manufacturer service, inspection and maintenance schedules are followed. Including but not limited to the on-site sewage disposal system, and fuel dispensing / storage equipment. • Governing authority (i.e. TSSA) inspection and reporting requirements are completed, and accurately documented. • Fuel dispensing and storage equipment must include properly functioning interstitial monitoring system. Leak detection units must also equip the tanks and associated piping. • The details of the S Spills Prevention and Risk Management Plan are implemented. • Ensuring that operators, tenants, contractors, employees and other occupants of the Site are aware of the risks associated with the sensitive receptor and are formally trained on the procedures, risks and measures to be implemented relating to the site. • All wells constructed or located on the Site (supply and monitoring wells) are constructed accordingly, by an O. Reg. 903 licensed well installer, so that there is prevention of downward drive of contamination through the low permeable layer into the supply aquifer. • Ensure that it is communicated that snow piling is not permitted in the 15 m distance from the supply well on the Site. • That the supply well casing be maintained a minimum of 40 cm above grade. • That the supply well be constructed according to O. Reg. 903 and maintained as per O. Reg. 903. This includes a

		proper fitted cap, grading away from the structure and any work related to the supply well (i.e. pump replacement) be followed by disinfection. • Protective bollards or barriers be maintained around the supply well to prevent damaged. • Grading around the well is such as presented in the Site re-development grading plans and is maintained. • A qualified person, such as a professional geoscientist or a professional engineer must be retained to review the installation and sealing of well casings installed on the Site. • Retain the services of an environmental professional to formalize, and execute an annual groundwater quality monitoring program, as outlined in the corresponding Monitoring Program. • Take action to remedy and remediate impacted subsurface conditions and report the findings (during on-site construction, or groundwater monitoring) to the local MECP and the TSSA authorities. This shall be done with assistance from a qualified person (such as a professional geoscientist or a professional engineer in the environmental field). • Support the repair and maintenance of groundwater monitoring wells on the Site, as deemed required by the qualified person (such as a professional geoscientist or a professional engineer in the environmental field). • Comply with the Environmental Compliance Approval issued to the site, and all the respective conditions.
Site Owner (Continued)	Do not permit the land use to become such which may cause further risk to the supply aquifer.	Have a representative frequent the property to ensure that the Site continues to operate in a fashion which respects the points mentioned above. Ensure that the Site is well kept, with no excessive storage of potential hazardous materials. Ensure that operations on the Site do no include heavy industrial uses, mineral extraction, waste disposal, or other light industrial uses which are known to be a high risk for potential environmental concern such as automotive repair operations or chemical refinement.
	Have received a copy, have reviewed, and clearly understands the items included in the Spills Prevention and Risk Management Plan for the Site.	A Spills Prevention and Risk Management Plan will be prepared for the Site. In the event of a land transaction, or change in Site operator, a copy of this plan must be transferred to the new owner/operator, to ensure that they: 1. Create one of their own which follows the points included and 2. Are clear on the sensitive requirements of the Site and neighbouring lands.

	Have received a copy, have reviewed, and clearly understands the items included in the Employee & Contractor Training Plan.	This plan will be included in the Spills Prevention and Risk Management Plan to be prepared. 1. Create one of their own which follows the points included and 2. Are clear on the sensitive requirements of the Site and neighbouring lands.
	Have received a copy, have reviewed, and clearly understands the items included in the Construction Risk Management Plan for Source Water Protection.	A Construction Risk Management Plan for Source Water Protection will be prepared for the Site.
Site Operator	Follow the specific recommendations set out by the Owner with respect to the in the Wellhead Protection Area Plan. The Operator is Responsible to ensure that Staff and Contractors are aware of the Wellhead Protection Area restrictions, and measures to be applied. More specific duties and roles are included in the adjacent column.	• Notify the Owner if equipment on the Site, and specific to the Site (i.e. Septic) requires assistance, maintenance or does not appear to be operating accordingly. • In conjunction with the Site Owner, and at times, specific to the Site Operators Equipment, ensure that manufacturer service, inspection and maintenance schedules are followed. Including but not limited to the on-site sewage disposal system, and fuel dispensing / storage equipment. • Governing authority (i.e. TSSA) inspection and reporting requirements are completed, and accurately documented when related to Site Operator specific equipment. • The Spills Prevention and Risk Management Plan specific requirements and details are implemented. • Ensuring that tenants, contractors, employees and other occupants of the Site are aware of the risks associated with the sensitive receptor and are formally trained on the procedures, risks and measures to be implemented relating to the site. • Ensure that snow piling is not permitted in the 15 m distance from the supply well on the Site. • That the supply well casing be maintained a minimum of 40 cm above grade. • Protective bollards or barriers be maintained around the supply well to prevent damaged. If damaged, the Site Owner must be notified. • Comply with the Environmental Compliance Approval issued to the site, and all the respective conditions that apply to Site operations.
	Do not permit the land use to become such which may cause further risk to the supply aquifer.	Have a representative frequent the property to ensure that the Site continues to operate in a fashion which respects the points mentioned above. Ensure that the Site is well kept, with no excessive storage of potential hazardous materials. Ensure that operations on the Site do no include heavy industrial uses, mineral extraction, waste disposal, or other light industrial uses which are known to be a high risk for potential environmental

		concern such as automotive repair operations or chemical refinement.
	Have received a copy, have reviewed, and clearly understands the items included in the Spills Prevention and Risk Management Plan for the Site.	A Spills Prevention and Risk Management Plan will be prepared for the Site. 1. Create one of their own which follows the points included and 2. Are clear on the sensitive requirements of the Site and neighbouring lands.
	Have received a copy, have reviewed, and clearly understands the items included in the Employee & Contractor Training Plan.	This plan will be included in the Spills Prevention and Risk Management Plan to be prepared. 1. Create one of their own which follows the points included and 2. Are clear on the sensitive requirements of the Site and neighbouring lands. Including excavation limitations to protect the aquifer.
Site Contractor	Follow the specific recommendations set out by the Site Operator with respect to the in the Wellhead Protection Area Plan.	• Notify the Operator (or Staff Representative) if equipment on the Site, requires assistance, maintenance or does not appear to be operating accordingly. • Conduct respective activities in a fashion which is respectful to the sensitive features of the Site, and mitigate the risk of impacts to the supply aquifer (See Spills Prevention and Risk Management Plan).
	Have received a copy, have reviewed, and clearly understands the items included in the Spills Prevention and Risk Management Plan for the Site.	A Spills Prevention and Risk Management Plan will be prepared for the Site. 1. Create one of their own which follows the points included and 2. Are clear on the sensitive requirements of the Site and neighbouring lands.
	Have received a copy, have reviewed, and clearly understands the items included in the Employee & Contractor Training Plan.	This plan will be included in the Spills Prevention and Risk Management Plan to be prepared. 1. Create one of their own which follows the points included and 2. Are clear on the sensitive requirements of the Site and neighbouring lands.
	Have received a copy, have reviewed, and clearly understands the items included in the Construction Risk Management Plan for Source Water Protection.	This is only applicable during the proposed Site re-development discussed in this report. Future projects will require specific plans for contractors to follow.
Site Employee	Follow the specific recommendations set out by the Site Operator with respect to the in the Wellhead Protection Area Plan.	• Notify the Operator (or Staff Representative) if equipment on the Site, requires assistance, maintenance or does not appear to be operating accordingly. • Conduct respective activities in a fashion which is respectful to the sensitive features of the Site, and mitigate the risk of impacts to the supply aquifer as set out in the Spills Prevention and Risk Management Plan and included Employee & Contractor Training Plan.

	Have received a copy, have reviewed, and clearly understands the items included in the Spills Prevention and Risk Management Plan for the Site.	A Spills Prevention and Risk Management Plan will be prepared for the Site. 1. Create one of their own which follows the points included and 2. Are clear on the sensitive requirements of the Site and neighbouring lands.
	Have received a copy, have reviewed, and clearly understands the items included in the Employee & Contractor Training Plan.	This plan will be included in the Spills Prevention and Risk Management Plan to be prepared. 1. Create one of their own which follows the points included and 2. Are clear on the sensitive requirements of the Site and neighbouring lands.
MECP	Ensure that the conditions of the ECA are meet and issue orders are required to ensure compliance.	Should reported aquifer impairment be noted, the MECP must consult with the Owner and Operator to address the issue and come to a plan of resolution.

10 SUMMARY AND CONCLUSIONS

Based on the results of this investigation the following summary and conclusions are provided.

- The subject Site is located within a generally rural residential and commercial area of Ottawa, at the northwest corner of the intersection of Albion Road, and Mitch Owens Road. The Site is presently developed and operated as a retail petroleum dispensing facility equipped with six (6) gasoline dispensing pumps, one (1) diesel dispensing pump, and five (5) underground storage tank located at the general southeastern portion of the Site. The Site has operated as a fuel dispensing facility since at least the mid to late 1990's.
- The Hydrogeological Assessment & Terrain Analysis was completed in support of the proposed site re-development and associated Site Plan Application submission to the City of Ottawa. It is anticipated that the existing fuel dispensing facility will be re-developed to include new fuel storage and dispensing equipment, and convenience store serviced by a private water supply well and sewage disposal system.
- The proposed construction activities associated with the re-development will include the removal and replacement of the underground petroleum storage tanks. The excavation associated with the installation of underground storage tanks of this size (two (2) at 65,000 L capacity and two (2) at 25,000 L capacity) generally extends to a depth of approximately 4.2 m below grade, which includes 0.6 m of granular underlying the installations.
- The Site is irregular shaped being generally rectangular with a portion of the southeastern extent being reduced. The Site is between approximately 85 and 110 m wide (east-west) by between 90 and 115 m deep (north-south) for an approximate surface area of 10 920 m² (2.7 acres).
- The topography of the Site and neighbouring lands is generally flat with a gentle slope to the south, towards Mitch Owens Road.
- The Site is fitted with storm water structures, including catch basins and buried catchment drainage piping. These systems set in place are used to collect and control surface runoff across the Site and distributes it into accepted City services and infrastructure for further off-Site handling. No swales or drainage courses are present on the subject Site. A municipal ditch however does run in a general east-west direction along Mitch Owens Road, along the adjacent lands to the west. Based on the topography of the site, and site

features, it is inferred that the property drainage pattern flows south towards Mitch Owens Road.

- A watercourse is located on the neighbouring property to the west, however the City of Ottawa identifies it as a 'ditch'. The neighbouring lands to the north, are identified to contain unevaluated wetlands according to provincial mapping systems (Ministry of Natural Resources and Forestry, Make a Map: Natural Heritage Areas).
- Surficial soil deposit mapping indicates that the surficial geology is fine- to medium-grained sand, calcareous and commonly fossiliferous; nearshore sand generally occurs as a sheet or as bars or spits associates with glaciofluvial materials. Bedrock mapping indicates that the bedrock is described as the Oxford Formation: dolomite and limestone.
- The Site is located within the wellhead capture zone for the neighbouring Albion Sun Vista communal supply well system. This communal well is located downgradient (south) of the subject Site, following Mitch Owens Road and is sourced by the shallow bedrock aquifer which is hydraulically connected to the sand/gravel/till overburden recharge zone.
- As part of this assessment, a desktop review of potential sources of contamination to the supply aquifer was completed. This review was completed with general reference to Ontario Regulation 153/04. The review revealed the following potential sources of contamination, and the corresponding PCA as set out by Ontario Regulation 153/04:
    - Petroleum handling and dispensing facility operations and associated equipment on the Site;
    - Aggregate extraction facility located approximately 390 m northeast and 600 m east of the Site; and
    - The historical industrial/commercial development previously occupying the property located immediately east of the Site, which historically included a fueling station along the southern extent of the property, an above-grade storage container (tank) associated with the fueling station, and the numerous pieces of heavy machinery and large vehicles are visible across the property through historical aerial imagery reviewed.
- A search was conducted of the well records from the MECP Water Well Record revealed 70 wells recorded within an approximately 500 m radius of the Site. The records of the wells within 500 m of the Site revealed that the wells are drilled wells extending to depths between 14.0 and 67.9 m. Geological conditions within 500 m are generally similar and consist of sand or sand and gravel mix, followed by clay over bedrock. Glacial till material was encountered in select wells retrieved, and additionally, clay was not identified in all locations. The bedrock typically includes limestone, sandstone, or a combination of both.
- Four (4) groundwater monitoring wells were constructed on the Site as part of a Phase II Environmental Site Assessment completed in support of the proposed Site re-development application. The wells were advanced to depths of approximately 4.5 m bgs. Groundwater levels measured in the installations were recorded to be between 1.77 and 1.98 m bgs, which corresponded to elevations between 98.15 and 98.43 m, with respect to an arbitrary benchmark established and assigned an elevation of 100.00 m.
- Groundwater sampling of the shallow groundwater monitoring wells installed on the Site, and the corresponding chemical analysis for VOC, PAH and PCB parameters revealed that concentrations were below the laboratory method detection limits, with the exception to PHC F3 and F4 parameters detected in a single location. The levels encountered were measured below the respective site condition standard. Select metal parameters were

detected, however all levels are below the applicable site condition standards with the exception of sodium in each groundwater monitoring well location, and Chloride at the majority of the sample locations.

- During the proposed re-development activities of the Site, an environmental remediation program will be implemented to address the identified or anticipated impacted overburden across the southern extent of the Site. The environmental remediation program will support the future protection of the on-Site supply well, in addition to the further protection of additional natural features and aquifers from possible contamination and damage in the long term. As presented in the Phase II Environmental Site Assessment, and discussed above in this section, generally contaminates associated with fuel handling facility were not encountered, although suspected to be present in the surrounding soils encompassing the underground storage tanks, and in the area of the pump islands, which could not be investigated due to the risk of damaging the fuel handing equipment. Following the TSSA Environmental Management Protocol for Fuel Handling Sites in Ontario, August 2012 (formerly GA1/99), contaminated soils will be remediated to conditions which meet the corresponding site conditions standards, as best possible. Caution will be taken to not puncture the confining clay barrier, when encountered, which acts as a protective layer to the neighbouring supply aquifer. Should restrictions to the excavation activities be encountered, alternative remediation methods will be implemented.
- Based on the proposed re-development attributes, the anticipated average daily flow demands of the proposed development have been evaluated based on the septic design. The daily flow demand is estimated based on the total daily design sanitary sewage flow, calculated as per Table 8.2.1.3.B of the Ontario Building Code, 2012. The anticipated daily flow demand is 7 720 L/day.
- With consideration to the average daily flow demand, a 6-hr pump test was conducted on the existing supply well. The well was pumped at a constant flow rate (±5%) of approximately 30 L/min over 6-hr period. The drawdown after 6-hr of pumping was 1.55 m which represents only approximately 4.0% of the available drawdown in the well. The specific capacity of the well after 6-hr of pumping was calculated to be 0.322 L/sec/m with a long-term availability of 51.1 m^3 per day. The recovery was commenced at the end of the 6-hr pumping duration. After one (1) hour of recovery, the well returned to 97.4% of the initial water level (3.02 m btc).
- Based on the observed drawdown/recovery relationship, it is concluded that the long-term yield of the test well is in excess of minimum daily demand of 7 720 L (8.62 m^3/day) and is found to be able meet a maximum pumping rate of 128.9 L/minute. This is considered sufficient to supply the inferred average and peak hourly flow demands of 16.08 L/min and 19.30 L/min, respectively.
- To represent the long-term water quality of the well, samples were collected during different stages of the pump test (after 3 and 6-hours of pumping), and shortly thereafter. The water samples meet the ODWS parameters tested except for the following:
    - Hardness was found to be 204 and 219 mg/L at 3- and 6-hours, respectively, above the ODWS OG limit of 100 mg/L;
    - Turbidity was measured to have a level of 4.2 NTU in the 3-hour sample, and 8.8 NTU in the 6-hour sample. Both of which are above the ODWS OG of 1 NTU if the treatment system is required to provide filtration and, the 6-hour sample is above the AO of 5 NTU;

- All trace metal parameters analysed were below the respective OWDS, with the exception to Manganese which was reported with a value of 0.07 mg/L, above the ODWS of 0.05 mg/L;
- Sulphide concentrations were reported as 0.12 mg/L after 6-hours of pumping, above the 0.05 mg/L ODWS AO. Sulphide can be reduced through aeration, which oxidizes it to sulphate, or an activated carbon filter;
- Total Coliforms were detected in the samples collected at 3-hours and 6-hours of pumping, with values of 4 and 2 CFU/100 mL, respectively. Microbial impacts can be treated through the use of an ultraviolet disinfection system; and
- Iron levels were measured to be 0.4 and 0.9 mg/L, above the ODWS AO of 0.3 mg/L. This level is below the D-5-5 treatability limit of 10 mg/L. Iron can be reduced through the use of a water softener.

- Additional water samples collected from the supply well on the Site has confirmed the absence of potential contaminates of concern, related to the Site operations as a petroleum storage and dispensing facility (VOCs, PHC, PAHs).
- Based on the Site's geology and hydrogeology the recommended potential supply aquifer for the Site, is the bedrock aquifer. The existing supply well currently intercepts this aquifer, and it is our understanding that the proposed re-development of the Site will utilize the existing well. Based on the findings of the Hydrogeological Assessment, it is considered acceptable for the proposed re-development to use the existing supply well on Site.
- As a conservative approach to determining the expected largest septic system envelope required to service a commercial gasoline service station establishment at the Site, a septic system envelope size was calculated assuming a fully raised bed with mantle, a percolation rate of 12 min/cm for the imported sand required and a daily sewage flow of 7 720 L. An area of approximately 772 m² is required for the septic bed. A mantle of 15 m in length would be required along the down gradient portion of the bed. Based on the total coverage of the septic bed (raised portion and mantle plus a replacement area) would be approximately 1 784 m².
- The Site has a surface 11 920 m², of which, approximately 3 525 m² is considered suitable for placement of the sewage disposal system, which encompasses the north/northwestern portion of the property. Sufficient area of replacement area and mantle exists on the Site in accordance with the OBC to service the proposed development with a design sewage flow of up to 7 720 L/day.
- The proposed sewage disposal system for the Site is the Norweco HK 4730L-3M tertiary treatment unit. The Norweco HK 4730L-3M, has the capability to reduce nitrates to at least 15 mg/L (67% nitrogen reduction).
- It should be noted that only marginal changes from the current Site use and daily flows are anticipated for the Site (approximately daily flow increase of 1,900 L to account for one (1) additional washroom). The use of an upgraded sewage treatment/disposal system is considered a substantial improvement to the exiting conditions and current effluent concentrations, therefore the use of the proposed Norweco tertiary system will in fact have a beneficial improvement to the Site in comparison to current conditions.
- Section 5.2, Groundwater Impact Assessment in Non-Designated Areas, of the MECP's Procedure D-5-4 outlines the three (3) step assessment process for evaluating the potential risk for "every proposed development involving on-site sewage systems". The steps are intended to be followed in succession, where the conditions established in the previous

step determine whether it is necessary to move on to the next step. The Contaminant Attenuation Consideration (Predictive Assessment) was used to determine the potential risk to groundwater resources on- and off-Site resulting from the proposed on-Site septic systems. More specifically, to confirm that the concentration of nitrates at the boundary of the Site are in accordance with the MECP's Procedure D-5-4: Technical Guideline for Individual On-Site Sewage Systems: Water Quality Impact Risk Assessment.

- Following the procedures set forth in the D-5-4 Guidelines for the Contaminant Attenuation Consideration (Predictive Assessment) methodology, and assuming an effluent nitrate reduction of 67%, which can reduce nitrates from 40 mg/L to 15 mg/L, the annual septic flow required for the Site of 2 818 m³/year will be meet with a calculated maximum allowable septic flow of 3 014 m³.
- Based on the D-5-4 Guideline considerations, the current Site conditions are suitable to attenuate the nitrate impacts generated by the septic systems on the development in accordance with current D-5-4 guidelines, provided an appropriate tertiary treatment is used and maintained. The system must be able to treat the effluent to a nitrate level of 15 mg/L or less. The potential impacts related to the use of the sewage disposal system on the Site, with respect to natural features, and shallow groundwater conditions is low risk. Furthermore, supply wells in the area retain their water supply from deeper bedrock aquifer, therefore the on-Site septic system is anticipated to have little to negligible impacts to the neighbouring water supply.

11 RECOMMENDATIONS

Based on the results of this investigation the following recommendations are provided:

1. It is recommended that the existing supply well at the Site be utilized as a water supply for the proposed re-development features of the Site. The well is found to generally have acceptable groundwater supply for human consumption and will be able to meet the daily supply demands, as determined through the 6-hour pumping test initiated.
2. Stick up of the existing supply well casing must be extended to 74 cm to match the proposed final grade and to include a 40 cm above grade stick up. The addition of a vermin proof cap should also be included to the existing supply well. The requirements for the well modifications in accordance with O. Reg. 903 requires that post well modifications, the well will require formal disinfection. To comply with the O. Reg. 903 requirements, the chlorination requires that the well be not used for between 12 and 24 hours. This will require that the operations of the site be stopped for this duration. As the Site operates as a 24-hour fuel service station, this would require the station to close for a period which is not considered practical at this time. The importance of the well modifications is understood, and it is guaranteed that during the initial stages of the construction activities associated with the re-development (i.e. removing asphalt and cement structures), the required modifications will be completed. The City can request as a condition of occupancy that formal written acknowledgement and evidence that these modification have been completed.
3. As mentioned in recommendation Item 2, the casing of the well must be extended to 0.4 m (40 cm) above ground level. It is also required that protective barriers (bollards) be added around the well structure to prevent possible damage by vehicle traffic. The grading and development plans associated with the development include specific details related to the inclusion of bollards to act as additional protection to the supply well, and requirements for grading at the supply well to divert run-off away from the structure. These

details must be followed so the final grading and development are as specified in the plans.

4. Additional consideration with respect to maintaining the condition of the supply well, and the corresponding supply aquifer include the following:
    a. Snow should not be piled in the area of the well so as not to potentially damage the supply well;
    b. A monitoring program of the Site's supply well must be initiated to provide ongoing water quality information. This program will include monitoring on an annual basis for general water quality parameters and metals in addition to parameters often associated with fuel dispensing and handling facilities: petroleum hydrocarbons (PHC) Fractions F1 through F4; and Volatile Organic Compounds (VOCs) including Benzene, Toluene, Ethylbenzene and Xylenes (BTEX). A detailed Groundwater Monitoring scope will be prepared at a later date, as a condition of occupancy permits issuance with the City of Ottawa. The plan will provide details related to :
        i. Monitoring well locations, depths and construction details;
        ii. Monitoring well sampling frequency;
        iii. Provincial criteria, or standards to be applied to the water quality representative of the samples collected, and trigger mechanism to be applied to protect off-Site receptors;
        iv. Roles and responsibilities relating to the monitoring wells, and corresponding reporting and regulatory submission;
        v. Procedures and guidelines to be followed to ensure the presence of the monitoring wells to not present a potential pathway for impairment of local supply aquifer resources; and
        vi. Contingency planning with respect to contaminates of concern including, but not limited to formal reporting procedures, plans of actions, and necessary actions to be taken; and

        The proposed monitoring program and included proposed contingency plan will be reviewed by the City of Ottawa as a condition of the approval.
    c. The Site, post- re-development, should be graded such that surface run-off and drainage be diverted away from the supply well, which is demonstrated in the site redevelopment grading plans.
5. The water quality of the supply well is found to be in general accordance with the ODWS. The following exceptions were encountered:
    a. Hardness was found to be above the ODWS OG limit of 100 mg/L, and manganese exceeded the 0.05 mg/L ODWS. High levels of hardness can lead to scale deposits and excessive utilization of regular soaps, and elevated manganese can result in a brown or rust-colour discolouration to water and may cause staining to faucets, sinks, or laundry. Hardness and manganese can be reduced through the use of a water softener; however the use of sodium chloride as a regenerant for the resins can increase the sodium content of the water. This poses a lower risk to the subject site based on it's anticipated use, although it should be noted that for individuals with sodium restricted diets, potassium chloride can be substituted for sodium in the ion exchange system to lower the hardness in the water supply.

b. Turbidity was measured to have a level of 4.2 NTU in the 3-hour sample, and 8.8 NTU in the 6-hour sample. Both of which are above the ODWS OG of 1 NTU if the treatment system is required to provide filtration and, the 6-hour sample is above the AO of 5 NTU. Turbidity can be reduced through proper filtration techniques, although it is anticipated that the elevated concentration is a result of a chemical reaction which may have occurred post- sample collection.

c. Total coliforms were detected in both the 3- and 6- hour samples collected. Microbial impacts encountered (Total Coliforms) can be treated through the use of an ultraviolet disinfection system.

d. Sulphide concentrations were reported as 0.12 mg/L after 6-hours of pumping, above the 0.05 mg/L ODWS AO. Sulphide can be reduced through aeration, which oxidizes it to sulphate, or an activated carbon filter.

6. Water Treatment options should be considered on an individual basis. Any water treatment system should be maintained on a regular basis in accordance with the manufacturer's recommendations to ensure that it is properly functioning and providing a safe drinking water.

7. The water system will be a small drinking water system that is governed by the Ministry of Health and Long-Term Care (MOGLTC). The procedures outlined in O. Reg. 319/08, including procedures for regular testing of the drinking water, upkeep of records of sampling and maintenance, and the protection of the drinking water source must be adhered to. Although it appears that the supply well is hydraulically separated from the shallow overburden aquifer, it is recommended that the drinking water testing include petroleum hydrocarbons and volatile organic compounds.

8. The owner should maintain their supply well as outlined in the Ontario Ministry of Agricultural and Rural Affairs Best Management Series – Water Wells.

9. Risk Management measures are required as the Site is located within the Wellhead Protection Area for the Albion Sun Vista communal wells. The proposed development must adhere to the Well Protection Area Plan prepared by Jacques Whitford (2004), and associated risk management measures. A Construction Risk Management Plan for Source Water Protection, a Spills Prevention and Risk Management Plan (which will include staff training and record keeping as a risk management measure), and a Monitoring Program – will be prepared and reviewed by the City as a condition of the site plan agreement. Once approved, these plans are to be implemented.

   Site specific wellhead protection area – prevention measures are generally outlined above in Section 9. These measures must be implemented and will be outlined in the proposed Construction Risk Management Plan for Source Water Protection, a Spills Prevention and Risk Management Plan (which will include staff training and record keeping as a risk management measure), and a Monitoring Program to be prepared.

10. The proposed sewage disposal system for the Site is a Class IV – Filter Media. It is proposed that the system will be fully in-ground with two (2) septic beds, and two (2) 4 730 L capacity Norweco HK 4730L-3M units. The subsurface conditions indicated for the Site are considered suitable for this proposed sewage disposal system. Sewage system designs shall be based on specific investigations to evaluate the suitability of local conditions on each lot. The system should be designed using the percolation time of the native and imported sand and according to the Ontario Building Code (OBC). The leaching beds should be constructed to conform to the specifications set out in the OBC. The septic

systems shall be constructed above the groundwater table over the native soil once all organic soils have been stripped from is footprint.

11. A tertiary treatment system for the septic system is required, such as a Norweco HK 4730L-3M sewage disposal system, or equivalent, which can treat nitrates to a level, at least 67% of that of a conventional system (15 mg/L). It is required that such a system be used, and maintained accordingly by the client to ensure possible off-Site impacts are negligible.
12. A maintenance agreement for the tertiary treatment system must be prepared by the Site Owner and maintained. A condition will be included in the development agreement prepared by the City of Ottawa that indicates that the owner must provide support that a maintenance agreement has been signed for the long-term maintenance of the septic system, as required in the OBC for advanced treatment units.
13. The previous (existing at the time this report was prepared) sewage disposal system must be decommissioned and removed from the Site. Soils which make up the system shall be removed from the Site as ‘contaminated’ material, and the applicable provincial regulations (i.e. O. Reg. 558) shall be followed in support of the off-Site disposal requirements.
14. The septic system should be placed at least 15 m from any drilled supply wells, 30 m from any shallow/dug wells, and at least 3 m from the property boundary limits.
15. It is recommended that the water table be surveyed prior to installation of the sewage disposal systems by the septic system designer or installer.

12 LIMITATIONS

The findings contained in this report are based on data and information collected during the Hydrogeological Assessment & Terrain Analysis of the subject property conducted by LRL Engineering. The conclusions and recommendations are based solely on-Site conditions encountered at the time of our fieldwork between October 16th and 21st, 2022, supplemented by historical information and data obtained as described in this report. The information presented in this report represents the groundwater conditions at the locations sampled. Due to natural variations in geological conditions, no inference is made to the soil or groundwater conditions between sampling points. No assurance is made regarding changes in conditions subsequent to the time of this investigation. If additional information is discovered or obtained, LRL Engineering should be requested to re-evaluate the conclusions presented in this report and to provide amendments as required.

In evaluating the subject property, LRL Engineering has relied in good faith on information provided by individuals as noted in this report. We assume that the information provided is factual and accurate. We accept no responsibility for any deficiencies, misstatements or inaccuracies contained in this report as a result of omissions, misinterpretation or fraudulent acts of the persons contacted.

Yours truly,

LRL Engineering

Jessica Arthurs
Environmental Engineering Manager

Kourosh Mohammadi, Ph. D., P. Eng.
Hydrogeological Engineer

W:\FILES 2001\01348\2022\Hydrogeological\October 2024 - Re-Submission04\2024.10.10.LRL01348.Report.HydrogeologicalAssessment.AlbionRoad.MPI.R0.docx

FIGURES

LRL
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PROJECT

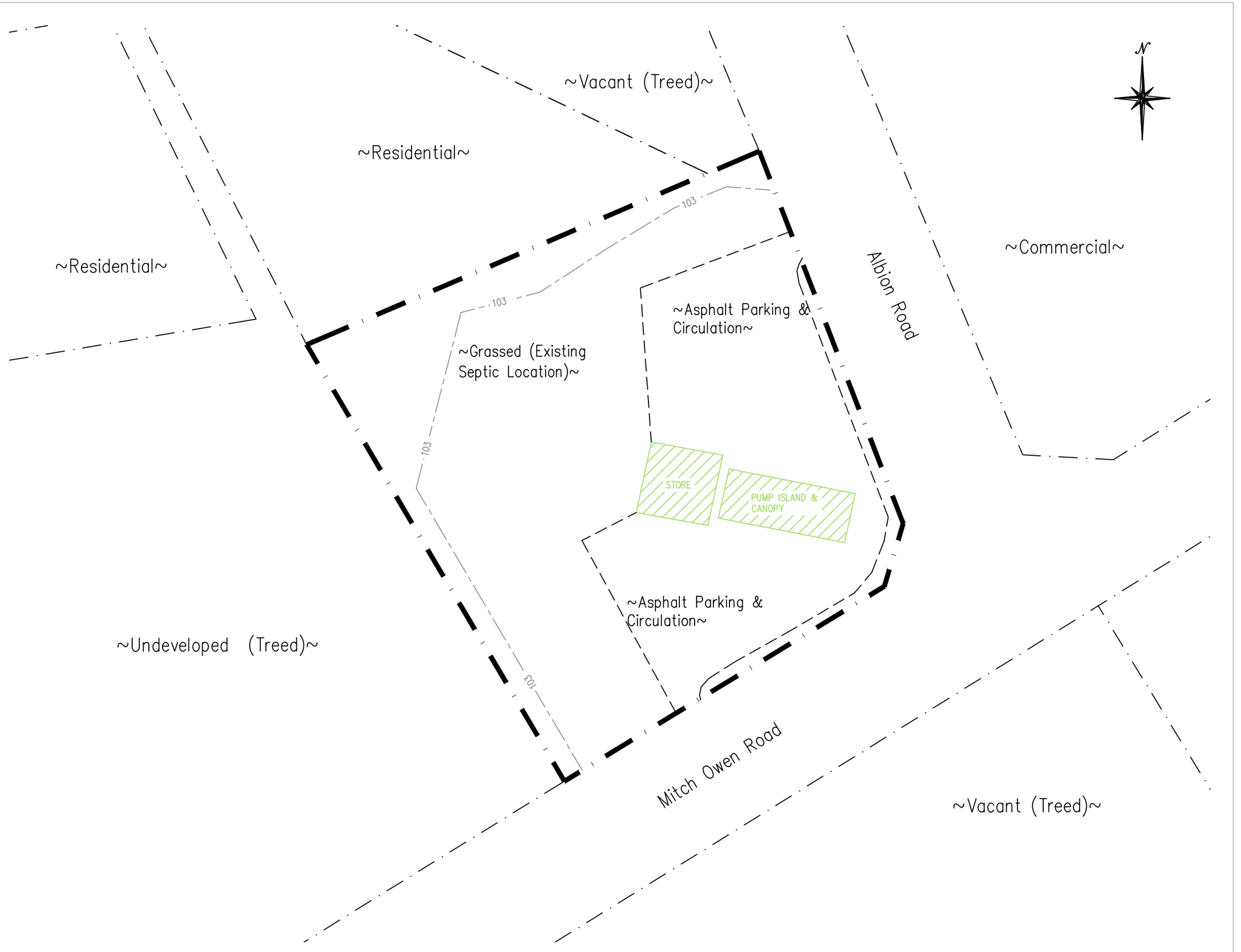
HYDROGEOLOGICAL ASSESSMENT &
TERRAIN ANALYSIS
5546 ALBION ROAD
OTTAWA, ONTARIO

DRAWING TITLE

SITE LOCATION
(NOT TO SCALE)
SOURCE: UCPR A LA CARTE

CLIENT	DATE	PROJECT
MACEWEN PETROLEUM INC.	NOVEMBER 2024	01348

FIGURE 1



LEGEND

- Property Line
- Existing Building/Structure
- Existing Supply Well
- XX Approximate Topographic Contour

30m 15 0 30 60m

SCALE: 1:1750

No.	REVISIONS	BY	DATE
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01	FINAL	J.A.	28/12/2022

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--	J.A.	J.A.

PROJECT

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SITE PLAN -
EXISTING CONDITIONS

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FIGURE 2

LEGEND

- Provincially Significant/considérée d'importance provinciale
- Non-Provincially Significant/non considérée d'importance provinciale
- Unevaluated Wetland
- Woodland

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MNRF - NATURAL FEATURES
SOURCE: MAKE A MAP: NATURAL HERITAGE AREAS

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DATE
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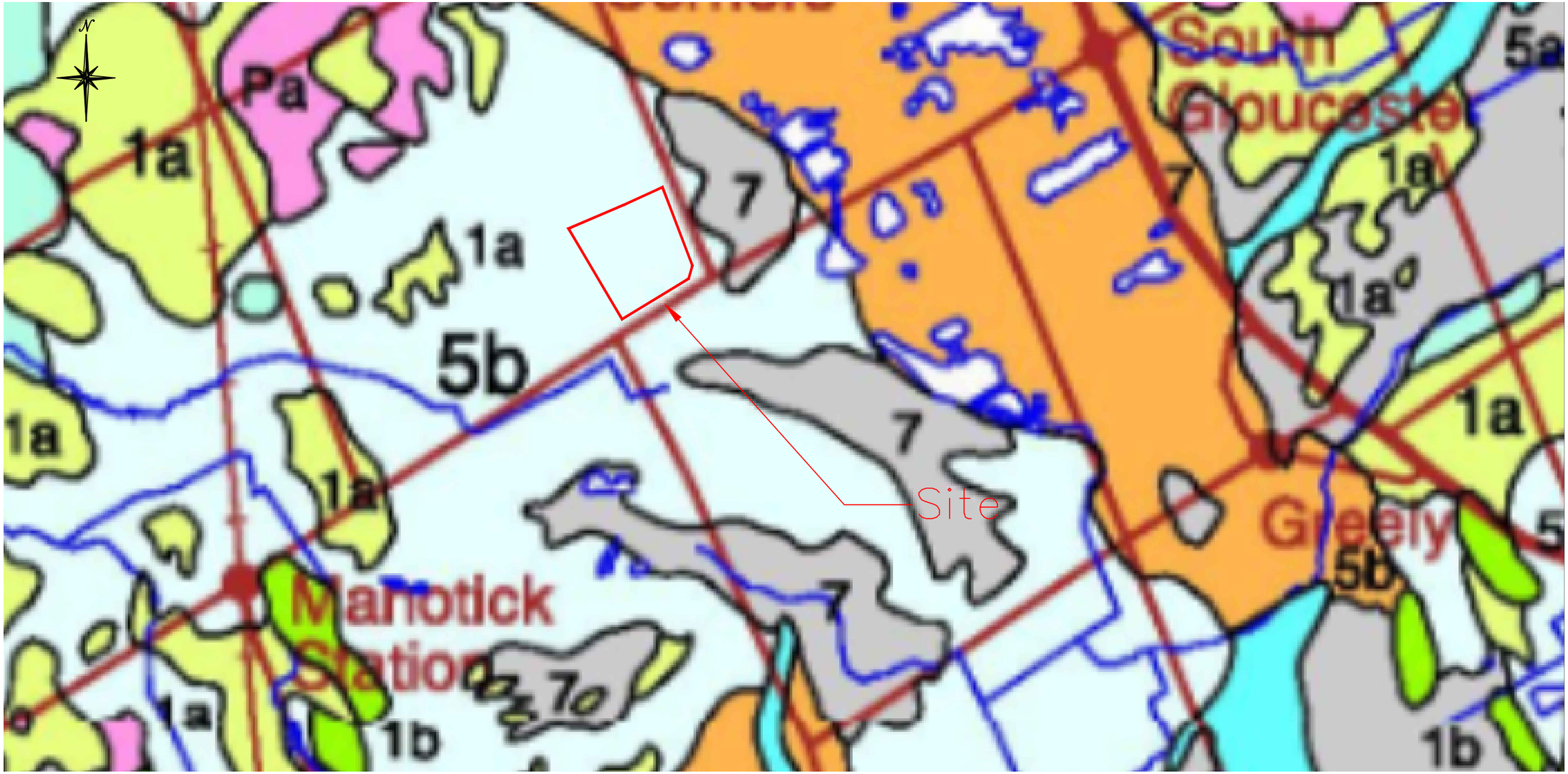
FIGURE 3



Legend

CHAMPLAIN SEA SEDIMENTS

***NEARSHORE SEDIMENTS:** gravel, sand, and coarser material, generally well sorted.*

5a — *Gravel, sand, and boulders; beaches commonly fossiliferous; nature of sediment controlled by underlying material (gravel, sand, and boulders where developed from till and glaciofluvial deposits; slabs and shingles where developed from sedimentary bedrock).*

5b — *Fine- to medium-grained sand, calcareous and commonly fossiliferous; nearshore sand generally occurs as a sheet or as bars or spits associated with glaciofluvial materials.*

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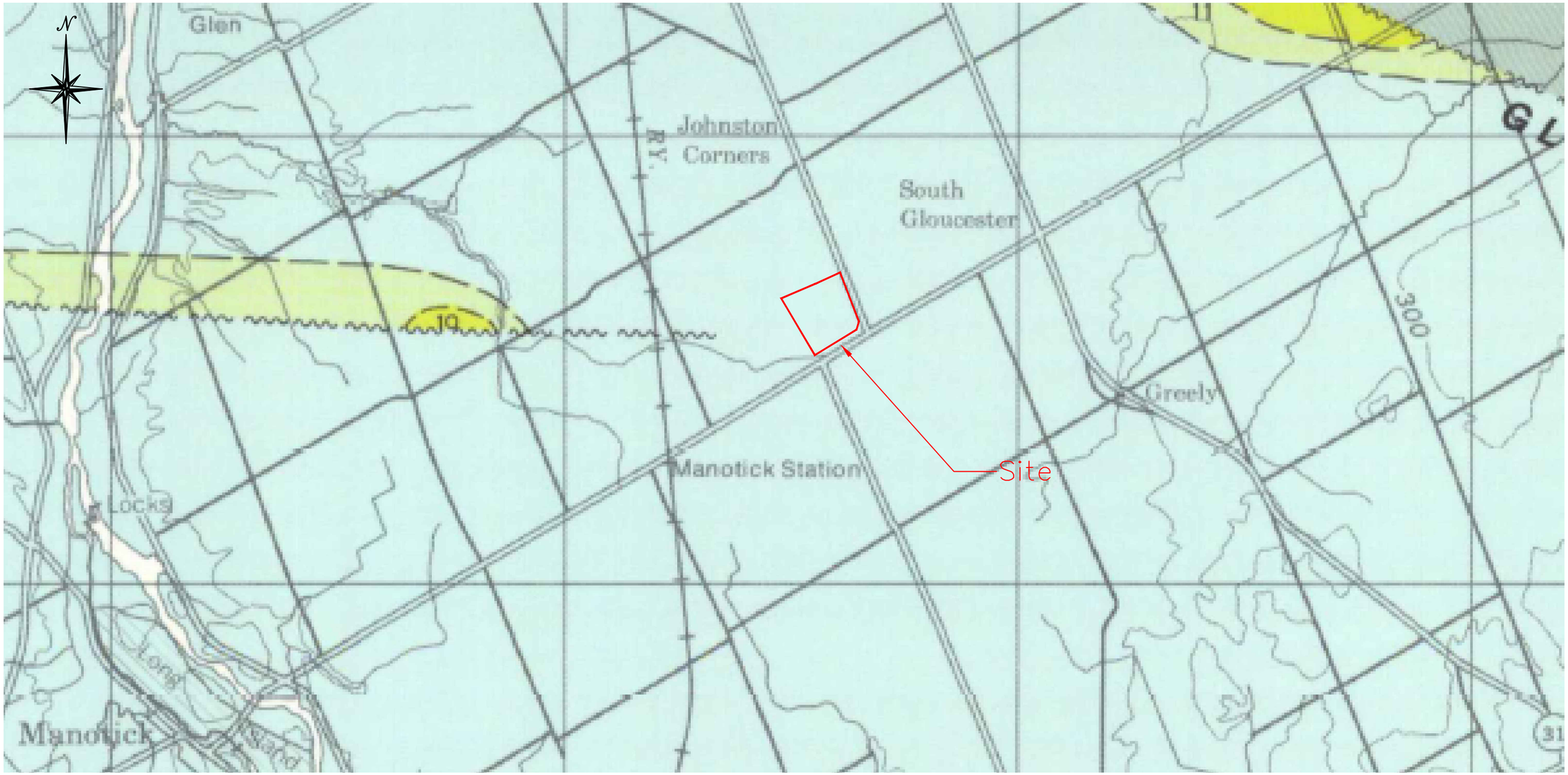
DRAWING TITLE
SURFICIAL GEOLOGY
SOURCE: GEOLOGICAL SURVEY OF CANADA, MAP 2140A,

NOT TO SCALE

PROJECT NO.
01348

DATE
NOVEMBER 2024

FIGURE 4



Legend

12	OXFORD FORMATION: dolomite and limestone

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DRAWING TITLE
BEDROCK GEOLOGY
SOURCE: GEOLOGICAL SURVEY OF CANADA, MAP 1508A

NOT TO SCALE

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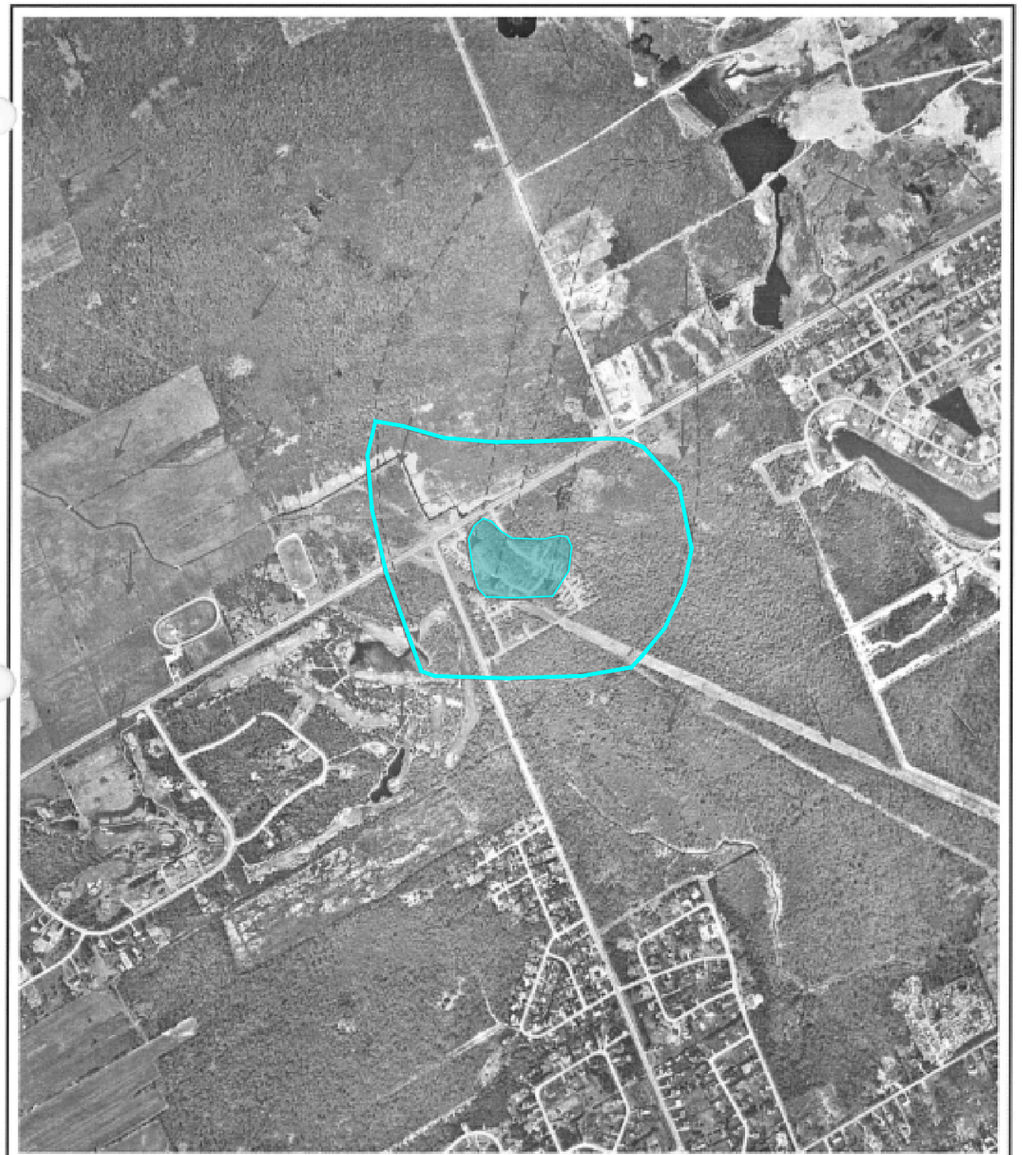
FIGURE 5



Trow Associates Inc.
154 Colonnade Road South, Ottawa, Ontario K2E 7J5
Tel: (613) 225-9940 Fax: (613) 225-7337

SCALE 1:15,000	CLIENT ALBION SUN VISTA	JOB No. OTEN00014309_A
DATE JUNE 2004	TITLE CAPTURE ZONE - 50 DAYS - 2 YEARS	FIG 6
DRAWN RG		

Source: Wellhead Protection Area Plan, Albion Sun Vista Community & Peer Review – Albion Sun Vista Wellhead Protection Plan, June 2004

LEGEND

50 Day – 2 Year Capture Zone (as determined by Others)

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ALBION SUN VISTA - CAPTURE ZONE DETAIL
NOT TO SCALE

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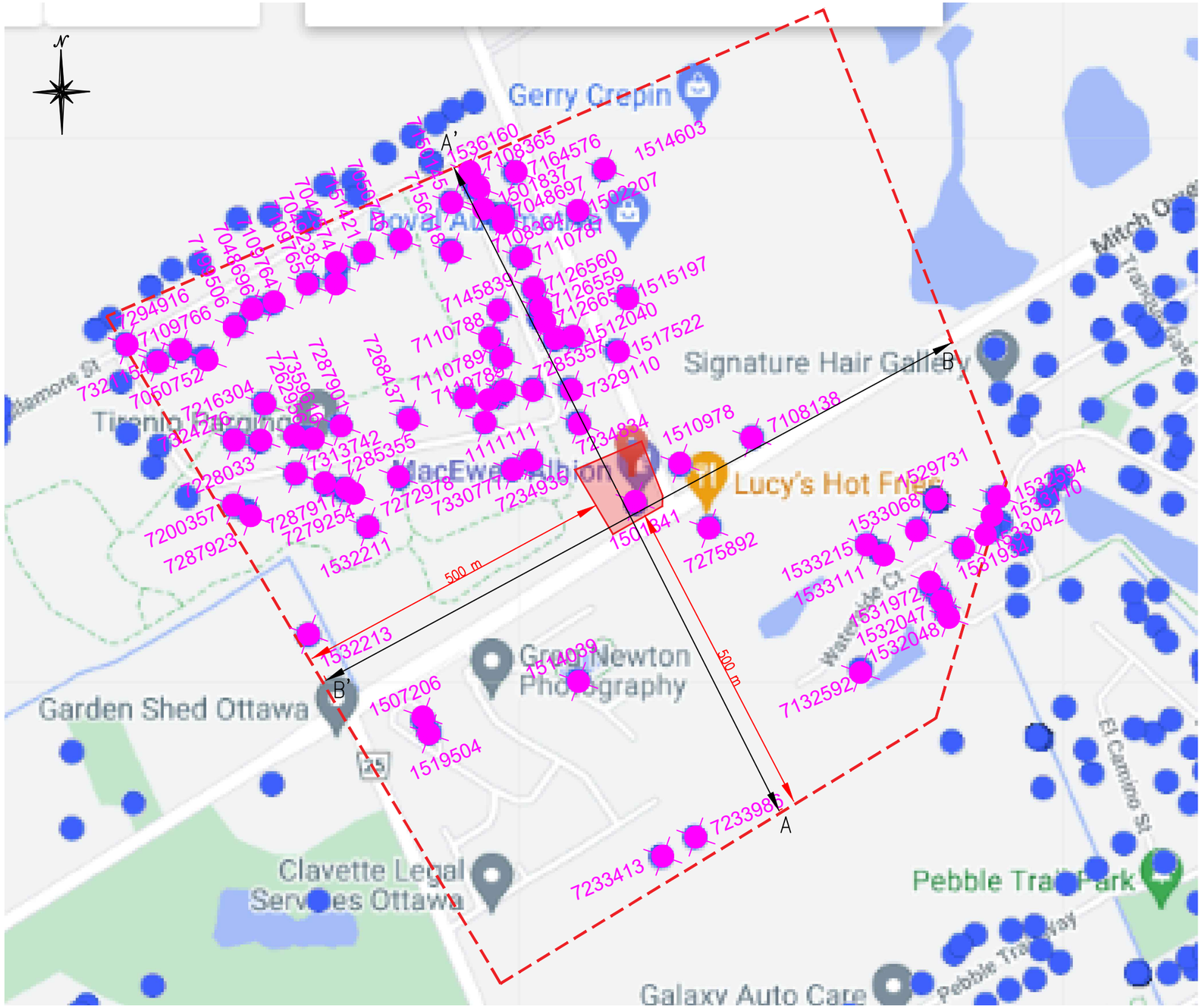
FIGURE 6



LEGEND

- Property Line
- Existing Supply Well
- xxxx Wells within 500 m of the Site
- Wells beyond 500 m of the Site

No.	REVISIONS	BY	DATE
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WELLS WITHIN 500 m OF THE SITE
(SOURCE & BASE LAYER: MECP WELL RECORD DATABASE)

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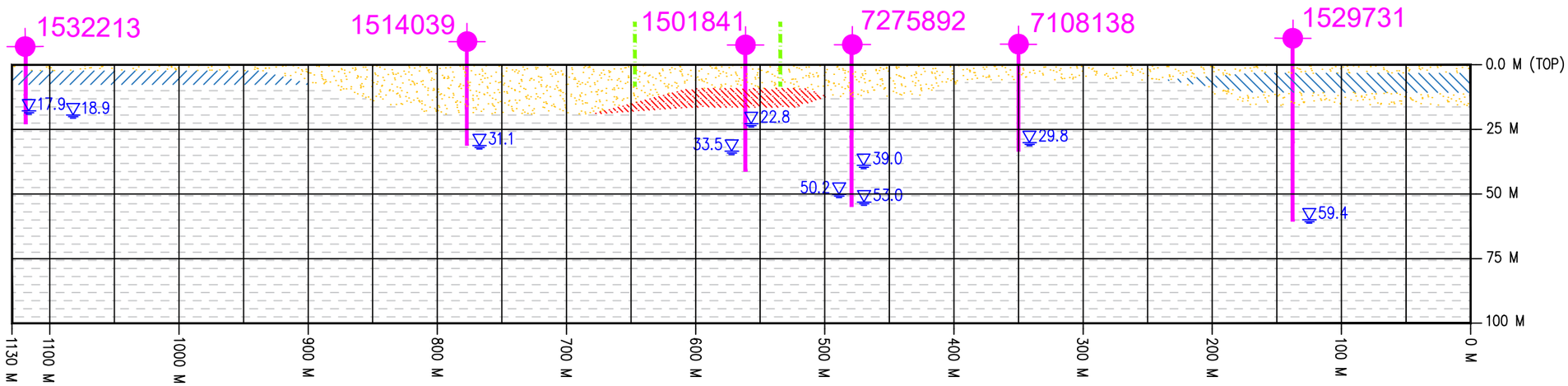
FIGURE 7



CROSS SECTION B' – B

LEGEND

- Supply Well
- Subject Site Property Extents
- 99.9 Groundwater Found
- Sand (Sand, Gravel, Boulders)
- Clay
- Till
- Pavement Structure and Fill Material

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OTTAWA, ONTARIO

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CROSS SECTION B' - B

PROJECT NO.
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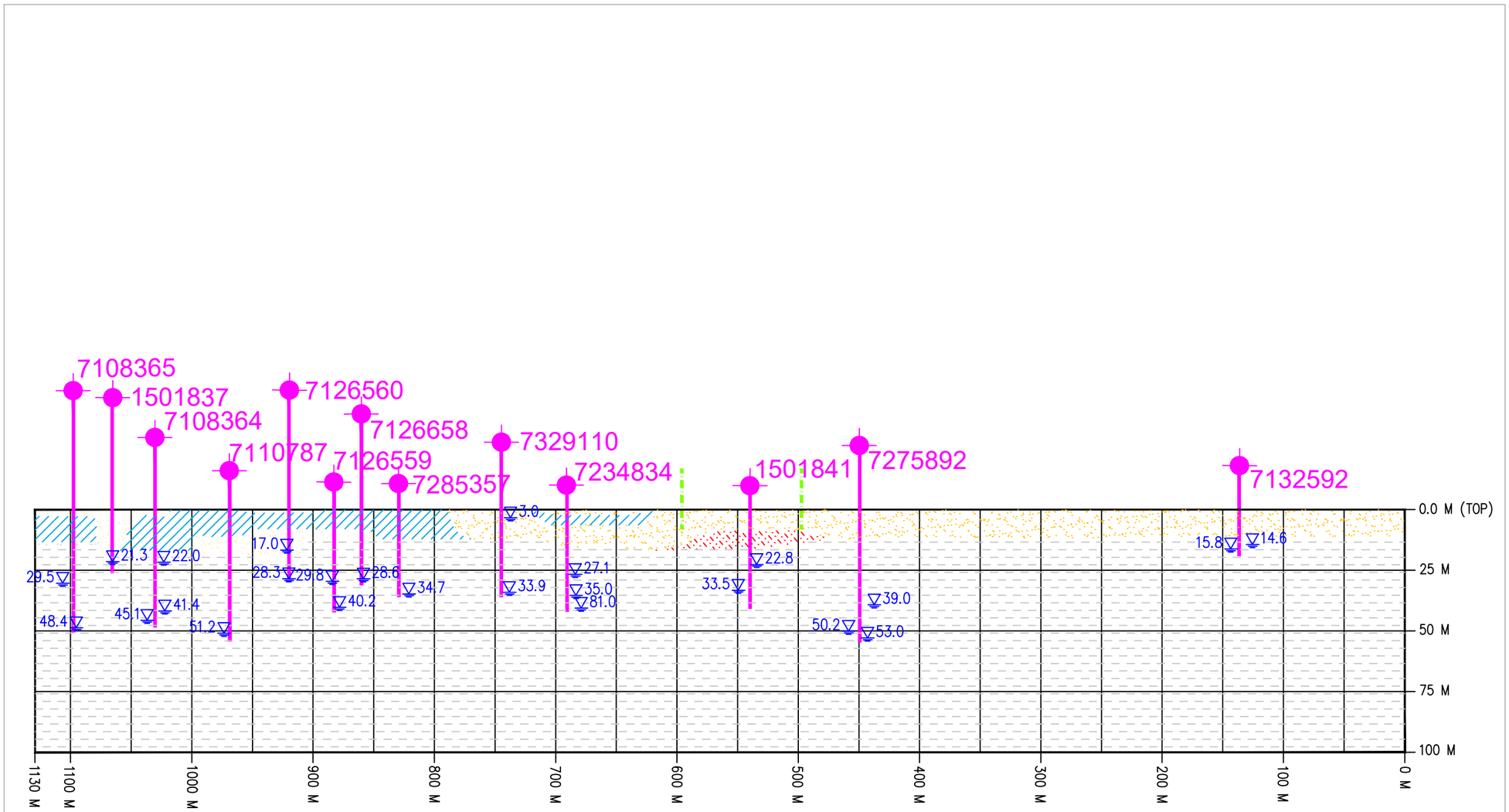
FIGURE8A



LEGEND

- Supply Well
- Subject Site Property Extents
- 99.9 Groundwater Found
- Sand (Sand, Gravel, Boulders)
- Clay
- Till
- Pavement Structure and Fill Material

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CROSS SECTION A' - A

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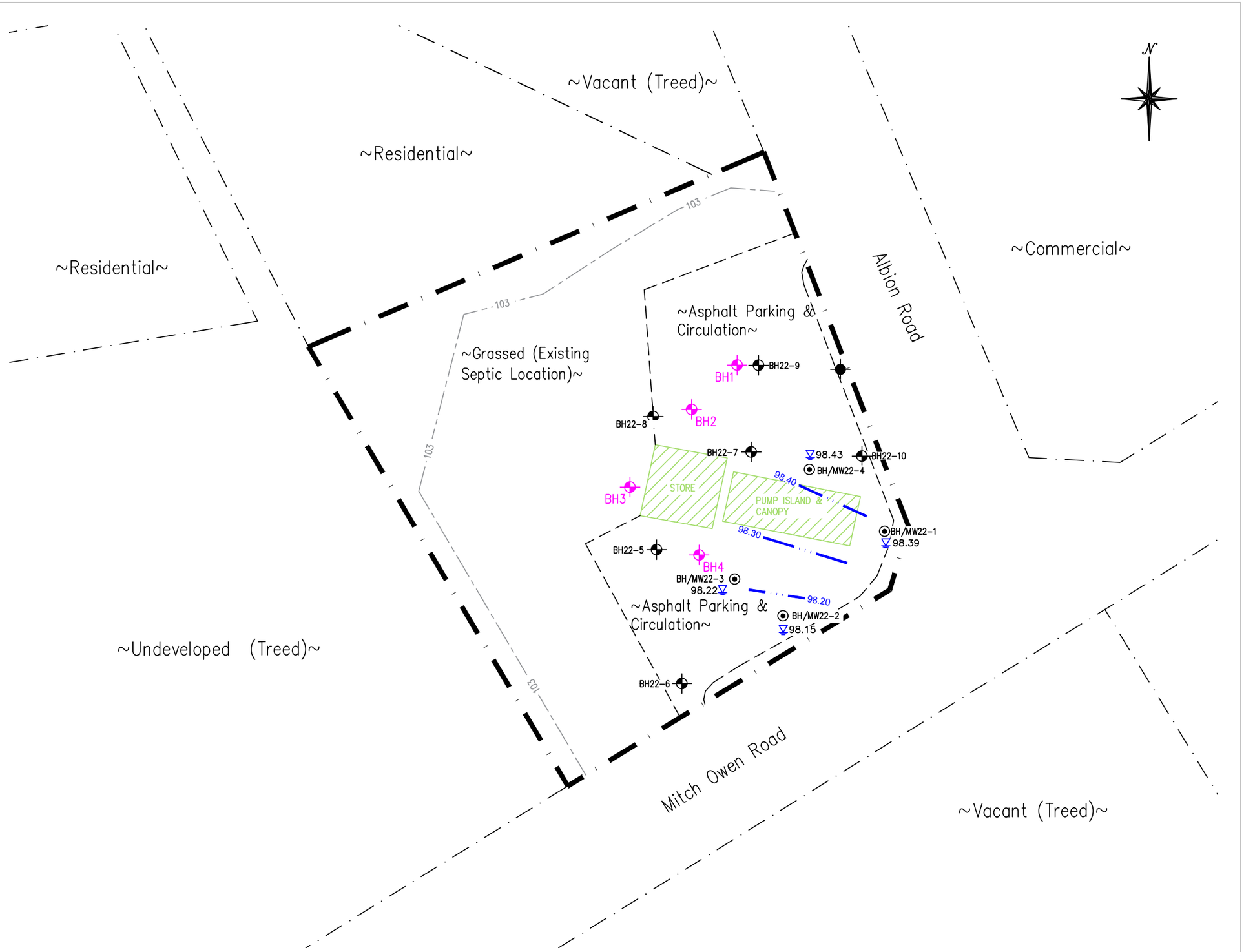
FIGURE8B



LEGEND

- Property Line
- Existing Building/Structure
- Existing Supply Well
- XX — Approximate Topographic Contour
- BH/MW22-99 — Phase II Environmental Site Assessment Groundwater Monitoring Well (July 2022)
- BH22-99 — Phase II Environmental Site Assessment Borehole (July 2022)
- BH22-99 — Geotechnical Investigation Borehole (May 2022)
- 99.99 — Groundwater Elevation (July 2022)
- Ground Contour (July 2022)

30m 15 0 30 60m

SCALE: 1:1750

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HYDROGEOLOGICAL ASSESSMENT & TERRAIN ANALYSIS
5546 ALBION ROAD
OTTAWA, ONTARIO

DRAWING TITLE

BOREHOLE & MONITORING WELL LOCATIONS (GEOTECHNICAL INVESTIGATION & ESA)

PROJECT NO.
01348

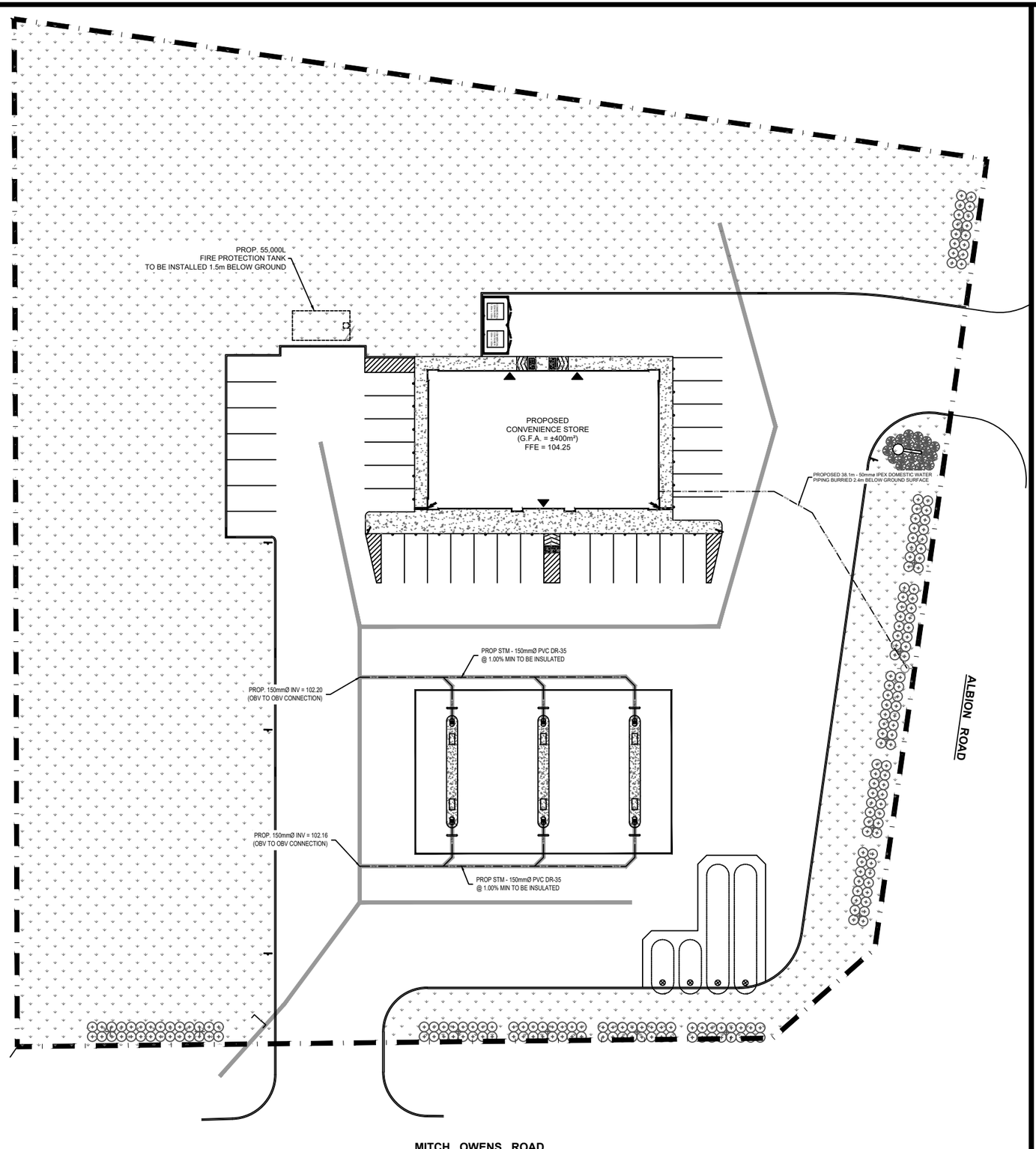
DATE
NOVEMBER 2024

FIGURE 9

LEGEND:

- EXISTING PROPERTY LINE TO REMAIN
- PROPOSED CURB
- PROPOSED DEPRESSED CURB (DC)
- PROPOSED SILT FENCE AS PER OPSD 219.110
- PROPOSED FENCE
- PROPOSED DOOR ENTRANCE/EXIT
- PROPOSED GRASS AREA (100mm TOP SOIL & SOD)
- PROPOSED CONCRETE FEATURES/SLAB
- PROPOSED HEAVY DUTY ASPHALT
- PROPOSED LIGHT DUTY ASPHALT
- PROPOSED RIP RAP
- ×50.00 PROPOSED ELEVATION
- ×50.00HP PROPOSED HIGH POINT ELEVATION
- ×50.00S PROPOSED SWALE ELEVATION
- ×50.00BC PROPOSED BOTTOM OF CURB / ASPHALT ELEVATION
- ×50.00TC PROPOSED TOP OF CURB ELEVATION
- ×50.00EX MATCH INTO EXISTING ELEVATION
- ×70.19 EXISTING ELEVATION
- PROPOSED OVERLAND MAJOR FLOW ROUTE
- STM PROPOSED STORM SEWER
- WTR PROPOSED WATERMAIN
- STM EXISTING STORM SEWER
- SAN EXISTING SANITARY SEWER
- WTR EXISTING WATERMAIN
- EXISTING MANHOLE
- EXISTING CATCHBASIN
- PROPOSED CATCHBASIN-MANHOLE/CATCHBASIN
- PROPOSED MANHOLE
- PROPOSED CURB STOP
- PROPOSED PIPE INSULATION
- PROPOSED 100 YEAR HIGH WATER LEVEL (ELEV = 103.85)
- PROPOSED 5 YEAR HIGH WATER LEVEL (ELEV = 103.80)
- STORM WATERSHED EXTENT

WS-XX (WATERSHED NAME)
CONTROLLED (RUNOFF COEFFICIENT)
AREA / RUNOFF (AREA IN HECTARES)



10m 5 0 10 20m

SCALE: 1:500

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PROJECT

HYDROGEOLOGICAL ASSESSMENT & TERRAIN ANALYSIS
5546 ALBION ROAD
OTTAWA, ONTARIO

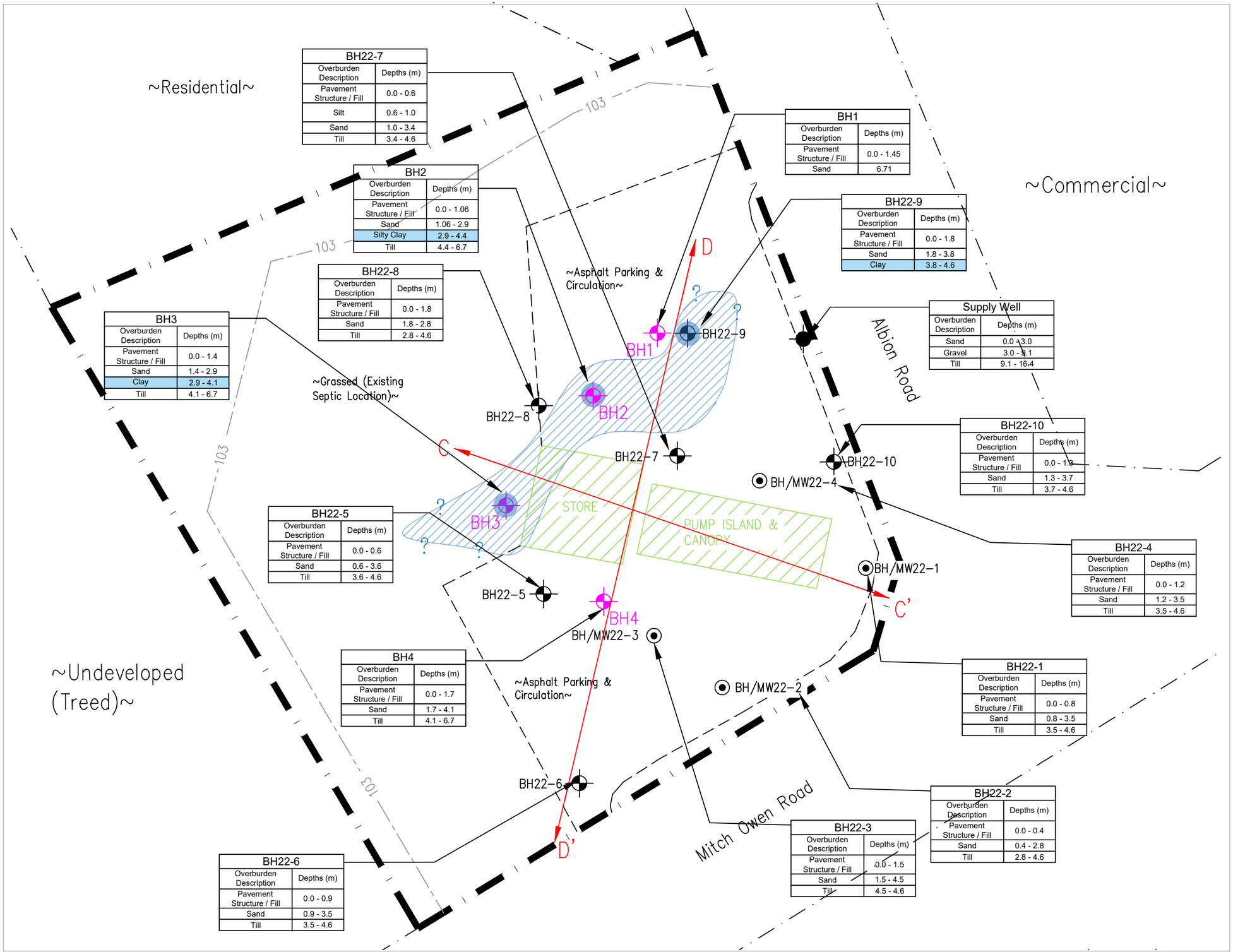
DRAWING TITLE

PROPOSED DEVELOPMENT PLAN

PROJECT NO.
01348

DATE
NOVEMBER 2024

FIGURE10



BH22-7	
Overburden Description	Depths (m)
Pavement Structure / Fill	0.0 - 0.6
Silt	0.6 - 1.0
Sand	1.0 - 3.4
Till	3.4 - 4.6

BH2	
Overburden Description	Depths (m)
Pavement Structure / Fill	0.0 - 1.06
Sand	1.06 - 2.9
Silty Clay	2.9 - 4.4
Till	4.4 - 6.7

BH1	
Overburden Description	Depths (m)
Pavement Structure / Fill	0.0 - 1.45
Sand	6.71

BH22-9	
Overburden Description	Depths (m)
Pavement Structure / Fill	0.0 - 1.8
Sand	1.8 - 3.8
Clay	3.8 - 4.6

BH22-8	
Overburden Description	Depths (m)
Pavement Structure / Fill	0.0 - 1.8
Sand	1.8 - 2.8
Till	2.8 - 4.6

BH3	
Overburden Description	Depths (m)
Pavement Structure / Fill	0.0 - 1.4
Sand	1.4 - 2.9
Clay	2.9 - 4.1
Till	4.1 - 6.7

Supply Well	
Overburden Description	Depths (m)
Sand	0.0 - 3.0
Gravel	3.0 - 9.1
Till	9.1 - 16.4

BH22-10	
Overburden Description	Depths (m)
Pavement Structure / Fill	0.0 - 1.3
Sand	1.3 - 3.7
Till	3.7 - 4.6

BH22-5	
Overburden Description	Depths (m)
Pavement Structure / Fill	0.0 - 0.6
Sand	0.6 - 3.6
Till	3.6 - 4.6

BH22-4	
Overburden Description	Depths (m)
Pavement Structure / Fill	0.0 - 1.2
Sand	1.2 - 3.5
Till	3.5 - 4.6

BH4	
Overburden Description	Depths (m)
Pavement Structure / Fill	0.0 - 1.7
Sand	1.7 - 4.1
Till	4.1 - 6.7

BH22-1	
Overburden Description	Depths (m)
Pavement Structure / Fill	0.0 - 0.8
Sand	0.8 - 3.5
Till	3.5 - 4.6

BH22-6	
Overburden Description	Depths (m)
Pavement Structure / Fill	0.0 - 0.9
Sand	0.9 - 3.5
Till	3.5 - 4.6

BH22-3	
Overburden Description	Depths (m)
Pavement Structure / Fill	0.0 - 1.5
Sand	1.5 - 4.5
Till	4.5 - 4.6

BH22-2	
Overburden Description	Depths (m)
Pavement Structure / Fill	0.0 - 0.4
Sand	0.4 - 2.8
Till	2.8 - 4.6

LEGEND

- Property Line
- Existing Building/Structure
- Existing Supply Well
- XX — Approximate Topographic Contour
- BH/MW22-99 — Phase II Environmental Site Assessment Groundwater Monitoring Well (July 2022)
- BH22-99 — Phase II Environmental Site Assessment Borehole (July 2022)
- BH22-99 — Geotechnical Investigation Borehole (May 2022)
- Estimated Extent Clay / Silty Clay Deposit Encountered in Boreholes Advanced
- ? ? — Full Directional Extent of Clay / Silty Clay Deposit Un-Defined
- BH22-99 — Borehole Advanced with Clay / Silty Clay Encountered
- Cross Section Segment

10m 5 0 10 20m

SCALE: 1:600

No.	REVISIONS	BY	DATE
02	REVISED	J.A.	08/11/2024
01	FINAL	J.A.	28/12/2022

LRL
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CLIENT

MACEWEN PETROLEUM INC.

DESIGNED BY:	DRAWN BY:	APPROVED BY:
--	J.A.	J.A.

PROJECT

HYDROGEOLOGICAL ASSESSMENT & TERRAIN ANALYSIS
5546 ALBION ROAD
OTTAWA, ONTARIO

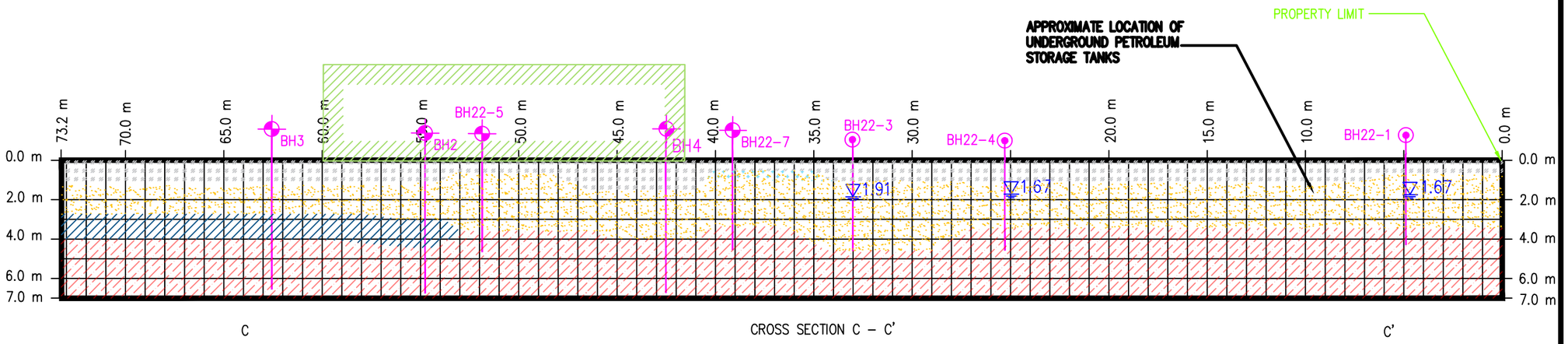
DRAWING TITLE

APPROXIMATE EXTENT AND THICKNESS OF THE CLAY ON-SITE

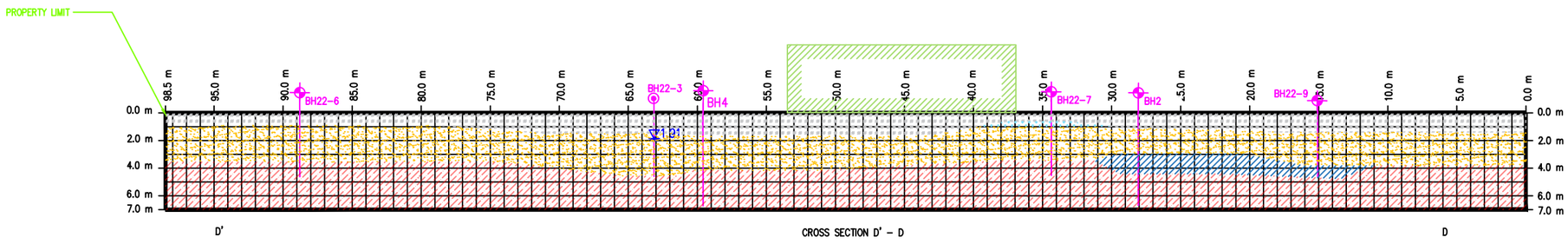
PROJECT NO.
01348

DATE
NOVEMBER 2024

FIGURE 11



CROSS SECTION C – C'



CROSS SECTION D' – D

LEGEND

- Borehole
- Monitoring Well
- 99.9 — Measured Groundwater Level (m bgs)
- Sand
- Clay
- Till
- Pavement Structure and Fill Material
- Silt
- Approximate Extents of Existing Building (Convenience Store) on Site

No.	REVISIONS	BY	DATE
02	REVISED	J.A.	08/11/2024
01	FINAL	J.A.	28/12/2022

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--	J.A.	J.A.

PROJECT
HYDROGEOLOGICAL ASSESSMENT & TERRAIN ANALYSIS
5546 ALBION ROAD
OTTAWA, ONTARIO

DRAWING TITLE
OVERBURDEN THICKNESS ACROSS SITE, AND CROSS SECTION C - C'
&
CROSS SECTION D - D'

PROJECT NO.
01348

DATE
NOVEMBER 2024

FIGURE11A

TABLES

Table 1
Specific Capacity and Longterm Availability
Hydrogeological Assessment & Terrain Analysis- Proposed Fuel Dispensing Facility Re-Development
5546 Albion Road South, Ottawa (Gloucester), Ontario
LRL File: 01348

Tested By: LRL Associates Ltd.
Well Depth 41.4

Date	Cs - Static mTOC	Cp - Pump* mTOC	Cp - Cs	Drawdown (m)	Pumping Rate L/min	*Sc* - Specific Capacity L/sec/m	Specific Yield (m^3/day/m)	Qsc -Maximum Pumping Rate L/min	Long Term Availability m^3/day	Qsc GPM (US)	Qsc GPM (IMP)
2022.10.17	2.98	22.86	19.88	1.55	30.0	3.23E-01	27.9	128.9	185.6	34.1	28.4

Notes:

$$Qsc = 0.67\frac{(C_p - C_s)S_c}{SF}$$

Where:

Qsc Pumping rate with safety factor (SF) of 2.5 (L/min);
$C_p - C_s$ Difference between pump level and static water level (m);
S_c Specific capacity (L/min/m); and
0.67 Is a factor that compensates for the variation of the static water level due to seasonal variations as well as to drawdown from nearby wells

SF 2.0
Minimum Demand 8.62 m^3/day
* Depth of Pump at the time of the Pumping Test.
Greater than Minimum Demand
Less than Minimum Demand
TOC Top of Casing

Table 2
Summary of Analysis of Water Sample Collected from the Supply Well - Subdivision Package
Hydrogeological Assessment & Terrain Analysis - Proposed Fuel Dispensing Facility Re-Development
5546 Albion Road South, Ottawa (Gloucester), Ontario
LRL File: 01348

Parameter	Units	MRL	Ontario Drinking Water Standards		MECP D-5-5[5]	Sample		
			Standard	Type		5546 Albion Rd - Supply Well - 3 hrs	5546 Albion Rd - Supply Well - 6 hrs	5546 Albion Rd - Supply Well
Sample Date (d/m/y)						**2022.10.17**	**2022.10.17**	**2023.11.23**
Microbiological Parameters								
E. Coli	CFU/100 mL	1	0	MAC		<1	<1	<1
Fecal Coliforms	CFU/100 mL	1	0 [1]	MAC		<1	<1	<1
Heterotrophic Plate Count	CFU/ml	10	--			10	10	10
Total Coliforms	CFU/100 mL	1	0/5[1]	MAC		**4**	**2**	**1**
General Inorganics								
Alkalinity, total	mg/L	5	30 - 500	OG		189	198	187
Ammonia as N	mg/L	0.01	--			0.02	0.03	0.04
Dissolved Organic Carbon	mg/L	0.5	5	AO	10	0.9	0.9	<0.5
Colour	TCU	2	5	AO	7	<2	<2	<2
Conductivity	uS/cm	5	--			534	584	470
Hardness	mg/L	1.1	80 - 100	OG	500	**204**	**219**	**203**
pH	pH Units	0.05	6.5 - 8.5	OG		8.0	8.0	8.0
Phenolics	mg/L	0.001	--			<0.001	<0.001	<0.001
Total Dissolved Solids	mg/L	10	500	AO		300	336	258
Sulphide	mg/L	0.02	0.05	AO		<0.02	**0.12**	<0.02
Tannin & Lignin	mg/L	0.1	--			<0.1	<0.1	<0.1
Total Kjeldahl Nitrogen	mg/L	0.1	--			0.1	<0.1	<0.1
Organic Nitrogen	mg/L		0.15	OG		0.08	0.02	0.01
Turbidity	NTU	0.1	1/5[2]	MAC/AO	5	4.2	**8.8**	3.4
Anions								
Chloride	mg/L	1	250	AO	250	23	30	14
Fluoride	mg/L	0.1	1.5[3]/2.4	MAC		0.2	0.1	0.1
Nitrate as N	mg/L	0.1	10	MAC		<0.1	<0.1	<0.1
Nitrite as N	mg/L	0.05	1	MAC		<0.10	<0.10	<0.05
Sulphate	mg/L	1	500	AO	500	51	56	52
Metals								
Calcium	mg/L	0.1	--			50.3	54.3	51.0
Iron	mg/L	0.1	0.3	AO	10	**0.4**	**0.9**	**0.5**
Magnesium	mg/L	0.2	--			19.2	20.3	18.5
Manganese	mg/L	0.005	0.05	AO	1	0.019	0.029	0.015
Potassium	mg/L	0.1	--			1.8	1.9	2
Sodium	mg/L	0.2	20[4]/200	AO	200	15.3	17.1	11.2

NOTES

MRL Minimum Reportable Limit
MAC Maximum Acceptable Concentration
AO Aesthetic Objective
OG Operational Guideline
ODWS Ontario Drinking Water Standards (2006)
NA Not Analysed
UNDERLINE Parameter level above ODWS
Italics Notify Medical Officer of Health
BOLD Parameter level above D-5-5 maximum treatability limits

[1] As per Table 1 of MECP's technical guideline "*D-5-5 Private Wells: Water Supply Assessment*"
[2] 1.0 NTU MAC if treatment system required to provide filtration for disinfection. 5.0 NTU AO for all points of consumption
[3] Where supplies of naturally occuring flouride at levels above 1.5 mg/L but below 2.4 mg/L the Ministry of Health recommends notification of local board of health of levels to avoid excesses exposure from other sources.
[4] Limit at which Local Medical Officer of Health should be notified of Levels.
[5] MECP D-5-5 guideline, maximum concentration considered reasonably treatable

Table 3
Langelier and Ryznar Calculations

Hydrogeological Assessment & Terrain Analysis - Proposed Fuel Dispensing Facility Re-Development
5546 Albion Road South, Ottawa (Gloucester), Ontario
LRL File: 01348

Analyzed Parameters

TDS (mg/L)	336
Hardness (mg/L)	219
Alkalinity (mg/L)	198
pH (pH units)	8.0
Temperature °C	10

Langelier

LSI = pH - pHs

pHs = (9.3 +A+B) - (C+D) Where

A= (Log10(TDS)-1)/10	=	0.1526339
B= (-13.12*Log10(T°C+273)+34.55	=	2.382562
C= Log10(Hardness)-0.4	=	1.9404441
D= Log10(Alkalinity)	=	2.2966652

Ryznar

RI=2pHs-pH

pHs=	7.598086589
LSI=	0.401913
RI=	7.196173177

Langelier

-2.0 < -0.5	Serious Corrosion
-0.5 < 0	Slightly corrosive byt non-scale forming
LSI = 0.0	Balanced but pitting corrosion possible
0.0 < 0.5	Slightly scale forming and corrosive
0.5 < 2	Scale forming but non corrosive

http://www.lenntech.com/calculators/langelier/index/langelier.htm

Ryznar

4.0-5.0	Heavy Scale
5.0-6.0	Light Scale
6.0-7.0	Light Scale or Corrosion
7.0-7.5	Corrosion Significant
7.5-9.0	Heavy Corrosion
9.0 +	Corrosion is Intolerable

http://www.lenntech.com/calculators/ryznar/index/ryznar.htm

Table 4
Summary of Analysis of Water Sample Collected from the Supply Well - Trace Metals
Hydrogeological Assessment & Terrain Analysis - Proposed Fuel Dispensing Facility Re-Development
5546 Albion Road South, Ottawa (Gloucester), Ontario
LRL File: 01348

			Ontario Drinking Water Standards			Sample	
Parameter	**Units**	**MRL**	**Standard**	**Type**	**MECP D-5-5[1]**	**5546 Albion Rd - Supply Well**	**5546 Albion Rd - Supply Well**
Sample Date (d/m/y)						**2022.10.17**	**2023.11.23**
Metals							
Aluminum	mg/L	0.001				0.001	<0.001
Antimony	mg/L	0.0005	0.006			<0.0005	<0.0005
Arsenic	mg/L	0.001	0.01	MAC		<0.001	<0.001
Barium	mg/L	0.001	1	MAC		0.033	0.122
Beryllium	mg/L	0.0005				<0.0005	<0.0005
Boron	mg/L	0.01	5	MAC		0.05	0.05
Cadmium	mg/L	0.0001	0.005	MAC		<0.0001	<0.0001
Calcium	mg/L	0.1				21.4	51.0
Chromium	mg/L	0.001	0.05	MAC		<0.001	<0.001
Cobalt	mg/L	0.0005				<0.0005	<0.0005
Copper	mg/L	0.0005	1	AO		0.0009	0.0009
Iron	mg/L	0.1	0.3	AO	10	0.2	0.5
Lead	mg/L	0.0001	0.01	MAC		<0.0001	0.0001
Magnesium	mg/L	0.2				19.1	18.5
Manganese	mg/L	0.005	0.05	AO	1	**0.070**	0.015
Molybdenum	mg/L	0.0005				0.0027	0.0038
Nickel	mg/L	0.001				<0.001	<0.001
Potassium	mg/L	0.1				2.7	2.0
Selenium	mg/L	0.001	0.05	MAC		<0.001	<0.001
Silver	mg/L	0.0001				<0.0001	0.0001
Sodium	mg/L	0.2	20/200	MAC/AO	200	15.5	11.2
Strontium	mg/L	0.01				0.08	0.23
Thallium	mg/L	0.001				<0.001	<0.001
Tin	mg/L	0.01				<0.01	<0.01
Titanium	mg/L	0.005				<0.005	<0.005
Tungsten	mg/L	0.01				<0.01	<0.01
Uranium	mg/L	0.0001	0.02	MAC		<0.0001	0.0004
Vanadium	mg/L	0.0005				<0.0005	<0.0005
Zinc	mg/L	0.005	5	AO		<0.005	<0.005

NOTES

MRL Minimum Reportable Limit
MAC Maximum Acceptable Concentration
AO Aesthetic Objective
OG Operational Guideline
ODWS Ontario Drinking Water Standards (2006)
NA Not Analysed
UNDERLINE Parameter level above ODWS

[1] MECP D-5-5 guideline, maximum concentration considered reasonably treatable

Table 5
Summary of Analysis of Water Sample Collected from the Supply Well - VOC & PHC
Hydrogeological Assessment & Terrain Analysis- Proposed Fuel Dispensing Facility Re-Development
5546 Albion Road South, Ottawa (Gloucester), Ontario
LRL File: 01348

			Ontario Drinking Water Standards		Sample		
Parameter	**Units**	**MRL**	**Standard**	**Type**	**5546 Albion Rd - Supply Well - 3 hrs**	**5546 Albion Rd - Supply Well - 6 hrs**	**5547 Albion Rd - Supply Well**
Sample Date (d/m/y)					**2022.10.17**	**2022.10.17**	**2023.11.23**
Volatiles							
Acetone	ug/L	5.0			--	<5.0	<5.0
Benzene	ug/L	0.5	1	MAC	--	<0.5	<0.5
Bromodichloromethane	ug/L	0.5			--	<0.5	<0.5
Bromoform	ug/L	0.5			--	<0.5	<0.5
Bromomethane	ug/L	0.5			--	<0.5	<0.5
Carbon Tetrachloride	ug/L	0.2	2	MAC	--	<0.2	<0.2
Chlorobenzene	ug/L	0.5	80	MAC	--	<0.5	<0.5
Chloroethane	ug/L	1.0			--	<1.0	<1.0
Chloroform	ug/L	0.5			--	<0.5	<0.5
Chloromethane	ug/L	3.0			--	<3.0	<3.0
Dibromochloromethane	ug/L	0.5			--	<0.5	<0.5
Dichlorodifluoromethane	ug/L	1.0			--	<1.0	<1.0
Ethylene dibromide (dibromoethane, 1,2-)	ug/L	0.2			--	<0.2	<0.2
1,2-Dichlorobenzene	ug/L	0.5	200	MAC	--	<0.5	<0.5
1,3-Dichlorobenzene	ug/L	0.5			--	<0.5	<0.5
1,4-Dichlorobenzene	ug/L	0.5	5	MAC	--	<0.5	<0.5
1,1-Dichloroethane	ug/L	0.5			--	<0.5	<0.5
1,2-Dichloroethane	ug/L	0.5	5	MAC	--	<0.5	<0.5
1,1-Dichloroethylene	ug/L	0.5	14	MAC	--	<0.5	<0.5
cis-1,2-Dichloroethylene	ug/L	0.5			--	<0.5	<0.5
trans-1,2-Dichloroethylene	ug/L	0.5			--	<0.5	<0.5
1,2-Dichloroethylene, total	ug/L	0.5			--	<0.5	<0.5
1,2-Dichloropropane	ug/L	0.5			--	<0.5	<0.5
cis-1,3-Dichloropropylene	ug/L	0.5			--	<0.5	<0.5
trans-1,3-Dichloropropylene	ug/L	0.5			--	<0.5	<0.5
1,3-Dichloropropene, total	ug/L	0.5			--	<0.5	<0.5
Ethylbenzene	ug/L	0.5	140	MAC	--	<0.5	<0.5
Hexane	ug/L	1.0			--	<1.0	<1.0
Methyl Ethyl Ketone (2-Butanone)	ug/L	5.0			--	<5.0	<5.0
Methyl Butyl Ketone (2-Hexanone)	ug/L	10.0			--	<10.0	<10.0
Methyl Isobutyl Ketone	ug/L	5.0			--	<5.0	<5.0
Methyl tert-butyl ether	ug/L	2.0			--	<2.0	<2.0
Methylene Chloride	ug/L	5.0	50	MAC	--	<5.0	<5.0
Styrene	ug/L	0.5			--	<0.5	<0.5
1,1,1,2-Tetrachloroethane	ug/L	0.5			--	<0.5	<0.5
1,1,2,2-Tetrachloroethane	ug/L	0.5			--	<0.5	<0.5
Tetrachloroethylene	ug/L	0.5	10	MAC	--	<0.5	<0.5
Toluene	ug/L	0.5	60	MAC	--	<0.5	<0.5
1,1,1-Trichloroethane	ug/L	0.5			--	<0.5	<0.5
1,1,2-Trichloroethane	ug/L	0.5			--	<0.5	<0.5
Trichloroethylene	ug/L	0.5	5	MAC	--	<0.5	<0.5
Trichlorofluoromethane	ug/L	1.0			--	<1.0	<1.0
1,3,5-Trimethylbenzene	ug/L	0.5			--	<0.5	<0.5
Vinyl Chloride	ug/L	0.5	1	MAC	--	<0.5	<0.5
m/p-Xylene	ug/L	0.5			--	<0.5	<0.5
o-Xylene	ug/L	0.5			--	<0.5	<0.5
Xylenes, total	ug/L	0.5	90	MAC	--	<0.5	<0.5
Petroleum Hydrocarbons (PHC)							
PHC F1 (C6 - C10)	ug/L	0.025			--	--	<0.0250
PHC F2 (C10-C16)	ug/L	0.1			--	--	<0.1
PHC F3 (C16-C34)	ug/L	0.1			--	--	<0.1
PHC F4 (C34-C50)	ug/L	0.1			--	--	<0.1

NOTES

MRL Minimum Reportable Limit

MAC Maximum Acceptable Concentration

ODWS Ontario Drinking Water Standards (2006)

Table 6
Summary of Analysis of Water Sample Collected from the Supply Well - PAH
Hydrogeological Assessment & Terrain Analysis- Proposed Fuel Dispensing Facility Re-Development
5546 Albion Road South, Ottawa (Gloucester), Ontario
LRL File: 01348

			Ontario Drinking Water Standards		Sample
Parameter	**Units**	**MRL**	**Standard**	**Type**	**5547 Albion Rd - Supply Well**
Sample Date (d/m/y)					**2023.11.23**
Semi-Volatiles					
Acenaphthene	ug/L	0.05			<5.0
Acenaphthylene	ug/L	0.05			<0.5
Anthracene	ug/L	0.01			<0.5
Benzo[a]anthracene	ug/L	0.01			<0.5
Benzo[a]pyrene	ug/L	0.01	0.01	MAC	<0.5
Benzo[b]fluoranthene	ug/L	0.05			<0.2
Benzo[g,h,i]perylene	ug/L	0.05			<0.5
Benzo[k]fluoranthene	ug/L	0.05			<1.0
Chrysene	ug/L	0.05			<0.5
Dibenzo[a,h]anthracene	ug/L	0.05			<3.0
Fluoranthene	ug/L	0.01			<0.5
Fluorene	ug/L	0.05			<1.0
Indeno [1,2,3-cd] pyrene	ug/L	0.05			<0.2
1-Methylnaphthalene	ug/L	0.05			<0.5
2-Methylnaphthalene	ug/L	0.05			<0.5
Methylnaphthalene (1&2)	ug/L	0.1			<0.5
Naphthalene	ug/L	0.05			<0.5
Phenanthrene	ug/L	0.05			<0.5
Pyrene	ug/L	0.01			<0.5

NOTES

MRL Minimum Reportable Limit

MAC Maximum Acceptable Concentration

ODWS Ontario Drinking Water Standards (2006)

Table 7
Contaminant Attenuation Consideration (Predictive Assessment) - Available Infiltration
Hydrogeological Assessment & Terrain Analysis- Proposed Fuel Dispensing Facility Re-Development
5546 Albion Road South, Ottawa (Gloucester), Ontario
LRL File: 01348

1. Potential Infiltration

Weather Station Ottawa

No.	Section Area (m^2)	Infiltration Factor (IF)[1]							Moisture Surplus (MS)				Potential Infiltration (PI) (IF*MS) (mm)	
		Topography	Value	Soil	Value	Cover	Value	Total	Ground Cover	Soil Type	Moisture Retention[2] (mm)	Moisture Surplus[3] (mm)	Section	Weighted
1	2,807	Flat	0.3	Sand	0.4	Woodland	0.2	0.9	Deep Rooted Crops	1 Fine Sand	100	363	326.7	76.9
2	9,113	Flat	0.3	Sand	0.4	Cultivated Land	0.1	0.8	Shallow Rooted Crops	1 Fine Sand	50	407	325.6	248.9
Total[6]	11,920												**Total**	325.9

2. Area Available for Infiltration

Approximate footprint of the proposed store			H	400	m2
Approximate footprint of the proposed pump island concrete apron			H	525	m2
Approximate Area of Proposed Parking and Circulation			L	4,055	m2
Total Area of Property				11,920	m2
Impervious Area				4,980	m^2
	Roads	l x w	-	m2	
	Parking and Circulation	d	4,055	m2	
	Buidling or Structure	Sum of H's	925	m2	
Permeable Area			A	6,940	m^2

3. Available Infiltration & Volume Calculations

Nitrate Concentration of Infiltration[4]	C_i	0	mg/L
Site Infiltration	$Q_i = A*PI$	2,261	m^3
Daily Sewage Volume - Proposed New Development[5]	Qd	7.72	m^3
Maximum Yearly Sewage Volume - Proposed New Development	Qe=365*Qd	2,818	m^3

NOTES

1 Table 2: Infiltration Factors, *Hydrogical Technical Information Requirements for Land Development Applications* , Ministry of the Energy and Environment, April 1995.

2 Thornthwaite and Mather's (1957) Instructions and Tables for Computing Potential Evapotranspiration and the Water Balance.

3 Moisture surplus for data for Ottawa ON (Environment Canada Meteorological Service of Canada, 2010).

4 The nitrate concentration of infiltration is assumed to be 0.0 mg/L.

5 As Per Septic Design for the Site - Prepared by Others

ATTACHMENT A

Topographic Map

TOPOGRAPHICAL PLAN OF SURVEY

PART OF LOT 30
CONCESSION 3 (RIDEAU FRONT)
GEOGRAPHIC TOWNSHIP OF GLOUCESTER
CITY OF OTTAWA

Surveyed by Annis, O'Sullivan, Vollebekk Ltd.

Revised to show catch basin invert elevation
August 8, 2022

Scale 1 : 250

10 7.5 5.0 2.5 0 5 10 Metres

Metric

DISTANCES SHOWN ON THIS PLAN ARE IN METRES AND CAN BE CONVERTED TO FEET BY DIVIDING BY 0.3048

Surveyor's Certificate

I CERTIFY THAT :

1. This survey and plan are correct and in accordance with the Surveys Act, the Surveyors Act and the Land Titles Act and the regulations made under them.
2. The survey was completed on the 7th day of April, 2022.

April 18 2022 — E. H. Herweyer
Date — E. H. Herweyer, Ontario Land Surveyor

Notes & Legend

		Denotes
—□—	-	Survey Monument Planted
—■—	-	Survey Monument Found
SIB	-	Standard Iron Bar
SSIB	-	Short Standard Iron Bar
IB	-	Iron Bar
(WIT)	-	Witness
Meas.	-	Measured
(AOG)	-	Annis, O'Sullivan, Vollebekk Ltd.
(P1)	-	Plan 4R-12754
(P2)	-	Registered Plan 4M-1275
(P3)	-	Plan 5R-14863
(P4)	-	Plan 4M-1482
	-	Deciduous Tree
	-	Coniferous Tree
MH-ST	-	Maintenance Hole (Storm Sewer)
MH-S	-	Maintenance Hole (Sanitary)
MH-T	-	Maintenance Hole (Traffic)
MH	-	Maintenance Hole
OHW	-	Overhead Wires
CB	-	Catch Basin
CB*	-	Catch Basin (Not Verified)
DI	-	Ditch Inlet
CSP	-	Corrugated Steel Pipe
TB	-	Unidentified Terminal Box
TSP	-	Traffic Signal Post
B	-	Bollard
S	-	Sign
HH	-	Handhole
UP	-	Utility Pole
AN	-	Anchor
LS	-	Light Standard
TOS	-	Top of Slope
BOS	-	Bottom of Slope
AC	-	Air Conditioner
Ø	-	Diameter
x 65.00	-	Location of Elevations
+ 65.00	-	Top of Concrete Curb Elevation
C/L	-	Centreline

Bearings are grid, derived from Can-Net 2016 Real Time Network GPS observations, MTM Zone 9 (76°30' West Longitude) NAD-83 (original).
For bearing comparisons, a rotation of 1°04'10" counter-clockwise was applied to bearings on P1, P2, P3 & P4.

ELEVATION NOTES

1. Elevations shown are geodetic and are referred to the CGVD28 geodetic datum, derived from control monument No. 019680377 having an elevation of 113.994 metres.
2. It is the responsibility of the user of this information to verify that the job benchmark has not been altered or disturbed and that it's relative elevation and description agrees with the information shown on this drawing.

UTILITY NOTES

1. This drawing cannot be accepted as acknowledging all of the utilities and it will be the responsibility of the user to contact the respective utility authorities for confirmation.
2. Only visible surface utilities were located.
3. A field location of underground plant by the pertinent utility authority is mandatory before any work involving breaking ground, probing, excavating etc.

ASSOCIATION OF ONTARIO LAND SURVEYORS
PLAN SUBMISSION FORM
V-25414

THIS PLAN IS NOT VALID UNLESS IT IS AN EMBOSSED ORIGINAL COPY ISSUED BY THE SURVEYOR In accordance with Regulation 1026, Section 29 (3).

ANNIS, O'SULLIVAN, VOLLEBEKK LTD.
14 Concourse Gate, Suite 500
Nepean, Ont. K2E 7S6
Phone: (613) 727-0850 / Fax: (613) 727-1079
Email: Nepean@aovltd.com
Ontario Land Surveyors

Job No. 22680-22 P1 LSD C5 RF T F2 — F5

ATTACHMENT B
WETLAND BOUNDARY REPORT – GEMTEC JUNE 2022

GEMTEC Consulting Engineers and Scientists Limited
32 Steacie Drive
Ottawa, ON, Canada
K2K 2A9
613.836.1422
ottawa@gemtec.ca
www.gemtec.ca

June 6, 2022 File: 101972.001

LRL Engineering
5430 Canotek Road
Ottawa, Ontario
K1J 9G2

Attention: Maxime Longtin, C.E.T. – Civil Team Manager

Re: Wetland Boundary Assessment, Unevaluated Wetland
Lot 30, Concession 3, From Rideau River Gloucester
Ottawa, Ontario

Please accept this letter as the GEMTEC Consulting Engineers and Scientists Limited (GEMTEC) Wetland Boundary Assessment completed for the property parcel municipally addressed as 5546 Albion Road and the west adjacent property located on Lot 30, Concession 3, From Rideau River Gloucester, herein collectively referred to as the study area.

INTRODUCTION

The purpose of this letter report is to provide a summary of the wetland boundary assessment completed for the unevaluated, local wetland identified by the City of Ottawa as occupying portions of both property parcels comprising the study area. The study area is illustrated on Figure A.1 in Attachment A.

BACKGROUND

It is GEMTEC's understanding that LRL Engineering (LRL) is completing an Environmental Impact Statement (EIS) for 5546 Albion Road and requires a certified Ontario Wetland Evaluation System (OWES) wetland evaluator to establish and ground-truth the boundary of wetlands within the study area.

The unevaluated, local wetland as identified by the City of Ottawa, covers approximately 10 ha, and is located immediately north of Mitch Owens Road, south of Ballycastle Crescent, east of the Spratt Municipal Drain (SMD) and west of Albion Road.

The nearest Provincially Significant Wetland (PSW), the Osgood PSW complex, is located approximately 4 km southeast of the study area.

Based on review of aerial photography (1976, 1999, 2002-2018) the study area was cleared sometime prior to 1976. Since 1976, the study area has been left in a fallow state to revegetate with the exception of periodic drainage improvements to the SMD and the construction of stormwater infrastructure associated with the Ballycastle Crescent subdivision to the north.

METHODOLOGY

To complete this Wetland Boundary Assessment, vegetation communities were delineated following the protocols outlined in the Wetland Evaluation System for Southern Ontario (OMNRF, 2014) supported by publicly available air photos and surficial soil data from the Ontario Soil Survey Complex (OMAFRA, 2022). A single field investigation was completed on May 25, 2022, from 07:00 to 09:00 to provide field verification of vegetation communities delineated during the desktop review. The conditions at the time of the field investigation were: clear skies with no precipitation, 21°C and light wind.

Field verification of vegetation communities was completed by walking linear transects along the soil moisture gradient from drier to wetter ecosites while documenting dominant vegetation species within the various vegetation community forms. The boundary between wetland ecosites and terrestrial ecosites was determined using the *50/50 Vegetation Rule* as outlined in the Ontario Wetland Evaluation System for Southern Ontario (OMNRF, 2014), where the wetland boundary is determined to be the point along each transect when 50% of the vegetation becomes comprised of hydrophilic or obligate wetland species.

EXISTING CONDITIONS

The study area is comprised of three vegetation communities including two upland vegetation communities and one wetland vegetation community. In general, vegetation on the subject property is consistent with cultural vegetation communities, those communities whose composition and form are heavily influenced by historical or on-going anthropogenic activities.

Vegetation communities present on the subject property are summarized in Table 1 below and are illustrated on Figure A.1.

Photograph 1 below provides illustrates the typical community form of the upland vegetation community present within the study area, while Photograph 2 illustrates the typical community form of the wetland vegetation community within the study area.

Table 1 - Vegetation Communities

ELC Type	Description
Fresh – Moist Poplar Deciduous Woodland (WODM5-1)	This upland vegetation community occurs over the eastern portions of the study area and is characterized by a semi-mature, fresh to moist poplar deciduous woodland. Dominant tree species included trembling aspen (*Populus tremuloides*), large-toothed aspen (*Populus grandidentata*) and sugar maple (*Acer saccharum*), and with lesser constituents including white pine (*Pinus strobus*), white elm (*Ulmus americana*), green ash (*Fraxinus pennsylvanica*) and glossy buckthorn (*Frangula alnus*).
Mineral Deciduous Thicket Swamp (SWT2)	This immature deciduous swamp is located over the western and central portion of the study area and is comprised primarily of hydrophilic tall shrub species. Dominant species consisted primarily of green alder (*Alnus viridis*) glossy buckthorn, red maple (*Acer rubrum*), slender willow (*Salix petiolaris*) and nannyberry (*Viburnum lentago*)

Photograph One

Photograph Two

SUMMARY

Based on the results of the desktop evaluation and completion of the vegetation survey, the ground-truthed wetland boundary is presented on Figure A.1.

We trust this report is sufficient for your current needs; however, should you require any clarification of the information presented above, please do not hesitate to contact the undersigned.

Sincerely,

Drew Paulusse, B.Sc.
Senior Biologist,
Manager, Environmental Services

ATTACHMENTS

Figure A.1 – Site Layout

Legend

- Property Boundary
- Local Wetland
- Vegetation Community

SWT2 = Mineral Deciduous Thicket Swamp
WODM5-1 = Fresh-Moist Poplar Deciduous Woodland

Scale
1:1,600
0 10 20 40 60 80 Meters

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

Client:	Project:
LRL Associates Ltd.	101972.001

Location
5546 Albion Road
Ottawa, Ontario

Drwn By:	Chkd By:	
JD	DP	Site Location

Date: June 2022	Rev.	
	0	Figure: A.1

Coordinate System: NAD 1983 UTM Zone 18N
Service Layer Credits: World Imagery: Maxar, Microsoft
Hybrid Reference Layer: Esri Community Maps Contributors, City of Ottawa, Province of Ontario, Esri Canada, Esri, HERE, Garmin, SafeGraph, GeoTechnologies, Inc, METI/NASA, USGS, EPA, NPS, US Census Bureau, USDA, NRCan, Parks Canada

ATTACHMENT C

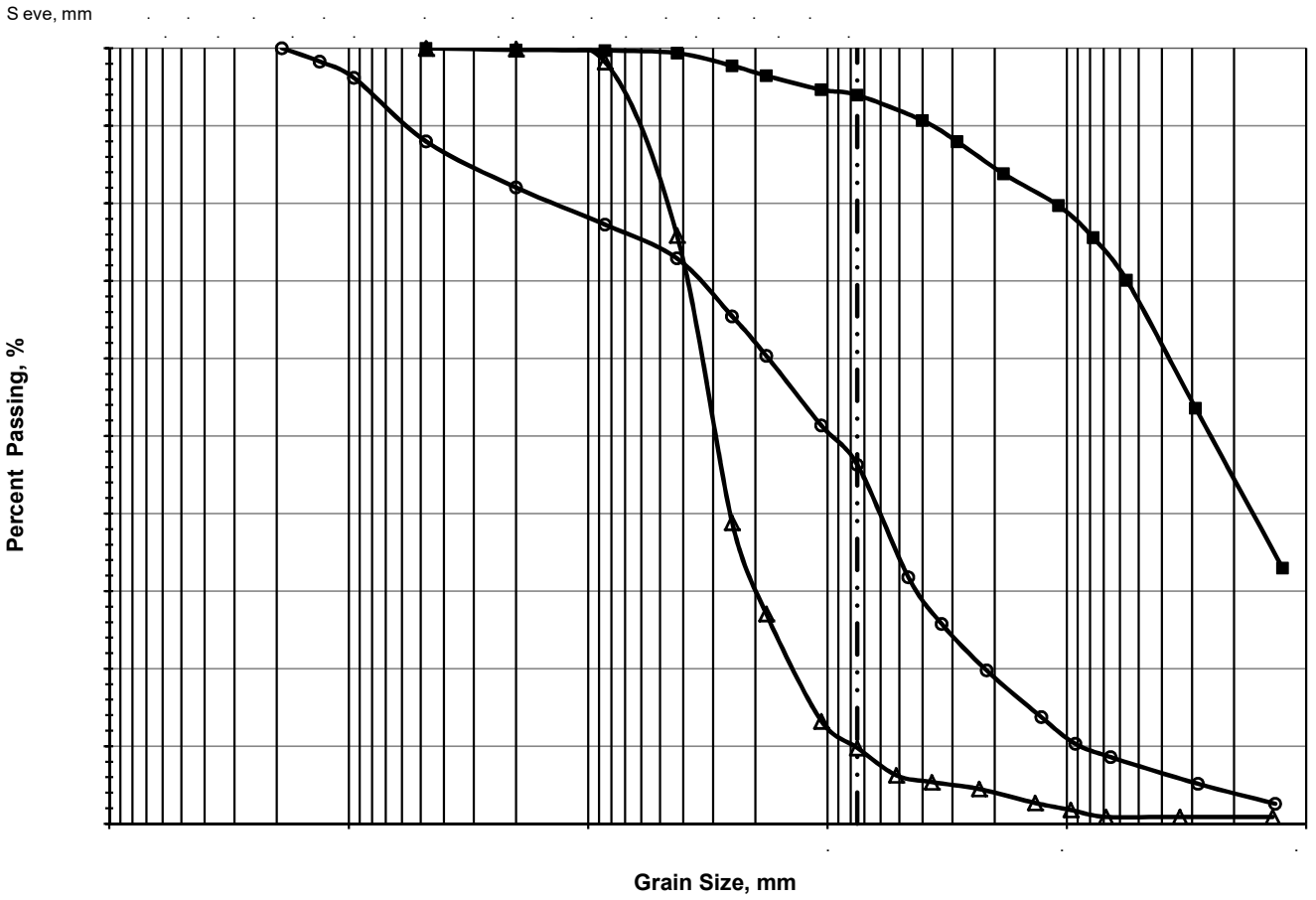
Particle Size Analysis

LRL " ssoc ates Ltd.

PARTICLE SIZE ANALYSIS

ASTM D 422 / LS-702

Client:	Mac e n etroleum nc.	**File No.:**	
Project:	Geotec n cal nvest gat on	**Report No.:**	
Location:	" l on Road Sout , Gloucester, O .	**Date:**	May ,



n ed So l Class cat on System

	> 75 mm	% GRAVEL		% SAND			% FINES	
		Coarse	ne	Coarse	Med um	ne	S lt	Clay
△	.	.	.	.	.	.	.	.
■	.	.	.	.	.	.	.	.
○	.	.	.	.	.	.	.	.

	Location	Sample	Depth, m	D_{60}	D_{50}	D_{30}	D_{15}	D_{10}	C_c	C_u
△		SS-	. - .	.	.	.	.	.	.	.
■		SS-	. - .	.	.					
○		SS-	. - .	.	.	.	.	.	.	.

ATTACHMENT D

Borehole Logs

Borehole Log: BH/MW22-1

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

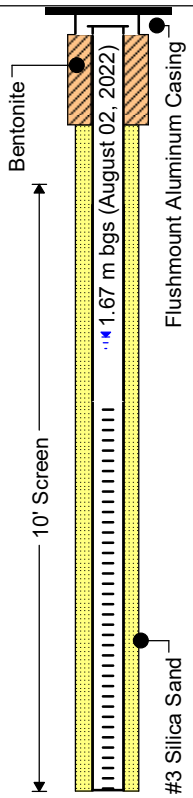
Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 28, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)
0.0 / 0.0	Ground Surface	100.17 / 0.00							
0.0 – 0.3	**ASPHALT** mm t c .	99.87 / 0.30							
0.3 – 0.8	**PAVEMENT STRUCTURE** Sand and gravel, dry.								
0.8 – 1.0	**FILL** Sand and gravel to 0.5 m bgs, s lty loam to 0.8 m bgs.	99.37 / 0.80			SS1A				<0.1
1.0 – 3.5	**SAND** Med um- to coarse- grained, becoming, fossilierous, brown becoming grey with depth, oxidized at 1.7 m bgs, moist at 1.5 m bgs becoming saturated at 1.9 m bgs.				SSAB	NA	87	VOC, PHC, PAH, Metals O.Reg.153, General inorganics	0.1
					SS1C				<0.1
					SS2A				<0.1
					SS2B	NA	53	VOC, PHC, PAH, Metals O.Reg.153, General inorganics	<0.1
					SS3A				<0.1
3.5 – 4.6	**GLACIAL TILL** Grey silt-sand with gravel, saturated.	96.67 / 3.50			SS3B	NA	100		<0.1
					SS3C			VOC, PHC, Metals O.Reg.153, General inorganics	<0.1
4.6	End of Borehole	95.57 / 4.60							

Monitoring Well Details



Easting: 0453388 | **Northing:** 5013088

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 100.17 m | **Top of Riser Elev.:** 100.06 m

Hole Diameter: 91 mm | **Monitoring Well Diameter:** 51 mm

NOTES

- Duplicate samples collected of SS2B (identified as SS5A).
- Groundwater sample collected on August 04, 2022 was submitted for laboratory analysis of VOC, PHC, PAH, Reg.153 Metals, General Inorganics.

Borehole Log: BH/MW22-2

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)	Monitoring Well Details
0.0 / 0.0	Ground Surface	99.94 / 0.00								
0.0	**ASPHALT**									
1.0	**PAVEMENT STRUCTURE** Sand and gravel, dry.	99.54 / 0.40								
2.0	**SAND** Med um- to coarse-gra ned, ecom ng clayey at 1.3 m bgs, and t clayey silt at 1.5 to 2.1 m bgs, brown becoming grey with depth, moist at 1.5 m bgs becoming saturated at 2.1 m bgs.				SS1A	NA	50		<0.1	
3.0 / 1.0					SS1B				<0.1	
4.0					SS2A				<0.1	
5.0					SS2B	NA	63	VOC, PHC, PAH, Metals O.Reg.153, General inorganics	0.6	
6.0 / 2.0										
7.0										
8.0										
9.0	**GLACIAL TILL** Silty sand with gravel, clayey, ecom ng more com act at 3.0 m bgs, saturated silt at 3.2 m bgs.	97.14 / 2.80			SS2C				0.3	
10.0 / 3.0					SS3A				<0.1	
11.0					SS3B				<0.1	
12.0										
13.0 / 4.0					SS3C	NA	100		<0.1	
14.0										
15.0		95.34 / 4.60								
16.0	End of Borehole									
16.0 / 5.0										
17.0										
18.0										
19.0										

Monitoring Well Details: Bentonite; 1.71 m bgs (August 02, 2022); Flushmount Aluminum Casing; 10' Screen; #3 Silica Sand

Easting: 0453364 | **Northing:** 5013069

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 99.94 m | **Top of Riser Elev.:** 99.86 m

Hole Diameter: 91 mm | **Monitoring Well Diameter:** 51 mm

NOTES

- Duplicate samples collected of SS2A (identified as SS4A).
- Groundwater sample collected on August 04, 2022 was submitted for laboratory analysis of VOC, PHC, PAH, Reg.153 Metals, General Inorganics.

Borehole Log: BH/MW22-3

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)
0.0 / 0.0	Ground Surface	100.20							
0.0	**ASPHALT**	0.00							
1.0	**PAVEMENT STRUCTURE** Sand and gravel, dry.	99.90 / 0.30							
3.0 / 1.0	**FILL** Sand and gravel, dry.				SS1A	NA	12		<0.1
5.0	**SAND** Medium- to coarse- grained, clayey 1.6 m bgs, brown becoming grey with depth, moist at 1.7 m bgs becoming saturated at 1.9 m bgs	98.70 / 1.50			SS2A				0.6
6.0					SS2B			VOC, PHC, PAH, Metals O.Reg.153.	0.4
7.0 / 2.0					SS2C	NA	52		<0.1
10.0 / 3.0					SS3A				<0.1
12.0					SS3B	NA	68	VOC, PHC, Metals O.Reg.153, General inorganics	0.1
15.0 / 4.5	**GLACIAL TILL** Grey silt with gravel, fossilierous.	95.70 / 4.50			SS3C				0.3
16.0 / 5.0	End of Borehole								

Monitoring Well Details

- Bentonite
- Flushmount Aluminum Casing
- 1.91 m bgs (August 02, 2022)
- 10' Screen
- #3 Silica Sand

Easting: 0453352 | **Northing:** 5013075

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 100.20 m | **Top of Riser Elev.:** 100.13 m

Hole Diameter: 91 mm | **Monitoring Well Diameter:** 51 mm

NOTES

- Duplicate samples collected of SS2C (identified as SS4C).
- Groundwater sample collected on August 04, 2022 was submitted for laboratory analysis of VOC, PHC, PAH, Reg.153 Metals, General Inorganics.

Borehole Log: BH/MW22-4

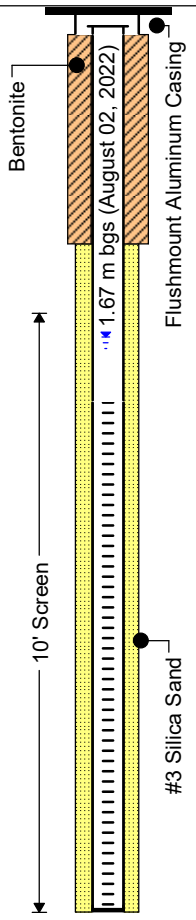
Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)
0.0 / 0.0	Ground Surface	100.21							
	ASPHALT	0.00							
1.0	**PAVEMENT STRUCTURE** Sand and gravel, dry.	99.76 / 0.45			SS1A			VOC, PHC, Metals O.Reg.153, General	0.7
2.0	**FILL** S lty Loam, ro n, dry.				SS1A SS1B	NA	47		0.1
3.0 / 1.0		99.01 / 1.20			SS1C				<0.1
4.0	**SAND** Medium-grained, brown becoming grey with depth, oxidized at 1.5 m bgs, moist becoming saturated at 2.0 m bgs, ractured roc at 3.5 m bgs.				SS2A				<0.1
5.0 / 2.0					SS1B SS2B	NA	51	VOC, PHC, Metals O.Reg.153, General inorganics	<0.1
6.0					SS3A				<0.1
7.0 / 3.0		96.71 / 3.50			SS3B SS1C	NA	100		<0.1
8.0	**GLACIAL TILL** S lty-sand, clayey with gravel at 4.0 m bgs, grey, saturated.				SS3C				<0.1
9.0 / 4.0		95.61 / 4.60							
10.0	End of Borehole								
11.0 / 5.0									
12.0									
13.0									
14.0									
15.0									
16.0									
17.0									
18.0									
19.0									



Easting: 0453371 | **Northing:** 5013099

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 100.21 m | **Top of Riser Elev.:** 100.1 m

Hole Diameter: 91 mm | **Monitoring Well Diameter:** 51 mm

NOTES

- Duplicate samples collected of SS1B (identified as SS4A).
- Groundwater sample collected on August 04, 2022 was submitted for laboratory analysis of VOC, PHC, PAH, Reg.153 Metals, General Inorganics.

Borehole Log: BH22-5

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)	Monitoring Well Details
0.0 / 0.0	Ground Surface	100.20 / 0.00								
	ASPHALT									
1.0	**PAVEMENT STRUCTURE** Sand and gravel, dry.	99.90 / 0.30			SS1A				<0.1	
2.0	**FILL** Crushed stone and gravel , dry.	99.60 / 0.60			SS1A SS1B	NA	53		<0.1	
3.0 / 1.0	**SAND** Silty, t gravel at 0.8 to 1.0 m bgs and at 1.8 to 2.0, coarse-grained at 2.9 to 3.1 m bgs and becoming medium-grained with depth, brown, dry becoming saturated at 1.9 m bgs.									
4.0										
5.0					SS2A				<0.1	
6.0										
7.0 / 2.0					SS1B SS2B	NA	58	VOC, PHC, PAH, Metals O.Reg.153, General inorganics	<0.1	
8.0										
9.0										
10.0 / 3.0					SS3A				<0.1	
11.0										
12.0	**GLACIAL TILL** Clayey silty-sand, with gravel.	96.60 / 3.60			SS2A SS3B	NA	100		<0.1	
13.0 / 4.0										
14.0					SS3C				<0.1	
15.0		95.60 / 4.60								
	End of Borehole									
16.0 / 5.0										
17.0										
18.0										
19.0										

Easting: 0453338 | **Northing:** 5013084

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 100.19 m | **Top of Riser Elev.:** NA

Hole Diameter: 91 mm | **Monitoring Well Diameter:** NA

NOTES

- Duplicate samples collected of SS2B (identified as SS4B).
- NA : Not applicable

Borehole Log: BH22-6

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)	Monitoring Well Details
0.0 / 0.0	Ground Surface	99.28								
	ASPHALT	0.00								
1.0	**PAVEMENT STRUCTURE** Sand and gravel, dry.	98.98 / 0.30								
2.0	**FILL** Med um-gra ned sand and gravel , dry.	98.35 / 0.93				NA	58		<0.1	
3.0 / 1.0	**SAND** Silty sand, medium-grained, trace clayey s lt et een 2.5 and 2.7 m bgs, brown becoming grey with depth, moist becoming saturated at 1.2 m bgs.				SS1A				0.1	
4.0					SS1B			SS1A: VOC, PAH, Metals O.Reg.153.	<0.1	
5.0					SS2A				<0.1	
6.0						NA	92			
7.0 / 2.0										
8.0					SS2B				<0.1	
9.0					SS2C			SS2C: VOC, PHC, PAH, Metals O.Reg.153. pH, texture, General inorganics.	0.1	
10.0 / 3.0					SS3A				<0.1	
11.0		95.73								
12.0	**GLACIAL TILL** S lt-sand, some gravel, trace clay, grey, saturated.	3.55			SS3B	NA	10		<0.1	
13.0 / 4.0										
14.0					SS3C				<0.1	
15.0		94.68								
	End of Borehole	4.60								
16.0										
17.0 / 5.0										
18.0										
19.0										

Easting: 0453341 | **Northing:** 5013052

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 99.28 m | **Top of Riser Elev.:** NA

Hole Diameter: 91 mm | **Monitoring Well Diameter:** NA

NOTES

- Duplicate samples collected of SS2A (identified as SS4A).
- NA : Not applicable

Borehole Log: BH22-7

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)	Monitoring Well Details
0.0 / 0.0	Ground Surface	100.23								
	ASPHALT	0.00								
1.0	**PAVEMENT STRUCTURE** Sand and gravel.									
2.0		99.63								
	SILT **Brown, dry.**	0.60			SS1A	NA	56		<0.1	
3.0 / 1.0		99.23							<0.1	
	SAND Loamy sand at 1.5 m bgs to 1.7 m bgs, brown becoming grey with depth, moist becoming saturated at 1.8 m bgs.	1.00			SS2B				<0.1	
5.0					SS2A				<0.1	
6.0					SS2B					
2.0 / 7.0						NA	58		<0.1	
8.0					SS2C			VOC, PHC, PAH, Metals O.Reg.153.		
9.0									<0.1	
3.0 / 10.0					SS3A				<0.1	
11.0		96.83								
	GLACIAL TILL S lt-sand, some gravel, trace clay, grey, saturated.	3.40			SS3B					
12.0						NA	100		<0.1	
4.0 / 13.0										
14.0					SS3C				<0.1	
15.0		95.63								
	End of Borehole	4.60								
5.0 / 16.0										
17.0										
18.0										
19.0										

Easting: 0453359 | **Northing:** 5013102

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 100.23 m | **Top of Riser Elev.:** NA

Hole Diameter: 91 mm | **Monitoring Well Diameter:** NA

NOTES

- Duplicate samples collected of SS2C (identified as SS4C).
- NA : Not applicable

Borehole Log: BH22-8

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)	Monitoring Well Details
0.0 / 0.0	Ground Surface	100.30								
	ASPHALT	0.00								
1.0	**PAVEMENT STRUCTURE** Sand and gravel, dry.	100.00 0.30								
2.0	**FILL** Sand, resence o gravel to 1.8 m bgs, ro n, dry.				SS1A	NA	52		<0.1	
3.0 / 1.0					SS1B				0.1	
4.0					SS2A				<0.1	
5.0		98.50			SS2B			VOC, PHC, Metals O.Reg.153.	<0.1	
6.0 / 2.0	**SAND** Brown becoming grey with depth, moist becoming saturated at 2.1 m bgs.	1.80			SS2C	NA	69		<0.1	
7.0										
8.0										
9.0		97.42			SS2D				0.1	
10.0 / 3.0	**GLACIAL TILL** Silt-sand, some gravel, trace clay, grey, saturated.	2.88			SS3A				<0.1	
11.0										
12.0					SS3B	NA	87		<0.1	
13.0 / 4.0										
14.0					SS3C				<0.1	
15.0		95.70								
	End of Borehole	4.60								
16.0 / 5.0										
17.0										
18.0										
19.0										

Easting: 0453338 | **Northing:** 5013114

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 100.30 m | **Top of Riser Elev.:** NA

Hole Diameter: 91 mm | **Monitoring Well Diameter:** NA

NOTES

- Duplicate samples collected of SS2C (identified as SS4C).
- NA : Not applicable

Borehole Log: BH22-9

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)	Monitoring Well Details
0.0 / 0.0	Ground Surface	100.13								
	ASPHALT	0.00								
1.0	**PAVEMENT STRUCTURE** Sand and gravel, dry.	99.83								
2.0	**FILL** Gravel and sand, medium-grained sand at 1.1 m bgs to 1.5 m bgs, brown.	0.30			SS1A				<0.1	
3.0 / 1.0					SS1A	NA	55			
4.0					SS1B				<0.1	
5.0		98.33								
6.0	**SAND** Medium-grained, clayey at 2.9 m bgs to 3.1 m bgs, bro n, saturated.	1.80						VOC, PHC, PAH, Metals O.Reg.153.		
7.0 / 2.0					SS2A	NA	67		<0.1	
8.0										
9.0					SS2B				<0.1	
10.0 / 3.0					SS3A					
11.0									<0.1	
12.0		96.33								
13.0 / 4.0	**CLAY** Grey, silty n asal ort on.	3.80				NA	92			
14.0					SS3B				<0.1	
15.0		95.53								
	End of Borehole	4.60								
16.0 / 5.0										
17.0										
18.0										
19.0										

Easting: 0453364 | **Northing:** 5013122

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 100.13 m | **Top of Riser Elev.:** NA

Hole Diameter: 91 mm | **Monitoring Well Diameter:** NA

NOTES

- Duplicate samples collected of SS2A (identified as SS4A).
- NA : Not applicable

Borehole Log: BH22-10

Project No.: 01348 | **Project:** Phase II Environmental Site Assessment

Client: MacEwen Petroleum Inc. | **Location:** 5546 Albion Road, Ottawa, Ontario

Date: July 29, 2022 | **Field Personnel:** GM

Driller: Strata Drilling Group | **Drilling Equipment:** Geoprobe 7822DT | **Drilling Method:** Direct Push

Depth (ft / m)	Soil Description	Elev./Depth (m)	Lithology	Type	Sample Number	N or RQD (%)	Recovery (%)	Lab Analysis	Combustible Soil Vapours (ppm / % LEL)	Monitoring Well Details
0.0 / 0.0	Ground Surface	100.10								
	ASPHALT	0.00								
1.0	**PAVEMENT STRUCTURE** Sand and gravel, dry	99.80 / 0.30								
2.0	**FILL** Sand to 0.9 m bgs, silt to 1.3 m bgs, brown, dry.				SS1A	NA	60		<0.1	
3.0 / 1.0		98.80 / 1.30			SS1B				0.1	
4.0	**SAND** Medium -grained, brown becoming grey with depth, dry becoming saturated at 1.5 m bgs.				SS2A				<0.1	
5.0					SS2B			VOC, PHC, Metals O.Reg.153.	<0.1	
6.0 / 2.0					SS2C	NA	60		<0.1	
7.0										
8.0					SS3A				0.1	
9.0 / 3.0		96.40 / 3.70			SS3B	NA	100		<0.1	
10.0	**GLACIAL TILL** Silt-sand, with some gravel, trace clay, grey, saturated.									
11.0		95.50 / 4.60								
12.0 / 4.0	End of Borehole									
13.0										
14.0										
15.0										
16.0 / 5.0										
17.0										
18.0										
19.0										

Easting: 0453383 | **Northing:** 5013101

Site Datum: "R" on "Danger" on storm sewer grate in east portion of the Site

Groundsurface Elevation: 100.10 m | **Top of Riser Elev.:** NA

Hole Diameter: 91 mm | **Monitoring Well Diameter:** NA

NOTES

- NA : Not applicable

Borehole Log: BH1

Project No.: 001348 **Project:** Proposed Site Redevelopment

Client: MacEwen Petroleum Inc. **Location:** 5546 Albion Road S, Ottawa ON

Date: May 25, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Truck Mount CME 850 **Drilling Method:** Hollow Stew Auger

Depth (ft / m)	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)	Shear Strength (kPa) / SPT N Value (Blows/0.3 m)	Water Content (%) / Liquid Limit (%)	Monitoring Well Details
0 / 0	Ground Surface								
0 / 0	**PAVEMENT STRUCTURE** 100 mm of asphalt overlying 300 mm of granular material.	0.00							
1 / 0	**FILL** sand and gravel, brown, moist, dense.	0.41		SS1	72	83	72	2	
3 / 1				SS2	41	75	41	6	
5 / 2	**SAND** trace silt, trace clay, greyish brown, moist, compact to very loose.	1.45		SS3	18	50	18	19	
7 / 2				SS4	9	63	9	25	
10 / 3	-becomes grey and wet, below about 3.0 m			SS5	WH	67	0	48	
13 / 4				SS6	16	50	16	36	
16 / 5				SS7	2	63	2	12	
20 / 6				SS8	5	100	5	11	
22 / 6	End of Borehole	6.71							

Easting: 453352 m **Northing:** 5013122 m

Site Datum: NM

Groundsurface Elevation: NM **Top of Riser Elev.:** NA

Hole Diameter: 200 mm **Monitoring Well Diameter:** N/A

NOTES:

Borehole Log: BH2

Project No.: 001348 **Project:** Proposed Site Redevelopment

Client: MacEwen Petroleum Inc. **Location:** 5546 Albion Road S, Ottawa ON

Date: May 25, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Truck Mount CME 850 **Drilling Method:** Hollow Stew Auger

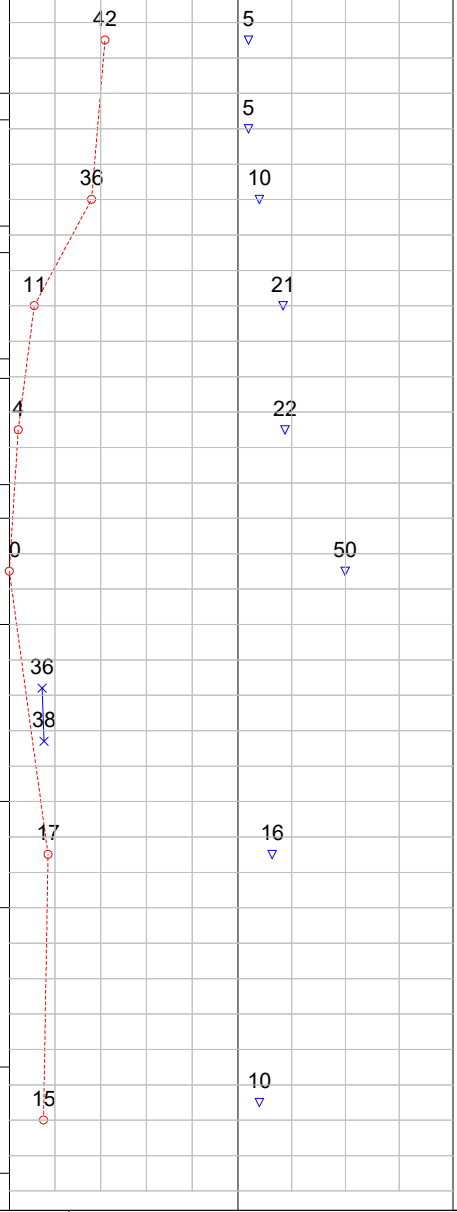
Depth (ft / m)	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)
0 / 0	Ground Surface					
0 – 1 / 0	**PAVEMENT STRUCTURE** 100 mm of asphalt overlying 300 mm of granular material.	0.00				
1 – 2 / 0	**FILL** sand and gravel, brown, moist, dense.	0.41		SS1	42	83
3 – 4 / 1	**SAND** trace silt, trace clay, greyish brown, moist, compact to loose.	1.06		SS2	36	88
5 – 9 / 2				SS3	11	92
				SS4	4	79
10 – 14 / 3 – 4	**SILT and CLAY** trace sand, grey, wet, firm.	2.97		SS5	WH	79
15 – 21 / 5 – 6	**GLACIAL TILL** silt-sand, some gravel sized stone, trace clay, grey, wet, compact.	4.42		SS7	17	79
				SS8	15	75
22 / 6	End of Borehole	6.71				

Shear Strength (kPa) 50 150

SPT N Value (Blows/0.3 m) 20 40 60 80

Water Content (%) 25 50 75

Liquid Limit (%) 25 50 75



Monitoring Well Details

Easting: 453334 m **Northing:** 5013122 m

Site Datum: NM

Groundsurface Elevation: NM **Top of Riser Elev.:** NA

Hole Diameter: 200 mm **Monitoring Well Diameter:** N/A

NOTES:

Borehole Log: BH3

Project No.: 001348 **Project:** Proposed Site Redevelopment

Client: MacEwen Petroleum Inc. **Location:** 5546 Albion Road S, Ottawa ON

Date: May 25, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Truck Mount CME 850 **Drilling Method:** Hollow Stew Auger

Depth (ft / m)	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)	Shear Strength (kPa) / SPT N Value (Blows/0.3 m)	Water Content (%) / Liquid Limit (%)	Monitoring Well Details
0 / 0	Ground Surface								
0 – 2 / 0 – 1	**TOPSOIL** about 75 mm thick. **FILL** sand and gravel, asphalt debris, brown, moist, compact.	0.00		SS1	21	96	21	4	
				SS2	23	88	23	14	
5 – 9 / 1 – 2	**SAND** trace silt, trace clay, greyish brown, moist, dense to loose.	1.45		SS3	33	100	33	16	
				SS4	6	67	6	23	
10 – 13 / 3 – 4	**SILT and CLAY** trace sand, grey, wet, firm.	2.97		SS5	WH	75	0	46	
							30		
14 – 22 / 4 – 6	**GLACIAL TILL** silt-sand, some gravel sized stone, trace clay, grey, wet, compact to loose.	4.12		SS7	17	79	17	12	
				SS8	4	75	4	10	
	End of Borehole	6.71							

Easting: 453320 m **Northing:** 5013082 m

Site Datum: NM

Groundsurface Elevation: NM **Top of Riser Elev.:** NA

Hole Diameter: 200 mm **Monitoring Well Diameter:** N/A

NOTES:

Borehole Log: BH4

Project No.: 001348 **Project:** Proposed Site Redevelopment

Client: MacEwen Petroleum Inc. **Location:** 5546 Albion Road S, Ottawa ON

Date: May 25, 2022 **Field Personnel:** BJ

Driller: CCC Geotech and Enviro Drilling **Drilling Equipment:** Truck Mount CME 850 **Drilling Method:** Hollow Stew Auger

Depth (ft / m)	Soil Description	Elev./Depth (m)	Type	Sample Number	N or RQD	Recovery (%)	Shear Strength (kPa) / SPT N Value (Blows/0.3 m)	Water Content (%) / Liquid Limit (%)	Monitoring Well Details
0 / 0	Ground Surface								
0 / 0	**PAVEMENT STRUCTURE** 100 mm of asphalt overlying about 400 mm of granular material..	0.00							
2 / 0.5	**FILL** sand and gravel, greyish brown, moist, dense.	0.50		SS1	36	79	36	3	
4 / 1				SS2	42	83	42	5	
6 / 2	**SAND** trace silt, trace clay, greyish brown, wet, compact to loose.	1.75		SS3	26	83	26	16	
8 / 2				SS4	10	75	10	26	
11 / 3				SS5	7	75	7	23	
14 / 4	**GLACIAL TILL** silt-sand, some gravel sized stone, trace clay, grey, wet, very loose to loose.	4.12							
16 / 5				SS7	2	100	2	10	
21 / 6				SS8	8	75	8	10	
22 / 6	End of Borehole	6.71							

Easting: 453346 m **Northing:** 5013076 m

Site Datum: NM

Groundsurface Elevation: NM **Top of Riser Elev.:** NA

Hole Diameter: 200 mm **Monitoring Well Diameter:** N/A

NOTES:

Symbols and Terms Used on Borehole and Test Pit Logs

1. Soil Description

The soil descriptions presented in this report are based on commonly accepted methods of classification and identification employed in geotechnical practice. Classification and identification of soil involves some judgement and LRL Associates Ltd. does not guarantee descriptions as exact, but infers accuracy to the extent that is common in current geotechnical practice. Boundaries between zones on the logs are often not distinct but transitional and were interpreted.

a. Proportion

The proportion of each constituent part, as defined by the grain size distribution, is denoted by the following terms:

Term	Proportions
"trace"	1% to 10%
"some"	10% to 20%
prefix (i.e. "sandy" silt)	20% to 35%
"and" (i.e. sand "and" gravel)	35% to 50%

b. Compactness and Consistency

The state of compactness of granular soils is defined on the basis of the Standard Penetration Number (N) as per ASTM D-1586. It corresponds to the number of blows required to drive 300 mm of the split spoon sampler using a metal drop hammer that has a weight of 62.5 kg and free fall distance of 760 mm. For a 600 mm long split spoon, the blow counts are recorded for every 150 mm. The "N" value is obtained by adding the number of blows from the 2nd and 3rd count. Technical refusal indicates a number of blows greater than 50.

The consistency of clayey or cohesive soils is based on the shear strength of the soil, as determined by field vane tests and by a visual and tactile assessment of the soil strength.

The state of compactness of granular soils is defined by the following terms:

State of Compactness Granular Soils	Standard Penetration Number "N"	Relative Density (%)
Very loose	0 – 4	<15
Loose	4 – 10	15 – 35
Compact	10 - 30	35 – 65
Dense	30 - 50	65 - 85
Very dense	> 50	> 85

The consistency of cohesive soils is defined by the following terms:

Consistency Cohesive Soils	Undrained Shear Strength (C_u) (kPa)	Standard Penetration Number "N"
Very soft	<12.5	<2
Soft	12.5 - 25	2 - 4
Firm	25 - 50	4 - 8
Stiff	50 - 100	8 - 15
Very stiff	100 - 200	15 - 30
Hard	>200	>30

c. Field Moisture Condition

Description (ASTM D2488)	Criteria
Dry	Absence of moisture, dusty, dry to touch.
Moist	Dump, but not visible water.
Wet	Visible, free water, usually soil is below water table.

2. Sample Data

a. Elevation depth

This is a reference to the geodesic elevation of the soil or to a benchmark of an arbitrary elevation at the location of the borehole or test pit. The depth of geological boundaries is measured from ground surface.

b. Type

Symbol	Type	Letter Code
	Auger	AU
	Split Spoon	SS
	Shelby Tube	ST
	Rock Core	RC

c. Sample Number

Each sample taken from the borehole is numbered in the field as shown in this column.

LETTER CODE (as above) – Sample Number.

d. Recovery (%)

For soil samples this is the percentage of the recovered sample obtained versus the length sampled. In the case of rock, the percentage is the length of rock core recovered compared to the length of the drill run.

3. Rock Description

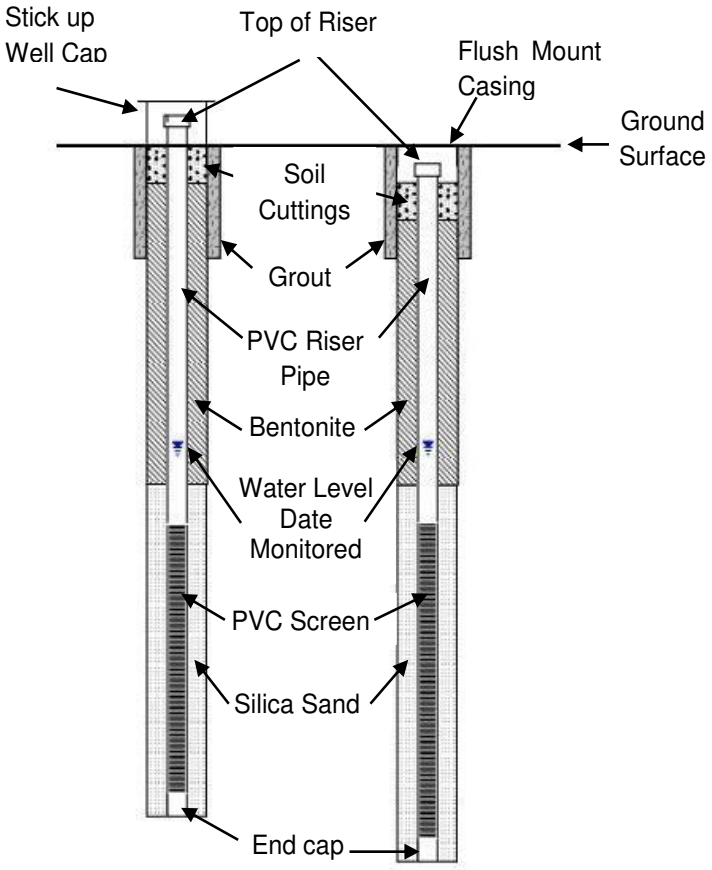
Rock Quality Designation (RQD) is a rough measure of the degree of jointing or fracture in a rock mas. The RQD is calculated as the cumulative length of rock pieces recovered having lengths of 100 mm or more divided by the length of coring. The qualitative description of the bedrock based on RQD is given below.

Rock Quality Designation (RQD) (%)	Description of Rock Quality
0 –25	Very poor
25 – 50	Poor
50 – 75	Fair
75 – 90	Good
90 – 100	Excellent

Strength classification of rock is presented below.

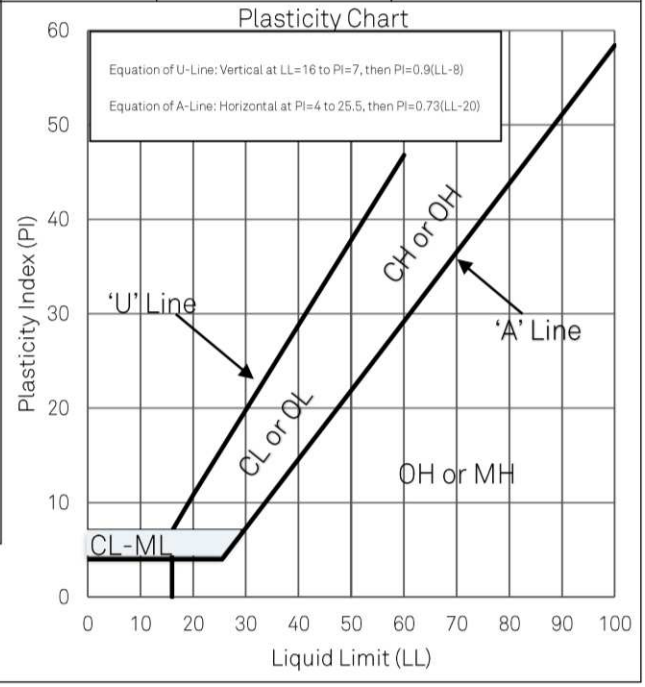
Strength Classification	Range of Unconfined Compressive Strength (MPa)
Extremely weak	< 1
Very weak	1 – 5
Weak	5 – 25
Medium strong	25 – 50
Strong	50 – 100
Very strong	100 – 250
Extremely strong	> 250

4. General Monitoring Well Data



5. Classification of Soils for Engineering Purposes (ASTM D2487)

(United Soil Classification System)

Major divisions			Group Symbol	Typical Names	Classification Criteria		
Coarse-grained soils More than 50% retained on No. 200 sieve* (>0.075 mm)	Gravels More than 50% of coarse fraction retained on No. 4 sieve(4.75 mm)	Clean gravels <5% fines	GW	Well-graded gravel	If 15% sand add "with sand" to group name.	Classification on basis of percentage of fines: Less than 5% pass No. 200 sieve - GW, GP, SW, SP More than 12% pass No. 200 sieve - GM, GC, SM, SC 5 to 12% pass No. 200 sieve - Borderline classifications, use of dual symbols	$C_u = \frac{D_{60}}{D_{10}} \geq 4$; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly graded gravel			Not meeting either Cu or Cc criteria for GW
		Gravels with >12% fines	GM	Silty gravel			Atterberg limits below "A" line or PI less than 4 → Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			GC	Clayey gravel			Atterberg limits on or above "A" line and PI > 7 → If fines are organic add "with orgnic fines" to group name
	Sands 50% or more of coarse fraction passes No. 4 sieve(<4.75 mm)	Clean sands <5% fines	SW	Well-graded sand	If 15% gravel add "with gravel to group name		$C_u = \frac{D_{60}}{D_{10}} \geq 6$; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly graded sand			Not meeting either Cu or C ccriteria for SW
		Sands with >12% fines	SM	Silty sand			Atterberg limits below "A" line or PI less than 4 → Atterberg limits plotting in hatched area are borderline classifications requiring use of dual symbols
			SC	Clayey sand			Atterberg limits on or above "A" line and PI > 7 → If fines are organic add "with orgnic fines" to group name
Fine-grained soils50% or more passes No. 200 sieve* (<0.075 mm)	Silts and Clays Liquid Limit <50%	Inorganic	ML	Silt	If 15 to 29% coarse-grained, add "with sand" or "with gravel" as appropriate. If > 30% coarse-grained, add "sandy" or "gravelly" as appropriate. Class as organic when oven dried liquid limit is < 75% of undried liquid limit.		
			CL	Lean Clay -low plasticity			
		Organic	OL	Organic clay or silt (Clay plots above 'A' Line)			
	Silts and Clays Liquid Limit >50%	Inorganic	MH	Elastic silt			
			CH	Fat Clay -high plasticity			
		Organic	OH	Organic clay or silt (Clay plots above 'A' Line)			
	Highly Organic Soils		PT	Peat, muck and other highly organic soils			

ATTACHMENT E

MECP Water Well Records

31G/5a.

UTM | 1 | 8 | Z | 4 | 5 | 1 | 3 | 1 | 3 | 1 | 0 | E
| 5 | R | 5 | 0 | 1 | 2 | 1 | 8 | 1 | 6 | 1 | 0 | N

Elev. | 4 | 3 | 0 | 1 | 3 | 1 | 5 |

Basin | 2 | 5 | County or District | Carleton | Township, Village, Town or City | Gloucester

Con III RF | Lot 30 | Date completed 3 (day) Sep (month) 65 (year)

[redacted] ress 467 McLeod St. Ottawa

WATER RESOURCES DIVISION — NOV 3 3 1965 — ONTARIO WATER RESOURCES COMMISSION

15 No. 1841

The Ontario Water Resources Commission Act

WATER WELL RECORD

Casing and Screen Record

Inside diameter of casing	6 1/4"
Total length of casing	64'
Type of screen	none
Length of screen	—
Depth to top of screen	—
Diameter of finished hole	6"

Pumping Test

Static level	18 FT.
Test-pumping rate	30 G.P.M.
Pumping level	76 FT
Duration of test pumping	24 hrs
Water clear or cloudy at end of test	clear
Recommended pumping rate	30 G.P.M.
with pump setting of	120 feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
sand	0	10		
gravel & boulders	10	30		
hard boulder Till	30	54		
hard limestone	54	90	75-110	Fresh
Sandstone	90	119		
Granite	119	136		

For what purpose(s) is the water to be used? Subdivision

Is well on upland, in valley, or on hillside? upland

Drilling or Boring Firm McLean Water Supply Ltd

Address 1532 Raven Ave Ottawa 3

Licence Number 1686

Name of Driller or Borer A. Scharf

Address

Date Sept 1, 1965

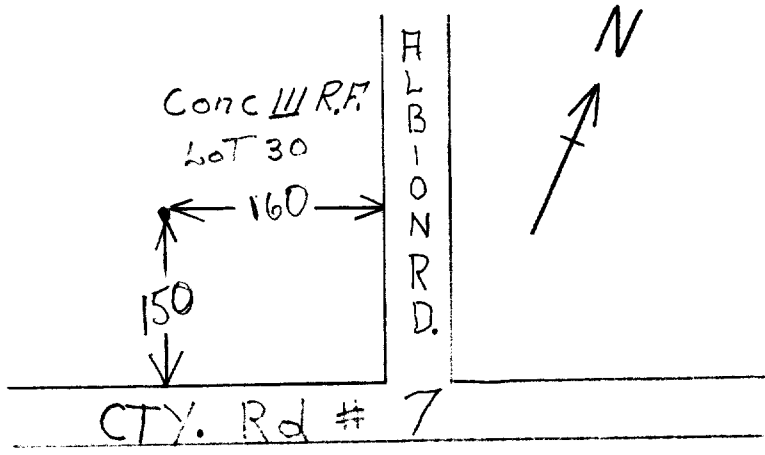
(Signature of Licensed Drilling or Boring Contractor)

Form 7 15M-60-4138

OWRC COPY

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



31G/5a

UTM [redacted] Zone 18 E 451310 N 5015320

Elev. 19 R 3 Lot 10

Basin 25 1

ONTARIO

The Well Drillers Act

Department of Mines, Province of Ontario

RECEIVED
APR 19 1949
GEOLOGICAL BRANCH
DEPARTMENT OF MINES

No. 1837

Water Well Record

Twp. Manotick Con. III RF Lot 29 Pt. Lot

[redacted] Acres 100

cluding pump) 25.5.00

Pipe and Casing Record

Casing diameter(s) 4"

Length(s) of casing(s) 5-5'

Length of screen

Type of screen

Type of pump

Capacity of pump

Depth of pump setting

Pumping Test

Date Feb. 10

Developed Capacity 200 gal P H

Duration of Test 1 hr.

Pumping Rate

Drawdown 4'

Static level of completed well 15'

Is well a gravel-wall type?

Water Record

Kind (fresh or mineral) fresh

Quality (hard, soft, contains iron, sulphur etc.) hard.

Appearance (clear, cloudy, coloured) clear

For what purpose(s) is the water to be used? stock well.

How far is well from possible source of contamination? 100'

What is source of contamination? Farm yard.

Enclose a copy of any mineral analysis that has been made of water

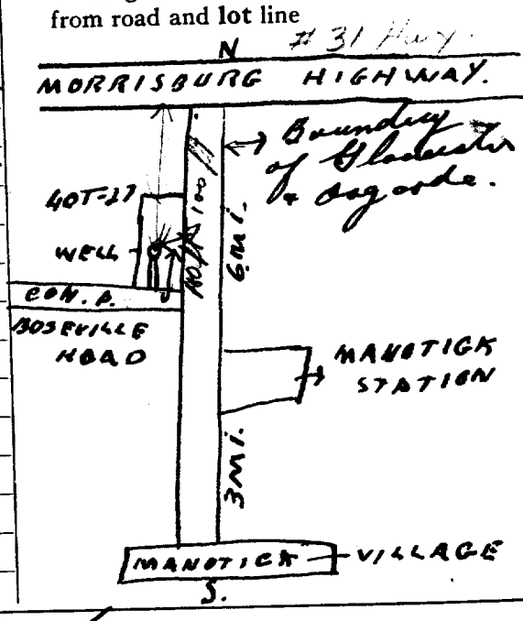
Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises
85.-	fresh	70'

Well Log

Drift and Bedrock Record	From O ft.	To ..... ft.
Top-soil & boulders	1	25'
gravel	25.-	55.-
granite? limestone	55.-	85.-

Location of Well

In diagram below show distances of well from road and lot line



Situation: Is well on upland, in valley, or on hillside? hillside

Drilling Firm M. Meagher

Address Britannia Heights

Recorded by M. Meagher Address Britannia Heights

Date Feb 15 1949 Licence Number

CSS.88

R.F. ? 31G/5a

UTM Zone 18 | 4 | 5 | 3 | 2 | 4 | 1 | 0 | E
| 5 | 0 | 1 | 3 | 3 | 2 | 1 | 0 | N

Lot 29

Elev. | 4 | R | 0 | 3 | 4 | 1 |

Basin | 2 | 5 |

15 No 2207

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Carl — Township, Village, Town or City Cardinal Gloucester

Con. IV RF — Lot 29 — Date completed 24 (day) Feb (month) 1966 (year)

Owner Geo. Crain & Sons Ltd (print in block letters) — Address 555 Cambridge St Ottawa

Casing and Screen Record

Inside diameter of casing 6 5/16

Total length of casing 52'

Type of screen

Length of screen

Depth to top of screen

Diameter of finished hole 6"

Pumping Test

Static level 5'

Test-pumping rate 10 G.P.M.

Pumping level 15

Duration of test pumping 2 hr

Water clear or cloudy at end of test clear

Recommended pumping rate 5 G.P.M.

with pump setting of 35' feet below ground surface

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Water Record: Depth(s) at which water(s) found	Water Record: Kind of water (fresh, salty, sulphur)
sand fill	0'	6'	52'	fresh
clay	6	40'		
hardpan	40'	46'		
gravel	46'	52'		
gravel backed up pipe to 45'				

For what purpose(s) is the water to be used? office building & garage

Is well on upland, in valley, or on hillside? upland

Drilling or Boring Firm Capital Water Supply

Address 14 Ashford Dr Ottawa 828-1764

Licence Number 1687

Name of Driller or Borer H Mains

Address

Date 24 Feb 1966

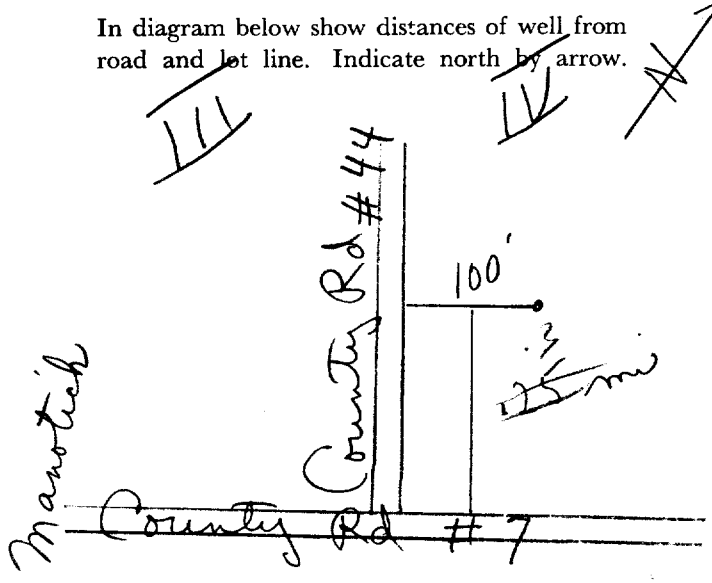
Walter Kavanagh
(Signature of Licensed Drilling or Boring Contractor)

Form 7 15M-60-4138

OWRC COPY

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



316/5a.

UTM | 18 | Z | 4 5 1 2 9 2 0 | E
| 5 | R | 5 0 1 2 5 2 0 | N
Elev. | R |
Basin | 2 | 5 | 1 | | |

ONTARIO

The Water-well Drillers Act, 1954
Department of Mines

15 No. 7206
GROUND WATER BRANCH
OCT 6 1958
ONTARIO WATER RESOURCES COMMISSION

Water-Well Record

[redacted] ip, Village, Town or City.....
Village, Town or City).....
Owner ..... Address .....
Date completed ..... (day) (month) (year)

Pipe and Casing Record

Casing diameter(s) .....
Length(s) .....
Type of screen .....
Length of screen .....

Pumping Test

Static level .....
Pumping rate .....
Pumping level .....
Duration of test .....

Well Log

Overburden and Bedrock Record	From ft.	To ft.
	0	51
	51	57

Water Record

Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
57	55	

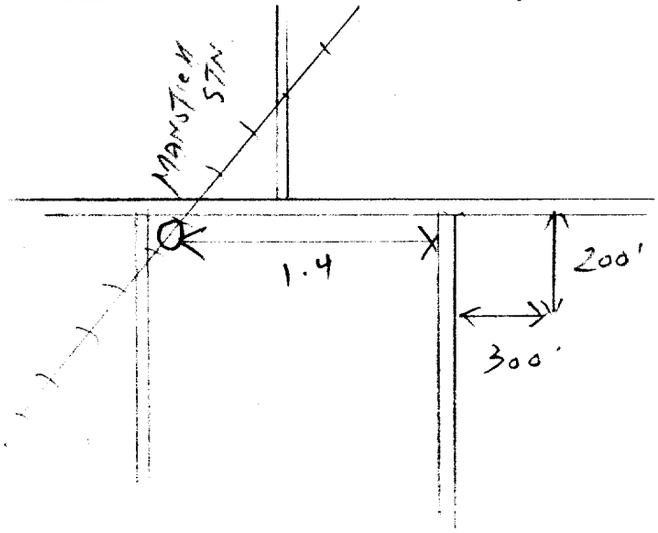
For what purpose(s) is the water to be used?
.....
Is water clear or cloudy?.....
Is well on upland, in valley, or on hillside?.....
.....
Drilling firm .....
Address .....
.....
Name of Driller .....
Address .....
.....
Licence Number.....

I certify that the foregoing statements of fact are true.

Date.....
Signature of Licensee

Location of Well

In diagram below show distances of well from road and lot line. Indicate north by arrow.



The Ontario Water Resources Commission Act

WATER WELL RECORD

31G/5a

Water management in Ontario

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 1510978 | MUNICIP. 15002 | CON. RF | C | 04

COUNTY OR DISTRICT: Carleton | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Gloucester | CON., BLOCK, TRACT, SURVEY, ETC.: 4 R.F. | LOT: 030

[redacted] ox 419 Manotick | DATE COMPLETED: DAY 20 MO. 11 YR 70

TWP. 012920 | RC. 4 | ELEVATION 03318 | RC. 4 | BASIN CODE 2st

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH – FEET FROM	DEPTH – FEET TO
Brown	Clay	Silt	Loose	0'	19'
Grey	Gravel	Boulder	Hard	19'	30'
Grey	Clay	Stones	Hard	30'	53'
Grey	lime Stone			53'	87

31 | 0019605004 | 0030211113 | 0053205112 | 0087215T

32

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0087	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH – FEET FROM	DEPTH – FEET TO
06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	54
06			54	87
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE			0087
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT – FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER | PUMPING RATE: 0012 GPM. | DURATION OF PUMPING: 02 HOURS 00 MINS.

WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY

STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
020 FEET	055 FEET	055 FEET	055 FEET	055 FEET	055 FEET

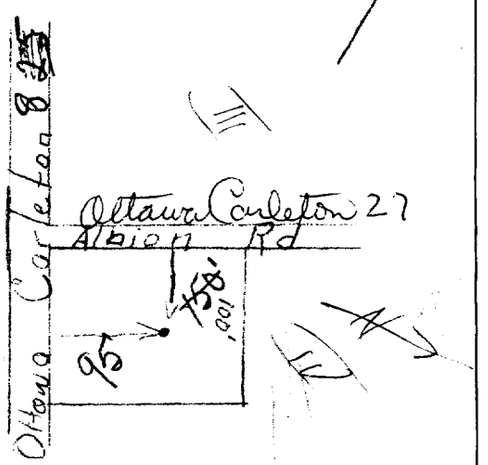
IF FLOWING, GIVE RATE: GPM. | PUMP INTAKE SET AT: FEET | WATER AT END OF TEST: 1 ☐ CLEAR 2 ☒ CLOUDY

RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP | RECOMMENDED PUMP SETTING: 070 FEET | RECOMMENDED PUMPING RATE: 0005 GPM.

000.3 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL

54 | 1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE

55-56 | 01 | 1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING

57 | 1 ☒ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Capital Water Supply | LICENCE NUMBER: 1558

ADDRESS: 14 Ashford Dr Ottawa

NAME OF DRILLER OR BORER: L Bowers | LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: Walter Kavanagh | SUBMISSION DATE: DAY ____ MO. ____ YR. ____

OWRC COPY

OFFICE USE ONLY

DATA SOURCE 58: 1 | CONTRACTOR 59-62: 1558 | DATE RECEIVED 63-68: 021270

DATE OF INSPECTION | INSPECTOR

REMARKS:

P 1441 -

WI

The Ontario Water Resources Commission Act

WATER WELL RECORD

3 1 G 5 A
South Gloucester
2-18
2-24

Water management in Ontario

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 1512040 | MUNICIP. 15002 | CON. 2-24 | 03

COUNTY OR DISTRICT: Carleton
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Gloucester
CON., BLOCK, TRACT, SURVEY, ETC.: 3 RF
LOT: 030
DATE COMPLETED: DAY 24 MO. 08 YR. 72
[redacted] Albion Rd, Ottawa
UTM 13 122 4 | ELEVATION 0338 | RC 4 | BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH FROM	DEPTH TO
Brown	sand	clay	packed	0	4
Brown	sand		packed	4	35
Grey	sand	gravel	packed	35	46

This is a gravel well

31: 0004628 05 | 0035628 | 0046 28 11
32:

41 WATER RECORD

WATER FOUND AT — FEET	KIND OF WATER
0046	1 ☒ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH FROM	DEPTH TO
6	1 ☒ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE	223	0	46
06				0046
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

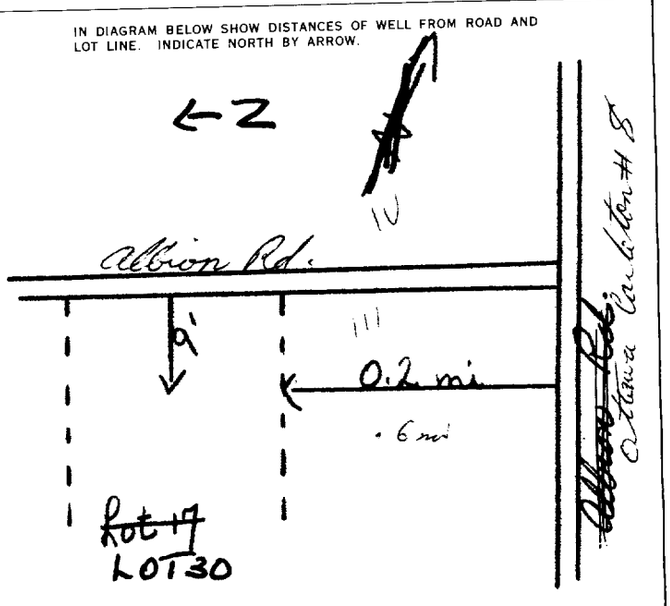
DEPTH SET AT — FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER
PUMPING RATE: 0020 GPM
DURATION OF PUMPING: 101 HOURS 00 MINS.
STATIC LEVEL: -00 FEET
WATER LEVEL END OF PUMPING: 030 FEET
WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY
15 MINUTES: 030 FEET | 30 MINUTES: 030 FEET | 45 MINUTES: 030 FEET | 60 MINUTES: 030 FEET
IF FLOWING, GIVE RATE: 0006 GPM
PUMP INTAKE SET AT: FEET
WATER AT END OF TEST: 1 ☐ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☒ SHALLOW ☐ DEEP
RECOMMENDED PUMP SETTING: 030 FEET
RECOMMENDED PUMPING RATE: 0025 GPM.
50-53: 0007 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL 1353

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL 54: 1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED

WATER USE 55-56: 05 — 1 ☐ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☒ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED

METHOD OF DRILLING 57: 1 ☒ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Capital Water Supply Ltd. — LICENCE NUMBER: 1558
ADDRESS: Box 490 Smiths Falls Ont.
NAME OF DRILLER OR BORER: Mike Kavanagh — LICENCE NUMBER:
SIGNATURE OF CONTRACTOR: Walter Kavanagh — SUBMISSION DATE: DAY 28 MO. 8 YR. 72

OWRC COPY

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59-62: 1558 — DATE RECEIVED 63-68: 041072
DATE OF INSPECTION — INSPECTOR
REMARKS:
P ✓
WI

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

South Gloucester Z-18 B-26 31G/5a

Ontario

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 | 1514039 | MUNICIP. 15009 | CON. CON 04

COUNTY OR DISTRICT: Carleton
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Osgoode
CON., BLOCK, TRACT, SURVEY, ETC.: 4
LOT: 1
DATE COMPLETED: DAY 14 MO 12 YR 73
[redacted] R 2 Greely out
2667 | RC 4 | ELEVATION 0335 | RC 4 | BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Sand			0	49
	Sand	Bolders		49	63
	Limestone		soft	63	162

31 | 0049 28 | 0063 2813 | 0102 15

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0102	1 ☒ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
03	1 ☒ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE	8/32	0	0065
03	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☒ OPEN HOLE			0102
	1 ☐ STEEL; 2 ☐ GALVANIZED; 3 ☐ CONCRETE; 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

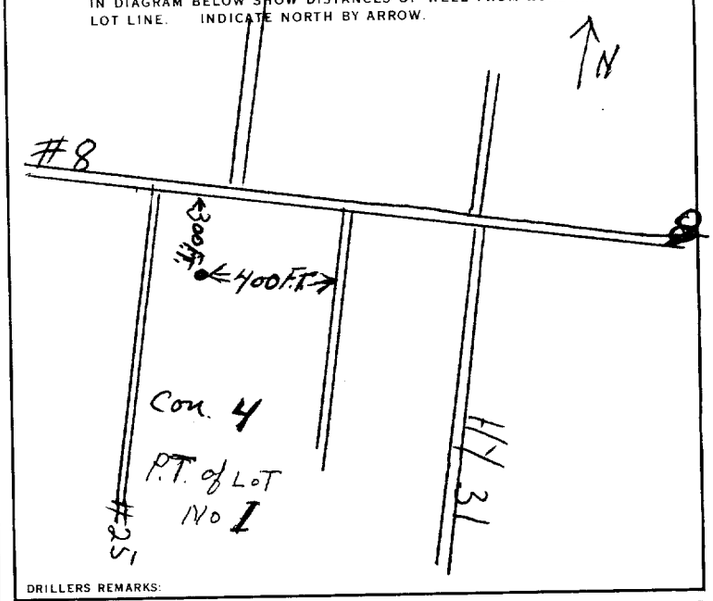
PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER
PUMPING RATE: 0008 GPM
DURATION OF PUMPING: 04 HOURS 00 MINS
WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY

STATIC LEVEL	WATER LEVEL END OF PUMPING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
028 FEET	028 FEET	028 FEET	028 FEET	028 FEET	028 FEET

IF FLOWING, GIVE RATE: — GPM
PUMP INTAKE SET AT: 45 FEET
WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY
RECOMMENDED PUMP TYPE: ☐ SHALLOW ☒ DEEP
RECOMMENDED PUMP SETTING: 045 FEET
RECOMMENDED PUMPING RATE: 0008 GPM
50-53: 016.0

LOCATION OF WELL 1253

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL 54: 1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED

WATER USE 55-56: 01 — 1 ☒ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; ☐ OTHER; 5 ☐ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED

METHOD OF DRILLING 57: 1 ☐ CABLE TOOL; 2 ☐ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☒ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: F.R. COSSETTE — LICENCE NUMBER: 1603
ADDRESS: 1510 BASECINIE
NAME OF DRILLER OR BORER — LICENCE NUMBER
SIGNATURE OF CONTRACTOR: F.R. Cossette — SUBMISSION DATE: DAY 14 MO. Dec YR 73

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59-62: 1603 — DATE RECEIVED 63-68: 270574
DATE OF INSPECTION — INSPECTOR: K.
REMARKS:

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 07-091

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

316/5a

Ontario

1. PRINT ONLY IN SPACES PROVIDED
2. CHECK ☒ CORRECT BOX WHERE APPLICABLE

11 — 1514603 — MUNICIP. 15002 — CON. F — 04

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Carleton	Gloucester	4 RF	029

[redacted]

ADDRESS: 42 Kingsdale Acve., Ottawa, Ont.

DATE COMPLETED: DAY 12 MO. 02 YR. 75

UTM/NORTHING 013387 — RC 4 — ELEVATION 0345 — RC 4 — BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
	Sand			0	10
	Sand	Clay		10	38
	Gravel	Boulders		38	47
	Limestone			47	104

31 — 0010 28 — 0038 2805 — 0047 1113 — 0104 15

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0095	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
0104	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	0	0047
06	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE			0104
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE			

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)
12	15	Cement Grout

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☒ BAILER	0007 GPM.	01 HOURS 30 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
006 FEET	035 FEET	1 PUMPING 2 ☒ RECOVERY	011 FEET	006 FEET	006 FEET	006 FEET

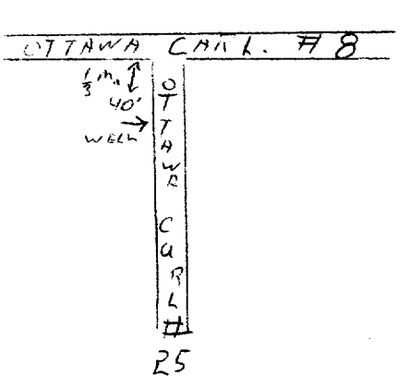
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM.	FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☒ DEEP	050 ~~007~~ FEET	0007 ~~0050~~ GPM.

50-53 0002 GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL 1353

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL 54: 1 ☒ WATER SUPPLY; 2 ☐ OBSERVATION WELL; 3 ☐ TEST HOLE; 4 ☐ RECHARGE WELL; 5 ☐ ABANDONED, INSUFFICIENT SUPPLY; 6 ☐ ABANDONED, POOR QUALITY; 7 ☐ UNFINISHED

WATER USE 55-56: 05 — 1 ☐ DOMESTIC; 2 ☐ STOCK; 3 ☐ IRRIGATION; 4 ☐ INDUSTRIAL; 5 ☒ COMMERCIAL; 6 ☐ MUNICIPAL; 7 ☐ PUBLIC SUPPLY; 8 ☐ COOLING OR AIR CONDITIONING; 9 ☐ NOT USED; ☐ OTHER

METHOD OF DRILLING 57: 1 — 1 ☐ CABLE TOOL; 2 ☒ ROTARY (CONVENTIONAL); 3 ☐ ROTARY (REVERSE); 4 ☐ ROTARY (AIR); 5 ☐ AIR PERCUSSION; 6 ☐ BORING; 7 ☐ DIAMOND; 8 ☐ JETTING; 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: McLean Water Supply Ltd — LICENCE NUMBER: 3504

ADDRESS: 1532 Raven Ave., Ottawa, Ont.

NAME OF DRILLER OR BORER: M. Mallon — LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: [signature] — SUBMISSION DATE: DAY 12 MO. 2 YR. 75

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59-62: 3504 — DATE RECEIVED 63-68: 290475

DATE OF INSPECTION — INSPECTOR

REMARKS: P ✓ WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 07-091

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

3161 5a

Ontario

1. PRINT ONLY IN SPACES PROVIDED
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11 | 1515197 | MUNICIP 15002 | CON. RF | 04

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Carleton	Gloucester	4RF	30

[redacted]

Box 151 R.R. # 5 Albion Rd. Ottawa, Ontario

DATE COMPLETED: DAY 12 MO 01 YR 76

UTM/TOWNSHIP 013184 | RC 4 | ELEVATION 0338 | RC 4 | BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
brown	sand		frozen	0	3
brown	sand		loose	3	35
black	gravel			35	98
black	limestone		medium hard	98	51
black	limestone			51	73

31 | 0003628 | 0035 2877 | 0038811 | 0051 81573 | 0073815

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0070	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM. INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06 5/0	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE	188	0	0051
06	4 ☒ OPEN HOLE		51	73
06	4 ☒ OPEN HOLE			0073

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET

MATERIAL AND TYPE | DEPTH TO TOP OF SCREEN FEET

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT, LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER

PUMPING RATE: 0050 GPM | DURATION OF PUMPING: 01 HOURS 00 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
-54 FEET	001 FEET		001 FEET	001 FEET	001 FEET	001 FEET

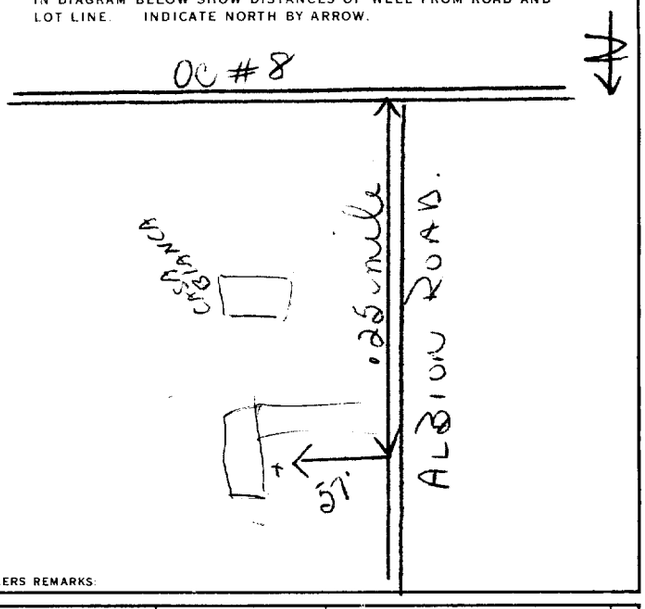
IF FLOWING, GIVE RATE: 0000 GPM | PUMP INTAKE SET AT: FEET | WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☒ SHALLOW ☐ DEEP | RECOMMENDED PUMP SETTING: 030 FEET | RECOMMENDED PUMPING RATE: 0005 GPM

GPM./FT. SPECIFIC CAPACITY

LOCATION OF WELL 5313

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL 1 — 1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED

WATER USE 01 — 1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING 5 — 1 ☐ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☒ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Capital Water Supply Ltd. | LICENCE NUMBER: 1558

ADDRESS: Box 490 Stittsville, Ontario

NAME OF DRILLER OR BORER: M. Hamilton | LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: [signature] | SUBMISSION DATE: DAY 14 MO 1 YR 76

OFFICE USE ONLY

DATA SOURCE 1 | CONTRACTOR 1558 | DATE RECEIVED 150376

DATE OF INSPECTION 15 Jul 76 | INSPECTOR P/R Doyle

REMARKS:

P

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Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

3165a

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1 2 — 1517522 — MUNICIP. 15002 — CON. RF — 04

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY ETC.	LOT 030 P/Lt.29
Ottawa-Carleton	Gloucester	Conc. 4 R. F.	

[redacted] x 153, Albion Rd., Ottawa, Ontario

DATE COMPLETED: DAY 30 MO 10 YR 80

UTM ZONE 13099 — RC 4 — ELEVATION 0340 — RC 1 — BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Sand	Fill	Loose	0	2
Gray	Clay	Sand & Stones	Soft	2	20
Gray	Sand	Boulders	Packed	20	44
Black	Limestone		Medium Soft	44	63

31 — 0002 1281 — 0020 2281 — 0044 2613 79 — 0063 3986

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0063	1 ☒ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL
	1 ☐ FRESH 3 ☐ SULPHUR; 2 ☐ SALTY 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06 6 1/4	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	0046
06	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		46	0055
06 5 3/4	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE		55	0063

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER, ETC.)

71 PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☐ PUMP 2 ☒ BAILER	0030 GPM	01 HOURS 00 MINS

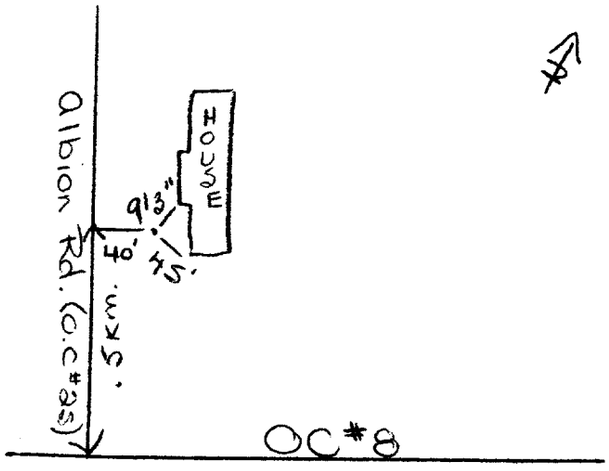
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING	15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
000 Flowing FEET	003 FEET	1 ☒ PUMPING 2 ☐ RECOVERY	003 FEET	003 FEET	003 FEET	003 FEET

IF FLOWING, GIVE RATE: GPM — PUMP INTAKE SET AT: FEET — WATER AT END OF TEST: 1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☒ SHALLOW ☐ DEEP — RECOMMENDED PUMP SETTING: 025 FEET — RECOMMENDED PUMPING RATE: 0005 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS:

FINAL STATUS OF WELL	1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED, POOR QUALITY 7 ☐ UNFINISHED
WATER USE 01	1 ☒ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED
METHOD OF DRILLING 1	1 ☒ CABLE TOOL 2 ☐ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: Capital Water Supply Ltd. — LICENCE NUMBER: 1558

ADDRESS: Box 490, Stittsville, Ontario K0A 3G0

NAME OF DRILLER OR BORER: J. Moore — LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: [signature] — SUBMISSION DATE: DAY 31 MO 10 YR 80

OFFICE USE ONLY

DATA SOURCE 1 — CONTRACTOR 1558 — DATE RECEIVED 020381

DATE OF INSPECTION: — INSPECTOR:

REMARKS:

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FORM NO. 0506—4—77 FORM 7

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

3/65a

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11 — 1519504 — MUNICIP. 15009 — CON. CON — 04

COUNTY OR DISTRICT	TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE	CON., BLOCK, TRACT, SURVEY, ETC.	LOT
Ottawa-Carleton	Osgoode	IV Con .04	001

[redacted] Buchanan Cres. Ottawa, Ont.

DATE COMPLETED: DAY 14 MO 08 YR 84

2499 — RC 4 — ELEVATION 0335 — RC 7 — BASIN CODE 26

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
Brown	Sand		Med.brown sand	0'	12'
Grey	Clay		Soft grey clay	12'	32'
Grey	Clay	Sand silt stones	Hard grey clay silt, sand, stones	12'	36'
Grey	Limestone		Med.grey limestone	36'	60'

MOE VF-18

31 — 001 2 6 4 8 7 8 — 003 2 0 5 8 5 — 003 6 1 0 5 2 8 0 4 — 006 0 2 1 5 7 8

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0040'	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
0054'	1 ☒ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL
	1 ☐ FRESH 2 ☐ SALTY 3 ☐ SULPHUR 4 ☐ MINERAL

51 CASING & OPEN HOLE RECORD

INSIDE DIAM INCHES	MATERIAL	WALL THICKNESS INCHES	DEPTH - FEET FROM	DEPTH - FEET TO
06 08"	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE		0'	0040'
06"	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE	.188	+2'	0060 40'
6"	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE		40'	60'

SCREEN

SIZE(S) OF OPENING (SLOT NO.)	DIAMETER INCHES	LENGTH FEET
MATERIAL AND TYPE	DEPTH TO TOP OF SCREEN FEET	

61 PLUGGING & SEALING RECORD

DEPTH SET AT - FEET FROM	DEPTH SET AT - FEET TO	MATERIAL AND TYPE (CEMENT GROUT LEAD PACKER ETC.)
20'	8'	Cement grout
		4 sacks of high high early cement

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☒ PUMP 2 ☐ BAILER

PUMPING RATE	DURATION OF PUMPING
0020 GPM	06 HOURS 00 MINS

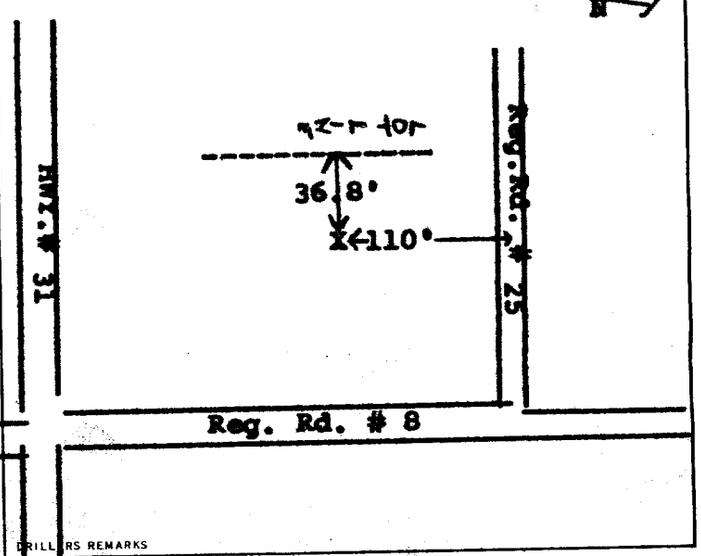
STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☒ PUMPING 2 ☐ RECOVERY	10 MINUTES	20 MINUTES	30 MINUTES	40 MINUTES	50 MINUTES	60 MINUTES
003 3.31' FEET	004 4.48' FEET	003 3/35' FEET	004 4.15' FEET	004 4.18' FEET				004 4.19' FEET

IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	50' FEET	1 ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☒ SHALLOW ☐ DEEP	050' FEET	0020 GPM

LOCATION OF WELL

IN DIAGRAM BELOW SHOW DISTANCES OF WELL FROM ROAD AND LOT LINE. INDICATE NORTH BY ARROW.



DRILLERS REMARKS

FINAL STATUS OF WELL 54 — 1

1 ☒ WATER SUPPLY 2 ☐ OBSERVATION WELL 3 ☐ TEST HOLE 4 ☐ RECHARGE WELL 5 ☐ ABANDONED, INSUFFICIENT SUPPLY 6 ☐ ABANDONED POOR QUALITY 7 ☐ UNFINISHED

WATER USE 55-56 — 12

1 ☒ DOMESTIC 2 ☒ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL ☐ OTHER 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED

METHOD OF DRILLING 57 — 2

1 ☐ CABLE TOOL 2 ☒ ROTARY (CONVENTIONAL) 3 ☐ ROTARY (REVERSE) 4 ☐ ROTARY (AIR) 5 ☐ AIR PERCUSSION 6 ☐ BORING 7 ☐ DIAMOND 8 ☐ JETTING 9 ☐ DRIVING

CONTRACTOR

NAME OF WELL CONTRACTOR: OLYMPIC DRILLING CO. LIMITED — LICENCE NUMBER: 4006

ADDRESS: Box 9180 OTTAWA, Ontario K1G 3T9

NAME OF DRILLER OR BORER: Roy W. Renwick — LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: R.W. Renwick — SUBMISSION DATE: (Sec) DAY 10 MO 09 YR 84

MINISTRY OF THE ENVIRONMENT COPY

OFFICE USE ONLY

DATA SOURCE 58: 1 — CONTRACTOR 59,62: 4006 — DATE RECEIVED 63-68: 190385

DATE OF INSPECTION: — INSPECTOR:

REMARKS: cssiEs

FORM NO. 0506—4—77 FORM 7

Ministry of Environment and Energy
Ontario

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 — 1529731 — Municipality 15009 — Con. CON — 04

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
[redacted]	Osgoode	4	1

Address: 6792 Mitch Owens Rd Greely,Ontario K4P 1M6

Date completed: 17 day 10 month 97 year

21 — Northing — RC — Elevation — RC — Basin Code — i ii iii iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth – feet From	Depth – feet To
Brown	Sand	Stones	Dry	0	10
Gray	Clay	Stones	Sticky	10	35
Gray	Sand & Clay	Boulders	Packed	35	52
Gray	Limestone		Medium HArd	52	95
Gray & White	Sandstone		Very Hard	95	200

31 — 32

41 WATER RECORD

Water found at – feet	Kind of water
195	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
NOT TESTED	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth – feet From	Depth – feet To
6 1/8	1 ☐ Steel 2 ☒ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.188	0	55.5
6	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		55.5	175
5 7/8	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		175	200

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet
Material and type	**Depth at top of screen feet**	

61 PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at – feet From	Depth set at – feet To	Material and type (Cement grout, bentonite. etc.)
54	35	Bentonite
35	0	Cement 9High Early)

71 PUMPING TEST

Pumping test method: 1 ☒ Pump 2 ☐ Bailer — Pumping rate: 5 GPM — Duration of pumping: 1 Hours ..... Mins

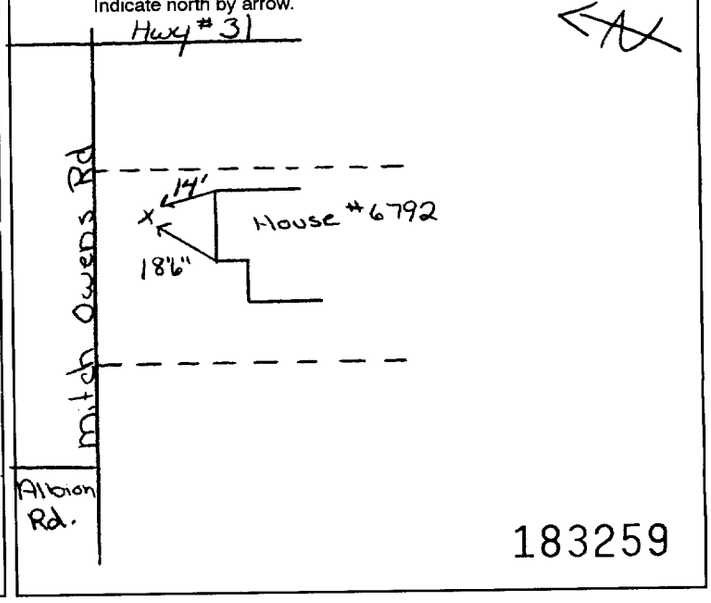
Static level	Water level end of pumping	Water levels during: 1 ☐ Pumping 2 ☐ Recovery — 15 minutes	30 minutes	45 minutes	60 minutes
31 feet	200 feet	137 feet	75 feet	32 feet	31 feet

If flowing give rate	Pump intake set at	Water at end of test
GPM	feet	☐ Clear ☒ Cloudy

Recommended pump type	Recommended pump setting	Recommended pump rate
☐ Shallow ☒ Deep	175 feet	5 GPM

LOCATION OF WELL

In diagram below show distances of well from road and lot line.
Indicate north by arrow.



183259

FINAL STATUS OF WELL

1 ☒ Water supply 2 ☐ Observation well 3 ☐ Test hole 4 ☐ Recharge well 5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering 9 ☐ Unfinished 10 ☐ Replacement well

WATER USE

1 ☒ Domestic 2 ☐ Stock 3 ☐ Irrigation 4 ☐ Industrial 5 ☐ Commercial 6 ☐ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning 9 ☐ Not used 10 ☐ Other .....

METHOD OF CONSTRUCTION

1 ☐ Cable tool 2 ☐ Rotary (conventional) 3 ☐ Rotary (reverse) 4 ☐ Rotary (air) 5 ☒ Air percussion 6 ☐ Boring 7 ☐ Diamond 8 ☐ Jetting 9 ☐ Driving 10 ☐ Digging 11 ☐ Other .....

Name of Well Contractor	Well Contractor's Licence No.
Capital Water Supply Ltd.	1558
Address: P.O. Box 490 Stittsville,Ontario K2S 1A6	
Name of Well Technician: S. Miller	Well Technician's Licence No.: T0097
Signature of Technician/Contractor	Submission date: day 22 mo 10 yr 97

MINISTRY USE ONLY

Data source 58 — Contractor 1558 — Date received DEC 22 1997

Date of inspection — Inspector

Remarks

0506 (07/94) Front Form 9

2 - MINISTER OF ENVIRONMENT & ENERGY COPY

Ontario **Ministry of the Environment**

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 (1 2) **1531934** Municipality 15009 (10 14) Con. CON (15 22 23 24) 04

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot (25-27)
Ottawa Carletpn	Osgoode	4	

[redacted]

Address: 60 Robinson Road, Nepean, ON. K2H 5Y8

Date completed (48-53): 20 day 04 month 01 year

21 (1 2) | UTM (10) | Northing (12 17 18 24) | RC (25) | Elevation (26) | RC (30) | Basin Code (31) | ii | iii | iv (47)

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
Brown	Sand			0	4
Grey	sand			4	9
Grey	clay			9	23
Grey	sand gravel & boulders			23	37
Grey	limestone			37	75

31 (10 14 15 21 32 43 54 65 75 80)

32

41 WATER RECORD

Water found at - feet	Kind of water
65 (10-13)	1 ☐ Fresh 3 ☐ Sulphur (14) 2 ☐ Salty 4 ☐ Minerals 6 ☐ Gas — NOT TESTED
(15-18)	1 ☐ Fresh 3 ☐ Sulphur (19) 2 ☐ Salty 4 ☐ Minerals 6 ☐ Gas
(20-23)	1 ☐ Fresh 3 ☐ Sulphur (24) 2 ☐ Salty 4 ☐ Minerals 6 ☐ Gas
(25-28)	1 ☐ Fresh 3 ☐ Sulphur (29) 2 ☐ Salty 4 ☐ Minerals 6 ☐ Gas
(30-33)	1 ☐ Fresh 3 ☐ Sulphur (34) 2 ☐ Salty 4 ☐ Minerals 6 ☐ Gas (60)

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4 (10-11)	1 ☒ Steel (12) 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.188	0	40 (13-16)
(17-18) 6	1 ☐ Steel (19) 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		40	75 (20-23)
(24-25)	1 ☐ Steel (26) 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			(27-30)

SCREEN

Sizes of opening (Slot No.) (31-33)	Diameter (34-38) inches	Length (39-40) feet
Material and type	Depth at top of screen (41-44) feet	(30)

61 PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
40 (10-13)	0 (14-17)	Grouted-Bentonite
(18-21)	(22-25)	
(26-29)	(30-33) (80)	

71 PUMPING TEST

Pumping test method (10): 1 ☒ Pump 2 ☐ Bailer — AIR

Pumping rate (11-14): 25 GPM

Duration of pumping (15-16): 1 Hours (17-18) Mins

Static level (19-21)	Water level end of pumping (22-24)	Water levels during (25): 1 ☒ Pumping 2 ☐ Recovery	15 minutes (26-28)	30 minutes (29-31)	45 minutes (32-34)	60 minutes (35-37)
8' 4" feet	25 feet		70 feet	50 feet	50 feet	25 feet

If flowing give rate (38-41): GPM

Pump intake set at: feet

Water at end of test (42): ☒ Clear ☐ Cloudy

Recommended pump type: ☐ Shallow ☒ Deep

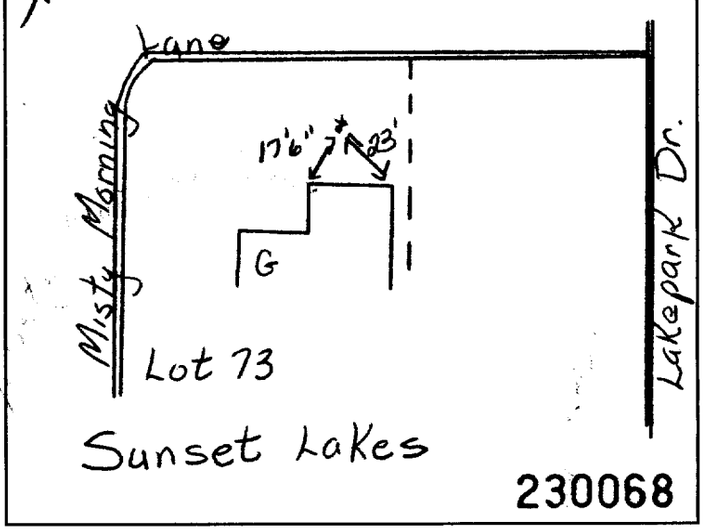
Recommended pump setting (43-45): 35 feet

Recommended pump rate (46-49): 5 GPM

(50-53)

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.



230068

FINAL STATUS OF WELL (54)

1 ☒ Water supply 5 ☐ Abandoned, insufficient supply 9 ☐ Unfinished
2 ☐ Observation well 6 ☐ Abandoned, poor quality 10 ☐ Replacement well
3 ☐ Test hole 7 ☐ Abandoned (Other)
4 ☐ Recharge well 8 ☐ Dewatering

WATER USE (55-56)

1 ☒ Domestic 5 ☐ Commercial 9 ☐ Not use
2 ☐ Stock 6 ☐ Municipal 10 ☐ Other
3 ☐ Irrigation 7 ☐ Public supply
4 ☐ Industrial 8 ☐ Cooling & air conditioning

METHOD OF CONSTRUCTION (57)

1 ☐ Cable tool 5 ☒ Air percussion 9 ☐ Driving
2 ☐ Rotary (conventional) 6 ☐ Boring 10 ☐ Digging
3 ☐ Rotary (reverse) 7 ☐ Diamond 11 ☐ Other
4 ☒ Rotary (air) 8 ☐ Jetting

Name of Well Contractor	Well Contractor's Licence No.
Capital Water Supply Ltd.	1558
Address: Box 490, Stittsville, ON. K2S 1A6	
Name of Well Technician: S. Miller	Well Technician's Licence No.: T0097
Signature of Technician/Contractor	Submission date: day 24 mo 04 yr 01

MINISTRY USE ONLY

Data source (58)	Contractor (59-62)	Date received (63-68) (80)
	1558	JUN 15 2001
Date of inspection	Inspector	
Remarks		CSS.ES1

2 - MINISTRY OF THE ENVIRONMENT COPY

0506 (07/00) Front Form 9

Ontario Ministry of the Environment

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 — 1531972 — Municipality 15009 — Con. CON — Lot Sublot 72 04

County or District: Ottawa Carleton
Township/Borough/City/Town/Village: Osgoode
Con block tract survey, etc.: 4
Lot: 4
Address: [redacted] Greely Ont.
Date completed: 02 04 01 (day month year)

21 — UTM — Northing — RC — Elevation — RC — Basin Code — ii — iii — iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
	Sand	blue clay		0	34
Grey	limestone			34	101
Grey	Sandstone			101	120

31
32

41 WATER RECORD

Water found at - feet	Kind of water
88	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas 6 ☐ — NO TESTED
112	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas 6 ☐ — TESTED
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas 6 ☐
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas 6 ☐
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas 6 ☐

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6¼	1 ☒ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	188	0	42
8¾	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		0	40
6	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		40	120

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet

Material and type: — Depth at top of screen feet:

61 PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
2	42	Cement grout

71 PUMPING TEST

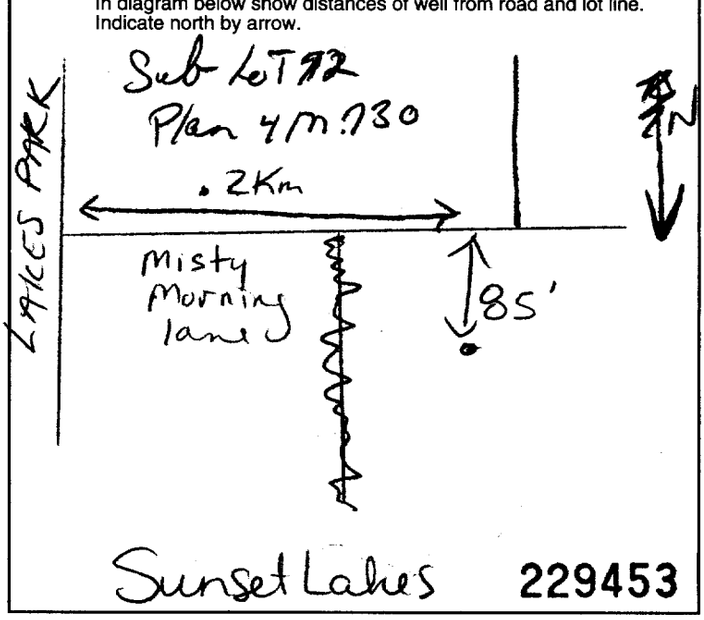
Pumping test method: 1 ☒ Pump 2 ☐ Bailer
Pumping rate: 8 GPM
Duration of pumping: 1 Hours ... Mins

Static level	Water level end of pumping	Water levels during: 1 ☐ Pumping 2 ☒ Recovery			
15 feet	100 feet	15 minutes: 15 feet	30 minutes: 15 feet	45 minutes: 15 feet	60 minutes: 15 feet

If flowing give rate: GPM
Pump intake set at: feet
Water at end of test: ☐ Clear ☒ Cloudy
Recommended pump type: ☐ Shallow ☒ Deep
Recommended pump setting: 100 feet
Recommended pump rate: 8 GPM

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.



Sunset Lakes 229453

FINAL STATUS OF WELL

1 ☒ Water supply 2 ☐ Observation well 3 ☐ Test hole 4 ☐ Recharge well 5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering 9 ☐ Unfinished 10 ☐ Replacement well

WATER USE

1 ☒ Domestic 2 ☐ Stock 3 ☐ Irrigation 4 ☐ Industrial 5 ☐ Commercial 6 ☐ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning 9 ☐ Not use 10 ☐ Other

METHOD OF CONSTRUCTION

1 ☐ Cable tool 2 ☐ Rotary (conventional) 3 ☐ Rotary (reverse) 4 ☐ Rotary (air) 5 ☒ Air percussion 6 ☐ Boring 7 ☐ Diamond 8 ☐ Jetting 9 ☐ Driving 10 ☐ Digging 11 ☐ Other

Name of Well Contractor: Ark Rock Dr. Wells Ltd — Well Contractor's Licence No.: 1119
Address: RR#2 Jasper, Ont
Name of Well Technician: Shannon Purcell — Well Technician's Licence No.: T2122
Signature of Technician/Contractor: — Submission date: 18 (day) 04 (mo) 01 (yr)

MINISTRY USE ONLY: Data source — Contractor: 1119 — Date received: JUN 12 2001
Date of inspection — Inspector
Remarks

CSS.ES1

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0506 (07/00) Front Form 9

Ontario Ministry of the Environment

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 (1 2) **1532047** Municipality 15009 (10 14) Con. CON 04 (15 22 23 24)

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot (25-27)
Ottawa Carleton	Osgoode	4	2

Owner's surname (26-47)	First Name	Address	Date completed (48-53)
Sienna Homes		60 Robinson Road, Nepean, ON K2H 5Y8	07 (day) 06 (month) 01 (year)

21 (1 2) Zone (UTM 10) Easting (12 17) Northing (18 24) RC (25) Elevation (26) RC (30) Basin Code (31 47) ii iii iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
Brown	sand			0	4
Grey	sand		wet	4	12
Grey	clay	stones		12	24
Grey	sand & gravel	boulders		24	39
Grey	limestone			39	110
Grey & white	sandstone			110	200

31 (10 14 15 21) 32 (32 43 54 65 75 80)

41 WATER RECORD

Water found at - feet (10-13)	Kind of water	
191	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas (14) — Not tested	
(15-18)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas (19)	
(20-23)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas (24)	
(25-28)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas (29)	
(30-33)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas (34)	60

51 CASING & OPEN HOLE RECORD

Inside diam inches (10-11)	Material (12)	Wall thickness inches	Depth - feet From (12-16)	Depth - feet To
6 1/4	1 ☒ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.188	0	42'6"
(17-18) 6	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic (19)		42'6"	200 (20-23)
(24-25)	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic (26)			(27-30)

SCREEN

Sizes of opening (Slot No.) (31-33)	Diameter (34-38) inches	Length (39-40) feet

Material and type	Depth at top of screen (41-44) feet	30

61 PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at - feet From (10-13)	Depth set at - feet To (14-17)	Material and type (Cement grout, bentonite, etc.)
42'6"	0	Grouted-Bentonite (3)
(18-21)	(22-25)	
(26-29)	(30-33)	80

71 PUMPING TEST

Pumping test method (10): 1 ☒ Pump 2 ☐ Bailer
Pumping rate (11-14): 20 GPM
Duration of pumping (15-16 Hours, 17-18 Mins): 1 Hours

Water levels during (25): 1 ☒ Pumping 2 ☐ Recovery

Static level (19-21)	Water level end of pumping (22-24)	15 minutes (26-28)	30 minutes (29-31)	45 minutes (32-34)	60 minutes (35-37)
6 feet	35 feet	190 feet	100 feet	75 feet	35 feet

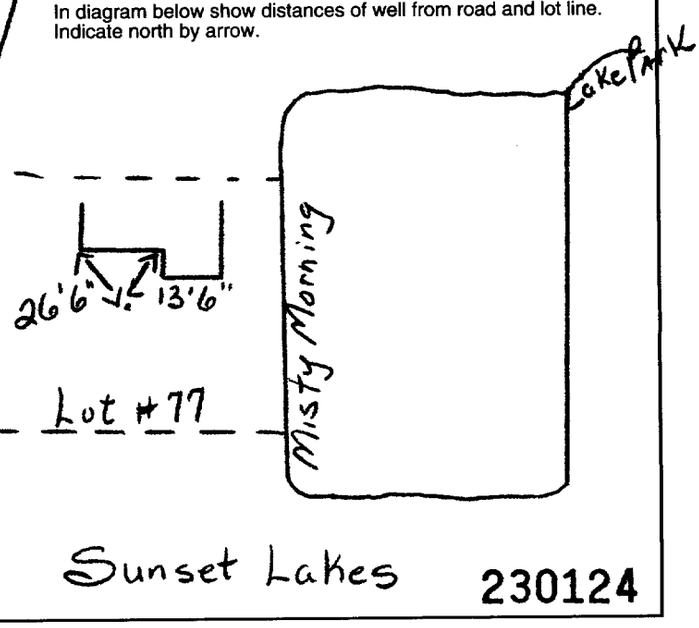
If flowing give rate (38-41)	Pump intake set at	Water at end of test (42)
GPM	feet	☐ Clear ☒ Cloudy

Recommended pump type	Recommended pump setting (43-45)	Recommended pump rate (46-49)
☐ Shallow ☒ Deep	100 feet	5 GPM

50-53

LOCATION OF WELL

In diagram below show distances of well from road and lot line.
Indicate north by arrow.



230124

FINAL STATUS OF WELL (54)

1 ☒ Water supply 2 ☐ Observation well 3 ☐ Test hole 4 ☐ Recharge well
5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering
9 ☐ Unfinished 10 ☐ Replacement well

WATER USE (55-56)

1 ☒ Domestic 2 ☐ Stock 3 ☐ Irrigation 4 ☐ Industrial
5 ☐ Commercial 6 ☐ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning
9 ☐ Not use 10 ☐ Other

METHOD OF CONSTRUCTION (57)

1 ☐ Cable tool 2 ☐ Rotary (conventional) 3 ☐ Rotary (reverse) 4 ☒ Rotary (air)
5 ☒ Air percussion 6 ☐ Boring 7 ☐ Diamond 8 ☐ Jetting
9 ☐ Driving 10 ☐ Digging 11 ☐ Other

Name of Well Contractor	Well Contractor's Licence No.
Capital Water Supply Ltd	1558

Address
Box 490, Stittsville, ON. K2S 1A6

Name of Well Technician	Well Technician's Licence No.
S. Miller	T0097

Signature of Technician/Contractor	Submission date
K Kawano	day 9 mo 06 yr 01

MINISTRY USE ONLY

Data source (58)	Contractor (59-62)	Date received (63-68)	80
	1558	JUL 18 2001	

Date of inspection	Inspector

Remarks: CSS.ES1

0506 (07/00) Front Form 9

2 - MINISTRY OF THE ENVIRONMENT COPY

Ontario Ministry of the Environment

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 (1 2) **1532048** Municipality 15009 (10 14) Con. CON (15 22 23 24) 04

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot (25-27)
Ottawa Carleton	Osgoode	4	1

Owner's surname (28-47)	First Name	Address	Date completed (48-53)
Sienna Homes		60 Robinson Road Nepean, Ontario K2H 5Y8	12 day 6 month 01 year

21 (1 2) UTM Zone (10) Easting (12-17) Northing (18-24) RC (25) Elevation (26) RC (30) Basin Code (31) ii iii iv (47)

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
Brown	Sand			0	8
Gray	Clay			8	24
Gray	Sand & Gravel			24	38
Gray	Limestone			38	100
	Note:	There was 2 feet of casing left above ground			
		at time of drilling			

31 (10 14 15 21 32 43 54 65 75 80)

32

41 WATER RECORD

Water found at - feet	Kind of water
92	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
NOT TESTED	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4	1 ☒ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.188	0	42
6 1/8	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		42	100
	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			

60

SCREEN

Sizes of opening (Slot No.) (31-33)	Diameter (34-38) inches	Length (39-40) feet
Material and type	Depth at top of screen (41-44) feet	30

61 PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
42 (10-13)	0 (14-17)	Grouted - Cement &
(18-21)	(22-25)	Bentonite (4)
(26-29)	(30-33)	80

71 PUMPING TEST

Pumping test method (10): 1 ☒ Pump 2 ☐ Bailer

Pumping rate (11-14): 15 GPM

Duration of pumping (15-16): 1 Hours ..... (17-18) Mins

25 Water levels during: 1 ☒ Pumping 2 ☐ Recovery

Static level (19-21)	Water level end of pumping (22-24)	15 minutes (26-28)	30 minutes (29-31)	45 minutes (32-34)	60 minutes (35-37)
4'6" feet	25 feet	95 feet	60 feet	60 feet	25 feet

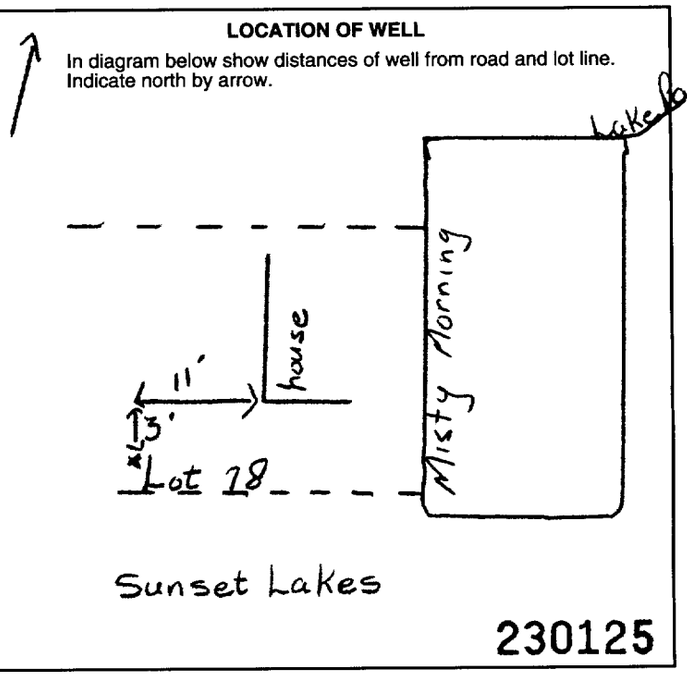
If flowing give rate (38-41)	Pump intake set at	Water at end of test (42)
GPM	feet	☐ Clear ☒ Cloudy

Recommended pump type	Recommended pump setting (43-45)	Recommended pump rate (46-49)
☐ Shallow ☒ Deep	60 feet	5 GPM

50-53

LOCATION OF WELL

In diagram below show distances of well from road and lot line.
Indicate north by arrow.



230125

FINAL STATUS OF WELL (54)

1 ☒ Water supply
2 ☐ Observation well
3 ☐ Test hole
4 ☐ Recharge well
5 ☐ Abandoned, insufficient supply
6 ☐ Abandoned, poor quality
7 ☐ Abandoned (Other)
8 ☐ Dewatering
9 ☐ Unfinished
10 ☐ Replacement well

WATER USE (55-56)

1 ☒ Domestic
2 ☐ Stock
3 ☐ Irrigation
4 ☐ Industrial
5 ☐ Commercial
6 ☐ Municipal
7 ☐ Public supply
8 ☐ Cooling & air conditioning
9 ☐ Not use
10 ☐ Other .....

METHOD OF CONSTRUCTION (57)

1 ☐ Cable tool
2 ☐ Rotary (conventional)
3 ☐ Rotary (reverse)
4 ☒ Rotary (air ☒ mud)
5 ☒ Air percussion
6 ☐ Boring
7 ☐ Diamond
8 ☐ Jetting
9 ☐ Driving
10 ☐ Digging
11 ☐ Other .....

Name of Well Contractor	Well Contractor's Licence No.
Capital Water Supply Ltd.	1558
Address	
P.O. Box 490 Stittsville, Ontario K2S 1A6	
Name of Well Technician	**Well Technician's Licence No.**
S. Miller	T0097
Signature of Technician/Contractor	**Submission date** day 13 mo 06 yr 01

MINISTRY USE ONLY

Data source (58)	Contractor (59-62)	Date received (63-68) (80)
	1558	JUL 18 2001
Date of inspection	Inspector	
Remarks		CSS.ES1

0506 (07/00) Front Form 9

2 - MINISTRY OF THE ENVIRONMENT COPY

Ontario Ministry of the Environment

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 (1 2) **1532211** Municipality 15002 (10 14) Con. CON (15 22 23 24) 03

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot (25-27)
Ottawa Carleton	Gloucester	3	30

[redacted]

Address: 5668 Island Park Dr., Manotick, ON/K4M 1J3

Date completed (48-53): 31 (day) 08 (month) 01 (year)

21 (1 2) UTM (10) Northing (12 17 18 24) RC (25) Elevation (26) RC (30) Basin Code (31) ii iii iv (47)

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
Brown	sandy		dry	0	5
Grey	sandy		wet	5	9
Grey	clay			9	25
Grey	gravel & boulders		packed	25	48
Grey & white	Sandstone			48	140

31 (10 14 15 21) 32 (32 43 54 65 75 80)

41 WATER RECORD

Water found at - feet	Kind of water
135 (10-13)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas (14) NOT TESTED
(15-18)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas (19)
(20-23)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas (24)
(25-28)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas (29)
(30-33)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas (34) (60)

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4 (11)	1 ☒ Steel (12) 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.188	0	54 (13-16)
(17-18) 6 1/8	1 ☐ Steel (19) 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		54	140 (20-23)
(24-25)	1 ☐ Steel (26) 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			(27-30)

SCREEN

Sizes of opening (Slot No.) (31-33)	Diameter (34-38) inches	Length (39-40) feet
Material and type	Depth at top of screen (41-44) feet	(30)

61 PLUGGING & SEALING RECORD

☐ Annular space ☐ Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
(10-13)	(14-17)	
(18-21)	(22-25)	
(26-29)	(30-33) (80)	

71 PUMPING TEST

Pumping test method (10): 1 ☒ Pump 2 ☐ Bailer

Pumping rate (11-14): 20 GPM

Duration of pumping (15-16): 1 Hours (17-18) Mins

Static level	Water level end of pumping	Water levels during (25): 1 ☒ Pumping 2 ☐ Recovery			
(19-21) 22'4" feet	(22-24) 50 feet	15 minutes (26-28) 135 feet	30 minutes (29-31) 120 feet	45 minutes (32-34) 100 feet	60 minutes (35-37) 50 feet

If flowing give rate (38-41): GPM

Pump intake set at: feet

Water at end of test (42): ☐ Clear ☒ Cloudy

Recommended pump type: ☐ Shallow ☒ Deep

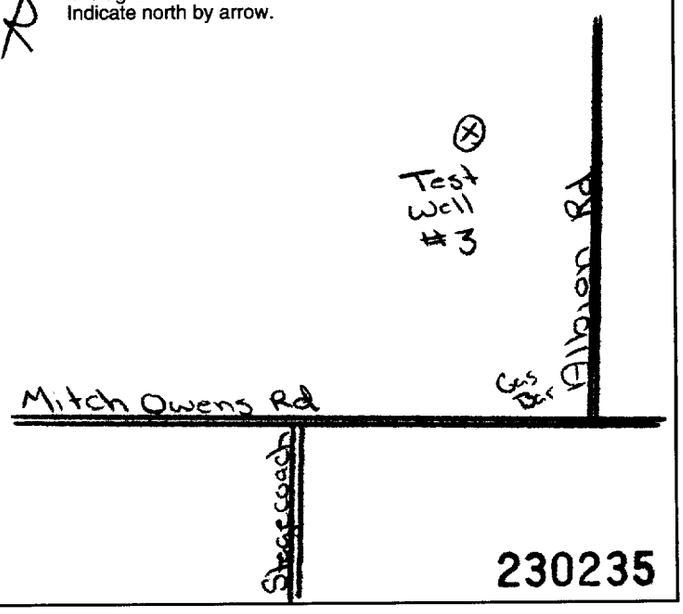
Recommended pump setting (43-45): 100 feet

Recommended pump rate (46-49): 5 GPM

(50-53)

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.



230235

FINAL STATUS OF WELL (54)

1 ☒ Water supply 2 ☐ Observation well 3 ☐ Test hole 4 ☐ Recharge well 5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering 9 ☐ Unfinished 10 ☐ Replacement well

WATER USE (55-56)

1 ☒ Domestic 2 ☐ Stock 3 ☐ Irrigation 4 ☐ Industrial 5 ☐ Commercial 6 ☐ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning 9 ☐ Not use 10 ☐ Other

METHOD OF CONSTRUCTION (57)

1 ☐ Cable tool 2 ☐ Rotary (conventional) 3 ☐ Rotary (reverse) 4 ☒ Rotary (air) 5 ☒ Air percussion 6 ☐ Boring 7 ☐ Diamond 8 ☐ Jetting 9 ☐ Driving 10 ☐ Digging 11 ☐ Other

Name of Well Contractor	Well Contractor's Licence No.
Capital Water Supply Ltd.	1558
Address: Box 490, Stittsville, ON. K2S 1A6	
Name of Well Technician: S. Miller	Well Technician's Licence No.: T0097
Signature of Technician/Contractor	Submission date: day 31 mo 8 yr 01

MINISTRY USE ONLY

Data source (58)	Contractor (59-62)	Date received (63-68) (80)
	1558	SEP 17 2001
Date of inspection	Inspector	
Remarks: OBS.ES1		

2 - MINISTRY OF THE ENVIRONMENT COPY

0506 (07/00) Front Form 9

Ontario Ministry of the Environment

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 (1 2) **1532213** Municipality 15002 (10 14) Con. CON (15 22 23 24) 03

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot (25-27)
Ottawa Carleton	Gloucester	3	30

[redacted]

Address: 5668 Island ParkDr. Manotick ON. K4M 1J3

Date completed (48-53): 30 day 08 month 01 year

21 (1 2) UTM (10) Northing (12 17) (18 24) RC (25) Elevation (26) RC (30) Basin Code (31 47) ii iii iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
Brown	sand			0	4
Grey	sand			4	8
Grey	sand & clay			8	25
Grey	limestone			25	75
	Note: casing was left 18" above ground level at time of drilling.				

31 (10 14 15 21) 32 (32 43 54 65 75 80)

41 WATER RECORD

Water found at - feet	Kind of water
59 (10-13)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (14)
62 (15-18) NOT TESTED	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (19)
(20-23)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (24)
(25-28)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (29)
(30-33)	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 6 ☐ Gas (34) 60

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4	1 ☒ Steel (12) 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	.188	0	32 (13-16)
(17-18) 6 1/8	1 ☐ Steel (19) 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		32	75 (20-23)
(24-25)	1 ☐ Steel (26) 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic			(27-30)

SCREEN

Sizes of opening (Slot No.) (31-33)	Diameter (34-38) inches	Length (39-40) feet
Material and type	Depth at top of screen (41-44) feet	(30)

61 PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
32 (10-13)	0 (14-17)	Grouted-bentonite & cement -mix
(18-21)	(22-25)	
(26-29)	(30-33) (80)	

71 PUMPING TEST

Pumping test method (10): 1 ☒ Pump 2 ☐ Bailer

Pumping rate (11-14): 30 GPM

Duration of pumping (15-16): 1 Hours (17-18) Mins

Water levels during (25): 1 ☒ Pumping 2 ☐ Recovery

Static level (19-21)	Water level end of pumping (22-24)	15 minutes (26-28)	30 minutes (29-31)	45 minutes (32-34)	60 minutes (35-37)
6 feet	20 feet	20 feet	20 feet	20 feet	20 feet

If flowing give rate (38-41): GPM

Pump intake set at: feet

Water at end of test (42): ☐ Clear ☒ Cloudy

Recommended pump type: ☐ Shallow ☒ Deep

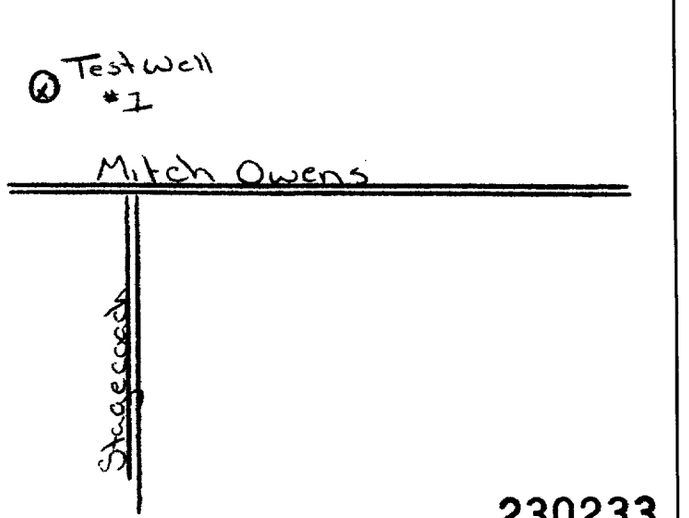
Recommended pump setting (43-45): 30 feet

Recommended pump rate (46-49): 5 GPM

(50-53)

LOCATION OF WELL

In diagram below show distances of well from road and lot line.
Indicate north by arrow.



230233

FINAL STATUS OF WELL (54)

1 ☒ Water supply 2 ☐ Observation well 3 ☐ Test hole 4 ☐ Recharge well
5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering
9 ☐ Unfinished 10 ☐ Replacement well

WATER USE (55-56)

1 ☒ Domestic 2 ☐ Stock 3 ☐ Irrigation 4 ☐ Industrial
5 ☐ Commercial 6 ☐ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning
9 ☐ Not use 10 ☐ Other

METHOD OF CONSTRUCTION (57)

1 ☐ Cable tool 2 ☐ Rotary (conventional) 3 ☐ Rotary (reverse) 4 ☒ Rotary (air)
5 ☒ Air percussion 6 ☐ Boring 7 ☐ Diamond 8 ☐ Jetting
9 ☐ Driving 10 ☐ Digging 11 ☐ Other

Name of Well Contractor	Well Contractor's Licence No.
Capital Water Supply Ltd.	1558
Address: Box 490, Stittsville, ON. K2S 1A6	
Name of Well Technician: S. Miller	Well Technician's Licence No.: T0097
Signature of Technician/Contractor	Submission date: day 31 mo 8 yr 01

MINISTRY USE ONLY

Data source (58)	Contractor (59-62)	Date received (63-68) (80)
	1558	SEP 17 2001
Date of inspection	Inspector	
Remarks: CSS.EST		

0506 (07/00) Front Form 9

2 - MINISTRY OF THE ENVIRONMENT COPY

Ontario Ministry of the Environment

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

1532594

Municipality 15009 Con CON 04
Plan 4M861 Sub-lot 49.

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
Ottawa Carleton	Osgoode	4	1

Owner's surname	First Name	Address	Date completed
Picasso Homes		Greely, ONT	20 day 11 month 01 year

Zone | Easting | Northing | RC | Elevation | RC | Basin Code | ii | iii | iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
black	earth	peat moss		0	6
grey	[redacted] Sand			6	34
grey	limestone			34	61

41 WATER RECORD

Water found at - feet	Kind of water
49	1 Fresh 2 Salty — NO
51	1 Fresh 2 Salty
53	1 Fresh 2 Salty — RSED
54	1 Fresh 2 Salty
	1 Fresh 2 Salty

Kind of water: 3 Sulphur 4 Minerals 5 Gas 6

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4	1 Steel 2 Galvanized 3 Concrete 4 Open hole 5 Plastic	188	0	42 1/2
8 3/4	1 Steel 2 Galvanized 3 Concrete 4 Open hole 5 Plastic		0	40 1/2
6	1 Steel 2 Galvanized 3 Concrete 4 Open hole 5 Plastic		40 1/2	61

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet

Material and type | Depth at top of screen feet

61 PLUGGING & SEALING RECORD

Annular space — Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
2	42	Bentonite grout

PUMPING TEST

71 Pumping test method: 1 Pump 2 Bailer

Pumping rate GPM	Duration of pumping Hours	Mins
28	1	

25 Water levels during: 1 Pumping 2 Recovery

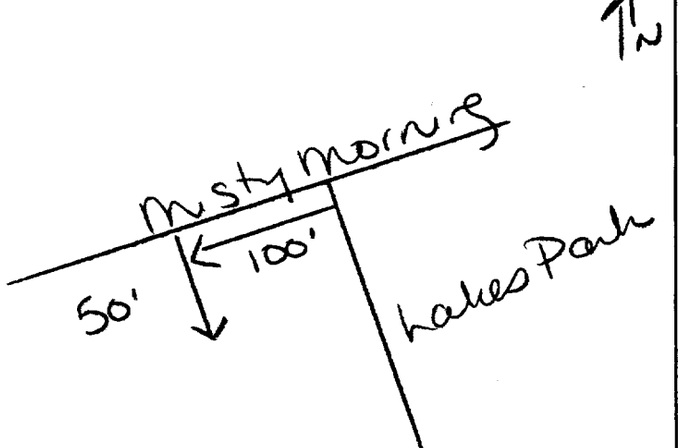
Static level feet	Water level end of pumping feet	15 minutes feet	30 minutes feet	45 minutes feet	60 minutes feet
4	50	4	4	4	4

If flowing give rate GPM	Pump intake set at feet	Water at end of test: Clear / Cloudy

Recommended pump type	Recommended pump setting feet	Recommended pump rate GPM
Shallow / Deep	50	28

LOCATION OF WELL

In diagram below show distances of well from road and lot line. Indicate north by arrow.



232829

FINAL STATUS OF WELL

1 Water supply; 2 Observation well; 3 Test hole; 4 Recharge well; 5 Abandoned, insufficient supply; 6 Abandoned, poor quality; 7 Abandoned (Other); 8 Dewatering; 9 Unfinished; 10 Replacement well

WATER USE

1 Domestic; 2 Stock; 3 Irrigation; 4 Industrial; 5 Commercial; 6 Municipal; 7 Public supply; 8 Cooling & air conditioning; 9 Not use; 10 Other

METHOD OF CONSTRUCTION

1 Cable tool; 2 Rotary (conventional); 3 Rotary (reverse); 4 Rotary (air); 5 Air percussion; 6 Boring; 7 Diamond; 8 Jetting; 9 Driving; 10 Digging; 11 Other

Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Ltd	1119

Address	
RR#2 Jasper, ONT	

Name of Well Technician	Well Technician's Licence No.
Shannon Purcell	T2122

Signature of Technician/Contractor	Submission date
	11 day 12 mo 01 yr

MINISTRY USE ONLY

Data source	Contractor	Date received
	1119	JAN 08 2002

Date of inspection | Inspector

Remarks: CSS.ES2

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Ontario **Ministry of the Environment**

The Ontario Water Resources Act

WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 — 1533042

Municipality 15001 — Con. CON — 04

Plan 4M1123 — Sublot 16

County or District	Township/Borough/City/Town/Village	Con	block	tract	survey, etc.	Lot
Ottawa - Carleton	Osgoode	4				1 1/2

[redacted]

Address: Greely, Ont

Date completed: 10 day 07 month 02 year

21 — UTM — Northing — RC — Elevation — RC — Basin Code — ii — iii — iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
	Sand	boulders		0	29
grey	fractured limestone			29	34
"	limestone			34	102

31

32

41 WATER RECORD

Water found at - feet	Kind of water
50	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
61	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas — NOT USED
72	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
85	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas

60

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4	1 ☒ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	188	0	40
9 3/4	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		0	38
6	1 ☐ Steel 2 ☐ Galvanized 3 ☒ Open hole 4 ☐ Concrete 5 ☐ Plastic		38	102

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet

Material and type — Depth at top of screen feet

61 PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
2	40	bentonite

71 PUMPING TEST

Pumping test method: 1 ☒ Pump 2 ☐ Bailer

Pumping rate: 25 GPM

Duration of pumping: 1 Hours 0 Mins

Static level	Water level end of pumping	Water levels during: 1 ☐ Pumping 2 ☒ Recovery			
		15 minutes	30 minutes	45 minutes	60 minutes
3 feet	70 feet	3 feet	3 feet	3 feet	3 feet

If flowing give rate: GPM

Pump intake set at: feet

Water at end of test: ☐ Clear ☒ Cloudy

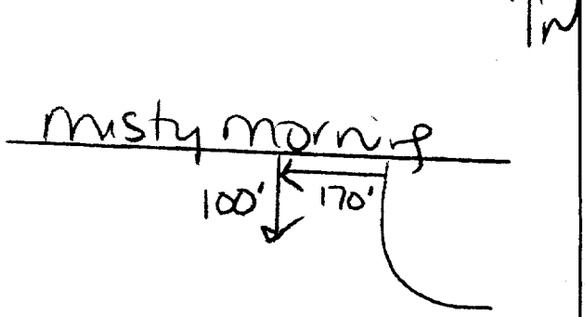
Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump setting: 70 feet

Recommended pump rate: 25 GPM

LOCATION OF WELL

In diagram below show distances of well from road and lot line.
Indicate north by arrow.



237922

FINAL STATUS OF WELL

1 ☒ Water supply 2 ☐ Observation well 3 ☐ Test hole 4 ☐ Recharge well 5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering 9 ☐ Unfinished 10 ☐ Replacement well

WATER USE

1 ☒ Domestic 2 ☐ Stock 3 ☐ Irrigation 4 ☐ Industrial 5 ☐ Commercial 6 ☐ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning 9 ☐ Not use 10 ☐ Other

METHOD OF CONSTRUCTION

1 ☐ Cable tool 2 ☐ Rotary (conventional) 3 ☐ Rotary (reverse) 4 ☐ Rotary (air) 5 ☒ Air percussion 6 ☐ Boring 7 ☐ Diamond 8 ☐ Jetting 9 ☐ Driving 10 ☐ Digging 11 ☐ Other

Name of Well Contractor: A. Rock Drilling Ltd — Well Contractor's Licence No.: 1119

Address: RR#1 Richmond, Ont

Name of Well Technician: Shannon Purcell — Well Technician's Licence No.: 12122

Signature of Technician/Contractor: [signature] — Submission date: 02 day 08 mo 02 yr

MINISTRY USE ONLY

Data source — Contractor: 1119 — Date received: AUG 09 2002

Date of inspection — Inspector

Remarks: CSS.ES2

0506 (07/00) Front Form 9

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Ontario **Ministry of the Environment**

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 **1533068**

Municipality 15009 Con. CON 04 Pt# 1122 Sblot 1

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
Ottawa Carleton	OSGOODE	4	1 1/2

Owner's surname	First Name	Address	Date completed
Picasso Homes		Greely, Ont	07 (day) 08 (month) 02 (year)

21 UTM Zone | Easting | Northing | RC | Elevation | RC | Basin Code | ii | iii | iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
	Sand	blue clay		0	35
grey	limestone			35	80

31

32

41 WATER RECORD

Water found at - feet	Kind of water
71	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas

NO WATER

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4	1 ☒ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	188	0	44
8 3/4	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		0	42
6	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		42	80

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet

Material and type	Depth at top of screen feet

61 PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
2	44	bentonite

71 PUMPING TEST

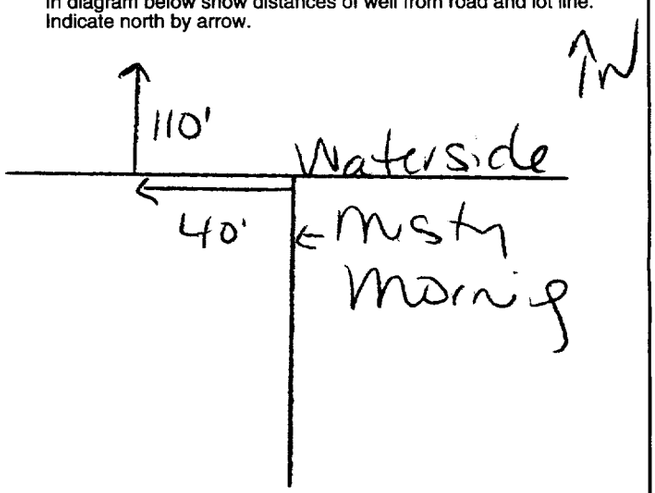
Pumping test method: 1 ☒ Pump 2 ☐ Bailer
Pumping rate: 30 GPM
Duration of pumping: 1 Hours Mins

Static level	Water level end of pumping	Water levels during: 1 ☐ Pumping ☒ Recovery			
		15 minutes	30 minutes	45 minutes	60 minutes
8 feet	70 feet	8 feet	8 feet	8 feet	8 feet

If flowing give rate: GPM
Pump intake set at: feet
Water at end of test: ☐ Clear ☒ Cloudy
Recommended pump type: ☐ Shallow ☒ Deep
Recommended pump setting: 70 feet
Recommended pump rate: 30 GPM

LOCATION OF WELL

In diagram below show distances of well from road and lot line.
Indicate north by arrow.



248069

FINAL STATUS OF WELL

1 ☒ Water supply 2 ☐ Observation well 3 ☐ Test hole 4 ☐ Recharge well 5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering 9 ☐ Unfinished 10 ☐ Replacement well

WATER USE

1 ☒ Domestic 2 ☐ Stock 3 ☐ Irrigation 4 ☐ Industrial 5 ☐ Commercial 6 ☐ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning 9 ☐ Not use 10 ☐ Other

METHOD OF CONSTRUCTION

1 ☐ Cable tool 2 ☐ Rotary (conventional) 3 ☐ Rotary (reverse) 4 ☐ Rotary (air) 5 ☒ Air percussion 6 ☐ Boring 7 ☐ Diamond 8 ☐ Jetting 9 ☐ Driving 10 ☐ Digging 11 ☐ Other

Name of Well Contractor	Well Contractor's Licence No.
Arrol Drilling Ltd	1119
Address	
RR#1 Richmond Ont	
Name of Well Technician	**Well Technician's Licence No.**
Shannon Purcell	TA102
Signature of Technician/Contractor	**Submission date**
	23 08 02 (day mo yr)

MINISTRY USE ONLY

Data source	Contractor	Date received
	1119	AUG 27 2002
Date of inspection	Inspector	
Remarks		CSS.ES2

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Ontario **Ministry of the Environment**

The Ontario Water Resources Act

WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

11 — 1533110

Municipality 5009 Con. CON OH

Plan 4M937 Sub lot 69

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
Ottawa Carleton	Osgoode	4	152

[redacted]

Address: Greely, Ont

Date completed: 21 day 08 month 02 year

21 — UTM — Northing — RC — Elevation — RC — Basin Code — ii — iii — iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
	Sandy clay			0	41
grey	Limestone			41	121
Grey	Sandstone			121	160

31

32

41 WATER RECORD

Water found at - feet	Kind of water
150	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas 6 ☐
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas 6 ☐
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas 6 ☐
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas 6 ☐
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas 6 ☐

NO 150

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6¼	1 ☑ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	188	0	50
8 3/4	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☑ Open hole 5 ☐ Plastic		0	48
6	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☑ Open hole 5 ☐ Plastic		48	160

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet

Material and type | Depth at top of screen feet

61 PLUGGING & SEALING RECORD

☑ Annular space ☐ Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
2	50	bentonite

71 PUMPING TEST

Pumping test method: 1 ☑ Pump 2 ☐ Bailer

Pumping rate: 7 GPM

Duration of pumping: 1 Hours Mins

Water levels during: 1 ☐ Pumping ☑ Recovery

Static level	Water level end of pumping	15 minutes	30 minutes	45 minutes	60 minutes
13 feet	150 feet	65 feet	13 feet	13 feet	13 feet

If flowing give rate: GPM

Pump intake set at: feet

Water at end of test: ☐ Clear ☑ Cloudy

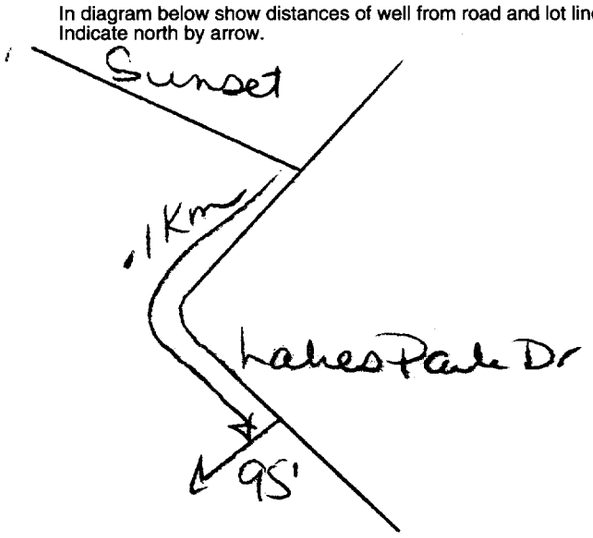
Recommended pump type: ☐ Shallow ☑ Deep

Recommended pump setting: 150 feet

Recommended pump rate: 7 GPM

LOCATION OF WELL

In diagram below show distances of well from road and lot line.
Indicate north by arrow.



248094

FINAL STATUS OF WELL

1 ☑ Water supply 2 ☐ Observation well 3 ☐ Test hole 4 ☐ Recharge well 5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering 9 ☐ Unfinished 10 ☐ Replacement well

WATER USE

1 ☑ Domestic 2 ☐ Stock 3 ☐ Irrigation 4 ☐ Industrial 5 ☐ Commercial 6 ☐ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning 9 ☐ Not use 10 ☐ Other

METHOD OF CONSTRUCTION

1 ☐ Cable tool 2 ☐ Rotary (conventional) 3 ☐ Rotary (reverse) 4 ☐ Rotary (air) 5 ☑ Air percussion 6 ☐ Boring 7 ☐ Diamond 8 ☐ Jetting 9 ☐ Driving 10 ☐ Digging 11 ☐ Other

Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Ltd	1119
Address: RR#1 Richmond, Ont	
Name of Well Technician: Shannon Russell	Well Technician's Licence No.: 10122
Signature of Technician/Contractor	Submission date: 09 day 05 mo 02 yr

MINISTRY USE ONLY

Data source	Contractor	Date received
	1119	SEP 16 2002
Date of inspection	Inspector	
Remarks		

CSS.ES2

0506 (07/00) Front Form 9

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Ontario Ministry of the Environment

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

1533111

Municipality 1500 09 Con. CON 04

Plan 4M1123 Sublot 3

County or District	Township/Borough/City/Town/Village	Con block tract survey, etc.	Lot
Ottawa Carleton	Osgoode	4	1 & 2

Owner's surname	First Name	Address	Date completed
Picasso	Homes	Greely	21 day 08 month 02 year

Zone | Easting | Northing | RC | Elevation | RC | Basin Code | ii | iii | iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
	Sand	blue clay		0	36
grey	Limestone			36	111
Grey	Sandstone			111	140

41 WATER RECORD

Water found at - feet	Kind of water
133	1 ☒ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4	1 ☒ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	188	0	44
8 3/4	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		0	42
6	1 ☐ Steel 2 ☐ Galvanized 3 ☒ Concrete 4 ☒ Open hole 5 ☐ Plastic		42	140

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet

Material and type | Depth at top of screen feet

61 PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at - feet From	Depth set at - feet To	Material and type (Cement grout, bentonite, etc.)
2	44	~~Cement~~ bentonite

71 PUMPING TEST

Pumping test method: ☒ 1 Pump ☐ 2 Bailer

Pumping rate: 15 GPM

Duration of pumping: 1 Hours ... Mins

Static level	Water level end of pumping	Water levels during: ☐ 1 Pumping ☒ 2 Recovery			
		15 minutes	30 minutes	45 minutes	60 minutes
12 feet	120 feet	12 feet	12 feet	12 feet	12 feet

If flowing give rate: ... GPM

Pump intake set at: ... feet

Water at end of test: ☐ Clear ☒ Cloudy

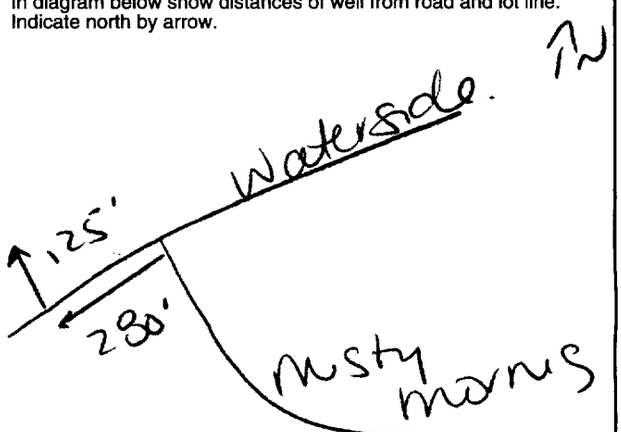
Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump setting: 120 feet

Recommended pump rate: 15 GPM

LOCATION OF WELL

In diagram below show distances of well from road and lot line.
Indicate north by arrow.



248092

FINAL STATUS OF WELL

54

1 ☒ Water supply
2 ☐ Observation well
3 ☐ Test hole
4 ☐ Recharge well
5 ☐ Abandoned, insufficient supply
6 ☐ Abandoned, poor quality
7 ☐ Abandoned (Other)
8 ☐ Dewatering
9 ☐ Unfinished
10 ☐ Replacement well

WATER USE

55-56

1 ☒ Domestic
2 ☐ Stock
3 ☐ Irrigation
4 ☐ Industrial
5 ☐ Commercial
6 ☐ Municipal
7 ☐ Public supply
8 ☐ Cooling & air conditioning
9 ☐ Not use
10 ☐ Other

METHOD OF CONSTRUCTION

57

1 ☐ Cable tool
2 ☐ Rotary (conventional)
3 ☐ Rotary (reverse)
4 ☐ Rotary (air)
5 ☒ Air percussion
6 ☐ Boring
7 ☐ Diamond
8 ☐ Jetting
9 ☐ Driving
10 ☐ Digging
11 ☐ Other

Name of Well Contractor	Well Contractor's Licence No.
A Rock Drilling Ltd	1119
Address: RR#1 Richmond, Ont	
Name of Well Technician: Shannon Purcell	Well Technician's Licence No. 1212
Signature of Technician/Contractor	Submission date: 09 day 09 mo 02 yr

MINISTRY USE ONLY

Data source 58	Contractor 59-62: 1119	Date received 63-68: SEP 18 2002	80
Date of inspection	Inspector		
Remarks			

CSS ES2

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0506 (07/00) Front Form 9

Ontario Ministry of the Environment

The Ontario Water Resources Act
WATER WELL RECORD

Print only in spaces provided.
Mark correct box with a checkmark, where applicable.

1533215

Municipality 15009 Con. CON 04

Plan 4M123 Sub Lot 5

County or District: Ottawa Carleton

Township/Borough/City/Town/Village: OSGoode

Con block tract survey, etc.: 4

Lot: 1 2

Address: [redacted] Greely, Ont

Date completed: 12 day 09 month 02 year

Northing RC Elevation RC Basin Code ii iii iv

LOG OF OVERBURDEN AND BEDROCK MATERIALS (see instructions)

General colour	Most common material	Other materials	General description	Depth - feet From	Depth - feet To
	Sand	blue clay, boulders		0	32
grey	Limestone			32	101

41 WATER RECORD

Water found at - feet	Kind of water
51	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
64	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
68	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas
	1 ☐ Fresh 2 ☐ Salty 3 ☐ Sulphur 4 ☐ Minerals 5 ☐ Gas

51 CASING & OPEN HOLE RECORD

Inside diam inches	Material	Wall thickness inches	Depth - feet From	Depth - feet To
6 1/4	1 ☒ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☐ Open hole 5 ☐ Plastic	188	0	44
8 3/4	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		0	42
6	1 ☐ Steel 2 ☐ Galvanized 3 ☐ Concrete 4 ☒ Open hole 5 ☐ Plastic		42	101

SCREEN

Sizes of opening (Slot No.)	Diameter inches	Length feet

Material and type:

Depth at top of screen feet:

61 PLUGGING & SEALING RECORD

☒ Annular space ☐ Abandonment

Depth set at - feet From	To	Material and type (Cement grout, bentonite, etc.)
2	44	bentonite

71 PUMPING TEST

Pumping test method: 1 ☒ Pump 2 ☐ Bailer

Pumping rate: 23 GPM

Duration of pumping: Hours Mins

Water levels during: 1 ☐ Pumping 2 ☒ Recovery

Static level	Water level end of pumping	15 minutes	30 minutes	45 minutes	60 minutes
5 feet	65 feet	5 feet	5 feet	5 feet	5 feet

If flowing give rate: GPM

Pump intake set at: feet

Water at end of test: ☐ Clear ☒ Cloudy

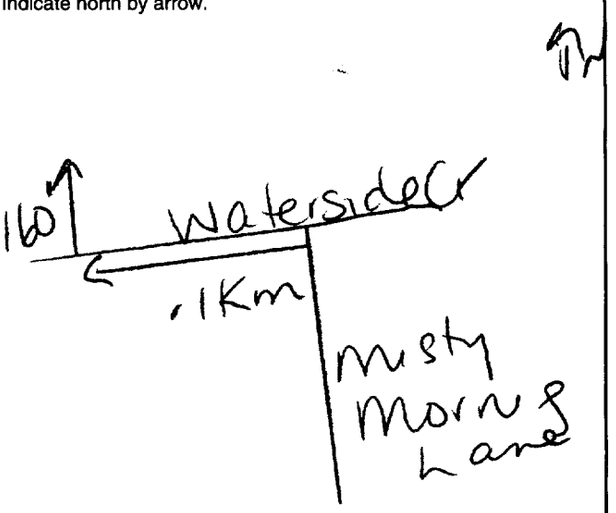
Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump setting: 65 feet

Recommended pump rate: 23 GPM

LOCATION OF WELL

In diagram below show distances of well from road and lot line.
Indicate north by arrow.



248146

FINAL STATUS OF WELL

1 ☒ Water supply 2 ☐ Observation well 3 ☐ Test hole 4 ☐ Recharge well 5 ☐ Abandoned, insufficient supply 6 ☐ Abandoned, poor quality 7 ☐ Abandoned (Other) 8 ☐ Dewatering 9 ☐ Unfinished 10 ☐ Replacement well

WATER USE

1 ☒ Domestic 2 ☐ Stock 3 ☐ Irrigation 4 ☐ Industrial 5 ☐ Commercial 6 ☐ Municipal 7 ☐ Public supply 8 ☐ Cooling & air conditioning 9 ☐ Not use 10 ☐ Other

METHOD OF CONSTRUCTION

1 ☐ Cable tool 2 ☐ Rotary (conventional) 3 ☐ Rotary (reverse) 4 ☐ Rotary (air) 5 ☒ Air percussion 6 ☐ Boring 7 ☐ Diamond 8 ☐ Jetting 9 ☐ Driving 10 ☐ Digging 11 ☐ Other

Name of Well Contractor: Arkon Drilling Ltd — Well Contractor's Licence No.: 1119

Address: RR#1 Richmond, Ont

Name of Well Technician: Shannon Purcell — Well Technician's Licence No.: T2122

Signature of Technician/Contractor: [signature] — Submission date: 27 day 09 mo 02 yr

MINISTRY USE ONLY

Data source: Contractor: 1119 — Date received: OCT 10 2002

Date of inspection: Inspector:

Remarks: CSS.ES2

0506 (07/00) Front Form 9

2 - MINISTRY OF THE ENVIRONMENT COPY

Ontario Ministry of the Environment

Well Tag Number (Place sticker and print number below)
A025657
A025657

Well Record
Regulation 903 Ontario Water Resources Act

page ___ of ___

Instructions for Completing Form

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- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Management Coordinator at 416-235-6203.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only
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Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR,Lot,Concession)
Patter[illegible] Homes		R.R. #2

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
Lanark	Ashton	Ontario	K0A 1B0	613 229 5889

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
Ottawa Carleton	Gloucester	29/30	4

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
Lot 40 Emerald Creek	Manotick	

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation:
	83	18	453104	5013591	Garmin	☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
brown	sandy soil	stones	fill	0	1.21
brown	sand		dry	1.21	3.04
gray	sand		wet	3.04	4.26
gray	clay		packed	4.26	10.05
gray	sand & gravel		packed	10.05	14.62
gray & white	sandstone		very hard	14.62	52.72

Hole Diameter

Depth From	Metres To	Diameter Centimetres
0	16.45	22.75
16.45	52.72	15.23

Water Record

Water found at ___ Metres / Kind of Water

___ m	☐ Fresh	☐ Sulphur	☐ Gas ☐ Salty ☐ Minerals
49.07			
___ m	☐ Fresh	☐ Sulphur	☐ Gas ☐ Salty ☐ Minerals
NOT TESTED			
___ m	☐ Fresh	☐ Sulphur	☐ Gas ☐ Salty ☐ Minerals

After test of well yield, water was
☒ Clear and sediment free
☐ Other, specify

Chlorinated ☒ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
15.86	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	0.48	+.45	16.45
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
15.23	☒ Open hole		16.54	52.72

Test of Well Yield

Pumping test method: submersible

	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Pump intake set at - (metres) 30.47	Static Level	5.00		
Pumping rate - (litres/min) 54.6	1	5.68	1	5.60
Duration of pumping 6 hrs + ___ min	2	5.83	2	5.62
Final water level end of pumping 6.53 metres	3	5.89	3	5.62
Recommended pump type. ☐ Shallow ☐ Deep	4	5.93	4	5.59
Recommended pump depth 22.85 metres	5	5.96	5	5.56
Recommended pump rate. (litres/min) 45.5	10	6.06	10	5.46
If flowing give rate - (litres/min)	15	6.13	15	5.37
	20	6.19	20	5.35
	25	6.23	25	5.33
If pumping discontinued, give reason.	30	6.27	30	5.31
	40	6.32	40	5.30
	50	6.36	50	5.30
	60	6.38	60	5.30

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
16.45	0	Grouted Bentonite Slurry	.964m3

Method of Construction

☐ Cable Tool ☒ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☒ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

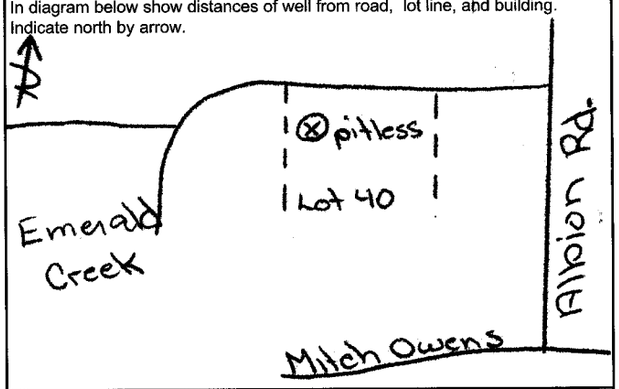
☒ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☒ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No. Z 39229

Date Well Completed YYYY MM DD: 2005 12 05

Was the well owner's information package delivered? ☒ Yes ☐ No

Date Delivered YYYY MM DD: 2005 12 06

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
Capital Water Supply Ltd.	1558

Business Address (street name, number, city etc.): Box 490 Stittsville, Ontario K2S 1A6

Name of Well Technician (last name, first name)	Well Technician's Licence No.
Miller, Stephen	T0097

Signature of Technician/Contractor: x [signature]

Date Submitted YYYY MM DD: 2005 12 06

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Data Source	Contractor
	1558
Date Received JAN 13 2006 DD	Date of Inspection YYYY MM DD
Remarks	Well Record Number

0506E (09/03) Contractor's Copy ☐ Ministry's Copy ☐ Well Owner's Copy ☐

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Ontario Ministry of the Environment

Well Ta A043546 nber below)

A043546

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

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[redacted]

Address of Well Location (County/District/Municipality): Gloucester

Township: Rideau Front

Lot: Pt Lt 29 & 30

Concession: 3

RR#/Street Number/Name: #528

City/Town/Village: Tullamore

Site/Compartment/Block/Tract etc.: Gloucester Plan 4M-1275 Pt Lt 23

GPS Reading: NAD 8 3 | Zone 18 | Easting 457890 | Northing 5013460

Unit Make/Model: Magellan

Mode of Operation: ☐ Undifferentiated ☑ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To
	Sand + Gravel			0	11.58
	Limestone			11.58	27.43

Hole Diameter

Depth From	Depth To	Diameter Centimetres
0	27.43	15.23

Water Record

Water found at Metres	Kind of Water
21.03 m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: NOT TESTED
26.52 m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was: ☐ Clear and sediment free ☐ Other, specify: Cloudy NOT TESTED

Chlorinated ☑ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To
Casing				
15.88	☑ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	48	0	15.85
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
	☑ Open hole		15.24	27.43

Test of Well Yield

Pumping test method: SubPump

Pump intake set at - (metres): 21.33

Pumping rate - (litres/min): 91

Duration of pumping: 2 hrs + 0 min

Final water level end of pumping: 0.20 metres

Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump depth: 21.33 metres

Recommended pump rate: 91 (litres/min)

If flowing give rate - (litres/min): 0

If pumping discontinued, give reason.

	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Static Level		Flow		0.22
1	0.18	1	Flow	
2	0.18	2		
3	0.18	3		
4	0.19	4		
5	0.19	5		
10	0.20	10		
15	0.20	15		
20	0.21	20		
25	0.21	25		
30	0.21	30		
40	0.22	40		
50	0.22	50		
60	0.22	60		

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
15.24	12.19	Neat Cement Slurry	.1816
12.19	0	Bentonite Slurry	.490

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☑ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☒ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☒ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor: AR Rock Drilling Ltd — Well Contractor's Licence No.: 1119

Business Address (street name, number, city etc.): RR#1 Richmond Ont K0A 2Z0

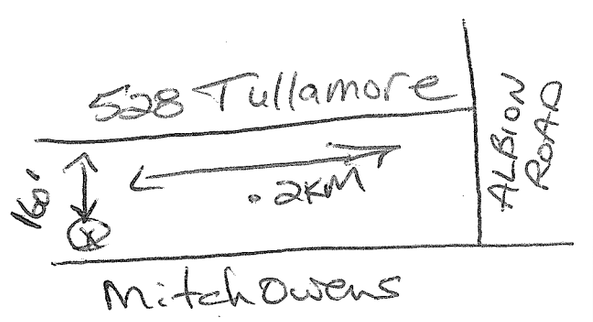
Name of Well Technician (last name, first name): Purcell Shannon — Well Technician's Licence No.: T2122

Signature of Technician/Contractor

Date Submitted: 2007 05 30

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No.: Z 55580

Date Well Completed: YYYY 2006 MM 12 DD 06

Was the well owner's information package delivered? ☒ Yes ☐ No

Date Delivered: YYYY 2006 MM 12 DD 07

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Data Source

Contractor: 1119

Date Received: YYYY APR 11 2007 MM DD

Date of Inspection: YYYY MM DD

Remarks

Well Record Number

(2006)

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Ontario Ministry of the Environment

Well Tag No. (Sticker number below) A 052490

A052490

Well Record

Regulation 903 Ontario Water Resources Act

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- Please print clearly in blue or black ink only.

Ministry Use Only

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Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR, Lot, Concession)
DR SHAQIR	ESSA	4065460251 Canada Inc 625 Gainsborough

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
	Ottawa	Ontario	K2A 2Y7	

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
Gloucester	Rideau Front	PL 29+30	3

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
#512 Tullamore	Gloucester	Plan 4M-1275 / L19

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation
	8 3	18	452755	5013393	Magellan	☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To
	Sand, Gravel, Boulders			0	13.11
	Grey Limestone			13.11	26.52
	White Sandstone			26.52	53.95

Hole Diameter

Depth From	Depth To	Diameter Centimetres
0	53.95	14.91

Water Record

Water found at Metres	Kind of Water
51.20 m	☐ Fresh ☒ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: TESTED
___ m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
___ m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was: ☐ Clear and sediment free ☐ Other, specify TESTED

Chlorinated ☒ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To
Casing				
15.88	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	.48	0	15.85
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
	☒ Open hole		15.24	53.95

Test of Well Yield

Pumping test method: SubPump

Pump intake set at (metres): 50.29

Pumping rate (litres/min): 75.80

Duration of pumping: 1 hrs 0 min

Final water level end of pumping: 14.70 metres

Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump depth: 50.29 metres

Recommended pump rate: 75.80 (litres/min)

If flowing give rate - (litres/min):

If pumping discontinued, give reason:

Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Static Level	3.70		14.70
1	6.81	1	10.00
2	8.10	2	9.4
3	8.97	3	8.38
4	9.62	4	7.80
5	10.19	5	7.40
10	11.92	10	5.70
15	13.75	15	5.30
20	13.31	20	5.2
25	13.69	25	5.8
30	13.87	30	4.65
40	14.22	40	4.33
50	14.53	50	4.23
60	14.70	60	4.00

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
15.24	12.19	Neat Cement Slurry	.227
12.19	0	Bentonite Slurry	.613

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☒ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☒ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

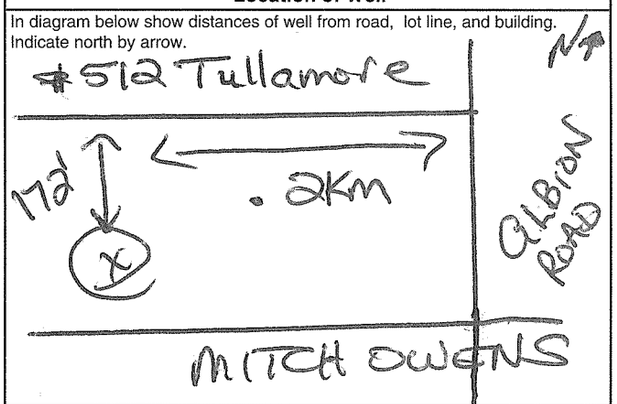
☒ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
AIR ROCK DRILLING CO LTD	1119
Business Address (street name, number, city etc.)	
RR#1 RICHMOND ONT	K0A2Z0
Name of Well Technician (last name, first name)	Well Technician's Licence No.
PURCELL SHANNON	7202
Signature of Technician/Contractor	Date Submitted YYYY MM DD
X	2007 08 31

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No.	Date Well Completed YYYY MM DD
Z 65062	2007 04 24
Was the well owner's information package delivered? ☒ Yes ☐ No	Date Delivered YYYY MM DD 2007 04 27

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Data Source	Contractor
	1119
Date Received YYYY MM DD AUG 29 2007	Date of Inspection YYYY MM DD
Remarks	Well Record Number

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Ontario Ministry of the Environment

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A055102

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

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- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

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[redacted]

Address of Well Location (County/District/Municipality): Gloucester | Township: Rideau Front | Lot: Pt Lot 30 | Concession: 3

RR#/Street Number/Name: #607 Ballycastle | City/Town/Village: Gloucester | Site/Compartment/Block/Tract etc.: Plan 4M-1275 SL38

GPS Reading: NAD 83 | Zone: 18 | Easting: 453153 | Northing: 5013539 | Unit Make/Model: Magellan | Mode of Operation: ☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To
	Sand, Boulder			0	1.22
	Sand			1.22	6.10
	Clay			6.10	15.85
	Grey Limestone			15.85	32.92
	White Sandstone			32.92	36.57

Hole Diameter

Depth From	Depth To	Diameter Centimetres
0	36.57	14.91

Water Record

Water found at Metres | Kind of Water

- 32 m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: TESTED
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: ___
- ___ m ☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: ___

After test of well yield, water was: ☐ Clear and sediment free ☐ Other, specify TESTED

Chlorinated ☒ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To
Casing				
15.88	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	.48	0	19.51
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
	☒ Open hole		18.90	36.57

Test of Well Yield

Pumping test method: Sub Pump

Pump intake set at (metres): 22

Pumping rate (litres/min): 56.78

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping: 34.32 metres

Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump depth: 32.92 metres

Recommended pump rate: 56.78 (litres/min)

If flowing give rate - (litres/min):

If pumping discontinued, give reason.

Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Static Level	4.73		34.32
1	7.25	1	29.70
2	9.18	2	27.68
3	10.80	3	25.10
4	12.25	4	23.95
5	13.48	5	22.68
10	18.84	10	16.90
15	24.00	15	10.80
20	28.60	20	8.09
25	33.74	25	6.60
30	34.32	30	5.60
40	34.33	40	4.92
50	34.32	50	4.15
60	34.32	60	

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - Metres From	Depth set at - Metres To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
18.90	15.85	Neat Cement Slurry	.227
15.85	0	Bentonite Slurry	.981

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☒ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☒ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☒ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor: AIR ROCK DRILLING CO LTD | Well Contractor's Licence No.: 1119

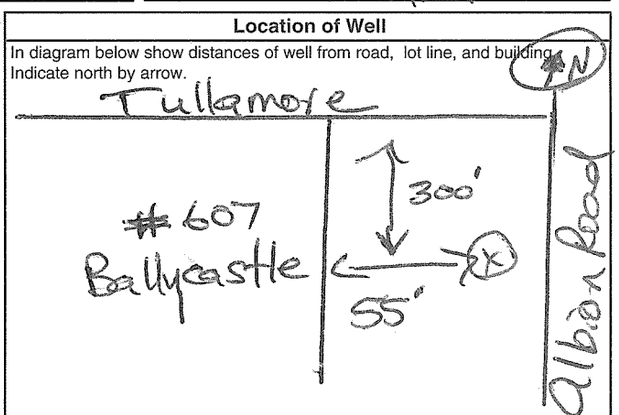
Business Address (street name, number, city etc.): RR#1 RICHMOND ONT K0A2Z0

Name of Well Technician (last name, first name): Desaulniers Ken | Well Technician's Licence No.: TA

Signature of Technician/Contractor: X [signature] | Date Submitted YYYY MM DD: 2007 08 21

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No.: Z 65079 | Date Well Completed YYYY MM DD: 2007 05 15

Was the well owner's information package delivered? ☒ Yes ☐ No | Date Delivered YYYY MM DD: 2007 05 16

Ministry Use Only

Data Source | Contractor: 1119

Date Received YYYY MM DD: AUG 29 2007 | Date of Inspection YYYY MM DD

Remarks | Well Record Number

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Ontario Ministry of the Environment

Well Tag Number (Plate number below) A 054030 A054030

Well Record

Regulation 903 Ontario Water Resources Act

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Instructions for Completing Form

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- Questions regarding completing this application can be directed to the Water Well Help Desk (Toll Free) at 1-888-396-9355.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

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Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR, Lot, Concession)
Vince Repaci	c/o B. Wilson	625 Gainsborough Ave

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
	Ottawa	Ontario	K2A 2Y7	

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
Gloucester	Rideau Front	Pt Lt 30	3

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
#524 Tullamore	Gloucester	Plan 4M-1275 Lt 22

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation
	83	18	452886	5013437	Magellan	☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To
	Sand, Gravel			0	3.35
	Blue Clay			3.35	11.58
	Gravel			11.58	13.11
	Grey Limestone			13.11	27.43
	Grey Limestone + Grey	Sandstone Mix		27.43	48.77

Hole Diameter

Depth From	Depth To	Diameter Centimetres
0	48.77	15.55

Water Record

Water found at Metres	Kind of Water	
23.47 m	☒ Fresh	☐ Sulphur
☐ Gas	☐ Salty	☐ Minerals
☐ Other:		
___ m	☐ Fresh	☐ Sulphur
☐ Gas	☐ Salty	☐ Minerals
☐ Other:		
___ m	☐ Fresh	☒ Sulphur
☐ Gas	☐ Salty	☐ Minerals
☐ Other:		

NOT TESTED

After test of well yield, water was ☐ Clear and sediment free ☐ Other, specify NOT TESTED

Chlorinated ☒ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To
Casing				
15.88	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	.48	0	16.76
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
	☒ Open hole		16.15	48.77

Test of Well Yield

Pumping test method: Sub Pump

Pump intake set at (metres): 15.12

Pumping rate (litres/min): 91

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping: 20.89 metres

Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump depth: 30.48 metres

Recommended pump rate: 91 (litres/min)

If flowing give rate - (litres/min):

If pumping discontinued, give reason: ✓

Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Static Level	5.30		20.89
1	6.73	1	20.42
2	8.10	2	17.58
3	9.62	3	15.54
4	11.00	4	13.86
5	11.75	5	12.56
10	15.80	10	7.99
15	18.10	15	6.20
20	20.00	20	5.22
25	21.05	25	
30	22.40	30	
40	21.06	40	
50	20.91	50	
60	20.89	60	

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - Metres From	Depth set at - Metres To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
16.15	13.11	Neat Cement Slurry	.227
13.11	0	Bentonite Slurry	.858

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☒ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☒ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☒ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
AIR ROCK DRILLING LTD	1119

Business Address (street name, number, city etc.): RR#1 RICHMOND ONT K0A 2Z0

Name of Well Technician (last name, first name)	Well Technician's Licence No.
Desaulniers Ken	T4

Signature of Technician/Contractor: X

Date Submitted: 2007-09-08

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.

Audit No.	Date Well Completed YYYY MM DD
Z 65187	2007 06 11
Was the well owner's information package delivered? ☒ Yes ☐ No	Date Delivered 2007 06 13

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Data Source	Contractor
	1119
Date Received SEP 17 2007 YYYY MM DD	Date of Inspection YYYY MM DD
Remarks	Well Record Number

Ontario Ministry of the Environment

Well Tag Number (Write number below): A 055101

A055101

Well Record

Regulation 903 Ontario Water Resources Act

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- Please print clearly in blue or black ink only.

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Well Owner's Information and Location of Well Information

[redacted]

Gloucester | Kidgemont | PIL 29 & 30 3

RR#/Street Number/Name: #536 Tullamore | City/Town/Village: Gloucester | Site/Compartment/Block/Tract etc.: PLAN 4M-1215 LOT 25

GPS Reading | NAD: 83 | Zone: 18 | Easting: 452989 | Northing: 5013498 | Unit Make/Model: Magellan | Mode of Operation: ☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
	Sandy Clay			0	2.13
	Grey	Sand & Gravel		2.13	13.72
	Grey	Limestone		13.72	28.95

Hole Diameter

Depth From (Metres)	Depth To (Metres)	Diameter (Centimetres)
0	28.95	15.88

Water Record

Water found at Metres	Kind of Water
21.34 m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

TESTED

After test of well yield, water was: ☐ Clear and sediment free ☐ Other, specify CLOUDY NOT TESTED

Chlorinated ☒ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From (Metres)	Depth To (Metres)
Casing				
15.88	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	.48	0	17.37
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
	☒ Open hole		16.76	28.95

Test of Well Yield

Pumping test method: Submpl

Pump intake set at (metres): 24.38

Pumping rate (litres/min): 56.78

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping: 16.40 metres

Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump depth: 24.38 metres

Recommended pump rate: 56.78 (litres/min)

If flowing give rate - (litres/min):

If pumping discontinued, give reason:

	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Static Level		.10		16.40
1	1	1.8	1	12.90
2	2	2.93	2	9.66
3	3	3.88	3	7.94
4	4	4.56	4	6.51
5	5	5.51	5	5.45
10	10	10.20	10	2.36
15	15	11.94	15	1.21
20	20	13.40	20	.73
25	25	14.42	25	.52
30	30	14.93	30	
40	40	15.68	40	
50	50	16.14	50	
60	60	16.40	60	

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - From	Depth set at - To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
16.76	13.72	Neat Cement Slurry	.227
13.72	0	Bentonite Slurry	.613

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☒ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☒ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☒ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor: AIRROCK DRILLING LTD | Well Contractor's Licence No.: 1119

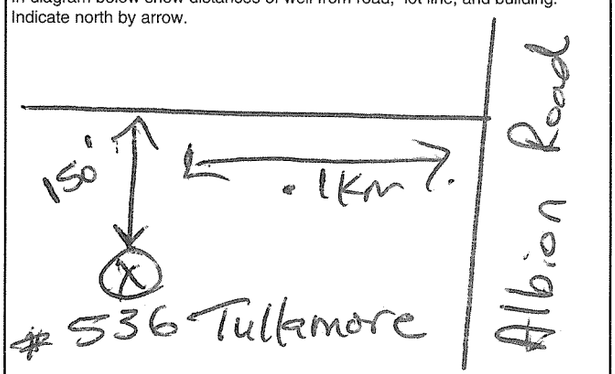
Business Address (street name, number, city etc.): RR#1 RICHMOND ONT K0A2Z0

Name of Well Technician (last name, first name): PURCELL SHANNON | Well Technician's Licence No.: 13122

Signature of Technician/Contractor: X [signature] | Date Submitted: 2007 10 10

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No.: Z 65073

Date Well Completed: YYYY 2007 MM 05 DD 08

Was the well owner's information package delivered? ☒ Yes ☐ No

Date Delivered: YYYY 2007 MM 05 DD 10

Ministry Use Only

Data Source	Contractor
Date Received: OCT 12 2007 (YYYY MM DD)	Date of Inspection (YYYY MM DD)
Remarks	Well Record Number

0506E (08/2006)

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Ontario Ministry of the Environment

Well Tag (r below) A 023089

A023089

Well Record

Regulation 903 Ontario Water Resources Act

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- Please print clearly in blue or black ink only.

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MUN | CON | LOT

Well Owner's Information and Location of Well Information

First Name: 6546251 | Last Name: Corodale Inc

Mailing Address (Street Number/Name, RR, Lot,Concession): 625 Gainsborough Ave

County/District/Municipality: Ottawa | Township/City/Town/Village | Province: Ontario | Postal Code: K2A2Y7 | Telephone Number (include area code)

Address of Well Location (County/District/Municipality): Gloucester | Township: Rideau Front Pt L29 | Lot: 30 | Concession: 3

RR#/Street Number/Name: #504 Tullamore | City/Town/Village: Gloucester | Site/Compartment/Block/Tract etc: Plan 4M-1215 Pt Lt 7

GPS Reading | NAD: 83 | Zone: 18 | Easting: 452679 | Northing: 5013318 | Unit Make/Model: Magellan | Mode of Operation: ☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
	Sand, gravel			0	3.05
	blue Clay			3.05	9.14
	Gravel, Boulders			9.14	10.67
	Grey Limestone			10.67	18.29
	White Sandstone			18.29	24.38

Hole Diameter

Depth From	Depth To (Metres)	Diameter (Centimetres)
0	24.38	15.23

Water Record

Water found at ... Metres / Kind of Water

Metres	Kind of Water
16.76	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
22.25	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

NOT TESTED

After test of well yield, water was ☐ Clear and sediment free ☐ Other, specify: DISCOLOURED NOT TESTED

Chlorinated ☒ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
15.88	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	.48	0	14.32
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
	☒ Open hole		13.72	24.38

Test of Well Yield

Pumping test method: SubPump

Pump intake set at (metres): 21.33

Pumping rate (litres/min): 91

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping: 6.47 metres

Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump depth: 21.33 metres

Recommended pump rate: 91 (litres/min)

If flowing give rate - (litres/min):

If pumping discontinued, give reason:

	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Static Level		0.25		0.47
1		.38	1	.37
2		.39	2	.35
3		.40	3	.34
4			4	.33
5			5	.32
10		.42	10	.31
15		.43	15	.31
20		.44	20	.30
25		.45	25	
30		.46	30	
40		.47	40	
50			50	.29
60			60	.29

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
13.72	10.67	Neat Cement Slurry	.2724
10.67	0	Bentonite Slurry	2.45

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☒ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

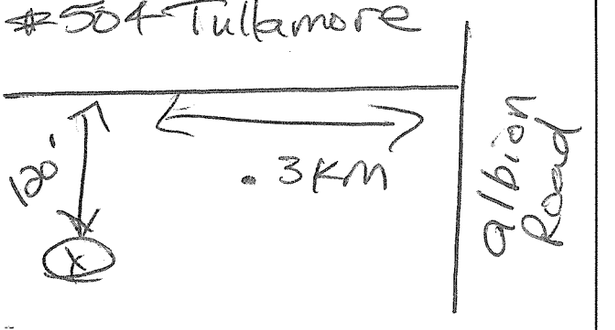
☒ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☒ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No. Z 65103

Date Well Completed: 2007 06 21

Was the well owner's information package delivered? ☒ Yes ☐ No

Date Delivered: 2007 06 25

Well Contractor/Technician Information

Name of Well Contractor: AK Rock Drilling Co Ltd | Well Contractor's Licence No.: 1119

Business Address (street name, number, city etc.): RR#1 Richmond Ont K0A 2Z0

Name of Well Technician (last name, first name): Dassan Niers Ken | Well Technician's licence No.: 7414

Signature of Technician/Contractor: X [signature] | Date Submitted: 2007 10 10

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Data Source | Contractor

Date Received: OCT 12 2007 | Date of Inspection

Remarks | Well Record Number

0506E (08/2006)

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Ontario — Ministry of the Environment

Measurements recorded in: [X] Metric [ ] Imperial

Well Tag No (ow) A 066515

A066515

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

[redacted]

6693 Pebble Trail — Greely — 4

County/District/Municipality: Ottawa Carlton — City/Town/Village: Osgoode — Province: Ontario — Postal Code:

UTM Coordinates: Zone 18 NAD 83 — Easting 454654 — Northing 5013185 — Municipal Plan and Sublot Number: 4M-1306 S/L 12 — Other:

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand and gravel & Boulders			0	6.10
Grey	Limestone			6.10	33.53

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
1.92	4.88	Neat Cement Slurry	.227
4.88	0	Bentonite Slurry	.245

Results of Well Yield Testing

After test of well yield, water was: [ ] Clear and sand free [ ] Other, specify — NOT TESTED

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 27.38

Pumping rate (l/min / GPM): 91

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 4.30

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): 24.38

Recommended pump rate (l/min / GPM): 091

Well production (l/min / GPM): 100

Disinfected? [X] Yes [ ] No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	3.27		4.30
1	3.33	1	3.40
2	3.40	2	3.27
3	3.43	3	
4	3.44	4	
5	3.44	5	
10	4m	10	
15	4.20	15	
20	4.2	20	
25	4.30	25	
30	4.3	30	
40	4.3	40	
50	4.3	50	
60	4.3	60	

Method of Construction

[ ] Cable Tool [ ] Diamond
[ ] Rotary (Conventional) [ ] Jetting
[ ] Rotary (Reverse) [ ] Driving
[ ] Boring [ ] Digging
[X] Air percussion
[ ] Other, specify

Well Use

[ ] Public [ ] Commercial [ ] Not used
[X] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [ ] Monitoring
[ ] Irrigation [ ] Cooling & Air Conditioning
[ ] Industrial
[ ] Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
15.88	Steel	.48	+6	6.10
15.23	Open hole		6.10	33.53

Status of Well

[X] Water Supply
[ ] Replacement Well
[ ] Test Hole
[ ] Recharge Well
[ ] Dewatering Well
[ ] Observation and/or Monitoring Hole
[ ] Alteration (Construction)
[ ] Abandoned, Insufficient Supply
[ ] Abandoned, Poor Water Quality
[ ] Abandoned, other, specify
[ ] Other, specify

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Water Details

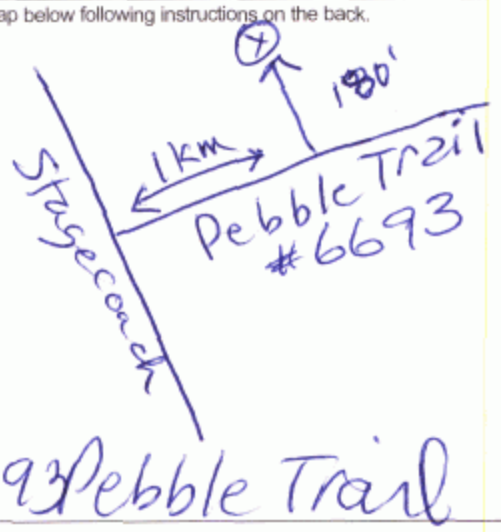
Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
29.89	[ ]	[ ] Fresh [X] Untested	
	[ ]	[ ] Fresh [ ] Untested	
	[ ]	[ ] Fresh [ ] Untested	

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	33.53	15.23

Map of Well Location

Please provide a map below following instructions on the back.



6693 Pebble Trail

Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: Air Rock Drilling Co Ltd — Well Contractor's Licence No.: 1119

Business Address (Street Number/Name): RR1 — Municipality: Richmond

Province: Ont — Postal Code: K0A2Z0 — Business E-mail Address:

Bus. Telephone No. (inc. area code): 6139382170 — Name of Well Technician (Last Name, First Name): Graham, Ryan

Well Technician's Licence No.: T3484 — Signature of Technician and/or Contractor — Date Submitted: 2008 06 30

Well owner's information package delivered: [X] Yes [ ] No — Date Package Delivered: 2008 05 27

Date Work Completed: 2008 05 27

Ministry Use Only

Audit No. Z 80759

JUL 15 2008 Received

0506E (12/2007)

Ministry's Copy

Ontario Ministry of the Environment

Well Tag (see below) A 055078

A055078

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

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- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR, Lot, Concession)
6546251 Canada Inc.		625 Gainsborough Ave

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
Ottawa	Gloucester	Ontario	K2A 2Y7	

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
Gloucester	Rideau Front	PL 29 & 30	3

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
#611 Ballycastle	Gloucester	Plan 4M-1275 L37

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation
	8 3	18	455148	5013532	Magellon	☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To (Metres)
	Sand, Gravel			0	2.44
	Blue Clay			2.44	12.19
	Clay Boulders			12.19	16.76
	Grey Limestone			16.76	48.77

Hole Diameter

Depth From	Depth To (Metres)	Diameter (Centimetres)
0	48.77	15.25

Water Record

Water found at Metres	Kind of Water
22.86 m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
41.45 m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other: NOT TESTED
45.11 m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was ☐ Clear and sediment free ☐ Other, specify NOT TESTED

Chlorinated ☒ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To (Metres)
Casing				
15.88	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	.48	0	20.42
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
	☒ Open hole		19.81	48.77

Test of Well Yield

Pumping test method: SubPump

Draw Down Time (min)	Draw Down Water Level (Metres)	Recovery Time (min)	Recovery Water Level (Metres)
Static Level	5.98		26.06
1	7.83	1	21.55
2	9.60	2	19.52
3	10.71	3	17.77
4	11.52	4	15.55
5	12.80	5	13.06
10	15.69	10	8.70
15	17.94	15	7.32
20	19.05	20	6.35
25	21.36	25	6.05
30	22.53	30	5.77
40	23.87	40	
50	24.98	50	
60	26.06	60	

Pump intake set at (metres): 45.72

Pumping rate - (litres/min): 49.21

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping: 26.06 metres

Recommended pump type: ☐ Shallow ☒ Deep

Recommended pump depth: 45.72 metres

Recommended pump rate: 49.21 (litres/min)

If flowing give rate - (litres/min):

If pumping discontinued, give reason:

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - Metres From	To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
19.81	16.76	Neat Cement Slurry	.2724
16.76	0	Bentonite Slurry	.735

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☒ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☒ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

☒ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
AR Rock Drilling Co Ltd	1119

Business Address (street name, number, city etc.): RR#1 Richmond Ont K0A 2Z0

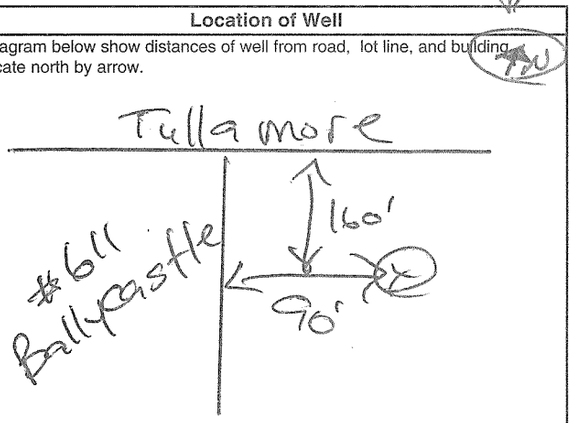
Name of Well Technician (last name, first name)	Well Technician's Licence No.
Desaulniers Ken	7774

Signature of Technician/Contractor: X

Date Submitted: 2007 10 11

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No. Z 65109

Date Well Completed: 2007 05 29 (YYYY MM DD)

Was the well owner's information package delivered? ☒ Yes ☐ No

Date Delivered: 2007 06 25 (YYYY MM DD)

Ministry Use Only

Data Source	Contractor
Date Received: OCT 22 2007 (YYYY MM DD)	Date of Inspection (YYYY MM DD)
Remarks	Well Record Number

0506E (08/2006) Ministry's Copy

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Ontario Ministry of the Environment

Well Tag (number below) A023087

A023087

Well Record

Regulation 903 Ontario Water Resources Act

page ___ of ___

Instructions for Completing Form

- For use in the **Province of Ontario** only. This document is a permanent **legal** document. Please retain for future reference.
- All Sections **must** be completed in full to avoid delays in processing. Further instructions and explanations are available on the back of this form.
- Questions regarding completing this application can be directed to the Water Well Help Desk (Toll Free) at 1-888-396-9355.
- **All metre measurements shall be reported to 1/10th of a metre.**
- Please print clearly in blue or black ink only.

Ministry Use Only

MUN | CON | LOT

Well Owner's Information and Location of Well Information

First Name	Last Name	Mailing Address (Street Number/Name, RR, Lot, Concession)
654625	Canada Inc	625 Gainsborough Ave

County/District/Municipality	Township/City/Town/Village	Province	Postal Code	Telephone Number (include area code)
	Ottawa	Ontario	K2A2Y7	

Address of Well Location (County/District/Municipality)	Township	Lot	Concession
Gloucester	Rideau Front	Pt Lt 29	3

RR#/Street Number/Name	City/Town/Village	Site/Compartment/Block/Tract etc.
#603 Ballycastle	Gloucester	Plan 4M-1275 Pt Lt 39

GPS Reading	NAD	Zone	Easting	Northing	Unit Make/Model	Mode of Operation
	8 3	18	453112	5013578	Progeller	☐ Undifferentiated ☒ Averaged ☐ Differentiated, specify

Log of Overburden and Bedrock Materials (see instructions)

General Colour	Most common material	Other Materials	General Description	Depth From	Depth To
	Sand, Gravel			0	3.05
	Blue Clay			3.05	13.72
	Gravel			13.72	14.63
	Grey Limestone			14.63	29.56
	Grey Limestone/Grey Sandstone Mix			29.56	50.59

Hole Diameter

Depth From	Depth To	Diameter Centimetres
0	50.59	15.55

Water Record

Water found at Metres	Kind of Water
29.75 m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
48.46 m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:
___ m	☐ Fresh ☐ Sulphur ☐ Gas ☐ Salty ☐ Minerals ☐ Other:

After test of well yield, water was
☐ Clear and sediment free ☐ Other, specify
Chlorinated ☒ Yes ☐ No

Construction Record

Inside diam centimetres	Material	Wall thickness centimetres	Depth From	Depth To
Casing				
15.88	☒ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	.48	0	18.29
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized			
Screen				
Outside diam	☐ Steel ☐ Fibreglass ☐ Plastic ☐ Concrete ☐ Galvanized	Slot No.		
No Casing or Screen				
	☒ Open hole		17.68	50.59

Test of Well Yield

Pumping test method: SubPump

	Draw Down Time min	Draw Down Water Level Metres	Recovery Time min	Recovery Water Level Metres
Static Level		6.0		7.57
1	1	6.60	1	6.19
2	2	6.78	2	6.12
3	3	6.88	3	6.07
4	4	6.92	4	5.85
5	5	6.98	5	
10	10	7.13	10	
15	15	7.25	15	
20	20	7.33	20	
25	25	7.38	25	
30	30	7.42	30	
40	40	7.52	40	
50	50	7.55	50	
60	60	7.57	60	

Pump intake set at (metres): 45.72
Pumping rate - (litres/min): 91
Duration of pumping: ___ hrs + 60 min
Final water level end of pumping: 57 metres
Recommended pump type: ☐ Shallow ☒ Deep
Recommended pump depth: 30.48 metres
Recommended pump rate: 91 (litres/min)
If flowing give rate - (litres/min):
If pumping discontinued, give reason: —

Plugging and Sealing Record

☒ Annular space ☐ Abandonment

Depth set at - Metres From	Depth set at - Metres To	Material and type (bentonite slurry, neat cement slurry) etc.	Volume Placed (cubic metres)
17.68	14.63	Neat Cement Slurry	.227
14.63	0	Bentonite Slurry	.858

Method of Construction

☐ Cable Tool ☐ Rotary (air) ☐ Diamond ☐ Digging
☐ Rotary (conventional) ☒ Air percussion ☐ Jetting ☐ Other
☐ Rotary (reverse) ☐ Boring ☐ Driving

Water Use

☒ Domestic ☐ Industrial ☐ Public Supply ☐ Other
☐ Stock ☐ Commercial ☐ Not used
☐ Irrigation ☐ Municipal ☐ Cooling & air conditioning

Final Status of Well

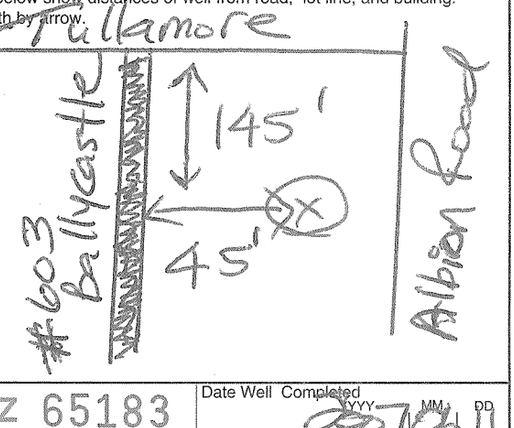
☒ Water Supply ☐ Recharge well ☐ Unfinished ☐ Abandoned, (Other)
☐ Observation well ☐ Abandoned, insufficient supply ☐ Dewatering
☐ Test Hole ☐ Abandoned, poor quality ☐ Replacement well

Well Contractor/Technician Information

Name of Well Contractor	Well Contractor's Licence No.
AIRROCK DRILLING Co Ltd	1119
Business Address (street name, number, city etc.)	
1461 Richmond Ont K0A2Z0	
Name of Well Technician (last name, first name)	Well Technician's Licence No.
Desaulniers Ken	7-4
Signature of Technician/Contractor	Date Submitted YYYY MM DD
X	2007 10 11

Location of Well

In diagram below show distances of well from road, lot line, and building. Indicate north by arrow.



Audit No.	Date Well Completed YYYY MM DD
Z 65183	2007 10 11
Was the well owner's information package delivered? ☒ Yes ☐ No	Date Delivered YYYY MM DD 2007 10 12

Ministry Use Only

Data Source	Contractor
Date Received YYYY MM DD OCT 22 2007	Date of Inspection YYYY MM DD
Remarks	Well Record Number

0506E (08/2006) Ministry's Copy

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Ontario — Ministry of the Environment

Measurements recorded in: [X] Metric [ ] Imperial

Well Tag No. (Sticker or Print Below): A 066944

A066944

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

[redacted]

#516 Tullamore | Rideau Ferry | 29430 | 3

County/District/Municipality: Gloucester

City/Town/Village: Gloucester

Province: Ontario

Postal Code:

UTM Coordinates: NAD 83 | Zone 18 | Easting 452785 | Northing 5013401

Municipal Plan and Sublot Number: PLAN 4M-1275 S/L # 20.

Other:

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand, Gravel, Boulders			0	11.89
	Grey Sandstone & Limestone Mix			11.89	43.28

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
15.24	0	Neat Cement Slurry	.8172

Method of Construction

[ ] Cable Tool [ ] Diamond
[ ] Rotary (Conventional) [ ] Jetting
[ ] Rotary (Reverse) [ ] Driving
[ ] Boring [ ] Digging
[X] Air percussion
[ ] Other, specify

Well Use

[ ] Public [ ] Commercial [ ] Not used
[X] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [ ] Monitoring
[ ] Irrigation [ ] Cooling & Air Conditioning
[ ] Industrial
[ ] Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
15.88	Steel	.48	+.6	15.24
15.07	Open hole		15.24	43.28

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

[X] Water Supply
[ ] Replacement Well
[ ] Test Hole
[ ] Recharge Well
[ ] Dewatering Well
[ ] Observation and/or Monitoring Hole
[ ] Alteration (Construction)
[ ] Abandoned, Insufficient Supply
[ ] Abandoned, Poor Water Quality
[ ] Abandoned, other, specify
[ ] Other, specify

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
41.76	[ ]	[ ] Fresh [X] Untested	
	[ ]	[ ] Fresh [ ] Untested	
	[ ]	[ ] Fresh [ ] Untested	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	43.28	15.07

Results of Well Yield Testing

After test of well yield, water was:
[ ] Clear and sand free
[ ] Other, specify ~~DIRTY~~

If pumping discontinued, give reason: ~~[illegible]~~

Pump intake set at (m/ft): 30.48

Pumping rate (l/min / GPM): 91

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 5.55

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 30.48

Recommended pump rate (l/min / GPM): 91

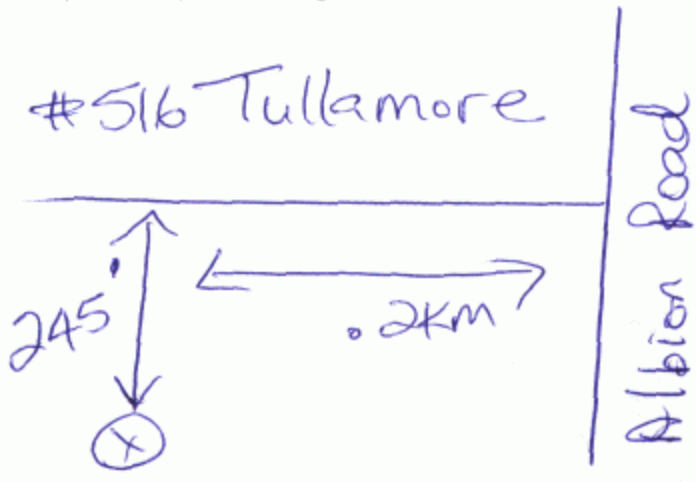
Well production (l/min / GPM): 20

Disinfected? [X] Yes [ ] No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	1.15cm		5.55
1	3.58	1	3.78
2	3.84	2	2.30
3	4.19	3	1.94
4	4.43	4	1.86
5	4.57	5	1.72
10	5.02	10	1.51
15	5.21	15	1.45
20	5.33	20	1.33
25	5.54	25	1.21
30	5.54	30	1.15
40	5.55	40	↓
50	5.55	50	
60	5.55	60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: AIR ROCK DRILLING CO LTD

Well Contractor's Licence No.: 1119

Business Address (Street Number/Name): RR#1

Municipality: RICHMOND

Province: ONT

Postal Code: K0A 2Z0

Business E-mail Address:

Bus. Telephone No. (inc. area code): 613-838-2170

Name of Well Technician (Last Name, First Name): GRAHAM RYAN

Well Technician's Licence No.: T3484

Signature of Technician and/or Contractor:

Date Submitted: 2008 08 01

Well owner's information package delivered: [X] Yes [ ] No

Date Package Delivered: 2008 07 09

Date Work Completed: 2008 07 07

Ministry Use Only

Audit No. Z 80830

AUG 14 2008

Received

0506E (12/2007)

Ministry's Copy

Ontario — Ministry of the Environment

Measurements recorded in: [X] Metric [ ] Imperial

Well Tag No. (Print Below): A 066946 / A066946.

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

[redacted]

#520 Tullamore | Rideau Front Pl L29430 | 3

County/District/Municipality: Gloucester | City/Town/Village: Gloucester | Province: Ontario | Postal Code:

UTM Coordinates: NAD 83 | Zone: 18 | Easting: 452842 | Northing: 5013432 | Municipal Plan and Sublot Number: PLAN 4M-1275 - S | Other: L# 21

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand	Gravel & Boulders		0	11.58
Grey	Limestone & Sandstone Mix			11.58	36.57

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
14.63	0	Neat Cement Slurry	.908

Method of Construction

[ ] Cable Tool [ ] Diamond
[ ] Rotary (Conventional) [ ] Jetting
[ ] Rotary (Reverse) [ ] Driving
[ ] Boring [ ] Digging
[X] Air percussion
[ ] Other, specify

Well Use

[ ] Public [ ] Commercial [ ] Not used
[X] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [ ] Monitoring
[ ] Irrigation [ ] Cooling & Air Conditioning
[ ] Industrial
[ ] Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
15.88	steel	.48	+.6	14.63
14.91	open hole		14.63	36.57

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

[X] Water Supply
[ ] Replacement Well
[ ] Test Hole
[ ] Recharge Well
[ ] Dewatering Well
[ ] Observation and/or Monitoring Hole
[ ] Alteration (Construction)
[ ] Abandoned, Insufficient Supply
[ ] Abandoned, Poor Water Quality
[ ] Abandoned, other, specify
[ ] Other, specify

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
34.44	[ ]	[ ] Fresh [X] Untested	
	[ ]	[ ] Fresh [ ] Untested	
	[ ]	[ ] Fresh [ ] Untested	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	36.57	14.91

Results of Well Yield Testing

After test of well yield, water was: [ ] Clear and sand free [ ] Other, specify — ~~PUMPED~~

If pumping discontinued, give reason: ~~X~~

Pump intake set at (m/ft): 33.53

Pumping rate (l/min / GPM): 45.48

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 29.56

If flowing give rate (l/min / GPM): ~~X~~

Recommended pump depth (m/ft): 33.53

Recommended pump rate (l/min / GPM): 45.48

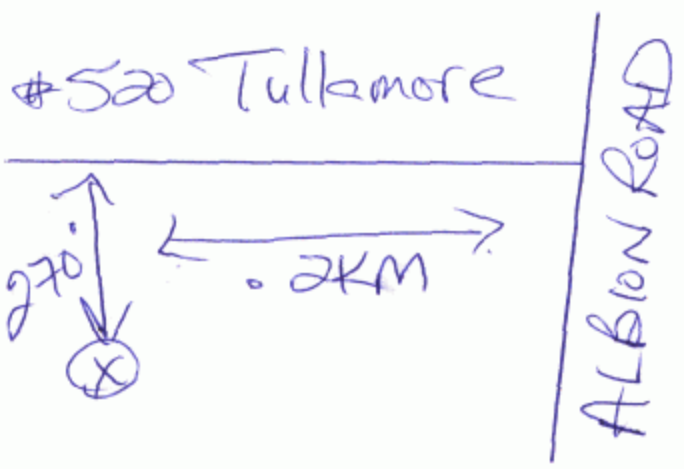
Well production (l/min / GPM): 10

Disinfected? [X] Yes [ ] No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	5.10		29.56
1	9.33	1	27.01
2	11.27	2	25.68
3	12.89	3	23.88
4	13.29	4	22.18
5	14.68	5	16.36
10	19.01	10	11.95
15	22.03	15	9.12
20	24.10	20	6.98
25	25.36	25	6.26
30	26.62	30	
40	28.14	40	
50	28.90	50	
60	29.56	60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: AIR ROCK DRILLING CO LTD | Well Contractor's Licence No.: 1119

Business Address (Street Number/Name): RR 1 | Municipality: Richmond

Province: Ont | Postal Code: K0A 2Z0 | Business E-mail Address:

Bus. Telephone No. (inc. area code): 6138382170 | Name of Well Technician (Last Name, First Name): Graham, Ryan

Well Technician's Licence No.: 13484 | Signature of Technician and/or Contractor: [signature] | Date Submitted: 20080801

Well owner's information package delivered: [X] Yes [ ] No | Date Package Delivered: 20080707 | Date Work Completed: 20080707

Ministry Use Only

Audit No. Z 80831

AUG 14 2008

Received

0506E (12/2007)

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Ontario — Ministry of the Environment

Measurements recorded in: [X] Metric [ ] Imperial

Well T A 066951 (Print Below)

A066951

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

[redacted]

500 Tullamore | Rideau Front | P/L 29+30 | 3

County/District/Municipality: Gloucester | City/Town/Village: Gloucester | Province: Ontario | Postal Code:

UTM Coordinates: NAD 83 | Zone 18 | Easting 452642 | Northing 5013329 | Municipal Plan and Sublot Number: PLAN 4M-1275 - 5 | Other: L16.

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	To
	Sand / Boulders			0	10.36
Grey	Sandstone	Limestone	Mix	10.36	24.38

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
13.41	10.36	Neat Cement Slurry	.7264
10.36	0	Bentonite Slurry	.613

Results of Well Yield Testing

After test of well yield, water was: [ ] Clear and sand free [ ] Other, specify: NOT TESTED

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 21.33

Pumping rate (l/min / GPM): 91

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 48

If flowing give rate (l/min / GPM): 4

Recommended pump depth (m/ft): 21.33

Recommended pump rate (l/min / GPM): 91

Well production (l/min / GPM): 30

Disinfected? [X] Yes [ ] No

Draw Down Time (min)	Water Level (m/ft)	Recovery Time (min)	Water Level (m/ft)
Static Level	10cm		48cm
1	11cm	1	10cm
2	12cm	2	8cm
3	13cm	3	5cm
4	16cm	4	Flowing
5	20cm	5	
10	32cm	10	
15	38cm	15	
20	42cm	20	
25	44cm	25	
30	45cm	30	
40	47cm	40	
50	48cm	50	
60	48cm	60	

Method of Construction

[ ] Cable Tool [ ] Diamond
[ ] Rotary (Conventional) [ ] Jetting
[ ] Rotary (Reverse) [ ] Driving
[ ] Boring [ ] Digging
[X] Air percussion
[ ] Other, specify

Well Use

[ ] Public [ ] Commercial [ ] Not used
[X] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [ ] Monitoring
[ ] Irrigation [ ] Cooling & Air Conditioning
[ ] Industrial
[ ] Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
15.88	Steel	.48	+6.	13.41
15.07	open hole		13.41	24.38

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To

Status of Well

[X] Water Supply
[ ] Replacement Well
[ ] Test Hole
[ ] Recharge Well
[ ] Dewatering Well
[ ] Observation and/or Monitoring Hole
[ ] Alteration (Construction)
[ ] Abandoned, Insufficient Supply
[ ] Abandoned, Poor Water Quality
[ ] Abandoned, other, specify
[ ] Other, specify

Water Details

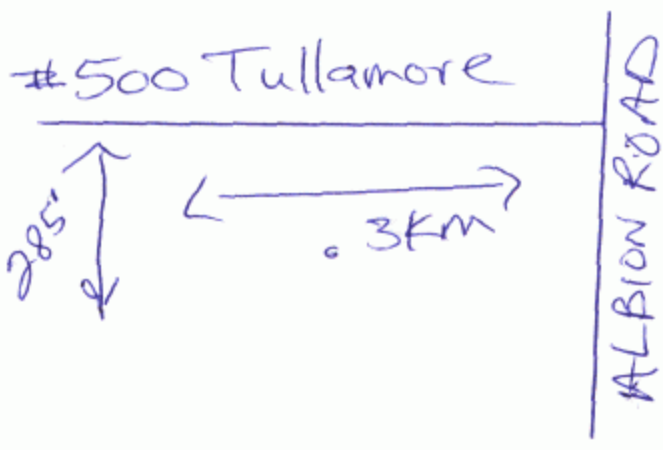
Water found at Depth (m/ft)	Kind of Water	
15.85	[ ] Fresh [X] Untested	[ ] Gas [ ] Other, specify
22.55	[ ] Fresh [X] Untested	[ ] Gas [ ] Other, specify
	[ ] Fresh [ ] Untested	[ ] Gas [ ] Other, specify

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	24.38	15.07

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: AIR ROCK DRILLING CO LTD | Well Contractor's Licence No.: 1119

Business Address (Street Number/Name): RR 1 | Municipality: Richmond

Province: Ont | Postal Code: K0A2Z0 | Business E-mail Address:

Bus. Telephone No. (inc. area code): 6138382170 | Name of Well Technician (Last Name, First Name): Hogan, Dan

Well Technician's Licence No.: T3058 | Signature of Technician and/or Contractor: [signature] | Date Submitted: 2008 08 01

Well owner's information package delivered: [X] Yes [ ] No

Date Package Delivered: 2008 07 09

Date Work Completed: 2008 07 08

Ministry Use Only

Audit No. Z 80832

AUG 14 2008

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Measurements recorded in: [X] Metric [ ] Imperial

Well Tag No. A 066936 (w)

A066936

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

[redacted]

Address of Well Location (Street Number/Name): 615 Ballycastle

Township: Gloucester

Lot: P/L 29 & 30

Concession: 3

County/District/Municipality: Gloucester

City/Town/Village: Gloucester

Province: Ontario

Postal Code:

UTM Coordinates: NAD 83 Zone 18 Easting 453182 Northing 5013472

Municipal Plan and Sublot Number: 4M-1295

Other: S/L 36

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Grey	Clay			0	10.36
	Sand			10.36	17.37
Grey	Limestone			17.37	54.86

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
20.42	0	Neat Cement Slurry	.7718

Method of Construction

[ ] Cable Tool [ ] Diamond
[ ] Rotary (Conventional) [ ] Jetting
[ ] Rotary (Reverse) [ ] Driving
[ ] Boring [ ] Digging
[X] Air percussion
[ ] Other, specify

Well Use

[ ] Public [ ] Commercial [ ] Not used
[X] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [ ] Monitoring
[ ] Irrigation [ ] Cooling & Air Conditioning
[ ] Industrial
[ ] Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
15.88	Steel	.48	+.6	20.42
15.55	open hole		20.42	54.86

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

[X] Water Supply
[ ] Replacement Well
[ ] Test Hole
[ ] Recharge Well
[ ] Dewatering Well
[ ] Observation and/or Monitoring Hole
[ ] Alteration (Construction)
[ ] Abandoned, Insufficient Supply
[ ] Abandoned, Poor Water Quality
[ ] Abandoned, other, specify
[ ] Other, specify

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
51.20	[ ]	[ ] Fresh [X] Untested	
	[ ]	[ ] Fresh [ ] Untested	
	[ ]	[ ] Fresh [ ] Untested	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	54.86	15.55

Results of Well Yield Testing

After test of well yield, water was:
[ ] Clear and sand free
[ ] Other, specify NOT TESTED

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 48.77

Pumping rate (l/min / GPM): 91 (GPM)

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 7.80

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): 48.77

Recommended pump rate (l/min / GPM): 91

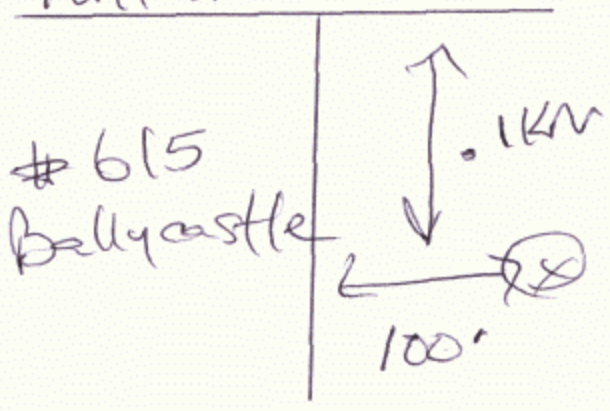
Well production (l/min / GPM): 40 (GPM)

Disinfected? [X] Yes [ ] No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	5.78		7.80
1	7.15	1	6.06
2	7.32	2	5.94
3	7.40	3	5.92
4	7.44	4	5.91
5	7.45	5	5.90
10	7.50	10	5.88
15	7.54	15	5.88
20	7.56	20	5.88
25	7.58	25	5.86
30	7.60	30	5.86
40	7.62	40	5.85
50	7.64	50	5.84
60	7.80	60	5.84

Map of Well Location

Please provide a map below following instructions on the back. N/A



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: AIR ROCK DRILLING CO LTD

Well Contractor's Licence No.: 1119

Business Address (Street Number/Name): R R 1

Municipality: Richmond

Province: Ont

Postal Code: K0A2Z0

Business E-mail Address:

Bus. Telephone No. (inc. area code): 6138382190

Name of Well Technician (Last Name, First Name): Graham, Ryan

Well Technician's Licence No.: T3484

Signature of Technician and/or Contractor:

Date Submitted: 20080825

Well owner's information package delivered: [X] Yes [ ] No

Date Package Delivered: 20080818

Date Work Completed: 20080814

Ministry Use Only

Audit No. Z 82479

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Ontario — Ministry of the Environment

Measurements recorded in: [X] Metric [ ] Imperial

Well Tag No **A075978**

A075978

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

[redacted]

Address of Well Location (Street/Number/Name): #620 Ballycastle

Township: Rideau Front Pt/L29

Lot: 30

Concession: 3

County/District/Municipality: Gloucester

City/Town/Village: Gloucester

Province: Ontario

Postal Code:

UTM Coordinates: NAD 83 Zone 18 Easting 453132 Northing 5013345

Municipal Plan and Sublot Number: Plan 4M-1275 S/L 31

Other:

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand clay & Gravel			0	10.97
Grey	Sandstone			10.97	30.48

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
14.02	0	Neat Cement Slurry	.1636

Method of Construction

- [ ] Cable Tool
- [ ] Diamond
- [ ] Rotary (Conventional)
- [ ] Jetting
- [ ] Rotary (Reverse)
- [ ] Driving
- [ ] Boring
- [ ] Digging
- [X] Air percussion
- [ ] Other, specify

Well Use

- [ ] Public
- [X] Domestic
- [ ] Livestock
- [ ] Irrigation
- [ ] Industrial
- [ ] Other, specify
- [ ] Commercial
- [ ] Municipal
- [ ] Test Hole
- [ ] Cooling & Air Conditioning
- [ ] Not used
- [ ] Dewatering
- [ ] Monitoring

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
15.88	Steel	.48	+.6	14.02
15.07	open hole		14.02	30.48

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

- [X] Water Supply
- [ ] Replacement Well
- [ ] Test Hole
- [ ] Recharge Well
- [ ] Dewatering Well
- [ ] Observation and/or Monitoring Hole
- [ ] Alteration (Construction)
- [ ] Abandoned, Insufficient Supply
- [ ] Abandoned, Poor Water Quality
- [ ] Abandoned, other, specify
- [ ] Other, specify

Water Details

Water found at Depth (m/ft)	Kind of Water	
26.52	[ ] Gas	[ ] Fresh [X] Untested [ ] Other, specify
28.35	[ ] Gas	[ ] Fresh [X] Untested [ ] Other, specify
(m/ft)	[ ] Gas	[ ] Fresh [ ] Untested [ ] Other, specify

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	30.48	15.07

Results of Well Yield Testing

After test of well yield, water was:
- [ ] Clear and sand free
- [ ] Other, specify NOT TESTED

If pumping discontinued, give reason: X

Pump intake set at (m/ft) 29.58

Pumping rate (l/min / GPM) 91

Duration of pumping 1 hrs + 0 min

Final water level end of pumping (m/ft) 5.35

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft) 24.38

Recommended pump rate (l/min / GPM) 91

Well production (l/min / GPM) 30

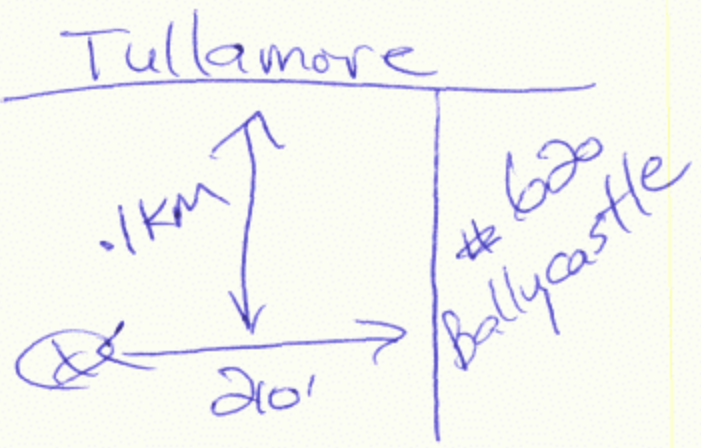
Disinfected? [X] Yes [ ] No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	2.00		5.35
1	3.60	1	2.10
2	4.25	2	2.02
3	4.70	3	
4	4.90	4	
5	5.00	5	
10	5.30	10	
15	5.35	15	
20	5.35	20	
25	5.35	25	
30	5.35	30	
40	5.35	40	
50	5.35	50	
60	5.35	60	

Map of Well Location

Please provide a map below following instructions on the back.

NT



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: AIR ROCK DRILLING CO LTD

Well Contractor's Licence No.: 1119

Business Address (Street Number/Name): RR1

Municipality: Richmond

Province: Ont

Postal Code: K0A 2Z0

Business E-mail Address:

Bus. Telephone No. (inc. area code): 6138352170

Name of Well Technician (Last Name, First Name): Hogan, Dan

Well Technician's Licence No.: T3058

Signature of Technician and/or Contractor:

Date Submitted: 20080825

Well owner's information package delivered: [X] Yes [ ] No

Date Package Delivered: 2008 08 14

Date Work Completed: 2008 08 08

Ministry Use Only

Audit No. Z 82489

SEP 03 2008

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Ontario Ministry of the Environment

Measurements recorded in: [X] Metric [ ] Imperial

Well Tag No **A076017**

A076017

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

[redacted]

Address of Well Location (Street Number/Name) #624 Ballycastle | Township Rideau Front | Lot PL29+30 | Concession 3

County/District/Municipality Gloucester | City/Town/Village Gloucester | Province Ontario | Postal Code

UTM Coordinates NAD 83 | Zone 18 | Easting 453149 | Northing 5013314 | Municipal Plan and Sublot Number Plan4M-1275 S/L32 | Other

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand clay and Gravel			0	10.97
Grey	Sandstone			10.97	30.48

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
14.02	0	Neat Cement Slurry	.6356

Method of Construction

[ ] Cable Tool [ ] Diamond
[ ] Rotary (Conventional) [ ] Jetting
[ ] Rotary (Reverse) [ ] Driving
[ ] Boring [ ] Digging
[X] Air percussion
[ ] Other, specify

Well Use

[ ] Public [ ] Commercial [ ] Not used
[X] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [ ] Monitoring
[ ] Irrigation [ ] Cooling & Air Conditioning
[ ] Industrial
[ ] Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
15.88	steel	.48	+.6	14.02
15.07	Openhole		14.02	30.48

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

[X] Water Supply
[ ] Replacement Well
[ ] Test Hole
[ ] Recharge Well
[ ] Dewatering Well
[ ] Observation and/or Monitoring Hole
[ ] Alteration (Construction)
[ ] Abandoned, Insufficient Supply
[ ] Abandoned, Poor Water Quality
[ ] Abandoned, other, specify
[ ] Other, specify

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
26.52	[ ] Fresh [X] Untested	[ ]	
28.35	[ ] Fresh [X] Untested	[ ]	
	[ ] Fresh [ ] Untested	[ ]	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	30.48	15.07

Results of Well Yield Testing

After test of well yield, water was:
[ ] Clear and sand free
[ ] Other, specify ~~MUDDIED~~ TESTED

If pumping discontinued, give reason: ~~X~~

Pump intake set at (m/ft) 24.38

Pumping rate (l/min / GPM) 75.82

Duration of pumping 1 hrs + 0 min

Final water level end of pumping (m/ft) 22.10

If ~~flowing~~ give rate (l/min / GPM) ~~X~~

Recommended pump depth (m/ft) 24.38

Recommended pump rate (l/min / GPM) 75.82

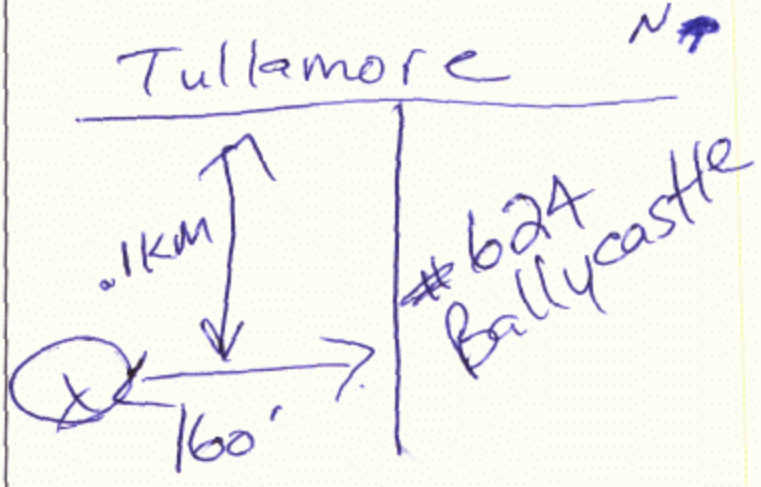
Well production (l/min / GPM) 18

Disinfected? [X] Yes [ ] No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	6.30		22.10
1	9.60	1	16.67
2	11.27	2	15.02
3	12.02	3	13.42
4	13.04	4	12.36
5	13.92	5	11.46
10	17.02	10	10.27
15	18.70	15	8.46
20	19.60	20	8.10
25	20.25	25	6.98
30	20.75	30	6.30
40	21.37	40	
50	21.80	50	
60	22.10	60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: AIR ROCK DRILLING CO LTD | Well Contractor's Licence No.: 1119

Business Address (Street Number/Name): RR1 | Municipality: Richmond

Province: Ont | Postal Code: K0A2Z0 | Business E-mail Address:

Bus. Telephone No. (inc. area code): 6138382170 | Name of Well Technician (Last Name, First Name): Hogan, Dan

Well Technician's Licence No.: T3058 | Signature of Technician and/or Contractor | Date Submitted: 20080825

Well owner's information package delivered: [X] Yes [ ] No | Date Package Delivered: 20080811 | Date Work Completed: 20080808

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Measurements recorded in: ☐ Metric ☒ Imperial

A082456

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Well Owner's Information

[redacted]

Well Location

Address of Well Location (Street Number/Name): #623 Ballycastle Crescent

Township: (Rideau Front) (Gloucester

Lot: Pt Lot 29 & 30

Concession: Con 3

County/District/Municipality: Gloucester

City/Town/Village: Gloucester

Province: Ontario

Postal Code:

UTM Coordinates: NAD 83 Zone 18 Easting 453211 Northing 5013392

Municipal Plan and Sublot Number: PLAN 4M-1275

Other: SL 34

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Grey Clay			0	26'
	Sand, Gravel & Boulders			26'	38'
	Grey Lime Stone			38'	95'
	Grey Sandstone & Limestone Mix			95'	140'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
48'	0	Neat Cement Slurry	28.98

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☒ Air percussion ☐ Other, specify

Well Use

☐ Public ☐ Commercial ☐ Not used ☒ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☐ Test Hole ☐ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ Industrial ☐ Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6"	Steel	.188"	+2'	48'
6"	Open Hole		48'	140'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, specify ☐ Other, specify

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
98'	☐	☐ Fresh ☒ Untested	
132'	☐	☐ Fresh ☒ Untested	
	☐	☐ Fresh ☐ Untested	

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	140'	6"

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, specify PRESSURIZED

If pumping discontinued, give reason: X

Pump intake set at (m/ft) 120

Pumping rate (l/min / GPM) 20

Duration of pumping 1 hrs + 0 min

Final water level end of pumping (m/ft) 87' 1"

If flowing give rate (l/min / GPM) X

Recommended pump depth (m/ft) (1/2HP) 120

Recommended pump rate (l/min / GPM) 20

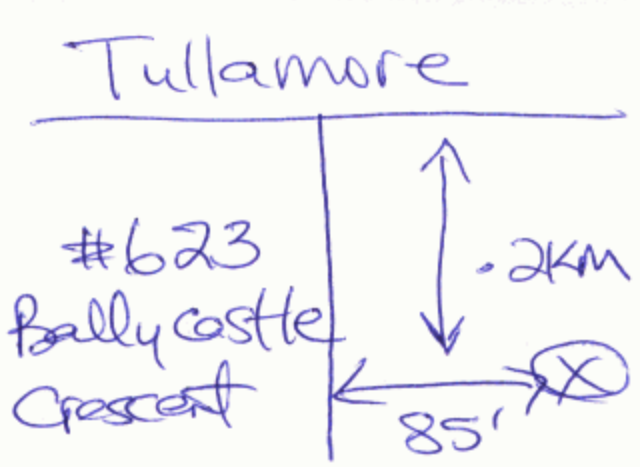
Well production (l/min / GPM) 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	13'4"		87'1"
1	21'	1	58'2"
2	27'5"	2	50'8"
3	32'	3	45'5"
4	35'9"	4	41'9"
5	39'1"	5	38'5"
10	50'7"	10	29'1"
15	56'9"	15	20'6"
20	63'3"	20	13'4"
25	66'9"	25	
30	70'7"	30	
40	76'	40	
50	81'5"	50	
60	87'1"	60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: AIR ROCK DRILLING Co LTD

Well Contractor's Licence No.: 1119

Business Address (Street Number/Name): RR#1

Municipality: RICHMOND

Province: ONT

Postal Code: K0A2Z0

Business E-mail Address:

Bus. Telephone No. (inc. area code): 6138382170

Name of Well Technician (Last Name, First Name): GRAHAM RYAN

Well Technician's Licence No.: T3484

Signature of Technician and/or Contractor:

Date Submitted: 20090727

Well owner's information package delivered: ☒ Yes ☐ No

Date Package Delivered: 20090709

Date Work Completed: 20090630

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Audit No. Z 94718

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Ontario — Ministry of the Environment

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page _____ of _____

Well Owner's Information

[redacted]

Well Location

Address of Well Location (Street Number/Name): #619 Ballycastle Crescent

Township: Gloucester

Lot: PL 29 & 30

Concession: Con 3

County/District/Municipality: Ottawa - Carleton

City/Town/Village: Gloucester

Province: Ontario

Postal Code:

UTM Coordinates: NAD 8 3 | Zone: 18 | Easting: 453201 | Northing: 5013422

Municipal Plan and Sublot Number: PLAN #4M-1275

Other: S/L 35

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Gravel			0	4'
	Grey Clay			4'	26'
	Sand, Gravel + Boulders			26'	40'
	Grey limestone			40'	100'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
50'	0	Neat Cement Slurry	29.64

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6"	Steel	.188"	+2'	50'
6"	Open hole		50'	100'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	
56 0	☐ Fresh ☐ Untested ☒	☐ Gas ☐ Other, *specify*
93 0	☐ Fresh ☒ Untested	☐ Gas ☐ Other, *specify*
	☐ Fresh ☐ Untested	☐ Gas ☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	100'	6"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify* TEST

If pumping discontinued, give reason:

Pump intake set at (m/ft): 80

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 24' 7"

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): (1/2HP) 80'

Recommended pump rate (l/min / GPM): 20

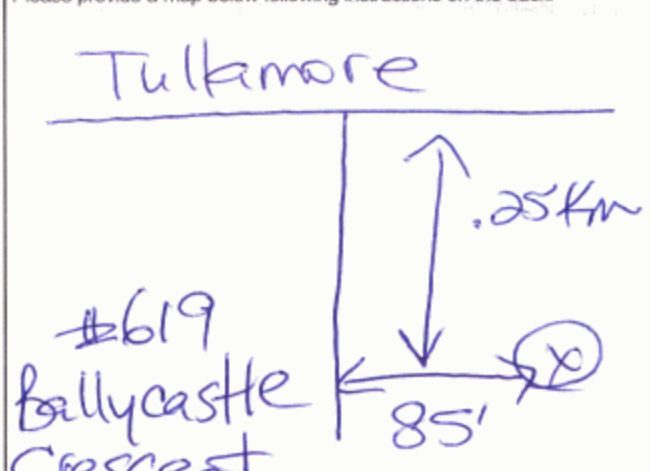
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	56' 1"		24' 7"
1	14' 9"	1	12' 4"
2	17' 7"	2	10' 0"
3	19' 3"	3	8' 8"
4	20' 1"	4	8' 3"
5	20' 8"	5	8' 0"
10	21' 6"	10	6' 8"
15	22' 5"	15	5' 9"
20	23' 3"	20	5' 6"
25	23' 6"	25	
30	23' 8"	30	
40	24' 1"	40	
50	24' 4"	50	
60	24' 7"	60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: Air Rock Drilling Co Ltd

Well Contractor's Licence No.: 1119

Business Address (Street Number/Name): RR#1

Municipality: Richmond

Province: ONT

Postal Code: K0A2Z0

Business E-mail Address:

Bus. Telephone No. (inc. area code): 6138382170

Name of Well Technician (Last Name, First Name): Graham Ryan

Well Technician's Licence No.: 1348

Signature of Technician and/or Contractor:

Date Submitted: 2009 07 27

Well owner's information package delivered: ☒ Yes ☐ No

Date Package Delivered: 2009 07 06

Date Work Completed: 2009 06 30

Ministry Use Only

Audit No. Z 94719

Received JUL 30 2009

0506E (12/2007)

Ministry's Copy

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. (Sticker or Plate) **A 082413**

A082413

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
# 627 Ballycastle	Rideau Front	P/L 29+30	Con 3

County/District/Municipality	City/Town/Village	Province	Postal Code
Gloucester	Gloucester	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	453210	5013375	PLAN 4M-1275	S/L 33

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	- Clay & Black Earth			0	8'
	- Clay			8'	30'
	- Sand & Boulders			30'	38'
	- Grey Limestone			38'	103'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
48'	0	Neat Cement Slurry	34.32

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, *specify*

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6"	Steel	.188"	2'+	48'
6"	Open hole		48'	103'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify — NOT TESTED

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 90

Pumping rate (l/min / GPM): 15

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 85'2"

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): (1/2HP) 90

Recommended pump rate (l/min / GPM): 15

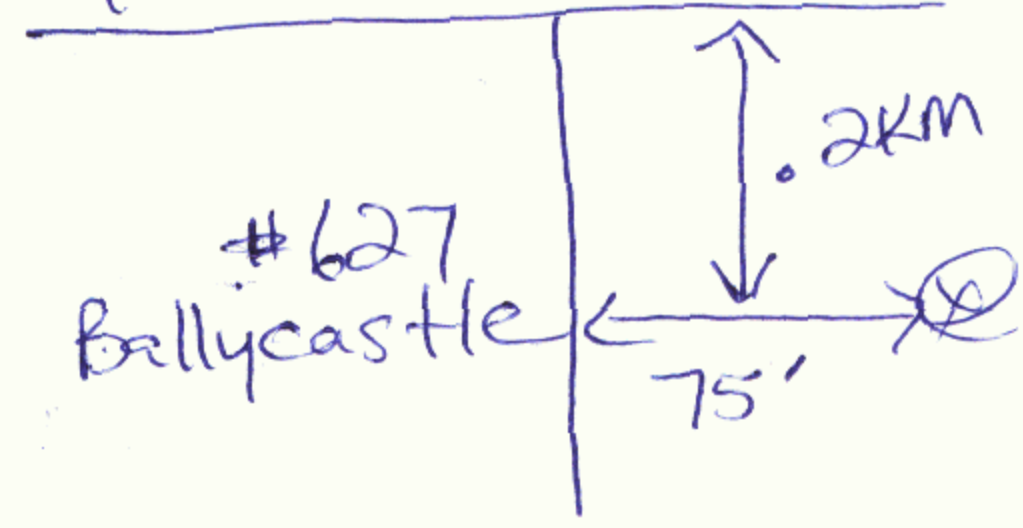
Well production (l/min / GPM): 15

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	13'7"		85'2"
1	20'3"	1	76'4"
2	27'9"	2	72'
3	32'7"	3	58'
4	37'	4	49'
5	40'7"	5	42'
10	54'	10	23'
15	59'9"	15	13'7"
20	63'	20	
25	66'2"	25	
30	69'8"	30	
40	74'9"	40	
50	79'8"	50	
60	85'2"	60	

Map of Well Location

Please provide a map below following instructions on the back.



Water Details

Water found at Depth	Kind of Water	Hole Diameter Depth From	Depth To	Diameter (cm/in)
94 (m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☒ Untested; ☐ Other, specify	0'	103'	6"
(m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested; ☐ Other, specify			
(m/ft) ☐ Gas	Kind of Water: ☐ Fresh ☐ Untested; ☐ Other, specify			

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
AIR ROCK DRILLING CO LTD	1119

Business Address (Street Number/Name)	Municipality
RR#1 RICHMOND	

Province	Postal Code	Business E-mail Address
ONT	K0A2Z0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	PURCELL SHANNON

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
1122		20090616

Comments:

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	20090519	20090513

Ministry Use Only

Audit No. Z 94643

AUG 03 2009 Received

0506E (12/2007)

Ministry's Copy

A 089381

Ontario — Ministry of the Environment

Well Ta... (See Below) A 089381

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☐ Imperial

[redacted]

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
#6707 Waterside Court	Osgoode	2	3

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Greely	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	460502	5014110	PLAN 4M-1123	S/L 3

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand, Gravel + Boulders			0'	34'
	Grey Limestone			34'	60'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
40'	30'	Neat Cement Slurry	7.8
30'	0	Neat Bentonite Slurry	25.2

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6"	Steel	.188"	+2'	40'
5 7/8"	Open Hole		40'	60'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth	Kind of Water	
48 (m/ft) ☐ Gas	☐ Fresh ☒ Untested ☐ Other, *specify*	
52 (m/ft) ☐ Gas	☐ Fresh ☒ Untested ☐ Other, *specify*	
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*	

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	40'	6"
40'	60'	5 7/8"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify* TESTED

If pumping discontinued, give reason: [redacted]

Pump intake set at (m/ft) 50'

Pumping rate (l/min / GPM) 20

Duration of pumping hrs 0 min

Final water level end of pumping (m/ft) 8'3"

If flowing give rate (l/min / GPM) [redacted]

Recommended pump depth (m/ft) 50'

Recommended pump rate (l/min / GPM) 20

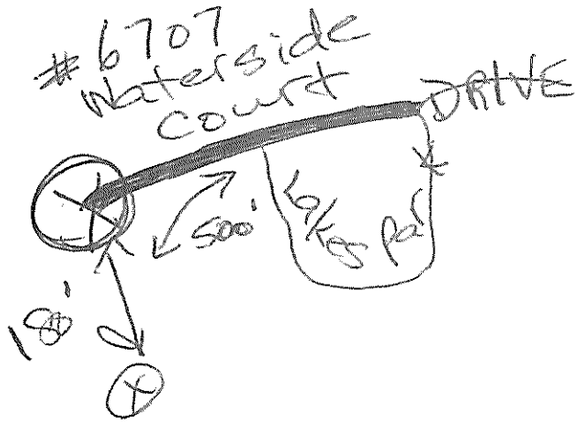
Well production (l/min / GPM) 20+

Disinfected? ☒ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		6'7"		8'3"
1	1	8'1"	1	6'8"
2	2	8'3"	2	6'7"
3	3	8'3"	3	6'7"
4	4		4	
5	5		5	
10	10		10	
15	15		15	
20	20		20	
25	25		25	
30	30		30	
40	40		40	
50	50		50	
60	60		60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
AIR ROCK DRILLING CO LTD	1119

Business Address (Street Number/Name)	Municipality
RR#1	RICHMOND

Province	Postal Code	Business E-mail Address
ONT	K0A 2Z0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
613 838 2170	GRAHAM RYAN

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T3484	[signature]	2009/10/26

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2009/10/06	2009/10/05

Ministry Use Only

Audit No. Z102718

Received OCT 27 2009

A 095927

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

Well T... (...Below) A095927

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

[redacted]

Well Location

Address of Well Location (Street Number/Name): #616 Ballycastle

Township: Gloucester

Lot: P/L 29+30

Concession: Con 3

County/District/Municipality: Ottawa-Carleton

City/Town/Village: Gloucester

Province: Ontario

Postal Code:

UTM Coordinates — NAD 83 — Zone: 18 — Easting: 453145 — Northing: 5013389

Municipal Plan and Sublot Number: PLAN 4M-1275 S/L 30

Other:

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Clay, Gravel & Sand			0'	29'
	Grey Limestone			29'	61'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
40'	0'	Neat Cement Slurry	23.4

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, specify

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6"	Steel	.188"	+2'	40'
6"	Open Hole		40'	61'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
47	☐	☐ Fresh ☒ Untested	
51	☐	☐ Fresh ☒ Untested	
54	☐	☐ Fresh ☒ Untested	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0'	61'	6"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify (MUDDY)

If pumping discontinued, give reason:

Pump intake set at (m/ft): 50'

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 5'

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 50'

Recommended pump rate (l/min / GPM): 20

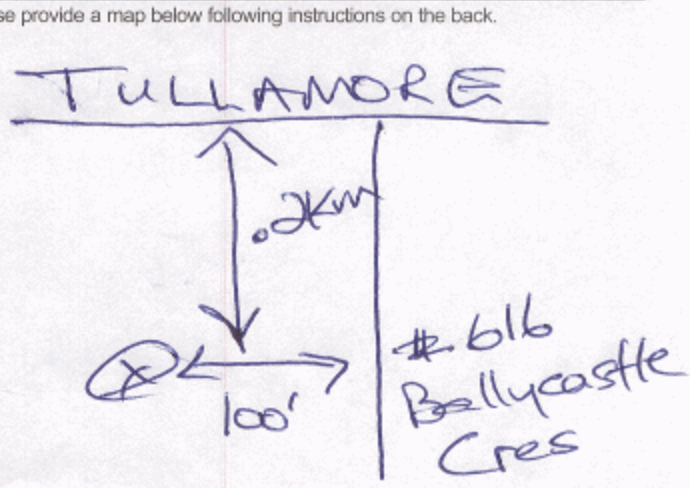
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	3'7"		5'
1	4'	1	3'7"
2	↓	2	
3	4'1"	3	
4	↓	4	
5	4'2"	5	
10	4'3"	10	
15	4'4"	15	
20	4'6"	20	
25	4'8"	25	
30	↓	30	
40	↓	40	
50	4'9"	50	
60	5'	60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: AIR ROCK DRILLING CO LTD

Well Contractor's Licence No.: 1119

Business Address (Street Number/Name): RR#1

Municipality: RICHMOND

Province: ONT

Postal Code: K0A2Z0

Business E-mail Address:

Bus. Telephone No. (inc. area code): 6138382170

Name of Well Technician (Last Name, First Name): HOGAN DAN

Well Technician's Licence No.: T3058

Signature of Technician and/or Contractor:

Date Submitted: 2010/05/10

Well owner's information package delivered: ☒ Yes ☐ No

Date Package Delivered: 2010/04/12

Date Work Completed: 2010/04/06

Ministry Use Only

Audit No. Z 108312

Received JUN 01 2010

0506E (12/2007)

Ministry's Copy

A105381

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. (Place Sticker and Stub Below): A105381

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

[redacted]

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
#604 Ballycastle	Gloucester	PL 394	30 Con 3

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Gloucester	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18	453071	5013559	PLAN 4M-1275	S/L 27.

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand			0'	6'
	Grey Clay			6'	15'
	Sand & Gravel			15'	47'
	Grey Limestone			47'	122'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³)
58'	0'	Neat Cement Slurry	39.

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6"	Steel	.188"	+2'	58'
5 15/16	Open hole		58'	122'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
115	☐ Fresh ☒ Untested	☐	
	☐ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0'	58'	6"
58'	122'	5 15/16"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify NOTED

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 100'

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 23'5"

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft): 100'

Recommended pump rate (l/min / GPM): 20

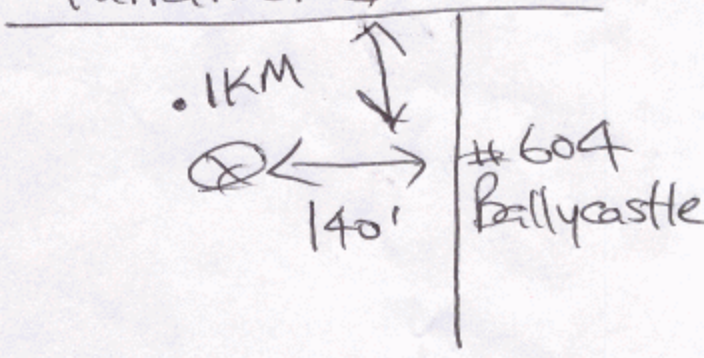
Well production (l/min / GPM): 20+

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	17'6"		23'5"
1	21'8"	1	18'8"
2	20'2"	2	18'2"
3	22'4"	3	17'8"
4	22'6"	4	17'6"
5	22'8"	5	
10		10	
15		15	
20		20	
25		25	
30	22'9"	30	
40	23'1"	40	
50	23'3"	50	
60	23'5"	60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
AIR Rock DRILLING Co LTD	1119

Business Address (Street Number/Name)	Municipality
RR#1	RICHMOND

Province	Postal Code	Business E-mail Address
ONT	K0A2Z0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
613 838 2170	GRAHAM RYAN

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
13484		2010 08 09

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2010 07 22	2010 07 19

Ministry Use Only

Audit No. z110726

Received AUG 20 2010

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Ministry's Copy

A105503

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. (Place Sticker and/or Print Below): A105503

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

[redacted]

Address of Well Location (Street Number/Name): #532 Tullamore

Township: Rideau Front & Gloucester

Lot: PL 29 & 30

Concession: 3

County/District/Municipality: Ottawa-Carleton

City/Town/Village: Gloucester

Province: Ontario

Postal Code:

UTM Coordinates: NAD 83 Zone 18 Easting 452933 Northing 5013479

Municipal Plan and Sublot Number: PLAN # 4M-1275

Other: SL # 24

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Gravel Fill			0'	3'
	Grey Clay			3'	12'
	Sand, Gravel + Boulders			12'	46'
	Grey limestone			46'	105'
	Grey limestone + Sandstone Mix			105'	160'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/Imp gal)
58'	0'	Neat Cement Slurry	42.12

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, specify

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6"	Steel	.188"	+2'	58'
5 3/4"	Open hole		58'	160'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas
85	☐ Fresh ☒ Untested	☐ Gas
135	☐ Fresh ☒ Untested	☐ Gas
154	☐ Fresh ☒ Untested	☐ Gas

Other, specify: ____

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0'	58'	6"
58'	160'	5 3/4"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify
NOT TESTED

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 140'

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs 0 min

Final water level end of pumping (m/ft): 36'6"

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): (1/2HP) 140'

Recommended pump rate (l/min / GPM): 20

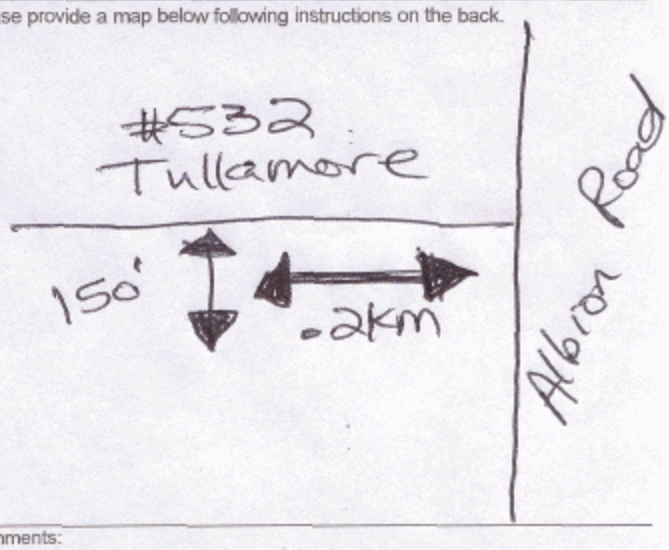
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	17'2"		36'6"
1	23'6"	1	26'1"
2	25'9"	2	24'4"
3	28'	3	23'2"
4	29'3"	4	22'3"
5	30'2"	5	21'5"
10	33'	10	19'
15	34'2"	15	17'3"
20	34'9"	20	17'2"
25	35'4"	25	
30	35'7"	30	
40	36'2"	40	
50	36'5"	50	
60	36'6"	60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: AIR ROCK DRILLING CO LTD

Well Contractor's Licence No.: 1119

Business Address (Street Number/Name): RR#1

Municipality: RICHMOND

Province: ONT

Postal Code: K0A2Z0

Business E-mail Address:

Bus. Telephone No. (inc. area code): 613 8382170

Name of Well Technician (Last Name, First Name): GRAHAM RYAN

Well Technician's Licence No.: T3484

Signature of Technician and/or Contractor:

Date Submitted: 2010 09 03

Well owner's information package delivered: ☒ Yes ☐ No

Date Package Delivered: 2010 08 23

Date Work Completed: 2010 08 30

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Audit No.: z110665

Received: SEP 17 2010

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Measurements recorded in: [X] Metric [ ] Imperial

Well Tag No. (Place Sticker and/or Print Below): A102479 A102479

Well Record

...ation 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	[ ] Well Constructed by Well Owner
	Junicon Homes		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
555 Winnards Perch	Manotick	Ontario	K4M 0A1	613 692 1414

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
608 Ballycastle	Gloucester	30	3

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa Carleton	Gloucester	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	453068	5013483		

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Brown	Soil Stones		Fill	0	1.52
Brown	Sandy Clay			1.52	3.65
Grey	Clay		Sticky	3.65	10.66
Grey	Till			10.66	17.06
Grey	Limestone			17.06	32.00
Grey & White	Sandstone			32.00	67.96

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
19.20	0	Grouted Bentonite Slurry	.92m^3

Method of Construction

[ ] Cable Tool [ ] Diamond
[X] Rotary (Conventional) Mud [ ] Jetting
[ ] Rotary (Reverse) [ ] Driving
[ ] Boring [ ] Digging
[X] Air percussion
[ ] Other, specify

Well Use

[ ] Public [ ] Commercial [ ] Not used
[X] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [ ] Monitoring
[ ] Irrigation [ ] Cooling & Air Conditioning
[ ] Industrial
[ ] Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
15.86	Steel	.48	+.45	19.20

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To

Status of Well

[X] Water Supply
[ ] Replacement Well
[ ] Test Hole
[ ] Recharge Well
[ ] Dewatering Well
[ ] Observation and/or Monitoring Hole
[ ] Alteration (Construction)
[ ] Abandoned, Insufficient Supply
[ ] Abandoned, Poor Water Quality
[ ] Abandoned, other, specify
[ ] Other, specify

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
64.91	[ ]	[ ] Fresh [X] Untested	
	[ ]	[ ] Fresh [ ] Untested	
	[ ]	[ ] Fresh [ ] Untested	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	19.20	15.86
19.20	67.96	15.23

Results of Well Yield Testing

After test of well yield, water was:
[X] Clear and sand free
[ ] Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft): 60.95

Pumping rate (l/min / GPM): 45.5

Duration of pumping: 6 hrs + ____ min

Final water level end of pumping (m/ft): 8.13

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 30.47

Recommended pump rate (l/min / GPM): 45.5

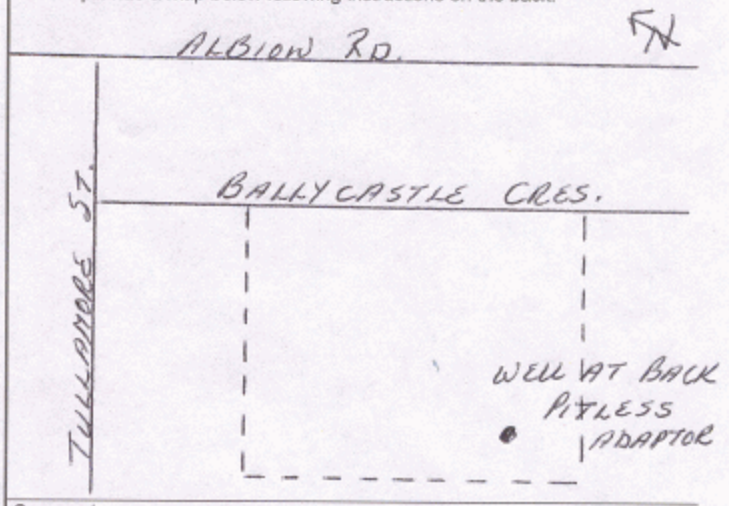
Well production (l/min / GPM):

Disinfected? [X] Yes [ ] No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	6.85		
1	7.84	1	7.20
2	8.13	2	7.04
3	8.42	3	7.03
4	8.69	4	7.03
5	8.84	5	7.02
10	9.44	10	7.01
15	9.73	15	7.01
20	9.92	20	7.00
25	9.99	25	7.00
30	10.03	30	7.00
40	10.10	40	7.00
50	10.14	50	7.00
60	10.14	60	7.00

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Capital Water Supply Ltd.	1558

Business Address (Street Number/Name)	Municipality
Box 490	Stittsville

Province	Postal Code	Business E-mail Address
Ontario	K2S 1A6	office@capitalwater.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
613 836 1766	Miller, Stephen

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
0097		2010092 1

Well owner's information package delivered	Date Package Delivered	Date Work Completed
[X] Yes [ ] No	2010092 1	2010092 0

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Ontario — Ministry of the Environment

Measurements recorded in: ☑ Metric ☐ Imperial

Well A110571 (See Instructions Below) — A110571

Well Record

Regulation 903 Ontario Water Resources Act

[redacted]

Address of Well Location (Street Number/Name): 600 Ballycastle Crest, | Township: Glouseeter | Lot: 26 | Concession: 3

County/District/Municipality: OTTAWA - City | City/Town/Village: Gloucester | Province: Ontario | Postal Code: K1X 0A2

UTM Coordinates: NAD 83 | Zone: 18 | Easting: 453173 | Northing: 5013604 | Municipal Plan and Sublot Number: 4M-1275 | Other:

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Brown	Sand.	Boulders	Soft	0	13.33
Grey	Limestone.		Hard.	13.33	54.54

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
16.36	0	Cement Grout	560 kg.

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Public ☐ Commercial ☐ Not used

☐ Rotary (Conventional) ☐ Jetting ☑ Domestic ☐ Municipal ☐ Dewatering

☑ Rotary (Reverse) AIR ☐ Driving ☐ Livestock ☐ Test Hole ☐ Monitoring

☐ Boring ☐ Digging ☐ Irrigation ☐ Cooling & Air Conditioning

☐ Air percussion ☐ Industrial

☐ Other, specify ☐ Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
15.55	Steel	0.48	+2.12	16.36

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☑ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

Water found at Depth 46.96 (m/ft) ☐ Gas — Kind of Water: ☑ Fresh ☐ Untested — ☐ Other, specify

Water found at Depth 51.51 (m/ft) ☐ Gas — Kind of Water: ☑ Fresh ☐ Untested — ☐ Other, specify

Water found at Depth (m/ft) ☐ Gas — Kind of Water: ☐ Fresh ☐ Untested — ☐ Other, specify

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	16.36	15.55
16.36	54.54	15.55

Results of Well Yield Testing

After test of well yield, water was: ☑ Clear and sand free ☐ Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft): 53.03

Pumping rate (l/min / GPM): 45.00

Duration of pumping: 3 hrs + 00 min

Final water level end of pumping (m/ft): 5.45

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 53.03

Recommended pump rate (l/min / GPM): 45.00

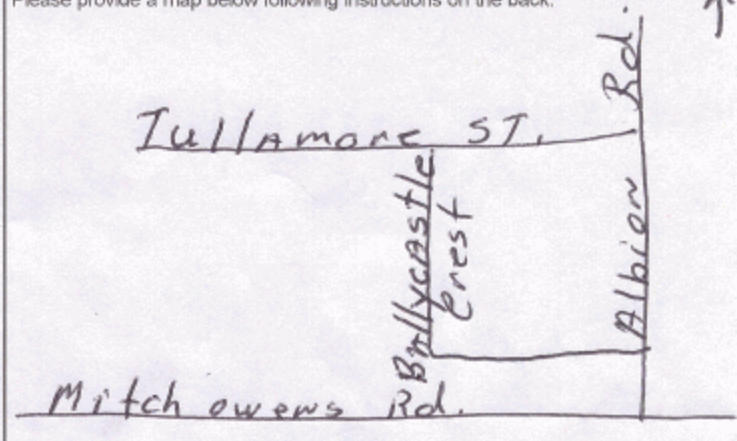
Well production (l/min / GPM): 90.00

Disinfected? ☑ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	3.59		5.45
1	4.51	1	3.81
2	4.90	2	3.15
3	5.04	3	3.68
4	5.06	4	3.60
5	5.11	5	3.59
10	5.30	10	
15	5.35	15	
20	5.39	20	
25	5.41	25	
30	5.42	30	
40	5.44	40	
50	5.45	50	
60	5.45	60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor: DXR-WATER-well-Drilling | Well Contractor's Licence No.: 6006

Business Address (Street Number/Name): 1763 - Route 900 west | Municipality: WATTON

Province: ON | Postal Code: K0A3C0 | Business E-mail Address:

Bus. Telephone No. (inc. area code): 6139875598 | Name of Well Technician (Last Name, First Name): Desnoyers Louis

Well Technician's Licence No.: TC25 | Signature of Technician and/or Contractor: [signature] | Date Submitted: 2011/05/31

Well owner's information package delivered ☑ Yes ☐ No — Date Package Delivered: 2011/05/25

Date Work Completed: 2011/05/25

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Received JUN 28 2011

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Well Record

on 903 Ontario Water Resources Act

Well Tag No. (Place Sticker and/or Print Below): A123364 **Tag#: A123364**

Measurements recorded in: [X] Metric [ ] Imperial

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	
	Metric Homes		[ ] Well Constructed by Well Owner

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
114 Arbourbrook Blvd.	Carp	Ontario	K0A 1L0	613 836 8079

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
508 Tullamore Dr. (Lot 18)	Gloucester	29/30	3

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa Carleton	Manotick	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	452728	5013366		

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Brown	Sand		Wet	0	1.52
Grey	Clay			1.52	5.48
Grey	Sand	Boulders		5.48	12.80
Grey & White	Sandstone		Very Hard	12.80	67.05

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
14.62	0	Grouted Bentonite Slurry	.92m^3

Method of Construction

[ ] Cable Tool [ ] Diamond
[X] Rotary (Conventional) [ ] Jetting — Mud
[ ] Rotary (Reverse) [ ] Driving
[ ] Boring [ ] Digging
[X] Air percussion
[ ] Other, specify _____

Well Use

[ ] Public [ ] Commercial [ ] Not used
[X] Domestic [ ] Municipal [ ] Dewatering
[ ] Livestock [ ] Test Hole [ ] Monitoring
[ ] Irrigation [ ] Cooling & Air Conditioning
[ ] Industrial
[ ] Other, specify _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
15.86	Steel	.48	+2.13	14.62

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

[X] Water Supply
[ ] Replacement Well
[ ] Test Hole
[ ] Recharge Well
[ ] Dewatering Well
[ ] Observation and/or Monitoring Hole
[ ] Alteration (Construction)
[ ] Abandoned, Insufficient Supply
[ ] Abandoned, Poor Water Quality
[ ] Abandoned, other, specify
[ ] Other, specify

Water Details

Water found at Depth	Kind of Water	
66.44 (m/ft) [ ] Gas	[ ] Fresh [X] Untested [ ] Other, specify	
(m/ft) [ ] Gas	[ ] Fresh [ ] Untested [ ] Other, specify	
(m/ft) [ ] Gas	[ ] Fresh [ ] Untested [ ] Other, specify	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	14.62	15.86
14.62	67.05	15.55

Results of Well Yield Testing

After test of well yield, water was:
[X] Clear and sand free
[ ] Other, specify _____

If pumping discontinued, give reason:

Pump intake set at (m/ft): 22.85

Pumping rate (l/min / GPM): 54.6

Duration of pumping: 1 hrs + _____ min

Final water level end of pumping (m/ft): 5.69

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 22.85

Recommended pump rate (l/min / GPM): 45.5

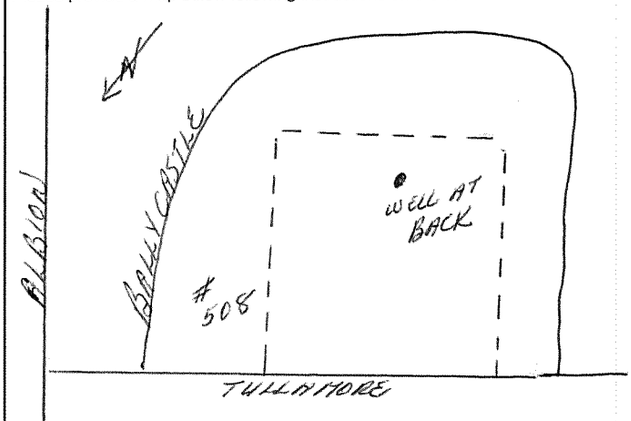
Well production (l/min / GPM):

Disinfected? [X] Yes [ ] No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		5.51		
1	5.66	1	5.54	
2	5.68	2	5.53	
3	5.68	3	5.52	
4	5.68	4	5.52	
5	5.68	5	5.51	
10	5.68	10	5.51	
15	5.68	15	5.51	
20	5.68	20	5.51	
25	5.68	25	5.51	
30	5.68	30	5.51	
40	5.68	40	5.51	
50	5.69	50	5.51	
60	5.69	60	5.51	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Capital Water Supply Ltd.	1558

Business Address (Street Number/Name)	Municipality
Box 490	Stittsville

Province	Postal Code	Business E-mail Address
Ontario	K2S 1A6	office@capitalwater.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
613 836 1766	Miller, Stephen

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
0097		2012 11 19

Well owner's information package delivered	Date Package Delivered	Date Work Completed
[X] Yes [ ] No	2012 11 14	2012 11 13

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Tag#: A127936

(Print Below) A127936

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Omega Homes c/o 7184841 Canada Inc		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
4515 Ramsayville Road	Gloucester	ON	K1G 3N4	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
695 Ballycastle Crescent	Rideau Front	P/L 29 & 30	3

County/District/Municipality	City/Town/Village	Province	Postal Code
Gloucester	Gloucester	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	452722	5013083	4M-1275	S/L 31

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Gravel			0	2
Grey	Clay			2	15
Grey	Silty Sand			15	43
Grey & White	Sandstone			43	91
Grey & White	Sandstone			91	164
Grey & White	Sandstone			164	170

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
54	0	Neat cement	59.3

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4"	Steel	.188"	+2	54
5 7/8"	Open Hole		54	170

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Hole Diameter Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
91 ☐ Gas	☐ Fresh ☒ Untested ☐ Other, *specify*	0	54	9 3/4"
164 ☐ Gas	☐ Fresh ☒ Untested ☐ Other, *specify*	54	170	5 7/8"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify* **Not tested**

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 160'

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 25.5"

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): 100'

Recommended pump rate (l/min / GPM): 20

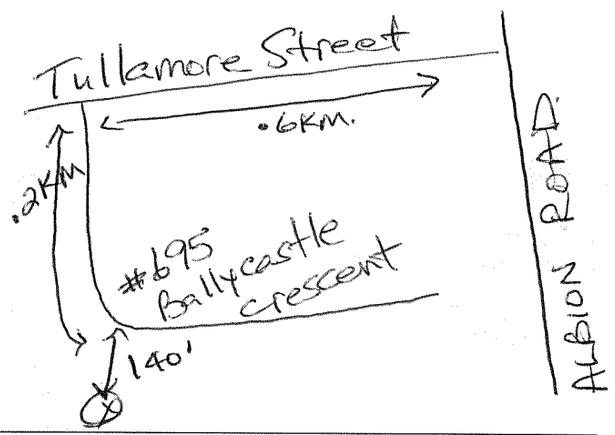
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	12.6"		25.6"
1	15.4	1	12.6
2	19	2	12.6
3	19.6	3	12.6
4	20.5	4	12.6
5	21.1	5	12.6
10	22	10	12.6
15	22.4	15	12.6
20	22.6	20	12.6
25	23.9	25	12.6
30	25.5	30	12.6
40	25.5	40	12.6
50	25.6	50	12.6
60	25.6"	60	12.6"

Map of Well Location

Please provide a map below following instructions on the back.



Comments:
3/4 HP - 15 GPM SET @ 100 FEET

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6659 Franktown Road, RR#1	Richmond

Province	Postal Code	Business E-mail Address
ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	Graham, Ryan

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T3484		2013 03 29

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2013 03 19	2013 03 13

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Audit No. z155053

Received APR 15 2013

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Measurements recorded in: ☑ Metric ☐ Imperial

Well Tag#: A151899 (See Instructions Below)

A151899

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 3

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
704 Ballycastle Cr	Gloucester	3	

County/District/Municipality	City/Town/Village	Province	Postal Code
OTTAWA - City	Gloucester	Ontario	K1K0A2

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	452771	5013242	4M-1482	

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Brown	Sand		Soft	0	3.93
Grey	Clay		Soft	3.93	6.96
Grey	SHALE	Gravel	Loose	6.96	10.00
Grey	Limestone		Hard	10.00	30.90

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
13.03	0	Cement Grout	4 Bags
		Bentonite Chips	6 Bags

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☑ Rotary (Reverse) AIR ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, *specify*

Well Use

☐ Public ☐ Commercial ☐ Not used
☑ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
25.40	Open Hole		0	13.03
15.55	Steel	0.48	+1.51	13.03

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☑ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth	Kind of Water	Hole Diameter Depth From	Hole Diameter Depth To	Hole Diameter Diameter (cm/in)
11.51 (m/ft) ☐ Gas	☑ Fresh ☐ Untested ☐ Other, *specify*	0	30.90	15.55
7.87 (m/ft) ☐ Gas	☑ Fresh ☐ Untested ☐ Other, *specify*			
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			

Results of Well Yield Testing

After test of well yield, water was:
☑ Clear and sand free
☐ Other, *specify*

If pumping discontinued, give reason:

Pump intake set at (m/ft): 28.78

Pumping rate (l/min / GPM): 45.00

Duration of pumping: 1 hrs + 00 min

Final water level end of pumping (m/ft): 20.77

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 28.78

Recommended pump rate (l/min / GPM): 45.00

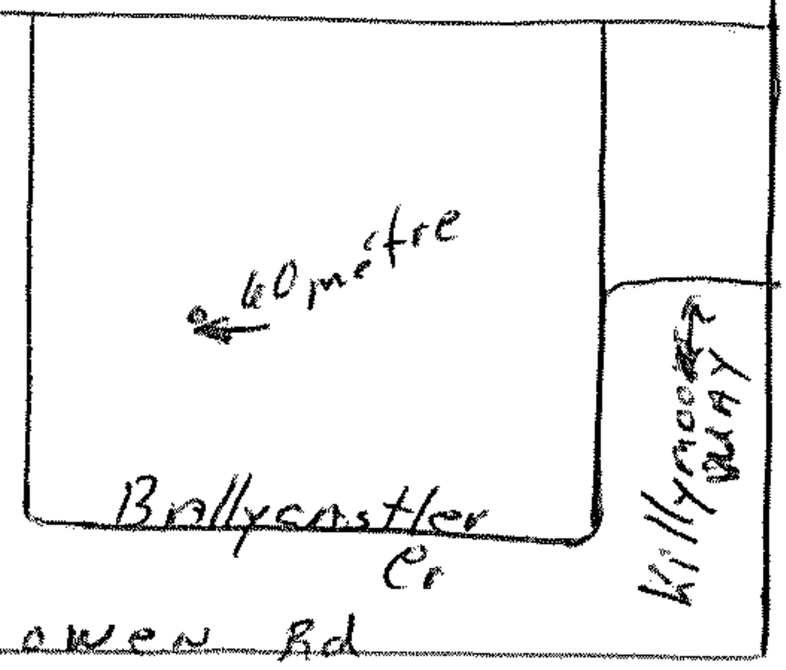
Well production (l/min / GPM): 49.50

Disinfected? ☑ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	6.29		20.77
1	7.18	1	18.60
2	8.20	2	17.55
3	8.92	3	16.49
4	9.60	4	15.51
5	10.42	5	14.71
10	13.03	10	11.53
15	14.89	15	9.53
20	16.40	20	7.82
25	17.44	25	6.96
30	18.25	30	6.27
40	19.37	40	6.27
50	20.77	50	6.27
60	20.77	60	6.27

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
DXR-WATER-well-Drilling	6006

Business Address (Street Number/Name)	Municipality
1763 - Route 900 west	Watiow

Province	Postal Code	Business E-mail Address
ON	K0A3C0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6139825578	Desnoyers Louis

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
TG25	Louis Desnoyers	2013/12/27

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☑ Yes ☐ No	2013/12/23	2013/12/23

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Ontario — Ministry of the Environment

Tag#: A144804

(or Print Below)

A144804

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page _____ of _____

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
688 Ballycastle Crescent	Rideau Front	P/L 29	3

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Gloucester	Ontario	

JTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	452765	5013184	4M-1482	S/L 5

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand & Gravel	Boulders		0'	40'
Grey & White	Sandstone			40'	85'
Grey & White	Sandstone			85'	115'
Grey & White	Sandstone			115'	123'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
50'	0'	Neat cement	46.8

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☑ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4"	Steel	.188"	+2'	50'
6"	Open Hole		50'	123'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
85	☐	☐ Fresh ☒ Untested	
115	☐	☐ Fresh ☒ Untested	
	☐	☐ Fresh ☐ Untested	

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0'	50'	9 3/4"
50'	123'	6"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify* Not tested

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 100

Pumping rate (l/min / GPM): 15

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 31.5'

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): 100'

Recommended pump rate (l/min / GPM): 15

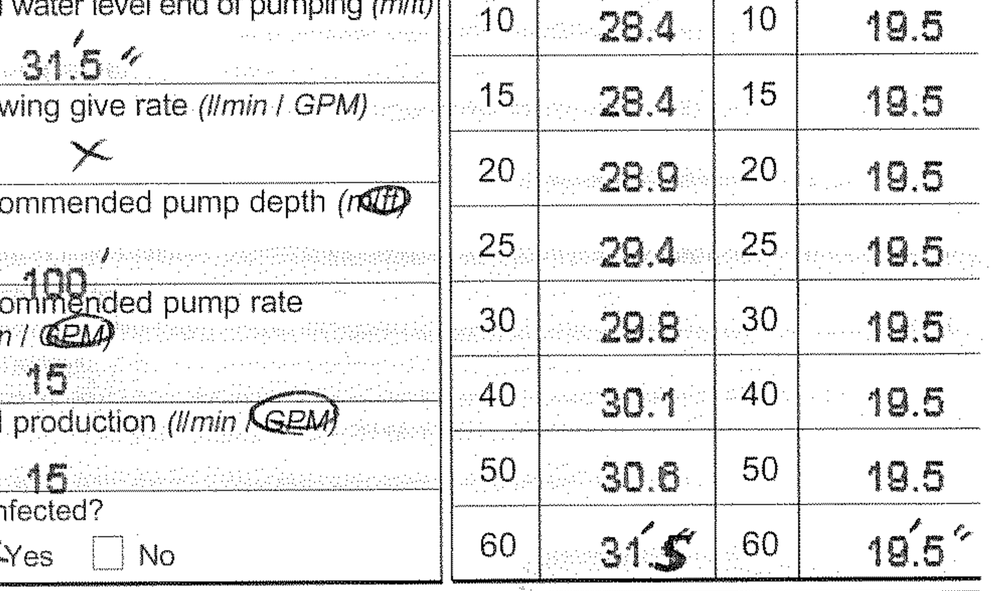
Well production (l/min / GPM): 15

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	19'5"		31.5"
1	25	1	22
2	26.3	2	19.5
3	26.9	3	19.5
4	27.3	4	19.5
5	27.6	5	19.5
10	28.4	10	19.5
15	28.4	15	19.5
20	28.9	20	19.5
25	29.4	25	19.5
30	29.8	30	19.5
40	30.1	40	19.5
50	30.6	50	19.5
60	31.5	60	19.5"

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

3/4 HP - 15 GPM SET @ 100 FT

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6659 Franktown Road, RR#1	Richmond

Province	Postal Code	Business E-mail Address
ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	Hogan, Dan

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T3058		2014 09 30

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2014 09 02	2014 08 26

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Audit No. Z167008

Received SEP 22 2014

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Ontario (https://www.ontario.ca/page/government-ontario)

Map: Well records

This map allows you to search and view well record information from reported wells in Ontario.

Full dataset is available in the Open Data catalogue (https://data.ontario.ca/dataset/well-records) .

Go Back to Map

Well ID

Well ID Number: 7233986
Well Audit Number: *C22635*
Well Tag Number: *A147901*
This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location	
Township	OSGOODE TOWNSHIP
Lot	
Concession	

County/District/Municipality	OTTAWA-CARLETON
City/Town/Village	
Province	ON
Postal Code	n/a
UTM Coordinates	NAD83 — Zone 18 Easting: 453450.00 Northing: 5012552.00
Municipal Plan and Sublot Number	
Other	

Overburden and Bedrock Materials Interval

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To

Annular Space/Abandonment Sealing Record

Depth From	Depth To	Type of Sealant Used (Material and Type)	Volume Placed

Method of Construction & Well Use

Method of Construction	Well Use

Status of Well

Construction Record - Casing

Inside Diameter	Open Hole or material	Depth From	Depth To

Construction Record - Screen

Outside Diameter	Material	Depth From	Depth To

Well Contractor and Well Technician Information

Well Contractor's Licence Number: 1844

Results of Well Yield Testing

After test of well yield, water was	
If pumping discontinued, give reason	
Pump intake set at	
Pumping Rate	
Duration of Pumping	
Final water level	
If flowing give rate	
Recommended pump depth	
Recommended pump rate	
Well Production	
Disinfected?	

Draw Down & Recovery

Draw Down Time(min)	Draw Down Water level	Recovery Time(min)	Recovery Water level
SWL			
1		1	
2		2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
45		45	

50		50	
60		60	

Water Details

Water Found at Depth	Kind

Hole Diameter

Depth From	Depth To	Diameter

Audit Number: C22635

Date Well Completed: September 08, 2014

Date Well Record Received by MOE: December 16, 2014

Related

How to use a Ministry of the Environment map (https://www.ontario.ca/page/how-use-ministry-environment-map#wells)

Technical documentation: Metadata record (https://data.ontario.ca/dataset/well-records/resource/3031344e-e3f2-48d5-888c-c1deadfd2f77)

Ontario — Ministry of the Environment

Tag #: A167454

A167454

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	John Gerard Homes		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
PO Box 40	Greely	On	K4N 1A0	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
647 Ballycastle Crescent	Rideau Front	P/L 29 & 30	3

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Gloucester	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18	453271	5013208	4M-1482	S/L 19

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand			0'	8'
	Clay	+ Boulders		8'	20'
	Gravel			20'	50'
Grey & White	Sandstone	w/Grey	Limestone	50'	89'
Grey & White	Sandstone	w/Grey	Limestone	89'	115'
Grey & White	Sandstone	w/Grey	Limestone	115'	133'
Grey & White	Sandstone	w/Grey	Limestone	133'	140'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
60'	0'	Neat cement	49.9

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, specify

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6¼"	Steel	.188"	+2'	60'
6"	Open Hole		60'	140'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

Water found at Depth (m/ft)	Kind of Water	
89	☐ Fresh ☒ Untested ☐ Gas ☐ Other, specify	
115	☐ Fresh ☒ Untested ☐ Gas ☐ Other, specify	
133	☐ Fresh ☒ Untested ☐ Gas ☐ Other, specify	

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0'	60'	9 3/4"
60'	140'	6"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify **Not tested**

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 130

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 92'

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): 100'

Recommended pump rate (l/min / GPM): 20

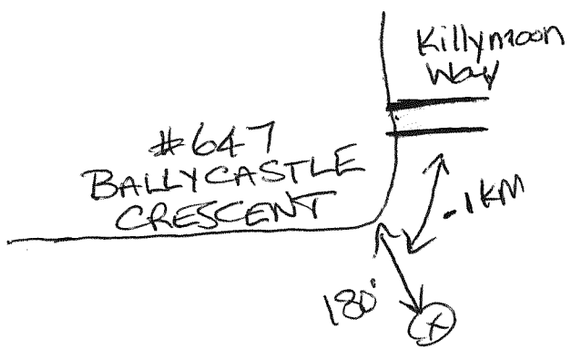
Well production (l/min / GPM): 20+

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	16.9"		92'
1	26.5	1	64.4
2	32.9	2	54.8
3	38	3	47
4	42.4	4	40
5	46.1	5	34.6
10	59.8	10	21
15	68.6	15	16.9
20	74.5	20	16.9
25	77.8	25	16.9
30	81	30	16.9
40	85	40	16.9
50	89	50	16.9
60	92'	60	16.9"

Map of Well Location

Please provide a map below following instructions on the back.



Comments: 3/4 HP - 15 GPM SET @ 100 FT

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Well Contractor's Address (Street Number/Name)	Municipality
5050 Franktown Road, RR#1	Richmond

Province	Postal Code	Business E-mail Address
ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	Hanna, Jeremy

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T3632		2014 11 28

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2014 11 04	2014 10 29

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Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☐ Imperial

Well Tag No. *(Place Sticker and/or Print Below)*

Tag#: A153560

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
651 bally castle Cres	Gloucester	30	03

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa Carleton	Gloucester	Ontario	K1X0A2

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	753548	4516613	Sublot 20/4M-1482	

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Brown	Sand with stones			0	38'
Grey	Fractured	Bedrock		38'	45'
Grey	Med	Bedrock		45'	85'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
45'	0'	6 Bags cement	
		10 Bags Quik grout	

Method of Construction

☐ Cable Tool ☐ Diamond
☒ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
10"	open hole		0	45'
6"	steel	.188	+3	45'
6"	open hole		45'	80'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	
67'	☒ Fresh ☐ Untested	☐ Gas ☐ Other, *specify*
	☐ Fresh ☐ Untested	☐ Gas ☐ Other, *specify*
	☐ Fresh ☐ Untested	☐ Gas ☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)

Results of Well Yield Testing

After test of well yield, water was:
☒ Clear and sand free
☐ Other, *specify* _____

If pumping discontinued, give reason:

Pump intake set at (m/ft): 50 ft

Pumping rate (l/min / GPM): 10 gpm

Duration of pumping: 1 hrs + _____ min

Final water level end of pumping (m/ft): 15.3'

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft): 60'

Recommended pump rate (l/min / GPM): 10 gpm

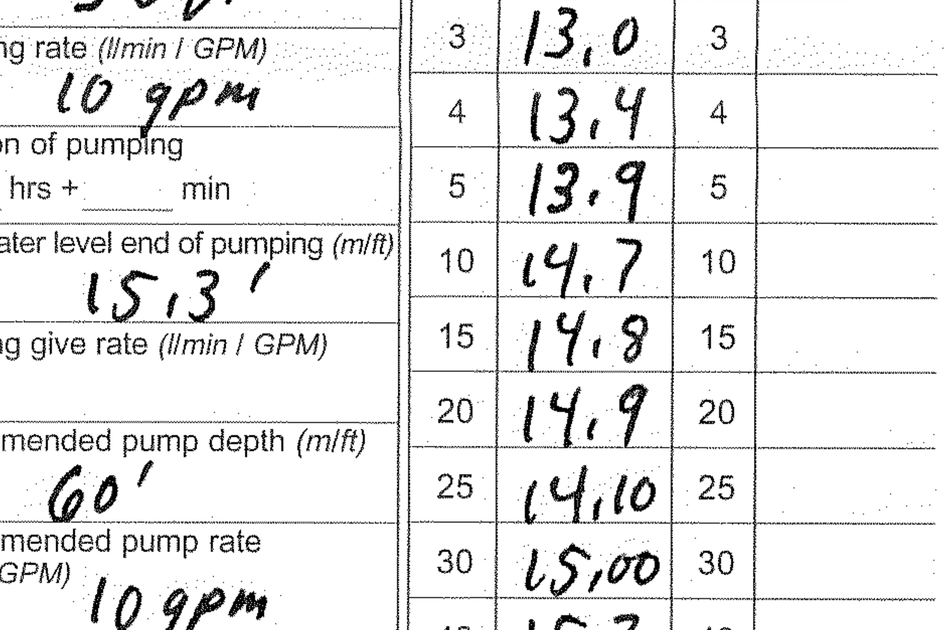
Well production (l/min / GPM): 35

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	12.1		
1	12.4	1	
2	12.7	2	
3	13.0	3	
4	13.4	4	
5	13.9	5	
10	14.7	10	
15	14.8	15	
20	14.9	20	
25	14.10	25	
30	15.00	30	
40	15.3	40	
50	15.3	50	
60	15.3	60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Olympic Drilling Co ltd	4006

Business Address (Street Number/Name)	Municipality
6662 Bank st Metcalfe	

Province	Postal Code	Business E-mail Address
ont	K0A2P0	

Bus.Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6132298371	Wayne Renwick

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
0327	Wayne Renwick	2014 12 20

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☐ No	20141220	20141203

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Well A018835 (Print Below)

A018835

Well Record

Regulation 903 Ontario Water Resources Act

Measurements recorded in: ☐ Metric ☒ Imperial

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Mackie Homes		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
Box 136	Greely	ON	K4P 1N4	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
684 Ballycastle Crescent	Rideau Front	P/L 29	3

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Gloucester	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	452820	5013191	4M-1482	S/L 6

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Clay			0'	25'
	Sand	& Gravel		25'	40'
Grey	Limestone			40'	67'
Grey & White	Sandstone			67'	93'
Grey & White	Sandstone			93'	100'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
50'	0'	Neat cement	40.6

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☒ Air percussion ☐ Other, *specify*

Well Use

☐ Public ☐ Commercial ☐ Not used ☒ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☐ Test Hole ☐ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ Industrial ☐ Other, *specify*

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6¼"	Steel	.188"	+2'	50'
6"	Open Hole		50'	100'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, *specify* ☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Other, specify
93 ☐ Gas	☐ Fresh ☒ Untested	
(m/ft) ☐ Gas	☐ Fresh ☐ Untested	
(m/ft) ☐ Gas	☐ Fresh ☐ Untested	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0'	50'	9¾"
50'	100'	6"

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, *specify* Not tested

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 80

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 2'9"

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): 80

Recommended pump rate (l/min / GPM): 20

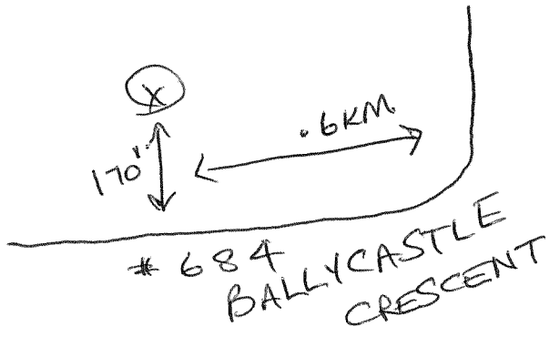
Well production (l/min / GPM): 20

Disinfected? ☐ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	4"		2'9"
1	1.4	1	1.7
2	1.5	2	1.4
3	1.6	3	1.4
4	1.7	4	1.4
5	1.8	5	1.4
10	2.1	10	1.3
15	2.2	15	1.3
20	2.3	20	1.3
25	2.4	25	1.2
30	2.5	30	1.2
40	2.7	40	1.2
50	2.8	50	1.1
60	2'9"	60	1'1"

Map of Well Location

Please provide a map below following instructions on the back.



Comments: 3/4 HP - 15 GPM SET @ 80 FT

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6659 Franktown Road, RR#1	Richmond

Province	Postal Code	Business E-mail Address
ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	Hanna, Jeremy

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted (Y Y Y Y M M D D)
13632		2016 03 31

Well owner's information package delivered	Date Package Delivered (Y Y Y Y M M D D)	Ministry Use Only
☒ Yes ☐ No	2016 03 17	Audit No. Z 202752
	Date Work Completed (Y Y Y Y M M D D)	Received MAY 12 2016
	2016 03 14	

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Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

Tag#: A199892 (t Below)

A199892

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Mackie Homes		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
Box 136	Greely	ON	K4P 1N4	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
668 Ballycastle Crescent	Gloucester	P/L 29	3

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Gloucester	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	453000	5013218	4M-1482	S/L 10

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand & Gravel	& Clay		0′	48′
Grey	Limestone			48′	150′
Grey	Limestone			150′	154′
Grey	Limestone			154′	160′

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
58′	0′	Neat cement	43.7

Method of Construction

☐ Cable Tool ☐ Diamond ☐ Rotary (Conventional) ☐ Jetting ☐ Rotary (Reverse) ☐ Driving ☐ Boring ☐ Digging ☒ Air percussion ☐ Other, specify

Well Use

☐ Public ☐ Commercial ☐ Not used ☒ Domestic ☐ Municipal ☐ Dewatering ☐ Livestock ☐ Test Hole ☐ Monitoring ☐ Irrigation ☐ Cooling & Air Conditioning ☐ Industrial ☐ Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4"	Steel	.188"	+2′	58′
6"	Open Hole		58′	160′

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply ☐ Replacement Well ☐ Test Hole ☐ Recharge Well ☐ Dewatering Well ☐ Observation and/or Monitoring Hole ☐ Alteration (Construction) ☐ Abandoned, Insufficient Supply ☐ Abandoned, Poor Water Quality ☐ Abandoned, other, specify ☐ Other, specify

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
150	☐ Fresh ☒ Untested	☐	
154	☐ Fresh ☒ Untested	☐	
(m/ft)	☐ Fresh ☐ Untested	☐	

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
[redacted]		
0′	58′	9 3/4"
58′	160′	6"

Results of Well Yield Testing

After test of well yield, water was: ☐ Clear and sand free ☐ Other, specify **Not tested**

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 140

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 123.2′

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): 125′

Recommended pump rate (l/min / GPM): 20

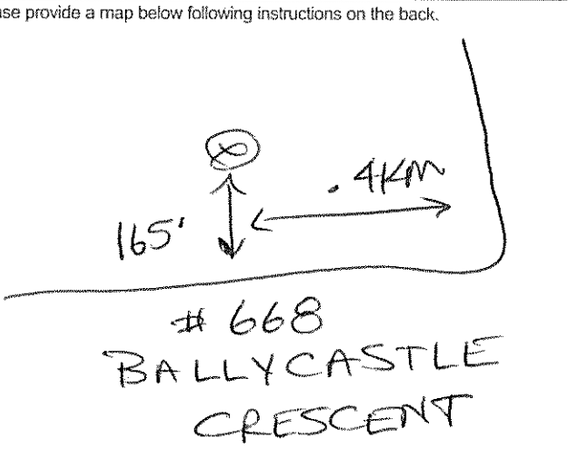
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	24′		123.2′
1	33.3	1	95.7
2	39.5	2	83.4
3	44.6	3	78.2
4	49	4	73.5
5	52.9	5	69.5
10	67.8	10	55.5
15	78.7	15	46.7
20	87.7	20	40.9
25	93.6	25	36.8
30	98.7	30	33.8
40	107.1	40	28.8
50	115.3	50	24
60	123.2′	60	24′

Map of Well Location

Please provide a map below following instructions on the back.



Comments: 1HP-15GPM SET @ 125 FT

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6659 Franktown Road, RR#1	Richmond

Province	Postal Code	Business E-mail Address
ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	Hogan, Dan

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T3058		2016 06 30

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2016 05 30	2016 05 25

Ministry Use Only

Audit No Z 202808

Received AUG 10 2016

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Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Tag#: A207792 (t Below)

A207792

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Mackie Homes		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
Box 136	Greely	ON	K4P 1N4	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
667 Ballycastle Crescent	Gloucester	P/L 29	3

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Gloucester	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18	452987	5013124	4M-1482	S/L 24

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Clay	& Sand	& Boulders	0'	36'
Grey	Limestone			36'	68'
Grey	Limestone			68'	89'
Grey	Limestone			89'	95'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
46'	0'	Neat cement	43.7

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, specify _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, specify _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4"	Steel	.188"	+2'	46'
6"	Open Hole		46'	95'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
68	☐	☐ Fresh ☒ Untested	
89	☐	☐ Fresh ☒ Untested	
	☐	☐ Fresh ☐ Untested	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0'	46'	9 3/4"
46'	95'	6"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify ~~Not tested~~

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 80

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 9'3"

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): 80'

Recommended pump rate (l/min / GPM): 20

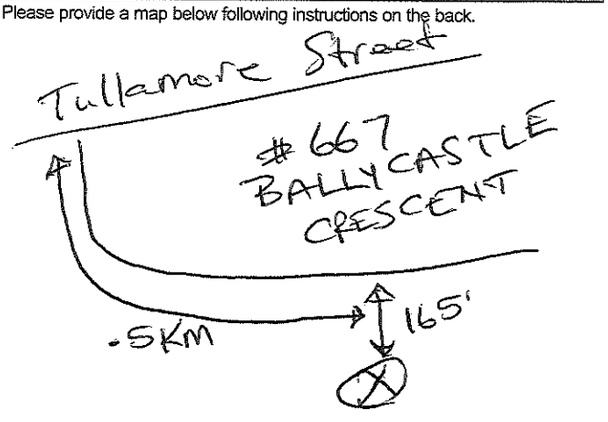
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		8'7"		9'3"
1	1	9.1	1	8.1
2	2	9.2	2	9
3	3	9.2	3	9
4	4	9.3	4	9
5	5	9.3	5	9
10	10	9.3	10	8.9
15	15	9.3	15	8.8
20	20	9.3	20	8.7
25	25	9.3	25	8.7
30	30	9.3	30	8.7
40	40	9.3	40	8.7
50	50	9.3	50	8.7
60	60	9'3"	60	8'7"

Map of Well Location

Please provide a map below following instructions on the back.



Comments:
3/4 HP - 15 GPM SET @ 80 FT

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6659 Franktown Road, RR#1	Richmond

Province	Postal Code	Business E-mail Address
ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	Hogan, Dan

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted (Y Y Y Y M M D D)
T3058		2016 09 31

Well owner's information package delivered	Date Package Delivered (Y Y Y Y M M D D)	Ministry Use Only
☒ Yes ☐ No	2016 08 11	Audit No. Z237157
	Date Work Completed: 2016 08 09	OCT 11 2016 Received

0506E (2014/11)

Ministry's Copy

Ontario — Ministry of the Environment and Climate Change

Tag#: A 207695 *(Print Below)*

A207695

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Measurements recorded in: ☐ Metric ☒ Imperial

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	1343487 Ontario Ltd.		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
1678 Bank Street.Suite 1	Ottawa	ON	K1V 7Y6	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
6690 Mitch Owens Road	Osgoode	P/L 1	4

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Greely	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18	453476	5013043		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand	& Gravel		0'	40'
Grey	Limestone			40'	125'
Grey & White	Sandstone			125'	128'
Grey & White	Sandstone			128'	165'
Grey & White	Sandstone			165'	174'
Grey & White	Sandstone			174'	180'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
46'	36'	Neat cement	10.9
36'	0'	Bentonite slurry	25.2

Method of Construction

☐ Cable Tool ☐ Diamond ☒ Air percussion
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☐ Other, specify

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6¼"	Steel	.188"	+2'	46'
6"	Open Hole		46'	180'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
128	☐ Fresh ☒ Untested	☐	
165	☐ Fresh ☒ Untested	☐	
174	☐ Fresh ☒ Untested	☐	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0'	46'	9¾"
46'	180'	6"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify Not tested

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 170

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 36'2"

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): 100'

Recommended pump rate (l/min / GPM): 20

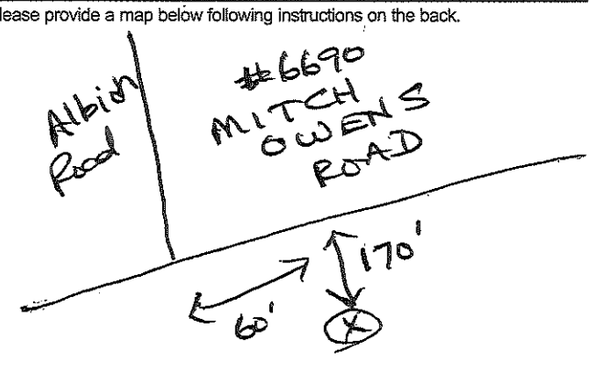
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	10'4"		36'2"
1	21.3	1	22.5
2	25.6	2	15.6
3	28	3	11.4
4	29.8	4	10.6
5	31.2	5	10.4
10	34.2	10	10.4
15	34.9	15	10.4
20	35.4	20	10.4
25	35.8	25	10.4
30	35.9	30	10.4
40	36	40	10.4
50	36.1	50	10.4
60	36.2'	60	10.4'

Map of Well Location

Please provide a map below following instructions on the back.



Comments: 3/4 HP - 15 GPM SET @ 100 FT

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6035 Perth Street, R.R.#1	Richmond

Province	Postal Code	Business E-mail Address
ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138882170	Hogan, Dan

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
13058		2016 10 31

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2016 10 06	2016 10 06

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Audit No. Z237048

NOV 28 2016 Received

0506E (2014/11)

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Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☑ Metric ☐ Imperial

Well Tag No. **Tag#: A 207441**

A207441

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
687 Bally Castle Cr	Ossoode	29	
County/District/Municipality	**City/Town/Village**	**Province**	**Postal Code**
Ottawa City	Greely	Ontario	K1X0A3

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18	452899	5013103	4M-1482	

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Brown	Sand.		Soft	0	14.84
Grey	Limestone.		Hard	14.84	48.48

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	17.82	Quik Crete	10 Bag
		Cement + Crete	2 Bag

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☑ Rotary (Reverse) Air ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☑ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
5.55	Steel	0.48	+0.60	17.82

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☑ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth	Kind of Water	
14.84 (m/ft) ☐ Gas	☑ Fresh ☐ Untested	☐ Other, *specify*
16.06 (m/ft) ☐ Gas	☑ Fresh ☐ Untested	☐ Other, *specify*
(m/ft) ☐ Gas	☐ Fresh ☐ Untested	☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	17.82	25.40
0	48.48	15.55

Results of Well Yield Testing

After test of well yield, water was:
☑ Clear and sand free
☐ Other, *specify* _____

If pumping discontinued, give reason:

Pump intake set at (m/ft): 30.30

Pumping rate (l/min / GPM): 45:00

Duration of pumping: 1 hrs + 00 min

Final water level end of pumping (m/ft): 7.67

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 30.00

Recommended pump rate (l/min / GPM): 45:00

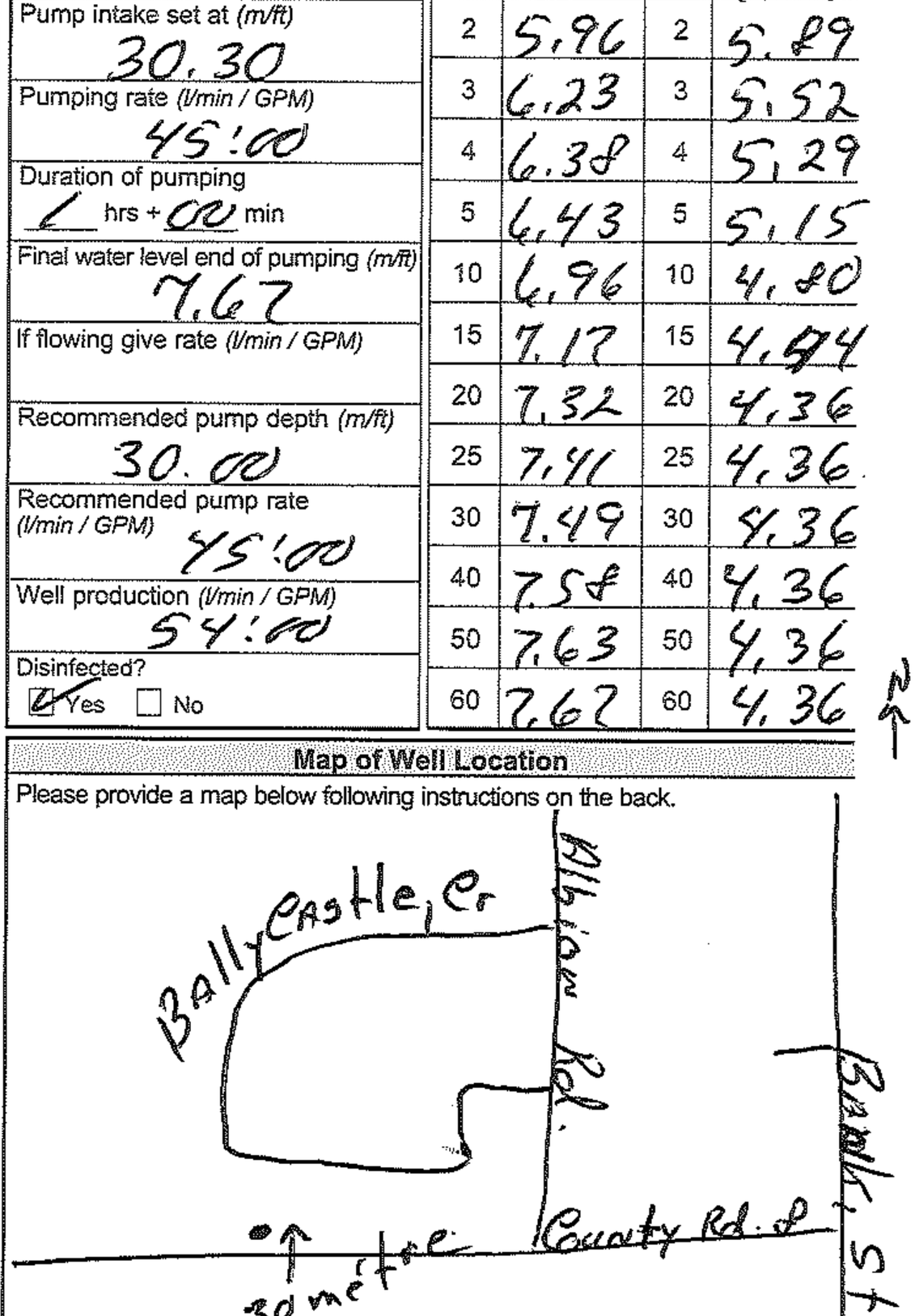
Well production (l/min / GPM): 54:00

Disinfected? ☑ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	4.36		7.62
1	5.61	1	6.47
2	5.96	2	5.89
3	6.23	3	5.52
4	6.38	4	5.29
5	6.43	5	5.15
10	6.96	10	4.80
15	7.17	15	4.64
20	7.32	20	4.36
25	7.41	25	4.36
30	7.49	30	4.36
40	7.54	40	4.36
50	7.63	50	4.36
60	7.62	60	4.36

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
DXR WATER-well-Drilling	7526
Business Address (Street Number/Name)	**Municipality**
1763 Route 900 west	Nation
Province	**Postal Code**	**Business E-mail Address**
ON	K0A3C0	
Bus. Telephone No. (inc. area code)	**Name of Well Technician (Last Name, First Name)**
613 982 5598	Mouette Karl
Well Technician's Licence No.	**Signature of Technician and/or Contractor**	**Date Submitted**
3773	Karl Mouette	2017/01/10

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☑ Yes ☐ No	2017/01/09	2017/01/10

Ministry Use Only

Audit No. Z236545

Received JAN 19 2017

0506E (2014/11)

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Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Tag#: A199963 (t Below)

A199963

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
679 Ballycastle Crescent	Gloucester	P/L 29	3

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Gloucester	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	452867	5013114	4M-1482	S/L 27

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Grey	Clay	& Sand & Gravel		0'	42'
Grey	Limestone			42'	100'
White	Sandstone			100'	137'
White	Sandstone			137'	153'
White	Sandstone			153'	160'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
52'	0'	Neat cement	49.9

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4"	Steel	.188"	+2'	52'
5 15/16"	Open Hole		52'	160'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
137	☐ Fresh ☒ Untested	☐	
153	☐ Fresh ☒ Untested	☐	
	☐ Fresh ☐ Untested	☐	

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0'	52'	9 3/4"
52'	160'	5 15/16"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify* Not tested

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 140

Pumping rate (l/min / GPM): 20

Duration of pumping: ____ hrs + ____ 0 min

Final water level end of pumping (m/ft): 53.7'

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): 100'

Recommended pump rate (l/min / GPM): 20

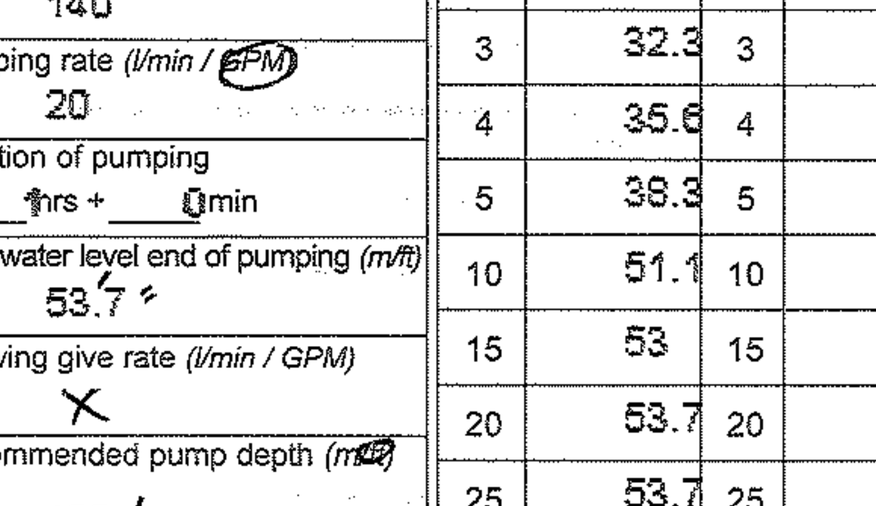
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	11.7"		53.7'
1	22.5	1	39
2	28.2	2	31
3	32.3	3	27.2
4	35.6	4	24.7
5	38.3	5	22.3
10	51.1	10	17.5
15	53	15	21.5
20	53.7	20	17.7
25	53.7	25	14.1
30	53.7	30	11.7
40	53.7	40	11.7
50	53.7	50	11.7
60	53.7"	60	11.7"

Map of Well Location

Please provide a map below following instructions on the back.



Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6659 Franktown Road, RR#1	Richmond

Province	Postal Code	Business E-mail Address
ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	Hogan, Dan

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted (Y Y Y Y M M D D)
T3058	[signature]	2017 03 31

Comments:
3/4 HP - 15 GPM SET @ 100 FT

Well owner's information package delivered	Date Package Delivered (Y Y M M D D)	Date Work Completed (Y Y Y Y M M D D)
☒ Yes ☐ No	2017 03 23	2017 03 13

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Measurements recorded in: ☐ Metric ☒ Imperial

W Tag#: A 207657 (Below)

A207657

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
635 Ballycastle Crescent	Gloucester	P/L 29	3

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Gloucester	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	453235	5013339	4M-1482	S/L 16

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Clay	& Gravel & Sand		0'	40'
Grey	Limestone	w/ Gray Sand Stone		40'	114'
Grey	Limestone	w/ Gray Sand Stone		114'	120'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/cf)
50'	0'	Neat cement	45.2

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4"	Steel	.188"	+2'	50'
6"	Open Hole		50'	120'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify* _____
☐ Other, *specify* _____

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
114	☐ Fresh ☒ Untested	☐	
	☐ Fresh ☐ Untested	☐	
	☐ Fresh ☐ Untested	☐	

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0'	50'	9 3/4"
50'	120'	6"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify* Not tested

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 110

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 40.7'

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): 100'

Recommended pump rate (l/min / GPM): 20

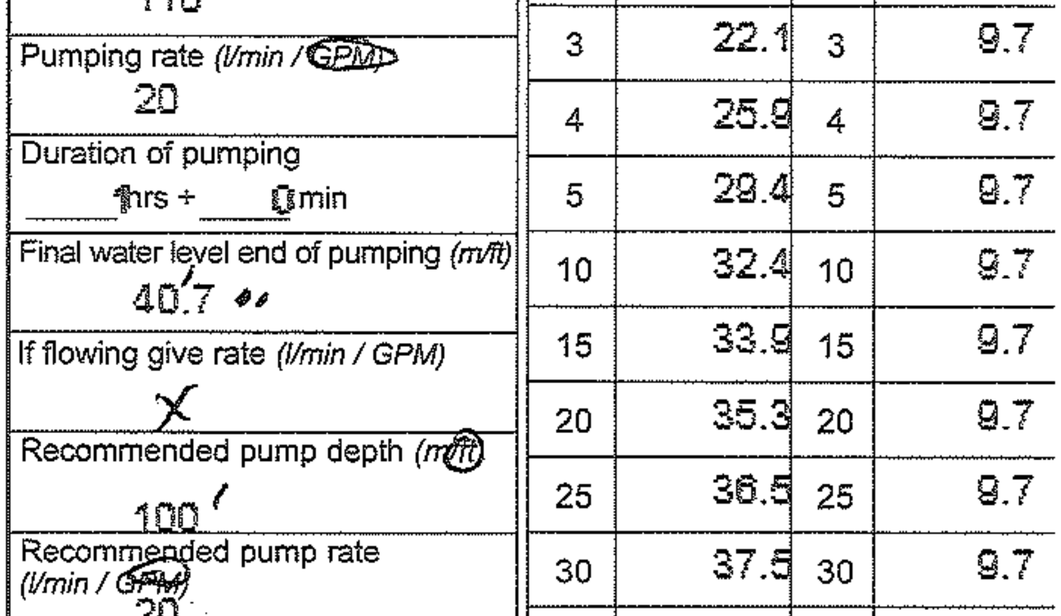
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	9'7"		40.7'
1	14	1	26
2	18.1	2	12
3	22.1	3	9.7
4	25.9	4	9.7
5	28.4	5	9.7
10	32.4	10	9.7
15	33.9	15	9.7
20	35.3	20	9.7
25	36.5	25	9.7
30	37.5	30	9.7
40	38.7	40	9.7
50	39.7	50	9.7
60	40.7'	60	9.7"

Map of Well Location

Please provide a map below following instructions on the back.



Comments:
3/4 HP - 15 GPM SET @ 100 FT

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6659 Franktown Road, RR#1	Richmond

Province	Postal Code	Business E-mail Address
ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	Hogan, Dan

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T3058	[signature]	2017 03 31

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2017 03 24	2017 03 16

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Measurements recorded in: ☐ Metric ☒ Imperial

Tag#: A 207606 *(see Below)*

A207606

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
676 Ballycastle Crescent	Gloucester	P/L 29	3

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Gloucester	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	452891	5013207	4M-1482	S/L 8

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Clay			0'	32'
	Gravel	& Boulders		32'	40'
Grey	Limestone			40'	67'
White	Sandstone			67'	109'
White	Sandstone			109'	150'
White	Sandstone			150'	160'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³)
50'	0'	Neat cement	37.4

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4"	Steel	.188"	+2'	50'
6"	Open Hole		50'	160'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas
109	☐ Fresh ☒ Untested ☐ Other, *specify*	☐
150	☐ Fresh ☒ Untested ☐ Other, *specify*	☐
(m/ft)	☐ Fresh ☐ Untested ☐ Other, *specify*	☐

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0'	50'	9 3/4"
50'	160'	6"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify* Not tested

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 140

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 23'3"

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): 100'

Recommended pump rate (l/min / GPM): 20

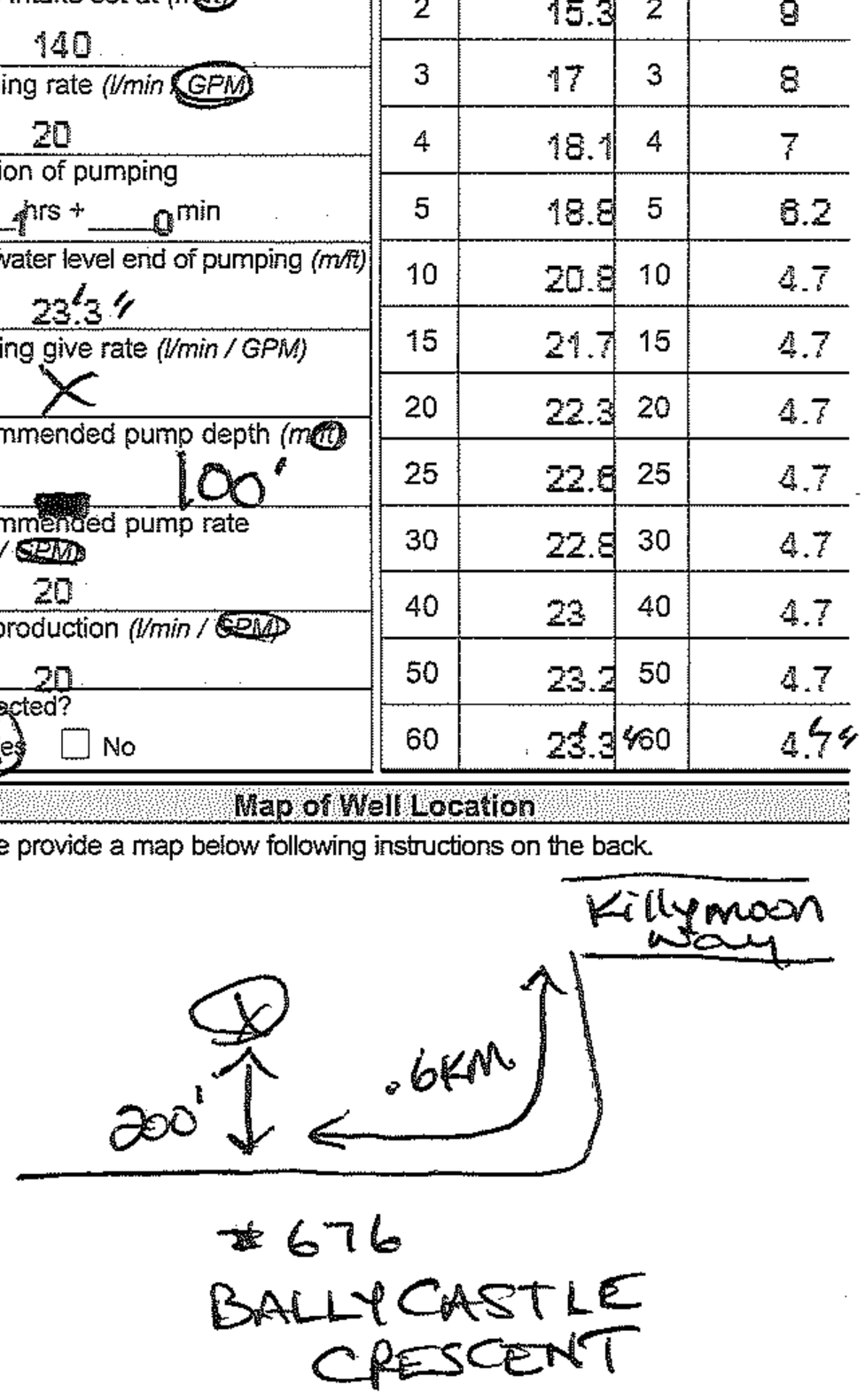
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	47"		23'3"
1	12.4	1	11
2	15.3	2	9
3	17	3	8
4	18.1	4	7
5	18.8	5	6.2
10	20.8	10	4.7
15	21.7	15	4.7
20	22.3	20	4.7
25	22.6	25	4.7
30	22.8	30	4.7
40	23	40	4.7
50	23.2	50	4.7
60	23.3	60	4.7

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

3/4 HP - 15 GPM Pump Set @ 100 FT

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6659 Franktown Road, RR#1	Richmond

Province	Postal Code	Business E-mail Address
ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	Hanna, Jeremy

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted (Y Y Y Y M M D D)
T3632		2017 05 31

Well owner's information package delivered	Date Package Delivered (Y Y Y Y M M D D)	Date Work Completed (Y Y Y Y M M D D)
☒ Yes ☐ No	2017 05 01	2017 04 27

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Measurements recorded in: ☐ Metric ☒ Imperial

Tag#: A 207612 (see Below)

A207612

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
675 Ballycastle Crescent	Gloucester	P/L 29	3

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Gloucester	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	452900	5013108	4M-1482	S/L 26

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand & Gravel	Clay		0'	40'
Grey	Limestone			40'	65'
Grey	Limestone			65'	70'
Grey & White	Sandstone			70'	92'
Grey & White	Sandstone			92'	104'
Grey & White	Sandstone			104'	110'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
52'	0'	Neat cement	32.8

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	To
6 1/4"	Steel	.188"	+2'	52'
6 1/8"	Open Hole		52'	110'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
65	☐ Fresh ☒ Untested	☐	
92	☐ Fresh ☒ Untested	☐	
104	☐ Fresh ☒ Untested	☐	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0'	52'	9 3/4"
52'	110'	6 1/8"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify* Not tested

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 100

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 34.8'

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): 100'

Recommended pump rate (l/min / GPM): 20

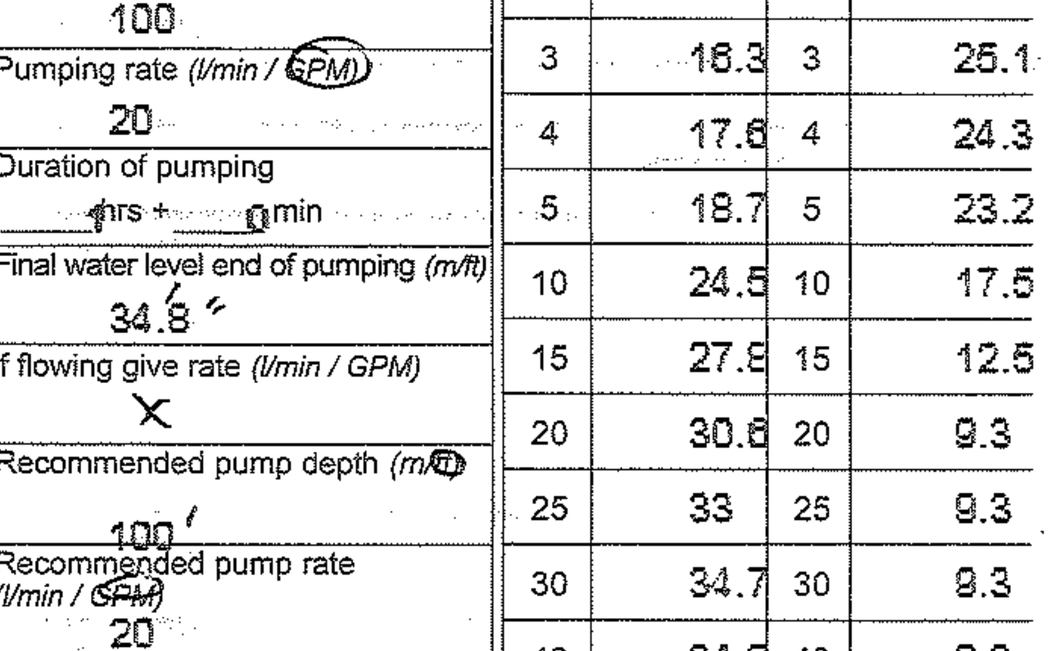
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	9'3"		34'8"
1	13.2	1	28.4
2	14.9	2	25.8
3	18.3	3	25.1
4	17.6	4	24.3
5	18.7	5	23.2
10	24.5	10	17.5
15	27.8	15	12.5
20	30.6	20	9.3
25	33	25	9.3
30	34.7	30	9.3
40	34.8	40	9.3
50	34.8	50	9.3
60	34'8"	60	9'3"

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

3/4 HP - 15 GPM SET @ 100 FT

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6659 Franktown Road, RR#1	Richmond

Province	Postal Code	Business E-mail Address
ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	Hogan, Dan

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted (Y Y Y Y M M D D)
T3058		2017 04 28

Well owner's information package delivered	Date Package Delivered (Y Y Y Y M M D D)	Date Work Completed (Y Y Y Y M M D D)
☒ Yes ☐ No	2017 04 05	2017 03 31

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Ministry of the Environment and Climate Change

Measurements recorded in: ☐ Metric ☒ Imperial

Tag#: A207599 (nt Below)

A207599

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
	Grizzly Homes		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
PO Box 422.RR#4	Ashton	On	K0A 1B0	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
691 Ballycastle Crescent	Gloucester	P/L 29	3

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Gloucester	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18	452744	5013074	4M-1482	S/L 30

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Grey	Clay			0'	25'
	Sand	& Cobble		25'	42'
Grey	Limestone			42'	90'
Grey	Limestone			90'	104'
Grey	Limestone			104'	110'

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m³)
52'	0'	Neat cement	31.2

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, specify _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, specify _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4"	Steel	.188"	+2'	52'
5 15/16"	Open Hole		52'	110'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

Water found at Depth (m/ft)	Kind of Water	Hole Diameter Depth From (m/ft)	Hole Diameter Depth To (m/ft)	Diameter (cm/in)
90 (m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify	0'	52'	9 3/4"
104 (m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify	52'	110'	5 15/16"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, specify			

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, specify Not tested

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 90

Pumping rate (l/min / GPM): 15

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 37.4"

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): 90'

Recommended pump rate (l/min / GPM): 15

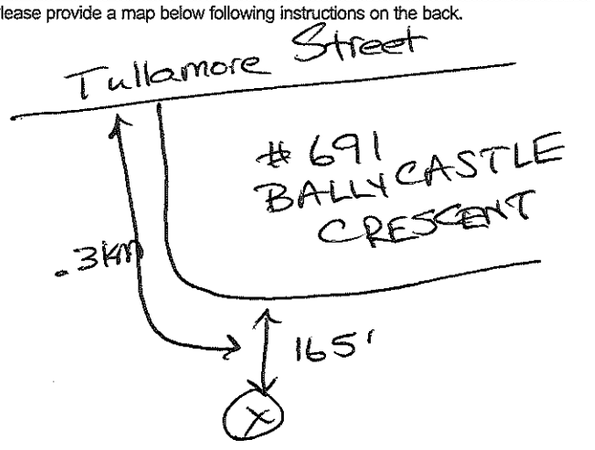
Well production (l/min / GPM): 15

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	11'8"		37.4"
1	16.6	1	23.6
2	18.7	2	20.1
3	20.5	3	17.9
4	22.1	4	16
5	23.6	5	15
10	27.6	10	11.8
15	30	15	11.8
20	31.5	20	11.8
25	32.7	25	11.8
30	33.7	30	11.8
40	35.4	40	11.8
50	36.6	50	11.8
60	37.4"	60	11'8"

Map of Well Location

Please provide a map below following instructions on the back.



Comments:
1/2 HP - 10 GPM SET @ 90 FT

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6659 Franktown Road, RR#1	Richmond

Province	Postal Code	Business E-mail Address
ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	Hogan, Dan

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted (Y Y Y Y M M D D)
T3058		2017 05 31

Well owner's information package delivered	Date Package Delivered (Y Y Y Y M M D D)	Ministry Use Only
☒ Yes ☐ No	2017 05 04	Audit No. Z237355
	Date Work Completed: 2017 05 03	JUN 07 2017 Received

Ontario — Ministry of the Environment and Climate Change

Measurements recorded in: ☑ Metric ☐ Imperial

Well Tag No: A209549 — Tag#: A209549

Well Record

Regulation 903 Ontario Water Resources Act

Page 1 of 1

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
485 Tullamore, St	Ossoode	4/0	
County/District/Municipality	**City/Town/Village**	**Province**	**Postal Code**
OTTAW City	Greely	Ontario	K1X0A4
UTM Coordinates Zone / Easting / Northing	**Municipal Plan and Sublot Number**	**Other**	
NAD 83 18 452553 5013340	4/M 1482		

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Grey	Clay	Sand.	Soft	0	3.03
Grey	Clay		Soft	3.03	9.69
Grey	Limestone		Hard.	9.69	49.09

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
0	13.03	Quik Crete	12 Bag

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☑ Rotary (Reverse) AIR ☐ Driving
☐ Boring ☐ Digging
☐ Air percussion
☐ Other, specify

Well Use

☐ Public ☐ Commercial ☐ Not used
☑ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, specify

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
5.55	Steel	0.48	+1.51	13.03

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☑ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, specify
☐ Other, specify

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	Other, specify
9.69	☐	☑ Fresh ☐ Untested	
43.03	☐	☑ Fresh ☐ Untested	
	☐	☐ Fresh ☐ Untested	

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0	13.03	25.40
0	49.09	15.55

Results of Well Yield Testing

After test of well yield, water was:
☑ Clear and sand free
☐ Other, specify

If pumping discontinued, give reason:

Pump intake set at (m/ft): 30.30

Pumping rate (l/min / GPM): 45.00

Duration of pumping: 1 hrs + 00 min

Final water level end of pumping (m/ft): 5.81

If flowing give rate (l/min / GPM):

Recommended pump depth (m/ft): 30.30

Recommended pump rate (l/min / GPM): 45.00

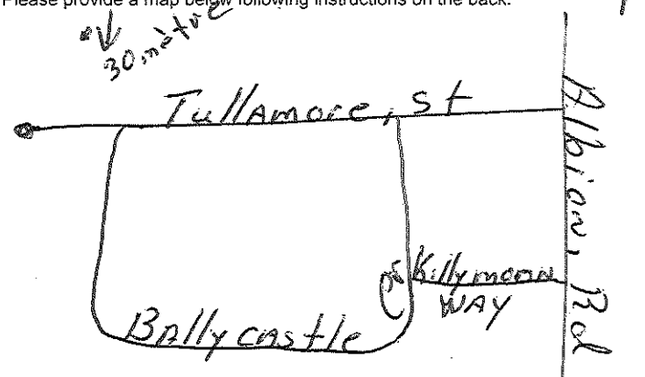
Well production (l/min / GPM): 90.00

Disinfected? ☑ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	3.11		5.81
1	4.32	1	4.42
2	4.65	2	4.15
3	4.97	3	3.91
4	5.05	4	3.68
5	5.15	5	3.49
10	5.40	10	3.11
15	5.50	15	3.11
20	5.59	20	3.11
25	5.63	25	3.11
30	5.68	30	3.11
40	5.73	40	3.11
50	5.78	50	3.11
60	5.81	60	3.11

Map of Well Location

Please provide a map below following instructions on the back.



Comments: Mitch Owens Rd.

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
DXR-WATER-well-Drilling	7216
Business Address (Street Number/Name)	**Municipality**
1763 - Route 900 west	Nation
Province	**Postal Code**	**Business E-mail Address**
ON	K0A3C0	
Bus. Telephone No. (inc. area code)	**Name of Well Technician (Last Name, First Name)**
613 987 7558	Monette Karl
Well Technician's Licence No.	**Signature of Technician and/or Contractor**	**Date Submitted**
3773	Karl Monette	2017 08 31

Well owner's information package delivered: ☑ Yes ☐ No

Date Package Delivered: 2017 08 31

Date Work Completed: 2017 08 31

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Audit No. Z252212

SEP 19 2017

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Ontario

Ministry of the Environment and Climate Change

Tag#:A252801

A252801

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

Measurements recorded in: ☐ Metric ☒ Imperial

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
692 Ballycastle Crescent	Gloucester	P/L 29	3 RF

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa Carleton	Gloucester	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	452728	5013187	4M-1482	S/L 4

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sandy	Clay	+ Boulders	0'	37'
Grey	Limestone			37'	68'
Grey	Limestone			68'	95'
Grey	Limestone			95'	103'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
47'	0	Neat cement	53.04

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4"	Steel	.188"	+2'	47'
6 1/8"	Open Hole		47'	103'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Gas	Kind of Water	
88	☐	☐ Fresh ☒ Untested	☐ Other, *specify*
95	☐	☐ Fresh ☒ Untested	☐ Other, *specify*
	☐	☐ Fresh ☐ Untested	☐ Other, *specify*

Hole Diameter

Depth (m/ft) From	Depth (m/ft) To	Diameter (cm/in)
0'	47'	9 3/4"
47'	103'	6 1/8"

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify* Not tested

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 80

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 45.4'

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): 80'

Recommended pump rate (l/min / GPM): 20

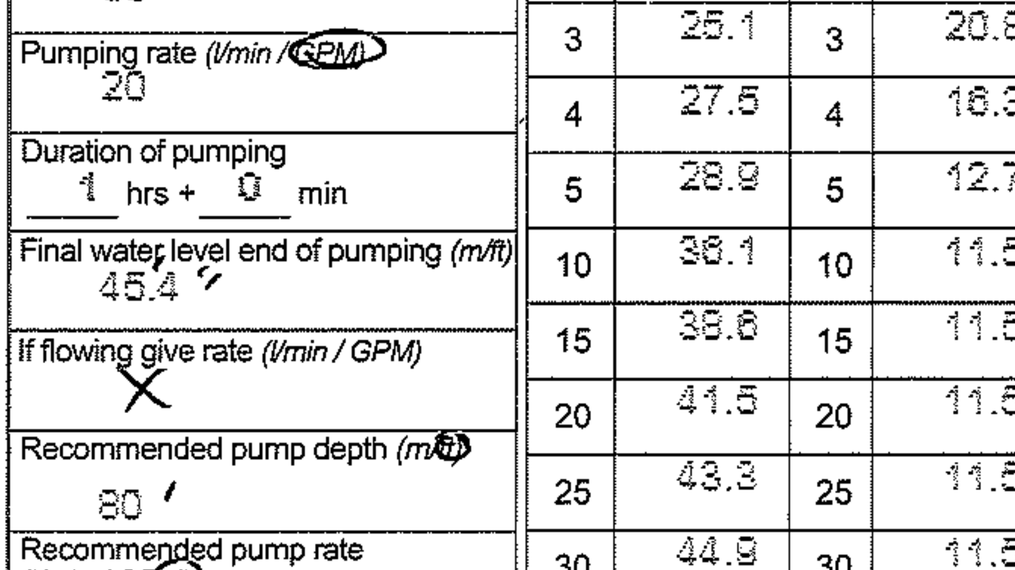
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	11'5"		45'4"
1	18.7	1	30.5
2	22.5	2	25.1
3	25.1	3	20.8
4	27.5	4	16.3
5	28.9	5	12.7
10	38.1	10	11.5
15	38.6	15	11.5
20	41.5	20	11.5
25	43.3	25	11.5
30	44.9	30	11.5
40	45.2	40	11.5
50	45.4	50	11.5
60	45'4"	60	11'5"

Map of Well Location

Please provide a map below following instructions on the back.



Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Air Rock Drilling Co. Ltd.	1119

Business Address (Street Number/Name)	Municipality
6053 Perkins Road, RR#1	Richmond

Province	Postal Code	Business E-mail Address
ON	K0A 2Z0	air-rock@sympatico.ca

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	Hogan, Dan

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
13098		2018 10 31

Comments:
1 HP 20 GPM SET AT 80 FEET

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2018 10 01	2018 09 27

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Audit No. Z276787

DEC 11 2018

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Ontario (https://www.ontario.ca/page/government-ontario)

Map: Well records

This map allows you to search and view well record information from reported wells in Ontario.

Full dataset is available in the Open Data catalogue (https://data.ontario.ca/dataset/well-records) .

Go Back to Map

Well ID

Well ID Number: 7329110
Well Audit Number: *Z302536*
Well Tag Number: *A260988*
This table contains information from the original well record and any subsequent updates.

Well Location

Address of Well Location	639 BALLYCASTE CRESCENT
Township	GLOUCESTER TOWNSHIP
Lot	030
Concession	RF 03
County/District/Municipality	OTTAWA-CARLETON
City/Town/Village	GLOUCESTER
Province	ON
Postal Code	n/a
UTM Coordinates	NAD83 — Zone 18 Easting: 453258.00 Northing: 5013264.00
Municipal Plan and Sublot Number	
Other	

Overburden and Bedrock Materials Interval

General Colour	Most Common Material	Other Materials	General Description	Depth From	Depth To
	SAND	CLAY	BLDR	0 ft	40 ft
GREY	SNDS			40 ft	110 ft
GREY	SNDS			110 ft	113 ft
GREY	SNDS			113 ft	120 ft

Annular Space/Abandonment Sealing Record

Depth From	Depth To	Type of Sealant Used (Material and Type)	Volume Placed
50 ft	0 ft	NEAT CEMENT	

Method of Construction & Well Use

Method of Construction	Well Use
Air Percussion	
	Domestic

Status of Well

Water Supply

Construction Record - Casing

Inside Diameter	Open Hole or material	Depth From	Depth To
6.25 Inch	STEEL	-2 ft	50 ft
5.875 Inch	OPEN HOLE	50 ft	120 ft

Construction Record - Screen

Outside Diameter	Material	Depth From	Depth To

Well Contractor and Well Technician Information

Well Contractor's Licence Number: 1119

Results of Well Yield Testing

After test of well yield, water was	OTHER
If pumping discontinued, give reason	
Pump intake set at	100 ft
Pumping Rate	20 GPM
Duration of Pumping	1 h:0 m
Final water level	14.25 ft
If flowing give rate	
Recommended pump depth	100 ft
Recommended pump rate	20 GPM

Well Production	
Disinfected?	Y

Draw Down & Recovery

Draw Down Time(min)	Draw Down Water level	Recovery Time(min)	Recovery Water level
SWL	12.417 ft		
1	13.7 ft	1	13.3 ft
2	13.7 ft	2	12.8 ft
3	13.7 ft	3	12.5 ft
4	13.8 ft	4	12.5 ft
5	13.8 ft	5	12.5 ft
10	14 ft	10	12.5 ft
15	14.1 ft	15	12.5 ft
20	14.1 ft	20	12.5 ft
25	14.1 ft	25	12.5 ft
30	14.2 ft	30	12.5 ft
40	14.2 ft	40	12.5 ft
45		45	
50	14.2 ft	50	12.5 ft
60	14.3 ft	60	12.5 ft

Water Details

Water Found at Depth	Kind
10 ft	Untested
113 ft	Untested

Hole Diameter

Depth From	Depth To	Diameter
0 ft	50 ft	9.75 Inch
50 ft	120 ft	5.875 Inch

Audit Number: Z302536

Date Well Completed: January 15, 2019

Date Well Record Received by MOE: February 22, 2019

Related

How to use a Ministry of the Environment map (https://www.ontario.ca/page/how-use-ministry-environment-map#wells)

Technical documentation: Metadata record (https://data.ontario.ca/dataset/well-records/resource/3031344e-e3f2-48d5-888c-c1deadfd2f77)

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. *(Place Sticker and/or Print Below)*

Tag#: A153585

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
655 Ballycastle Crescent	Gloucester	21	30

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa Carleton	Ottawa	Ontario	K1X0A3

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	751870	4549160	Plan 4M-1482	

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
Brown	Sand			0	10'
Grey	Clay with	stones		10'	42'
Grey	Fractured	limestone		42'	45'
Grey	Med	limestone		45'	80'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
49'	0'	15 bags cement	
		9 bags Quik grout	

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/8	steel	~~188~~ 188	~~49'~~ 49'	~~5'~~ +2'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Results of Well Yield Testing

After test of well yield, water was:
☒ Clear and sand free
☐ Other, *specify* _____

If pumping discontinued, give reason:

Pump intake set at (m/ft): 50 ft

Pumping rate (l/min / GPM): 20 gpm

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft)

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft): 50 ft

Recommended pump rate (l/min / GPM): 20 gpm

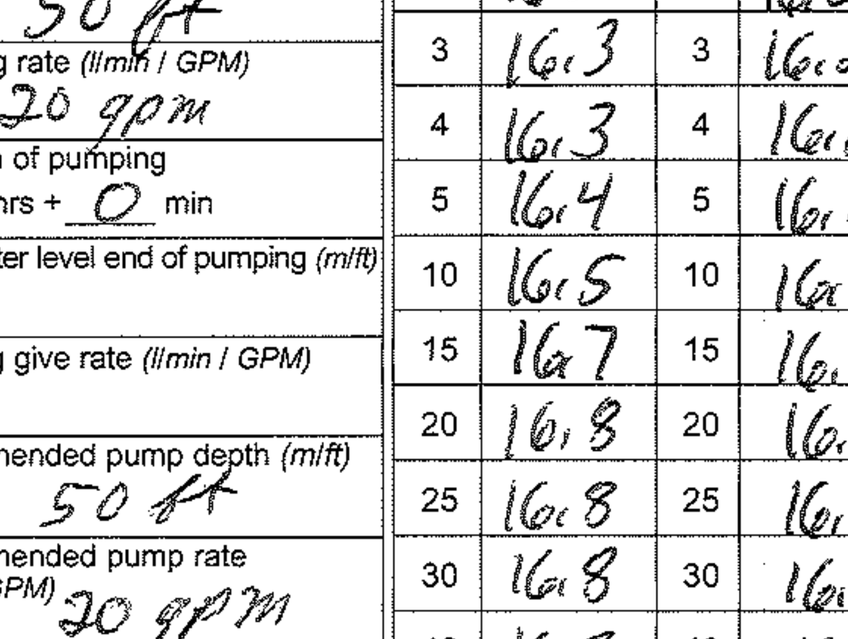
Well production (l/min / GPM): +75 gph

Disinfected? ☒ Yes ☐ No 35

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	16.1		16.8
1	16.2	1	16.5
2	16.2	2	16.3
3	16.3	3	16.2
4	16.3	4	16.2
5	16.4	5	16.2
10	16.5	10	16.2
15	16.7	15	16.2
20	16.8	20	16.2
25	16.8	25	16.2
30	16.8	30	16.2
40	16.8	40	16.2
50	16.8	50	16.2
60	16.8	60	16.2

Map of Well Location

Please provide a map below following instructions on the back.



Comments:

Water Details

Water found at Depth	Kind of Water	Hole Diameter Depth From	Depth To	Diameter (cm/in)
59' (m/ft) ☐ Gas	☒ Fresh ☐ Untested ☐ Other, *specify*	49'	0	10"
65' (m/ft) ☐ Gas	☒ Fresh ☐ Untested ☐ Other, *specify*	49'	80	6 1/8
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify*			

Well Contractor and Well Technician Information

Business Name of Well Contractor	Well Contractor's Licence No.
Olympic Drilling Co ltd	4006

Business Address (Street Number/Name)	Municipality
6662 Bank street	Ottawa

Province	Postal Code	Business E-mail Address
Ont	K0A2P0	

Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6132298371	Wayne Renwick

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
0327	Wayne Renwick	2018 07 18

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☐ Yes ☒ No		2018 07 18

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Audit No. Z 177453

Received APR 01 2019

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Ministry of the Environment and Climate Change

Tag#:A252912

Well Record

Regulation 903 Ontario Water Resources Act

Page _____ of _____

Measurements recorded in: ☐ Metric ☒ Imperial

Well ... (See Instructions on the back of this form) A252912

[redacted]

Well Location

Address of Well Location (Street Number/Name): #680 BALLYCASTLE CRESCENT

Township: Gloucester

Lot: PL29

Concession: 3

County/District/Municipality: OTTAWA-CARLETON

City/Town/Village: Gloucester

Province: Ontario

Postal Code:

UTM Coordinates: NAD 8 3 Zone 18 Easting 452843 Northing 5013188

Municipal Plan and Sublot Number: 4M-1482

Other: SL#7

Overburden and Bedrock Materials/Abandonment Sealing Record *(see instructions on the back of this form)*

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft) From	Depth (m/ft) To
	Sand, Clay & Gravel			0'	41'
Black & Grey	Limestone			41'	83'

Annular Space

Depth Set at (m/ft) From	Depth Set at (m/ft) To	Type of Sealant Used (Material and Type)	Volume Placed (m^3/ft^3)
51'	0'	Neat Cement Slurry	28.08

Method of Construction

☐ Cable Tool ☐ Diamond
☐ Rotary (Conventional) ☐ Jetting
☐ Rotary (Reverse) ☐ Driving
☐ Boring ☐ Digging
☒ Air percussion
☐ Other, *specify* _____

Well Use

☐ Public ☐ Commercial ☐ Not used
☒ Domestic ☐ Municipal ☐ Dewatering
☐ Livestock ☐ Test Hole ☐ Monitoring
☐ Irrigation ☐ Cooling & Air Conditioning
☐ Industrial
☐ Other, *specify* _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft) From	Depth (m/ft) To
6 1/4"	Steel	.188"	+2'	51'
6"	Open hole		51'	83'

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft) From	Depth (m/ft) To

Status of Well

☒ Water Supply
☐ Replacement Well
☐ Test Hole
☐ Recharge Well
☐ Dewatering Well
☐ Observation and/or Monitoring Hole
☐ Alteration (Construction)
☐ Abandoned, Insufficient Supply
☐ Abandoned, Poor Water Quality
☐ Abandoned, other, *specify*
☐ Other, *specify*

Water Details

Water found at Depth (m/ft)	Kind of Water	Hole Diameter Depth From	Hole Diameter Depth To	Hole Diameter (cm/in)
69 (m/ft) ☐ Gas	☐ Fresh ☒ Untested ☐ Other, *specify* _____	0'	51'	9 3/4"
77 (m/ft) ☐ Gas	☐ Fresh ☒ Untested ☐ Other, *specify* _____	51'	83'	6"
(m/ft) ☐ Gas	☐ Fresh ☐ Untested ☐ Other, *specify* _____			

Results of Well Yield Testing

After test of well yield, water was:
☐ Clear and sand free
☐ Other, *specify* _____

If pumping discontinued, give reason: X

Pump intake set at (m/ft): 75'

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 6' 7"

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): 70'

Recommended pump rate (l/min / GPM): 20

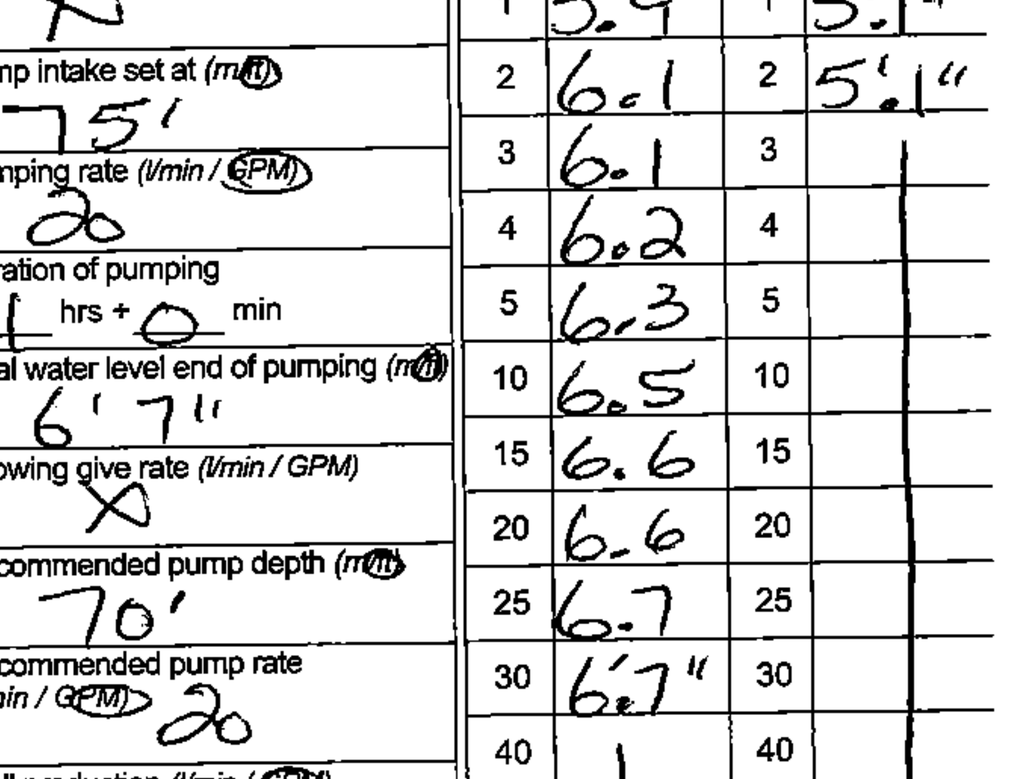
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	5' 1"		6' 7"
1	5.9	1	5' 1"
2	6.1	2	5' 1"
3	6.1	3	
4	6.2	4	
5	6.3	5	
10	6.5	10	
15	6.6	15	
20	6.6	20	
25	6.7	25	
30	6' 7"	30	
40		40	
50		50	
60		60	

Map of Well Location

Please provide a map below following instructions on the back.



Comments: 3/4HP-15GPM Set 70 FT

Well owner's information package delivered ☒ Yes ☐ No

Date Package Delivered: 2020 04 14

Date Work Completed: 2020 04 09

Ministry Use Only

Audit No. Z302625

MAY 28 2020

Received

Well Contractor and Well Technician Information

Business Name of Well Contractor: Air Rock Drilling Co Ltd

Well Contractor's Licence No.: C7681

Business Address (Street Number/Name): 6659 Fallowfield Road

Municipality: Richmond

Province: Ont

Postal Code: K0A2Z0

Business E-mail Address:

Bus. Telephone No. (inc. area code): 6138882170

Name of Well Technician (Last Name, First Name): HOGAN DAN

Well Technician's Licence No.: T3058

Signature of Technician and/or Contractor:

Date Submitted: 2020 04 30

0506E (2014/11)

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ATTACHMENT F

Camera Inspection – On-Site Supply Well

PV WELL WATER

3831 Carp Road
Carp, Ontario K0A 1L0
613-839-5550
contact@well-water.ca

Camera Inspection Report

Date: November 28, 2023
Location: 5546 Albion Road South, Ottawa, Ontario K1X 1A8
Job #: 4335

Click Here to View or Download Video

If link will not function use the following URL:
https://drive.google.com/file/d/1cI16E3_wy75-SKd_Ly3VUB9Q3cC9cDnY/view?usp=sharing

Please download a copy of your video within 30 days of the inspection date. The video will be deleted after 30 days from our system. We do not keep an archived copy.

Timeline

- 0 Minutes 16 Seconds - Camera enters well at top of casing.
- 0 Minutes 38 Seconds - 5ft TOC Pitless adapter visible.
- 0 Minutes 55 Seconds - Static water level reached at 9ft 2in TOC.
- 0 Minutes 58 Seconds - 10ft TOC Iron build up is visible on the casing.
- 1 Minutes 20 Seconds - 15ft TOC
- 1 Minutes 43 Seconds - 20ft TOC Very poor visibility due to turbidity.
- 2 Minutes 04 Seconds - 25ft TOC
- 2 Minutes 26 Seconds - 30ft TOC
- 2 Minutes 47 Seconds - 35ft TOC
- 3 Minutes 09 Seconds - 40ft TOC
- 3 Minutes 29 Seconds - 45ft TOC Visibility starts to improve. Possible Biofilm visible.
- 3 Minutes 50 Seconds - 50ft TOC
- 4 Minutes 11 Seconds - 55ft TOC Heavy build up on side of well.

- 4 Minutes 30 Seconds - Transition from casing to open hole.
- 4 Minutes 32 Seconds - 60ft TOC Open hole clearly visible.
- 4 Minutes 57 Seconds - 65ft TOC
- 5 Minutes 18 Seconds - 70ft TOC
- 5 Minutes 30 Seconds - Approx. 73ft TOC Pump set depth reached, unable to proceed further down well.
- 5 Minutes 51 Seconds - Camera retrieval begins.
- 7 Minutes 05 Seconds - Camera exits well.

TOC = Top of Casing

Notes:
There appears to be approximately 60ft of casing from TOC to transition to open hole. Well casing is currently less than 16” above grade and should be extended and have a vermin proof well cap installed as per Ontario Regulation 903. Typically casing is sold in 20ft lengths so it is very likely they used three full lengths of casing in the construction of the well.

We are unable to verify the annular space seal via camera inspection or casing depth sensor inspection. Annular space would need to be dug and disturbed to establish if and how much grout was used to seal the annular space. No grout was visible at the grade.

PV WELL WATER
WE KEEP WATER FLOWING

INVOICE #6512

ISSUED:
Nov 28, 2023

DUE:
Dec 28, 2023

RECIPIENT:

LRL Engineering

5430 Canotek Rd
Ottawa, Ontario K1J 9G2

SERVICE ADDRESS:

5546 Albion Road South
Gloucester
Ottawa, Ontario K1X 1A8

SENDER:

PV Plumbing & Water Inc.

3831 Carp Road
Carp, Ontario K0A 1L0

Phone: 613-839-5550
Email: contact@pvplumbingwater.com

For Services Rendered

Product/Service	Description	Qty.	Unit Price	Total
Nov 28, 2023				
WL / Well Inspection / Camera Inspection	Camera inspection of a well. Includes a report and video. Please note that if the pump remains in the well there is a risk that the camera can get stuck. If this happens pulling the pump to retrieve the camera is completed at additional cost.	1	$495.00	$495.00
WL / Inspection / Standard	Ontario Regulation 903. Compliance Inspection (grouting as visible from surface)***	1	$50.00	$50.00

Thank you for your business!

Standard One Year Parts and Labour Warranty
Warranty expires 365 days following service date on invoice.
All parts must be supplied and installed by us to be covered under warranty.
Please retain a copy of your invoice for verification purposes.

PV Well Water is a PV Plumbing & Water Inc. Brand.

HST/GST Number 784916934RT0001

Subtotal	$545.00
HST (13.0%)	$70.85
Total	**$615.85**

Pay Now

ATTACHMENT G

Pumping Test – Field Data

Pump Test Data - MacEwen Petroleum Inc.
Hydrogeological Assessment & Terrain Anlaysis - Proposed Fuel Dispensing Facility Re-Development
5546 Albion Road, Ottawa, Ontario
LRL File No. 01348

Date:	October 16 & 17, 2022	**Technician:**	A. Kader		
Well Number:	1501841	**Pump Depth (m BTC):**	22.5		
Depth of Well (m BTC):	41.40	**Start Time:**	9:00 PM	16-Oct-22	
Ground Surface Elev. (m):	Not Measured	**End Time:**	3:10 AM	17-Oct-22	
Top of Casing Elev. (m):	Not Measured	**Average Pump Rate (L/min):**	30.0		
Water Level before Pump In (m BTC)	2.98				

				Field Parameters					
Time[1] (min)	**Water Level (Pump In) (m BTC)**	**Drawdown (m)**	**Flow Rate (L/min)**	**Turbidity (NTU)**	**Residual Chlorine (mg/L)**	**Colour (TCU)**	**pH**	**Conductivity (µs)**	**Total Dissolved (mg/L)**
0.0	2.98	0.00	30.0						
0.5	3.79	0.81	30.0						
1.0	3.60	0.62	30.0						
1.5	3.72	0.74	30.0						
2.0	3.81	0.83	30.0						
2.5	3.91	0.93	30.0						
3.0	3.96	0.98	30.0						
3.5	4.01	1.03	30.0						
4.5	4.06	1.08	30.0						
5.0	4.07	1.09	30.0						
6.0	4.11	1.13	30.0						
7.0	4.13	1.15	30.0						
8.0	4.15	1.17	30.0						
9.0	4.17	1.19	30.0						
10.0	4.19	1.21	30.0						
20.0	4.26	1.28	30.0						
30.0	4.28	1.30	30.0						
60.0	4.30	1.32	30.0	1.14	0.0	27	8.25	463	233
90.0	4.30	1.32	30.0						
120.0	4.30	1.32	30.0	0.74	0.0	29	8.13	471	239
150.0	4.30	1.32	30.0						
180.0	4.30	1.32	30.0	0.31	0.0	22	8.07	484	242
240.0	6.48	3.50	30.0	0.98	0.0	73	7.99	513	258
300.0	4.42	1.44	30.0	0.99	0.0	29	8.07	513	254
360.0	4.53	1.55	30.0	0.27	0.0	13	8.12	519	257
Recovery				**% Recovery**					
0 (370)	4.53	1.55		0.0					
0.5	3.86	0.88		43.2					
1.0	3.61	0.63		59.4					
1.6	3.48	0.50		67.7					
2.0	3.41	0.43		72.3					
2.5	3.33	0.35		77.4					
3.0	3.28	0.30		80.6					
3.5	3.24	0.26		83.2					
4.0	3.22	0.24		84.5					
4.5	3.19	0.21		86.5					
5.0	3.17	0.19		87.7					
6.0	3.15	0.17		89.0					
7.0	3.13	0.15		90.3					
8.0	3.11	0.13		91.6					
9.0	3.10	0.12		92.3					
10.0	3.09	0.11		92.9					
20.0	3.05	0.07		95.5					
30.0	3.02	0.04		97.4					
60.0	3.02	0.04		97.4					

[1] Time elapse from pump turning on or off.
BTC: Below Top of Casing

ATTACHMENT H

Pumping Test – Theis Analysis

LRL Associates Ltd.
5430 Canotek Road
Ottawa, Ontario

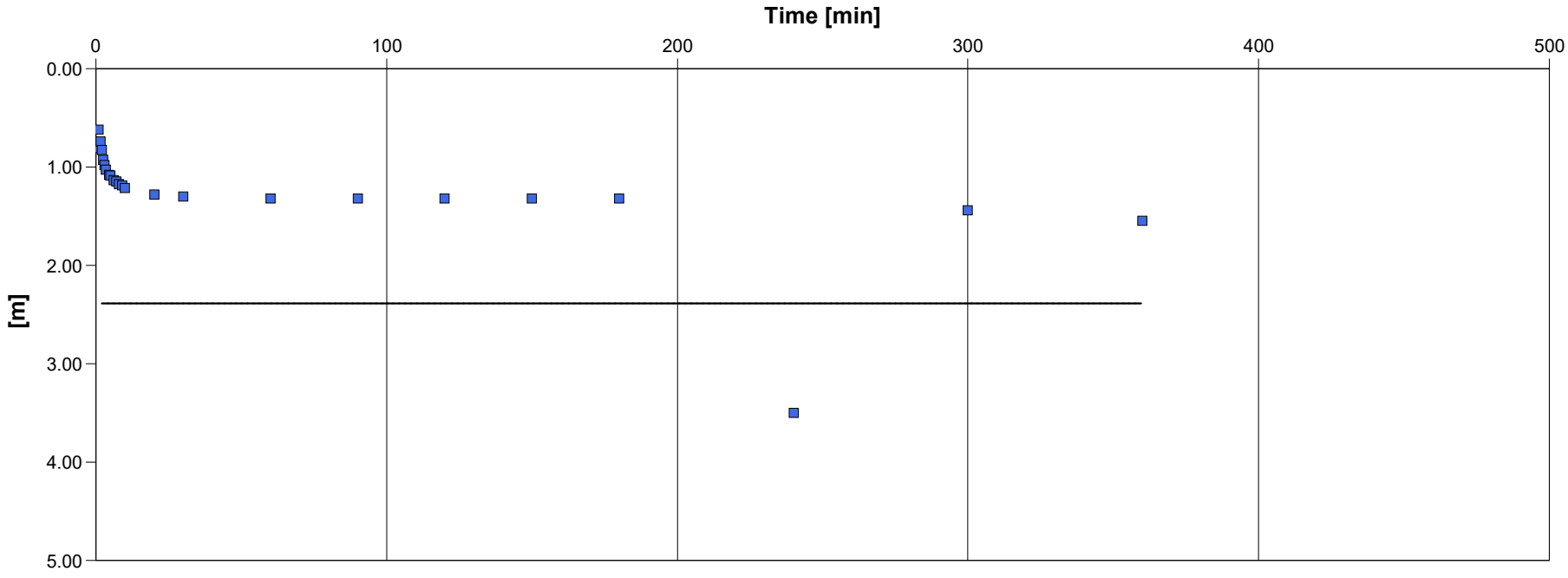
Pumping Test Analysis Report

Project: Hydrogeological Assessment & Terrain Anlaysis - Proposed Fuel Dispensing Facility

Number: 01348

Client: MacEwen Petroleum Inc.

Location: 5546 Albion Road, Ottawa, Ontario	Pumping Test: Well 1501841	Pumping Well: 1501841
Test Conducted by: LRL Associates		Test Date: 2023-01-09
Analysis Performed by: LRL Associates	Drawdown	Analysis Date: 2023-01-09
Aquifer Thickness:	Discharge Rate: 30 [l/s]	



Calculation using Theis

Observation Well	Transmissivity [m²/s]	Storage coefficient	Radial Distance to PW [m]	
1501841	1.00×10^{-3}	1.00×10^{-4}		

ATTACHMENT I

Laboratory Certificate of Analysis

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

LRL Associates Ltd.

5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Abdul Kader Alhaj

Client PO:
Project: 01348
Custody: 17463

Report Date: 24-Oct-2022
Order Date: 17-Oct-2022

Order #: 2243028

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

Paracel ID	Client ID
2243028-01	5546 Albion Rd - Supply Well - 3 hrs
2243028-02	5546 Albion Rd - Supply Well - 6 hrs

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 24-Oct-2022

Order Date: 17-Oct-2022

Project Description: 01348

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Alkalinity, total to pH 4.5	EPA 310.1 - Titration to pH 4.5	18-Oct-22	18-Oct-22
Ammonia, as N	EPA 351.2 - Auto Colour	18-Oct-22	18-Oct-22
Anions	EPA 300.1 - IC	19-Oct-22	19-Oct-22
Colour	SM2120 - Spectrophotometric	17-Oct-22	17-Oct-22
Conductivity	EPA 9050A- probe @25 °C	18-Oct-22	18-Oct-22
Dissolved Organic Carbon	MOE E3247B - Combustion IR, filtration	18-Oct-22	18-Oct-22
E. coli	MOE E3407	18-Oct-22	18-Oct-22
Fecal Coliform	SM 9222D	18-Oct-22	18-Oct-22
Heterotrophic Plate Count	SM 9215C	18-Oct-22	18-Oct-22
Metals, ICP-MS	EPA 200.8 - ICP-MS	19-Oct-22	19-Oct-22
pH	EPA 150.1 - pH probe @25 °C	18-Oct-22	18-Oct-22
Phenolics	EPA 420.2 - Auto Colour, 4AAP	18-Oct-22	18-Oct-22
Hardness	Hardness as CaCO3	19-Oct-22	19-Oct-22
Sulphide	SM 4500SE - Colourimetric	19-Oct-22	19-Oct-22
Tannin/Lignin	SM 5550B - Colourimetric	17-Oct-22	17-Oct-22
Total Coliform	MOE E3407	18-Oct-22	18-Oct-22
Total Dissolved Solids	SM 2540C - gravimetric, filtration	17-Oct-22	18-Oct-22
Total Kjeldahl Nitrogen	EPA 351.2 - Auto Colour, digestion	18-Oct-22	19-Oct-22
Turbidity	SM 2130B - Turbidity meter	17-Oct-22	17-Oct-22
VOCs by P&T GC-MS	EPA 624 - P&T GC-MS	18-Oct-22	18-Oct-22

Certificate of Analysis

Client: **LRL Associates Ltd.**

Client PO:

Report Date: 24-Oct-2022

Order Date: 17-Oct-2022

Project Description: 01348

	Client ID:	5546 Albion Rd - Supply Well - 3 hrs	5546 Albion Rd - Supply Well - 6 hrs	-	-
	Sample Date:	17-Oct-22 00:05	17-Oct-22 03:05	-	-
	Sample ID:	2243028-01	2243028-02	-	-
	MDL/Units	Drinking Water	Drinking Water	-	-
Microbiological Parameters					
E. coli	1 CFU/100mL	ND	ND	-	-
Fecal Coliforms	1 CFU/100mL	ND	ND	-	-
Total Coliforms	1 CFU/100mL	4	2	-	-
Heterotrophic Plate Count	10 CFU/mL	10	10	-	-
General Inorganics					
Alkalinity, total	5 mg/L	189	198	-	-
Ammonia as N	0.01 mg/L	0.02	0.03	-	-
Dissolved Organic Carbon	0.5 mg/L	0.9	0.9	-	-
Colour	2 TCU	<2	<2	-	-
Conductivity	5 uS/cm	534	584	-	-
Hardness	mg/L	204	219	-	-
pH	0.1 pH Units	8.0	8.0	-	-
Phenolics	0.001 mg/L	<0.001	<0.001	-	-
Total Dissolved Solids	10 mg/L	300	336	-	-
Sulphide	0.02 mg/L	<0.02	0.12	-	-
Tannin & Lignin	0.1 mg/L	<0.1	<0.1	-	-
Total Kjeldahl Nitrogen	0.1 mg/L	0.1	<0.1	-	-
Turbidity	0.1 NTU	4.2	8.8	-	-
Anions					
Chloride	1 mg/L	23 [5]	30 [5]	-	-
Fluoride	0.1 mg/L	0.2 [5]	0.1 [5]	-	-
Nitrate as N	0.1 mg/L	<0.1 [5]	<0.1 [5]	-	-
Nitrite as N	0.10 mg/L	<0.10 [5]	<0.10 [5]	-	-
Sulphate	1 mg/L	51 [5]	56 [5]	-	-
Metals					
Calcium	0.1 mg/L	50.3	54.3	-	-
Iron	0.1 mg/L	0.4	0.9	-	-
Magnesium	0.2 mg/L	19.2	20.3	-	-
Manganese	0.005 mg/L	0.019	0.029	-	-
Potassium	0.1 mg/L	1.8	1.9	-	-
Sodium	0.2 mg/L	15.3	17.1	-	-
Volatiles					
Acetone	5.0 ug/L	-	<5.0	-	-
Benzene	0.5 ug/L	-	<0.5	-	-

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 24-Oct-2022

Order Date: 17-Oct-2022

Project Description: 01348

	Client ID:	5546 Albion Rd - Supply Well - 3 hrs	5546 Albion Rd - Supply Well - 6 hrs	-	-
	Sample Date:	17-Oct-22 00:05	17-Oct-22 03:05	-	-
	Sample ID:	2243028-01	2243028-02	-	-
	MDL/Units	Drinking Water	Drinking Water	-	-
Bromodichloromethane	0.5 ug/L	-	<0.5	-	-
Bromoform	0.5 ug/L	-	<0.5	-	-
Bromomethane	0.5 ug/L	-	<0.5	-	-
Carbon Tetrachloride	0.2 ug/L	-	<0.2	-	-
Chlorobenzene	0.5 ug/L	-	<0.5	-	-
Chloroethane	1.0 ug/L	-	<1.0	-	-
Chloroform	0.5 ug/L	-	<0.5	-	-
Chloromethane	3.0 ug/L	-	<3.0	-	-
Dibromochloromethane	0.5 ug/L	-	<0.5	-	-
Dichlorodifluoromethane	1.0 ug/L	-	<1.0	-	-
1,2-Dibromoethane	0.2 ug/L	-	<0.2	-	-
1,2-Dichlorobenzene	0.5 ug/L	-	<0.5	-	-
1,3-Dichlorobenzene	0.5 ug/L	-	<0.5	-	-
1,4-Dichlorobenzene	0.5 ug/L	-	<0.5	-	-
1,1-Dichloroethane	0.5 ug/L	-	<0.5	-	-
1,2-Dichloroethane	0.5 ug/L	-	<0.5	-	-
1,1-Dichloroethylene	0.5 ug/L	-	<0.5	-	-
cis-1,2-Dichloroethylene	0.5 ug/L	-	<0.5	-	-
trans-1,2-Dichloroethylene	0.5 ug/L	-	<0.5	-	-
1,2-Dichloroethylene, total	0.5 ug/L	-	<0.5	-	-
1,2-Dichloropropane	0.5 ug/L	-	<0.5	-	-
cis-1,3-Dichloropropylene	0.5 ug/L	-	<0.5	-	-
trans-1,3-Dichloropropylene	0.5 ug/L	-	<0.5	-	-
1,3-Dichloropropene, total	0.5 ug/L	-	<0.5	-	-
Ethylbenzene	0.5 ug/L	-	<0.5	-	-
Hexane	1.0 ug/L	-	<1.0	-	-
Methyl Ethyl Ketone (2-Butanone)	5.0 ug/L	-	<5.0	-	-
Methyl Butyl Ketone (2-Hexanone)	10.0 ug/L	-	<10.0	-	-
Methyl Isobutyl Ketone	5.0 ug/L	-	<5.0	-	-
Methyl tert-butyl ether	2.0 ug/L	-	<2.0	-	-
Methylene Chloride	5.0 ug/L	-	<5.0	-	-
Styrene	0.5 ug/L	-	<0.5	-	-
1,1,1,2-Tetrachloroethane	0.5 ug/L	-	<0.5	-	-
1,1,2,2-Tetrachloroethane	0.5 ug/L	-	<0.5	-	-
Tetrachloroethylene	0.5 ug/L	-	<0.5	-	-

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 24-Oct-2022

Order Date: 17-Oct-2022

Project Description: 01348

	Client ID:	5546 Albion Rd - Supply Well - 3 hrs	5546 Albion Rd - Supply Well - 6 hrs	-	-
	Sample Date:	17-Oct-22 00:05	17-Oct-22 03:05	-	-
	Sample ID:	2243028-01	2243028-02	-	-
	MDL/Units	Drinking Water	Drinking Water	-	-
Toluene	0.5 ug/L	-	<0.5	-	-
1,1,1-Trichloroethane	0.5 ug/L	-	<0.5	-	-
1,1,2-Trichloroethane	0.5 ug/L	-	<0.5	-	-
Trichloroethylene	0.5 ug/L	-	<0.5	-	-
Trichlorofluoromethane	1.0 ug/L	-	<1.0	-	-
1,3,5-Trimethylbenzene	0.5 ug/L	-	<0.5	-	-
Vinyl chloride	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	-	-
4-Bromofluorobenzene	Surrogate	-	123%	-	-
Dibromofluoromethane	Surrogate	-	92.7%	-	-
Toluene-d8	Surrogate	-	113%	-	-

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 24-Oct-2022

Order Date: 17-Oct-2022

Project Description: 01348

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Alkalinity, total	ND	5	mg/L						
Ammonia as N	ND	0.01	mg/L						
Dissolved Organic Carbon	ND	0.5	mg/L						
Colour	ND	2	TCU						
Conductivity	ND	5	uS/cm						
Phenolics	ND	0.001	mg/L						
Total Dissolved Solids	ND	10	mg/L						
Sulphide	ND	0.02	mg/L						
Tannin & Lignin	ND	0.1	mg/L						
Total Kjeldahl Nitrogen	ND	0.1	mg/L						
Turbidity	ND	0.1	NTU						
Metals									
Calcium	ND	0.1	mg/L						
Iron	ND	0.1	mg/L						
Magnesium	ND	0.2	mg/L						
Manganese	ND	0.005	mg/L						
Potassium	ND	0.1	mg/L						
Sodium	ND	0.2	mg/L						
Microbiological Parameters									
E. coli	ND	1	CFU/100mL						
Fecal Coliforms	ND	1	CFU/100mL						
Total Coliforms	ND	1	CFU/100mL						
Heterotrophic Plate Count	ND	10	CFU/mL						
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						
Chloroethane	ND	1.0	ug/L						
Chloroform	ND	0.5	ug/L						
Chloromethane	ND	3.0	ug/L						
Dibromochloromethane	ND	0.5	ug/L						
Dichlorodifluoromethane	ND	1.0	ug/L						
1,2-Dibromoethane	ND	0.2	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						
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-Dichloroethylene, total	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						
Hexane	ND	1.0	ug/L						
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L						
Methyl Butyl Ketone (2-Hexanone)	ND	10.0	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						

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
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						
1,3,5-Trimethylbenzene	ND	0.5	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	*112*		*ug/L*		*139*	*50-140*			
Surrogate: Dibromofluoromethane	*68.7*		*ug/L*		*85.9*	*50-140*			
Surrogate: Toluene-d8	*90.2*		*ug/L*		*113*	*50-140*			

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 24-Oct-2022

Order Date: 17-Oct-2022

Project Description: 01348

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Alkalinity, total	33.0	5	mg/L	33.4			1.4	14	
Ammonia as N	0.027	0.01	mg/L	0.027			2.8	17.7	
Dissolved Organic Carbon	0.7	0.5	mg/L	0.9			19.3	37	
Colour	ND	2	TCU	ND			NC	12	
Conductivity	162	5	uS/cm	165			1.6	5	
pH	8.4	0.1	pH Units	8.4			0.1	3.3	
Phenolics	ND	0.001	mg/L	ND			NC	10	
Total Dissolved Solids	86.0	10	mg/L	86.0			0.0	10	
Sulphide	ND	0.02	mg/L	ND			NC	10	
Tannin & Lignin	ND	0.1	mg/L	ND			NC	11	
Total Kjeldahl Nitrogen	0.12	0.1	mg/L	0.12			1.0	16	
Turbidity	4.2	0.1	NTU	4.2			0.5	10	
Metals									
Calcium	50.6	0.1	mg/L	50.3			0.7	20	
Iron	0.4	0.1	mg/L	0.4			2.7	20	
Magnesium	19.4	0.2	mg/L	19.2			1.2	20	
Manganese	0.019	0.005	mg/L	0.019			0.1	20	
Potassium	1.8	0.1	mg/L	1.8			1.7	20	
Sodium	15.0	0.2	mg/L	15.3			1.6	20	
Microbiological Parameters									
E. coli	ND	1	CFU/100mL	ND			NC	30	
Fecal Coliforms	ND	1	CFU/100mL	ND			NC	30	
Total Coliforms	4	1	CFU/100mL	4			0.0	30	
Heterotrophic Plate Count	ND	10	CFU/mL	10			NC	30	
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	
Chlorobenzene	ND	0.5	ug/L	ND			NC	30	
Chloroethane	ND	1.0	ug/L	ND			NC	30	
Chloroform	ND	0.5	ug/L	ND			NC	30	
Chloromethane	ND	3.0	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-Dibromoethane	ND	0.2	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	
Hexane	ND	1.0	ug/L	ND			NC	30	
Methyl Ethyl Ketone (2-Butanone)	ND	5.0	ug/L	ND			NC	30	
Methyl Butyl Ketone (2-Hexanone)	ND	10.0	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	

Certificate of Analysis

Client: LRL Associates Ltd.

Client PO:

Report Date: 24-Oct-2022

Order Date: 17-Oct-2022

Project Description: 01348

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
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	
1,3,5-Trimethylbenzene	ND	0.5	ug/L	ND			NC	30	
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	*86.0*		*ug/L*		*108*	*50-140*			
Surrogate: Dibromofluoromethane	*72.8*		*ug/L*		*91.0*	*50-140*			
Surrogate: Toluene-d8	*87.8*		*ug/L*		*110*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
Ammonia as N	0.269	0.01	mg/L	0.027	96.6	81-124			
Dissolved Organic Carbon	10.1	0.5	mg/L	0.9	92.0	60-133			
Phenolics	0.027	0.001	mg/L	ND	108	67-133			
Total Dissolved Solids	94.0	10	mg/L	ND	94.0	75-125			
Sulphide	0.54	0.02	mg/L	ND	107	79-115			
Tannin & Lignin	1.0	0.1	mg/L	ND	95.7	71-113			
Total Kjeldahl Nitrogen	2.09	0.1	mg/L	0.12	98.4	81-126			
Metals									
Calcium	57300	0.1	mg/L	50300	70.1	80-120			QM-07
Iron	2560	0.1	mg/L	371	87.4	80-120			
Magnesium	27700	0.2	mg/L	19200	85.9	80-120			
Manganese	65.0	0.005	mg/L	18.7	92.7	80-120			
Potassium	11300	0.1	mg/L	1790	94.7	80-120			
Sodium	23500	0.2	mg/L	15300	81.9	80-120			
Volatiles									
Acetone	81.3	5.0	ug/L	ND	81.3	50-140			
Benzene	35.5	0.5	ug/L	ND	88.8	60-130			
Bromodichloromethane	36.7	0.5	ug/L	ND	91.7	60-130			
Bromoform	42.2	0.5	ug/L	ND	106	60-130			
Bromomethane	40.4	0.5	ug/L	ND	101	50-140			
Carbon Tetrachloride	47.2	0.2	ug/L	ND	118	60-130			
Chlorobenzene	40.9	0.5	ug/L	ND	102	60-130			
Chloroethane	31.5	1.0	ug/L	ND	78.8	50-140			
Chloroform	44.0	0.5	ug/L	ND	110	60-130			
Chloromethane	35.5	3.0	ug/L	ND	88.7	50-140			
Dibromochloromethane	43.5	0.5	ug/L	ND	109	60-130			
Dichlorodifluoromethane	26.3	1.0	ug/L	ND	65.6	50-140			
1,2-Dibromoethane	35.8	0.2	ug/L	ND	89.5	60-130			
1,2-Dichlorobenzene	38.9	0.5	ug/L	ND	97.2	60-130			
1,3-Dichlorobenzene	39.9	0.5	ug/L	ND	99.7	60-130			
1,4-Dichlorobenzene	40.5	0.5	ug/L	ND	101	60-130			
1,1-Dichloroethane	36.8	0.5	ug/L	ND	92.0	60-130			
1,2-Dichloroethane	41.8	0.5	ug/L	ND	104	60-130			
1,1-Dichloroethylene	32.4	0.5	ug/L	ND	81.1	60-130			
cis-1,2-Dichloroethylene	40.9	0.5	ug/L	ND	102	60-130			
trans-1,2-Dichloroethylene	36.6	0.5	ug/L	ND	91.4	60-130			
1,2-Dichloropropane	35.5	0.5	ug/L	ND	88.6	60-130			
cis-1,3-Dichloropropylene	35.9	0.5	ug/L	ND	89.7	60-130			
trans-1,3-Dichloropropylene	38.3	0.5	ug/L	ND	95.8	60-130			
Ethylbenzene	33.8	0.5	ug/L	ND	84.6	60-130			
Hexane	37.1	1.0	ug/L	ND	92.8	60-130			
Methyl Ethyl Ketone (2-Butanone)	116	5.0	ug/L	ND	116	50-140			
Methyl Butyl Ketone (2-Hexanone)	67.4	10.0	ug/L	ND	67.4	50-140			
Methyl Isobutyl Ketone	81.0	5.0	ug/L	ND	81.0	50-140			
Methyl tert-butyl ether	82.5	2.0	ug/L	ND	82.5	50-140			
Methylene Chloride	37.6	5.0	ug/L	ND	94.1	60-130			
Styrene	30.7	0.5	ug/L	ND	76.7	60-130			
1,1,1,2-Tetrachloroethane	36.0	0.5	ug/L	ND	90.1	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
1,1,2,2-Tetrachloroethane	41.9	0.5	ug/L	ND	105	60-130			
Tetrachloroethylene	49.9	0.5	ug/L	ND	125	60-130			
Toluene	36.3	0.5	ug/L	ND	90.6	60-130			
1,1,1-Trichloroethane	42.1	0.5	ug/L	ND	105	60-130			
1,1,2-Trichloroethane	38.5	0.5	ug/L	ND	96.2	60-130			
Trichloroethylene	41.7	0.5	ug/L	ND	104	60-130			
Trichlorofluoromethane	41.2	1.0	ug/L	ND	103	60-130			
1,3,5-Trimethylbenzene	40.6	0.5	ug/L	ND	102	60-130			
Vinyl chloride	35.7	0.5	ug/L	ND	89.2	50-140			
m,p-Xylenes	70.4	0.5	ug/L	ND	88.0	60-130			
o-Xylene	34.6	0.5	ug/L	ND	86.5	60-130			
Surrogate: 4-Bromofluorobenzene	*69.5*		*ug/L*		*86.9*	*50-140*			
Surrogate: Dibromofluoromethane	*78.0*		*ug/L*		*97.5*	*50-140*			
Surrogate: Toluene-d8	*70.1*		*ug/L*		*87.6*	*50-140*			

Qualifier Notes:

Login Qualifiers :

Container and COC sample IDs don't match - Sulphide bottle is labelled as 5548 Albion Rd, chain of custody reads 5546 Albion Rd.

Applies to samples: 5546 Albion Rd - Supply Well - 3 hrs

Sample - Not submitted in the correct container - VOC sample decanted from plastic general 500mL bottle.

Applies to samples: 5546 Albion Rd - Supply Well - 6 hrs

Sample - F1/BTEX/VOCs (water) submitted with headspace which covered the bottom surface of the vial when inverted.

Applies to samples: 5546 Albion Rd - Supply Well - 6 hrs

Sample Qualifiers :

5 : Subcontracted analysis - Eurofins Environment Testing

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

PARAC LABORATORIES

Paracel ID: 2243028

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Paracel Order Number	Chain Of Custody Ontario Drinking Water Samples № 17463
2243028	

Client Name:	LRL	Project Ref:	01348	Waterworks Name:		Samples Taken By:	
Contact Name:	Abdul Trader	Quote #:		Waterworks Number:		Name:	Abdul Trader
Address:	5430 Canotek Rd	PO #:		Address:	5546 Albion Rd	Signature:	
After Hours Contact:		E-mail:	atrader@lrl.ca		Ottawa, ON.	Page 1 of 1	
Telephone:	6133156602	Fax:		Public Health Unit:		Turn Around Time Required: ☐ 1 day ☐ 2 day ☐ 3 day ☒ 4 day	

Samples Submitted Under: (Indicate **ONLY one**)
☐ ON REG 170/03 ☐ ON REG 319/08 ☐ Private Well
☐ ON REG 243/07 ☒ Other: ODWS

Have LSN forms been submitted to MOE/MOHLTC?: ☐ Yes ☐ No ☐ N/A

Are these samples for human consumption?: ☐ Yes ☐ No

All information must be completed before samples will be processed.

Sample Type: R = Raw ; T = Treated ; D = Distribution; P = Plumbing
Source Type: G = Ground Water; S = Surface Water
Reportable: Requires AWQI reporting as per Regulation - Y = Yes; N = No

	LOCATION NAME	SAMPLE ID	Sample Type: R/T/D/P	Source Type: G / S	Reportable: Y / N	Resample	SAMPLE COLLECTED DATE	SAMPLE COLLECTED TIME	# of Containers	Free/Combined Chlorine Residual mg/L	Standing / Flushed: S / F (REG 243)	Total Coliform/E. Coli	HPC	Lead	THM	Subdivision Sample			
1	5546 Albion Rd - supply well - 3hrs		R	G	N		17.10.2022	12:05am	8							X			
2	5546 Albion Rd - supply well - 6hrs		R	G	N		17.10.2022	3:05am	8							X			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Required Analyses

Comments:

Method of Delivery: Drop Box

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab:	Verified By:
Relinquished By (Print): Abdul Trader	Date/Time:	Date/Time: Oct 17 2022 757	Date/Time: Oct 17 22 1140
Date/Time: 17-10-2022 / 4:45a.m	Temperature: °C	Temperature: 7.4 °C	pH Verified: ☐ By:

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Certificate of Analysis

LRL Associates Ltd.

5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Abdul Kader Alhaj

Client PO:
Project: 01348
Custody: 17473

Report Date: 27-Oct-2022
Order Date: 21-Oct-2022

Order #: 2243484

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

Paracel ID	Client ID
2243484-01	5546 Albion Rd-Supply Well

Approved By:

Dale Robertson, BSc
Laboratory Director

Certificate of Analysis
Client: **LRL Associates Ltd.**
Client PO:

Report Date: 27-Oct-2022
Order Date: 21-Oct-2022
Project Description: 01348

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-MS	EPA 200.8 - ICP-MS	26-Oct-22	26-Oct-22

Certificate of Analysis

Client: **LRL Associates Ltd.**

Client PO:

Report Date: 27-Oct-2022

Order Date: 21-Oct-2022

Project Description: 01348

	Client ID:	5546 Albion Rd-Supply Well	-	-	-
	Sample Date:	21-Oct-22 08:35	-	-	-
	Sample ID:	2243484-01	-	-	-
	MDL/Units	Drinking Water	-	-	-
Metals					
Aluminum	0.001 mg/L	0.001	-	-	-
Antimony	0.0005 mg/L	<0.0005	-	-	-
Arsenic	0.001 mg/L	<0.001	-	-	-
Barium	0.001 mg/L	0.033	-	-	-
Beryllium	0.0005 mg/L	<0.0005	-	-	-
Boron	0.01 mg/L	0.05	-	-	-
Cadmium	0.0001 mg/L	<0.0001	-	-	-
Calcium	0.1 mg/L	21.4	-	-	-
Chromium	0.001 mg/L	<0.001	-	-	-
Cobalt	0.0005 mg/L	<0.0005	-	-	-
Copper	0.0005 mg/L	0.0009	-	-	-
Iron	0.1 mg/L	0.2	-	-	-
Lead	0.0001 mg/L	<0.0001	-	-	-
Magnesium	0.2 mg/L	19.1	-	-	-
Manganese	0.005 mg/L	0.070	-	-	-
Molybdenum	0.0005 mg/L	0.0027	-	-	-
Nickel	0.001 mg/L	<0.001	-	-	-
Potassium	0.1 mg/L	2.7	-	-	-
Selenium	0.001 mg/L	<0.001	-	-	-
Silver	0.0001 mg/L	<0.0001	-	-	-
Sodium	0.2 mg/L	15.5	-	-	-
Strontium	0.01 mg/L	0.08	-	-	-
Thallium	0.001 mg/L	<0.001	-	-	-
Tin	0.01 mg/L	<0.01	-	-	-
Titanium	0.005 mg/L	<0.005	-	-	-
Tungsten	0.01 mg/L	<0.01	-	-	-
Uranium	0.0001 mg/L	<0.0001	-	-	-
Vanadium	0.0005 mg/L	<0.0005	-	-	-
Zinc	0.005 mg/L	<0.005	-	-	-

Certificate of Analysis
Client: **LRL Associates Ltd.**
Client PO:

Report Date: 27-Oct-2022
Order Date: 21-Oct-2022
Project Description: 01348

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Aluminum	ND	0.001	mg/L						
Antimony	ND	0.0005	mg/L						
Arsenic	ND	0.001	mg/L						
Barium	ND	0.001	mg/L						
Beryllium	ND	0.0005	mg/L						
Boron	ND	0.01	mg/L						
Cadmium	ND	0.0001	mg/L						
Calcium	ND	0.1	mg/L						
Chromium	ND	0.001	mg/L						
Cobalt	ND	0.0005	mg/L						
Copper	ND	0.0005	mg/L						
Iron	ND	0.1	mg/L						
Lead	ND	0.0001	mg/L						
Magnesium	ND	0.2	mg/L						
Manganese	ND	0.005	mg/L						
Molybdenum	ND	0.0005	mg/L						
Nickel	ND	0.001	mg/L						
Potassium	ND	0.1	mg/L						
Selenium	ND	0.001	mg/L						
Silver	ND	0.0001	mg/L						
Sodium	ND	0.2	mg/L						
Strontium	ND	0.01	mg/L						
Thallium	ND	0.001	mg/L						
Tin	ND	0.01	mg/L						
Titanium	ND	0.005	mg/L						
Tungsten	ND	0.01	mg/L						
Uranium	ND	0.0001	mg/L						
Vanadium	ND	0.0005	mg/L						
Zinc	ND	0.005	mg/L						

Certificate of Analysis
Client: **LRL Associates Ltd.**
Client PO:

Report Date: 27-Oct-2022
Order Date: 21-Oct-2022
Project Description: 01348

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Aluminum	0.001	0.001	mg/L	0.001			0.6	20	
Antimony	ND	0.0005	mg/L	ND			NC	20	
Arsenic	ND	0.001	mg/L	ND			NC	20	
Barium	0.033	0.001	mg/L	0.033			2.7	20	
Beryllium	ND	0.0005	mg/L	ND			NC	20	
Boron	0.05	0.01	mg/L	0.05			1.2	20	
Cadmium	ND	0.0001	mg/L	ND			NC	20	
Calcium	21.8	0.1	mg/L	21.4			1.9	20	
Chromium	ND	0.001	mg/L	ND			NC	20	
Cobalt	ND	0.0005	mg/L	ND			NC	20	
Copper	0.0009	0.0005	mg/L	0.0009			0.5	20	
Iron	0.2	0.1	mg/L	0.2			0.0	20	
Lead	ND	0.0001	mg/L	ND			NC	20	
Magnesium	19.4	0.2	mg/L	19.1			1.8	20	
Manganese	0.071	0.005	mg/L	0.070			1.8	20	
Molybdenum	0.0027	0.0005	mg/L	0.0027			0.3	20	
Nickel	ND	0.001	mg/L	ND			NC	20	
Potassium	3.0	0.1	mg/L	2.7			9.6	20	
Selenium	ND	0.001	mg/L	ND			NC	20	
Silver	ND	0.0001	mg/L	ND			NC	20	
Sodium	14.9	0.2	mg/L	15.5			4.0	20	
Thallium	ND	0.001	mg/L	ND			NC	20	
Tin	ND	0.01	mg/L	ND			NC	20	
Titanium	ND	0.005	mg/L	ND			NC	50	
Tungsten	ND	0.01	mg/L	ND			NC	20	
Uranium	ND	0.0001	mg/L	ND			NC	20	
Vanadium	ND	0.0005	mg/L	ND			NC	20	
Zinc	ND	0.005	mg/L	ND			NC	20	

Certificate of Analysis
Client: **LRL Associates Ltd.**
Client PO:

Report Date: 27-Oct-2022
Order Date: 21-Oct-2022
Project Description: 01348

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Aluminum	49.6	0.001	mg/L	1.06	97.1	80-120			
Antimony	44.1	0.0005	mg/L	ND	88.1	80-120			
Arsenic	52.0	0.001	mg/L	0.115	104	80-120			
Barium	78.3	0.001	mg/L	33.4	89.8	80-120			
Beryllium	49.9	0.0005	mg/L	0.0184	99.8	80-120			
Boron	93.8	0.01	mg/L	49.7	88.3	80-120			
Cadmium	45.4	0.0001	mg/L	0.0076	90.7	80-120			
Calcium	30300	0.1	mg/L	21400	89.1	80-120			
Chromium	53.8	0.001	mg/L	0.045	108	80-120			
Cobalt	49.8	0.0005	mg/L	0.0396	99.4	80-120			
Copper	48.4	0.0005	mg/L	0.937	94.9	80-120			
Iron	2540	0.1	mg/L	212	93.0	80-120			
Lead	46.9	0.0001	mg/L	0.0359	93.6	80-120			
Magnesium	27600	0.2	mg/L	19100	84.8	80-120			
Manganese	118	0.005	mg/L	69.9	96.8	80-120			
Molybdenum	49.0	0.0005	mg/L	2.71	92.7	80-120			
Nickel	49.1	0.001	mg/L	0.192	97.8	80-120			
Potassium	13100	0.1	mg/L	2690	104	80-120			
Selenium	49.1	0.001	mg/L	0.059	98.1	80-120			
Silver	46.0	0.0001	mg/L	0.0054	91.9	80-120			
Sodium	24200	0.2	mg/L	15500	87.4	80-120			
Thallium	46.5	0.001	mg/L	0.006	92.9	80-120			
Tin	46.8	0.01	mg/L	0.14	93.4	80-120			
Titanium	59.0	0.005	mg/L	ND	118	70-130			
Tungsten	48.1	0.01	mg/L	0.08	95.9	80-120			
Uranium	49.8	0.0001	mg/L	0.0268	99.6	80-120			
Vanadium	54.5	0.0005	mg/L	0.0134	109	80-120			
Zinc	48.6	0.005	mg/L	2.08	93.0	80-120			

Certificate of Analysis
Client: **LRL Associates Ltd.**
Client PO:

Report Date: 27-Oct-2022
Order Date: 21-Oct-2022
Project Description: 01348

Qualifier Notes:

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

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Paracel ID: 2243484

Chain Of Custody
Ontario Drinking Water Samples

№ 17473

Client Name:	LRL Associates	Project Ref:	01348	Waterworks Name:	Samples Taken By:
Contact Name:	Abdul Kader	Quote #:		Waterworks Number:	Name: Abdul Kader
Address:	5430 Canotek Rd	PO #:		Address: 5546 Albion Rd.	Signature:
After Hours Contact:		E-mail:	akader@lrl.ca	Ottawa, ON.	Page 1 of 1
Telephone:	613 315 6602	Fax:		Public Health Unit:	Turn Around Time Required: ☐ 1 day ☐ 2 day ☐ 3 day ☒ 4 day

Samples Submitted Under: (Indicate **ONLY** one)
☐ ON REG 170/03 ☐ ON REG 319/08 ☐ Private Well
☐ ON REG 243/07 ☒ Other: ODWS

Have LSN forms been submitted to MOE/MOHLTC?: ☐ Yes ☐ No ☐ N/A

Are these samples for human consumption?: ☐ Yes ☐ No

All information must be completed before samples will be processed.

Sample Type: R = Raw ; T = Treated ; D = Distribution; P = Plumbing
Source Type: G = Ground Water; S = Surface Water
Reportable: Requires AWQI reporting as per Regulation - Y = Yes; N = No

	LOCATION NAME	SAMPLE ID	Sample Type: R/T/D/P	Source Type: G / S	Reportable: Y / N	Resample	SAMPLE COLLECTED DATE	SAMPLE COLLECTED TIME	# of Containers	Free/Combined Chlorine Residual mg/L	Standing / Flushed: S / F (REG 243)	Required Analyses: Total Coliform/E. Coli	HPC	Lead	THM	Trace Metals			
1	5546 Albion Rd - supply well		R	G	N		21.10.22	8:35	1							X			
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Comments:

Method of Delivery: Drop Box

Relinquished By (Sign): Abdul Kader	Received By Driver/Depot:	Received at Lab:	Verified By: SC
Relinquished By (Print):	Date/Time:	Date/Time: Oct 21 2022 10:30	Date/Time: Oct 21/22 11:11am
Date/Time: 21/10/2022 / 10:10	Temperature: °C	Temperature: 11.3 °C	pH Verified: ☐ By: SC

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Certificate of Analysis

LRL Associates Ltd.
5430 Canotek Road
Ottawa, ON K1J 9G2
Attn: Jessica Arthurs

Client PO:
Project: 01348
Custody: 13259

Report Date: 29-Nov-2023
Order Date: 23-Nov-2023

Order #: 2347319

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

Paracel ID	Client ID
2347319-01	5546 Albion Road

Approved By:

Dale Robertson, BSc
Laboratory Director

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Alkalinity, total to pH 4.5	EPA 310.1 - Titration to pH 4.5	27-Nov-23	27-Nov-23
Ammonia, as N	EPA 351.2 - Auto Colour	27-Nov-23	27-Nov-23
Anions	EPA 300.1 - IC	29-Nov-23	29-Nov-23
Colour	SM2120 - Spectrophotometric	23-Nov-23	24-Nov-23
Conductivity	EPA 9050A- probe @25 °C	27-Nov-23	27-Nov-23
Dissolved Organic Carbon	MOE 3247B - Combustion IR	23-Nov-23	24-Nov-23
E. coli	MOE E3407	23-Nov-23	23-Nov-23
Fecal Coliform	SM 9222D	23-Nov-23	23-Nov-23
Heterotrophic Plate Count	SM 9215C	23-Nov-23	23-Nov-23
Metals, ICP-MS	EPA 200.8 - ICP-MS	24-Nov-23	24-Nov-23
pH	EPA 150.1 - pH probe @25 °C	27-Nov-23	27-Nov-23
PHC F1	CWS Tier 1 - P&T GC-FID	27-Nov-23	28-Nov-23
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	28-Nov-23	28-Nov-23
Phenolics	EPA 420.2 - Auto Colour, 4AAP	28-Nov-23	28-Nov-23
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	27-Nov-23	27-Nov-23
Hardness	Hardness as CaCO3	29-Nov-23	29-Nov-23
Sulphide	SM 4500SE - Colourimetric	23-Nov-23	23-Nov-23
Tannin/Lignin	SM 5550B - Colourimetric	23-Nov-23	24-Nov-23
Total Coliform	MOE E3407	23-Nov-23	23-Nov-23
Total Dissolved Solids	SM 2540C - gravimetric, filtration	27-Nov-23	28-Nov-23
Total Kjeldahl Nitrogen	EPA 351.2 - Auto Colour, digestion	27-Nov-23	28-Nov-23
Turbidity	SM 2130B - Turbidity meter	23-Nov-23	23-Nov-23
VOCs by P&T GC-MS	EPA 624 - P&T GC-MS	28-Nov-23	28-Nov-23

	Client ID:	5546 Albion Road	-	-	-	-	-
	Sample Date:	23-Nov-23 08:05	-	-	-		
	Sample ID:	2347319-01	-	-	-		
	Matrix:	Drinking Water	-	-	-		
	MDL/Units						
Microbiological Parameters							
E. coli	1 CFU/100mL	ND	-	-	-	-	-
Total Coliforms	1 CFU/100mL	1	-	-	-	-	-
Fecal Coliforms	1 CFU/100mL	ND	-	-	-	-	-
Heterotrophic Plate Count	10 CFU/mL	10	-	-	-	-	-
General Inorganics							
Alkalinity, total	5 mg/L	187	-	-	-	-	-
Ammonia as N	0.01 mg/L	0.04	-	-	-	-	-
Dissolved Organic Carbon	0.5 mg/L	<0.5	-	-	-	-	-
Colour	2 TCU	<2	-	-	-	-	-
Conductivity	5 uS/cm	470	-	-	-	-	-
Hardness	mg/L	203	-	-	-	-	-
pH	0.1 pH Units	8.0	-	-	-	-	-
Phenolics	0.001 mg/L	<0.001	-	-	-	-	-
Total Dissolved Solids	10 mg/L	258	-	-	-	-	-
Sulphide	0.02 mg/L	<0.02	-	-	-	-	-
Tannin & Lignin	0.1 mg/L	<0.1	-	-	-	-	-
Total Kjeldahl Nitrogen	0.1 mg/L	<0.1	-	-	-	-	-
Turbidity	0.1 NTU	3.4	-	-	-	-	-
Anions							
Chloride	1 mg/L	14	-	-	-	-	-
Fluoride	0.1 mg/L	0.1	-	-	-	-	-
Nitrate as N	0.1 mg/L	<0.1	-	-	-	-	-
Nitrite as N	0.05 mg/L	<0.05	-	-	-	-	-
Sulphate	1 mg/L	52	-	-	-	-	-
Metals							

	Client ID:	5546 Albion Road	-	-	-	-	-
	Sample Date:	23-Nov-23 08:05	-	-	-		
	Sample ID:	2347319-01	-	-	-		
	Matrix:	Drinking Water	-	-	-		
	MDL/Units						
Metals							
Aluminum	0.001 mg/L	<0.001	-	-	-	-	-
Antimony	0.0005 mg/L	<0.0005	-	-	-	-	-
Arsenic	0.001 mg/L	<0.001	-	-	-	-	-
Barium	0.001 mg/L	0.122	-	-	-	-	-
Beryllium	0.0005 mg/L	<0.0005	-	-	-	-	-
Boron	0.01 mg/L	0.05	-	-	-	-	-
Cadmium	0.0001 mg/L	<0.0001	-	-	-	-	-
Calcium	0.1 mg/L	51.0	-	-	-	-	-
Chromium	0.001 mg/L	<0.001	-	-	-	-	-
Cobalt	0.0005 mg/L	<0.0005	-	-	-	-	-
Copper	0.0005 mg/L	0.0009	-	-	-	-	-
Iron	0.1 mg/L	0.5	-	-	-	-	-
Lead	0.0001 mg/L	0.0001	-	-	-	-	-
Magnesium	0.2 mg/L	18.5	-	-	-	-	-
Manganese	0.005 mg/L	0.015	-	-	-	-	-
Molybdenum	0.0005 mg/L	0.0038	-	-	-	-	-
Nickel	0.001 mg/L	<0.001	-	-	-	-	-
Potassium	0.1 mg/L	2.0	-	-	-	-	-
Selenium	0.001 mg/L	<0.001	-	-	-	-	-
Silver	0.0001 mg/L	0.0001	-	-	-	-	-
Sodium	0.2 mg/L	11.2	-	-	-	-	-
Strontium	0.01 mg/L	0.23	-	-	-	-	-
Thallium	0.001 mg/L	<0.001	-	-	-	-	-
Tin	0.01 mg/L	<0.01	-	-	-	-	-
Titanium	0.005 mg/L	<0.005	-	-	-	-	-

	Client ID:	5546 Albion Road	-	-	-	-	-
	Sample Date:	23-Nov-23 08:05	-	-	-		
	Sample ID:	2347319-01	-	-	-		
	Matrix:	Drinking Water	-	-	-		
	MDL/Units						
Metals							
Tungsten	0.01 mg/L	<0.01	-	-	-	-	-
Uranium	0.0001 mg/L	0.0004	-	-	-	-	-
Vanadium	0.0005 mg/L	<0.0005	-	-	-	-	-
Zinc	0.005 mg/L	<0.005	-	-	-	-	-
Volatiles							
Acetone	0.0050 mg/L	<0.0050	-	-	-	-	-
Benzene	0.0005 mg/L	<0.0005	-	-	-	-	-
Bromodichloromethane	0.0005 mg/L	<0.0005	-	-	-	-	-
Bromoform	0.0005 mg/L	<0.0005	-	-	-	-	-
Bromomethane	0.0005 mg/L	<0.0005	-	-	-	-	-
Carbon Tetrachloride	0.0002 mg/L	<0.0002	-	-	-	-	-
Chlorobenzene	0.0005 mg/L	<0.0005	-	-	-	-	-
Chloroethane	0.0010 mg/L	<0.0010	-	-	-	-	-
Chloroform	0.0005 mg/L	<0.0005	-	-	-	-	-
Dibromochloromethane	0.0005 mg/L	<0.0005	-	-	-	-	-
Dichlorodifluoromethane	0.0010 mg/L	<0.0010	-	-	-	-	-
1,2-Dibromoethane	0.0002 mg/L	<0.0002	-	-	-	-	-
1,2-Dichlorobenzene	0.0005 mg/L	<0.0005	-	-	-	-	-
1,3-Dichlorobenzene	0.0005 mg/L	<0.0005	-	-	-	-	-
1,4-Dichlorobenzene	0.0005 mg/L	<0.0005	-	-	-	-	-
1,1-Dichloroethane	0.0005 mg/L	<0.0005	-	-	-	-	-
1,2-Dichloroethane	0.0005 mg/L	<0.0005	-	-	-	-	-
1,1-Dichloroethylene	0.0005 mg/L	<0.0005	-	-	-	-	-
cis-1,2-Dichloroethylene	0.0005 mg/L	<0.0005	-	-	-	-	-
trans-1,2-Dichloroethylene	0.0005 mg/L	<0.0005	-	-	-	-	-

Certificate of Analysis

Report Date: 29-Nov-2023

Client: **LRL Associates Ltd.**

Order Date: 23-Nov-2023

Client PO:

Project Description: 01348

	Client ID:	5546 Albion Road	-	-	-	-	-
	Sample Date:	23-Nov-23 08:05	-	-	-		
	Sample ID:	2347319-01	-	-	-		
	Matrix:	Drinking Water	-	-	-		
	MDL/Units						
Volatiles							
1,2-Dichloroethylene, total	0.0005 mg/L	<0.0005	-	-	-	-	-
1,2-Dichloropropane	0.0005 mg/L	<0.0005	-	-	-	-	-
cis-1,3-Dichloropropylene	0.0005 mg/L	<0.0005	-	-	-	-	-
trans-1,3-Dichloropropylene	0.0005 mg/L	<0.0005	-	-	-	-	-
1,3-Dichloropropene, total	0.0005 mg/L	<0.0005	-	-	-	-	-
Ethylbenzene	0.0005 mg/L	<0.0005	-	-	-	-	-
Hexane	0.0010 mg/L	<0.0010	-	-	-	-	-
Methyl Ethyl Ketone (2-Butanone)	0.0050 mg/L	<0.0050	-	-	-	-	-
Methyl Isobutyl Ketone	0.0050 mg/L	<0.0050	-	-	-	-	-
Methyl tert-butyl ether	0.0020 mg/L	<0.0020	-	-	-	-	-
Methylene Chloride	0.0050 mg/L	<0.0050	-	-	-	-	-
Styrene	0.0005 mg/L	<0.0005	-	-	-	-	-
1,1,1,2-Tetrachloroethane	0.0005 mg/L	<0.0005	-	-	-	-	-
1,1,2,2-Tetrachloroethane	0.0005 mg/L	<0.0005	-	-	-	-	-
Tetrachloroethylene	0.0005 mg/L	<0.0005	-	-	-	-	-
Toluene	0.0005 mg/L	<0.0005	-	-	-	-	-
1,1,1-Trichloroethane	0.0005 mg/L	<0.0005	-	-	-	-	-
1,1,2-Trichloroethane	0.0005 mg/L	<0.0005	-	-	-	-	-
Trichloroethylene	0.0005 mg/L	<0.0005	-	-	-	-	-
Trichlorofluoromethane	0.0010 mg/L	<0.0010	-	-	-	-	-
Vinyl chloride	0.0002 mg/L	<0.0002	-	-	-	-	-
m,p-Xylenes	0.0005 mg/L	<0.0005	-	-	-	-	-
o-Xylene	0.0005 mg/L	<0.0005	-	-	-	-	-
Xylenes, total	0.0005 mg/L	<0.0005	-	-	-	-	-
Toluene-d8	Surrogate	99.7%	-	-	-	-	-

	Client ID:	5546 Albion Road	-	-	-	-	-
	Sample Date:	23-Nov-23 08:05	-	-	-		
	Sample ID:	2347319-01	-	-	-		
	Matrix:	Drinking Water	-	-	-		
	MDL/Units						
Volatiles							
4-Bromofluorobenzene	Surrogate	119%	-	-	-	-	-
Dibromofluoromethane	Surrogate	78.4%	-	-	-	-	-
Hydrocarbons							
F1 PHCs (C6-C10)	0.0250 mg/L	<0.0250	-	-	-	-	-
F2 PHCs (C10-C16)	0.1 mg/L	<0.1	-	-	-	-	-
F3 PHCs (C16-C34)	0.1 mg/L	<0.1	-	-	-	-	-
F4 PHCs (C34-C50)	0.1 mg/L	<0.1	-	-	-	-	-
Semi-Volatiles							
Acenaphthene	0.05 ug/L	<0.05	-	-	-	-	-
Acenaphthylene	0.05 ug/L	<0.05	-	-	-	-	-
Anthracene	0.01 ug/L	<0.01	-	-	-	-	-
Benzo [a] anthracene	0.01 ug/L	<0.01	-	-	-	-	-
Benzo [a] pyrene	0.01 ug/L	<0.01	-	-	-	-	-
Benzo [b] fluoranthene	0.05 ug/L	<0.05	-	-	-	-	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	-	-	-	-	-
Benzo [k] fluoranthene	0.05 ug/L	<0.05	-	-	-	-	-
Chrysene	0.05 ug/L	<0.05	-	-	-	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	-	-	-	-	-
Fluoranthene	0.01 ug/L	<0.01	-	-	-	-	-
Fluorene	0.05 ug/L	<0.05	-	-	-	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	-	-	-	-	-
1-Methylnaphthalene	0.05 ug/L	<0.05	-	-	-	-	-
2-Methylnaphthalene	0.05 ug/L	<0.05	-	-	-	-	-
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	-	-	-	-	-
Naphthalene	0.05 ug/L	<0.05	-	-	-	-	-

	Client ID:	5546 Albion Road	-	-	-		
	Sample Date:	23-Nov-23 08:05	-	-	-	-	-
	Sample ID:	2347319-01	-	-	-		
	Matrix:	Drinking Water	-	-	-		
	MDL/Units						
Semi-Volatiles							
Phenanthrene	0.05 ug/L	<0.05	-	-	-	-	-
Pyrene	0.01 ug/L	<0.01	-	-	-	-	-
2-Fluorobiphenyl	Surrogate	68.0%	-	-	-	-	-
Terphenyl-d14	Surrogate	58.0%	-	-	-	-	-

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions								
Chloride	ND	1	mg/L					
Fluoride	ND	0.1	mg/L					
Nitrate as N	ND	0.1	mg/L					
Nitrite as N	ND	0.05	mg/L					
Sulphate	ND	1	mg/L					
General Inorganics								
Alkalinity, total	ND	5	mg/L					
Ammonia as N	ND	0.01	mg/L					
Dissolved Organic Carbon	ND	0.5	mg/L					
Colour	ND	2	TCU					
Conductivity	ND	5	uS/cm					
Phenolics	ND	0.001	mg/L					
Total Dissolved Solids	ND	10	mg/L					
Sulphide	ND	0.02	mg/L					
Tannin & Lignin	ND	0.1	mg/L					
Total Kjeldahl Nitrogen	ND	0.1	mg/L					
Turbidity	ND	0.1	NTU					
Hydrocarbons								
F1 PHCs (C6-C10)	ND	0.0250	mg/L					
F2 PHCs (C10-C16)	ND	0.1	mg/L					
F3 PHCs (C16-C34)	ND	0.1	mg/L					
F4 PHCs (C34-C50)	ND	0.1	mg/L					
Metals								
Aluminum	ND	0.001	mg/L					
Antimony	ND	0.0005	mg/L					
Arsenic	ND	0.001	mg/L					
Barium	ND	0.001	mg/L					
Beryllium	ND	0.0005	mg/L					
Boron	ND	0.01	mg/L					
Cadmium	ND	0.0001	mg/L					
Calcium	ND	0.1	mg/L					
Chromium	ND	0.001	mg/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
Cobalt	ND	0.0005	mg/L					
Copper	ND	0.0005	mg/L					
Iron	ND	0.1	mg/L					
Lead	ND	0.0001	mg/L					
Magnesium	ND	0.2	mg/L					
Manganese	ND	0.005	mg/L					
Molybdenum	ND	0.0005	mg/L					
Nickel	ND	0.001	mg/L					
Potassium	ND	0.1	mg/L					
Selenium	ND	0.001	mg/L					
Silver	ND	0.0001	mg/L					
Sodium	ND	0.2	mg/L					
Strontium	ND	0.01	mg/L					
Thallium	ND	0.001	mg/L					
Tin	ND	0.01	mg/L					
Titanium	ND	0.005	mg/L					
Tungsten	ND	0.01	mg/L					
Uranium	ND	0.0001	mg/L					
Vanadium	ND	0.0005	mg/L					
Zinc	ND	0.005	mg/L					
Microbiological Parameters								
E. coli	ND	1	CFU/100mL					
Total Coliforms	ND	1	CFU/100mL					
Fecal Coliforms	ND	1	CFU/100mL					
Heterotrophic Plate Count	ND	10	CFU/mL					
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					
Benzo [b] fluoranthene	ND	0.05	ug/L					
Benzo [g,h,i] perylene	ND	0.05	ug/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
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	*14.1*		*%*	*70.6*	*50-140*			
Surrogate: Terphenyl-d14	*15.3*		*%*	*76.4*	*50-140*			
Volatiles								
Acetone	ND	0.0050	mg/L					
Benzene	ND	0.0005	mg/L					
Bromodichloromethane	ND	0.0005	mg/L					
Bromoform	ND	0.0005	mg/L					
Bromomethane	ND	0.0005	mg/L					
Carbon Tetrachloride	ND	0.0002	mg/L					
Chlorobenzene	ND	0.0005	mg/L					
Chloroethane	ND	0.0010	mg/L					
Chloroform	ND	0.0005	mg/L					
Dibromochloromethane	ND	0.0005	mg/L					
Dichlorodifluoromethane	ND	0.0010	mg/L					
1,2-Dibromoethane	ND	0.0002	mg/L					
1,2-Dichlorobenzene	ND	0.0005	mg/L					
1,3-Dichlorobenzene	ND	0.0005	mg/L					
1,4-Dichlorobenzene	ND	0.0005	mg/L					
1,1-Dichloroethane	ND	0.0005	mg/L					
1,2-Dichloroethane	ND	0.0005	mg/L					

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	%REC	%REC Limit	RPD	RPD Limit	Notes
1,1-Dichloroethylene	ND	0.0005	mg/L					
cis-1,2-Dichloroethylene	ND	0.0005	mg/L					
trans-1,2-Dichloroethylene	ND	0.0005	mg/L					
1,2-Dichloroethylene, total	ND	0.0005	mg/L					
1,2-Dichloropropane	ND	0.0005	mg/L					
cis-1,3-Dichloropropylene	ND	0.0005	mg/L					
trans-1,3-Dichloropropylene	ND	0.0005	mg/L					
1,3-Dichloropropene, total	ND	0.0005	mg/L					
Ethylbenzene	ND	0.0005	mg/L					
Hexane	ND	0.0010	mg/L					
Methyl Ethyl Ketone (2-Butanone)	ND	0.0050	mg/L					
Methyl Isobutyl Ketone	ND	0.0050	mg/L					
Methyl tert-butyl ether	ND	0.0020	mg/L					
Methylene Chloride	ND	0.0050	mg/L					
Styrene	ND	0.0005	mg/L					
1,1,1,2-Tetrachloroethane	ND	0.0005	mg/L					
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L					
Tetrachloroethylene	ND	0.0005	mg/L					
Toluene	ND	0.0005	mg/L					
1,1,1-Trichloroethane	ND	0.0005	mg/L					
1,1,2-Trichloroethane	ND	0.0005	mg/L					
Trichloroethylene	ND	0.0005	mg/L					
Trichlorofluoromethane	ND	0.0010	mg/L					
Vinyl chloride	ND	0.0002	mg/L					
m,p-Xylenes	ND	0.0005	mg/L					
o-Xylene	ND	0.0005	mg/L					
Xylenes, total	ND	0.0005	mg/L					
Surrogate: 4-Bromofluorobenzene	*0.0815*		*%*	*102*	*50-140*			
Surrogate: Dibromofluoromethane	*0.0687*		*%*	*85.9*	*50-140*			
Surrogate: Toluene-d8	*0.0807*		*%*	*101*	*50-140*			

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	142	1	mg/L	141			0.2	20	
Fluoride	ND	0.1	mg/L	ND			NC	20	
Nitrate as N	2.91	0.1	mg/L	2.93			0.8	20	
Nitrite as N	ND	0.05	mg/L	ND			NC	20	
Sulphate	81.9	1	mg/L	81.3			0.8	20	
General Inorganics									
Alkalinity, total	181	5	mg/L	187			3.1	14	
Ammonia as N	ND	0.01	mg/L	0.049			NC	17.7	
Dissolved Organic Carbon	1.1	0.5	mg/L	1.0			8.8	37	
Colour	ND	2	TCU	ND			NC	12	
Conductivity	449	5	uS/cm	470			4.7	5	
pH	8.0	0.1	pH Units	8.0			0.1	3.3	
Phenolics	ND	0.001	mg/L	ND			NC	10	
Total Dissolved Solids	240	10	mg/L	258			7.2	10	
Sulphide	ND	0.02	mg/L	ND			NC	10	
Tannin & Lignin	ND	0.1	mg/L	ND			NC	11	
Total Kjeldahl Nitrogen	ND	0.1	mg/L	ND			NC	16	
Turbidity	3.6	0.1	NTU	3.4			6.8	10	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	0.0250	mg/L	ND			NC	30	
Metals									
Aluminum	0.001	0.001	mg/L	ND			NC	20	
Antimony	ND	0.0005	mg/L	ND			NC	20	
Arsenic	ND	0.001	mg/L	ND			NC	20	
Barium	0.127	0.001	mg/L	0.122			4.3	20	
Beryllium	ND	0.0005	mg/L	ND			NC	20	
Boron	0.05	0.01	mg/L	0.05			1.5	20	
Cadmium	ND	0.0001	mg/L	ND			NC	20	
Calcium	51.0	0.1	mg/L	51.0			0.0	20	
Chromium	ND	0.001	mg/L	ND			NC	20	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Cobalt	ND	0.0005	mg/L	ND			NC	20	
Copper	0.0009	0.0005	mg/L	0.0009			2.0	20	
Iron	0.5	0.1	mg/L	0.5			1.8	20	
Lead	0.0001	0.0001	mg/L	0.0001			0.4	20	
Magnesium	18.7	0.2	mg/L	18.5			0.9	20	
Manganese	0.014	0.005	mg/L	0.015			1.2	20	
Molybdenum	0.0037	0.0005	mg/L	0.0038			2.6	20	
Nickel	ND	0.001	mg/L	ND			NC	20	
Potassium	2.1	0.1	mg/L	2.0			2.4	20	
Selenium	ND	0.001	mg/L	ND			NC	20	
Silver	ND	0.0001	mg/L	0.0001			NC	20	
Sodium	11.1	0.2	mg/L	11.2			0.8	20	
Thallium	ND	0.001	mg/L	ND			NC	20	
Tin	ND	0.01	mg/L	ND			NC	20	
Titanium	ND	0.005	mg/L	ND			NC	50	
Tungsten	ND	0.01	mg/L	ND			NC	20	
Uranium	0.0004	0.0001	mg/L	0.0004			0.6	20	
Vanadium	ND	0.0005	mg/L	ND			NC	20	
Zinc	ND	0.005	mg/L	ND			NC	20	
Microbiological Parameters									
E. coli	ND	1	CFU/100mL	ND			NC	30	
Total Coliforms	1	1	CFU/100mL	1			0.0	30	
Fecal Coliforms	ND	1	CFU/100mL	ND			NC	30	
Heterotrophic Plate Count	10	10	CFU/mL	10			0.0	30	
Volatiles									
Acetone	ND	0.0050	mg/L	ND			NC	30	
Benzene	ND	0.0005	mg/L	ND			NC	30	
Bromodichloromethane	ND	0.0005	mg/L	ND			NC	30	
Bromoform	ND	0.0005	mg/L	ND			NC	30	
Bromomethane	ND	0.0005	mg/L	ND			NC	30	
Carbon Tetrachloride	ND	0.0002	mg/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Chlorobenzene	ND	0.0005	mg/L	ND			NC	30	
Chloroethane	ND	0.0010	mg/L	ND			NC	30	
Chloroform	ND	0.0005	mg/L	ND			NC	30	
Dibromochloromethane	ND	0.0005	mg/L	ND			NC	30	
Dichlorodifluoromethane	ND	0.0010	mg/L	ND			NC	30	
1,2-Dibromoethane	ND	0.0002	mg/L	ND			NC	30	
1,2-Dichlorobenzene	ND	0.0005	mg/L	ND			NC	30	
1,3-Dichlorobenzene	ND	0.0005	mg/L	ND			NC	30	
1,4-Dichlorobenzene	ND	0.0005	mg/L	ND			NC	30	
1,1-Dichloroethane	ND	0.0005	mg/L	ND			NC	30	
1,2-Dichloroethane	ND	0.0005	mg/L	ND			NC	30	
1,1-Dichloroethylene	ND	0.0005	mg/L	ND			NC	30	
cis-1,2-Dichloroethylene	ND	0.0005	mg/L	ND			NC	30	
trans-1,2-Dichloroethylene	ND	0.0005	mg/L	ND			NC	30	
1,2-Dichloropropane	ND	0.0005	mg/L	ND			NC	30	
cis-1,3-Dichloropropylene	ND	0.0005	mg/L	ND			NC	30	
trans-1,3-Dichloropropylene	ND	0.0005	mg/L	ND			NC	30	
Ethylbenzene	ND	0.0005	mg/L	ND			NC	30	
Hexane	ND	0.0010	mg/L	ND			NC	30	
Methyl Ethyl Ketone (2-Butanone)	ND	0.0050	mg/L	ND			NC	30	
Methyl Isobutyl Ketone	ND	0.0050	mg/L	ND			NC	30	
Methyl tert-butyl ether	ND	0.0020	mg/L	ND			NC	30	
Methylene Chloride	ND	0.0050	mg/L	ND			NC	30	
Styrene	ND	0.0005	mg/L	ND			NC	30	
1,1,1,2-Tetrachloroethane	ND	0.0005	mg/L	ND			NC	30	
1,1,2,2-Tetrachloroethane	ND	0.0005	mg/L	ND			NC	30	
Tetrachloroethylene	ND	0.0005	mg/L	ND			NC	30	
Toluene	ND	0.0005	mg/L	ND			NC	30	
1,1,1-Trichloroethane	ND	0.0005	mg/L	ND			NC	30	
1,1,2-Trichloroethane	ND	0.0005	mg/L	ND			NC	30	
Trichloroethylene	ND	0.0005	mg/L	ND			NC	30	

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Trichlorofluoromethane	ND	0.0010	mg/L	ND			NC	30	
Vinyl chloride	ND	0.0002	mg/L	ND			NC	30	
m,p-Xylenes	ND	0.0005	mg/L	ND			NC	30	
o-Xylene	ND	0.0005	mg/L	ND			NC	30	
Surrogate: 4-Bromofluorobenzene	*0.0977*		*%*		*122*	*50-140*			
Surrogate: Dibromofluoromethane	*0.0624*		*%*		*78.0*	*50-140*			
Surrogate: Toluene-d8	*0.0799*		*%*		*99.9*	*50-140*			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Anions									
Chloride	150	1	mg/L	141	89.5	70-124			
Fluoride	0.93	0.1	mg/L	ND	93.0	70-130			
Nitrate as N	3.95	0.1	mg/L	2.93	102	77-126			
Nitrite as N	0.944	0.05	mg/L	ND	94.4	82-115			
Sulphate	90.8	1	mg/L	81.3	95.8	70-130			
General Inorganics									
Ammonia as N	1.09	0.01	mg/L	0.049	104	81-124			
Dissolved Organic Carbon	11.7	0.5	mg/L	1.8	99.1	60-133			
Phenolics	0.026	0.001	mg/L	ND	103	74-126			
Total Dissolved Solids	86.0	10	mg/L	ND	86.0	75-125			
Sulphide	0.49	0.02	mg/L	ND	98.4	79-115			
Tannin & Lignin	1.1	0.1	mg/L	ND	112	71-113			
Total Kjeldahl Nitrogen	0.92	0.1	mg/L	ND	91.7	81-126			
Hydrocarbons									
F1 PHCs (C6-C10)	1.99	0.0250	mg/L	ND	99.3	85-115			
F2 PHCs (C10-C16)	1.9	0.1	mg/L	ND	120	60-140			
F3 PHCs (C16-C34)	4.7	0.1	mg/L	ND	121	60-140			
F4 PHCs (C34-C50)	3.2	0.1	mg/L	ND	131	60-140			
Metals									
Aluminum	49.0	0.001	mg/L	0.993	95.9	80-120			
Arsenic	52.5	0.001	mg/L	0.215	105	80-120			
Barium	160	0.001	mg/L	122	76.4	80-120			QM-07
Beryllium	50.7	0.0005	mg/L	0.0461	101	80-120			
Boron	88.6	0.01	mg/L	45.2	86.7	80-120			
Cadmium	47.2	0.0001	mg/L	0.0340	94.4	80-120			
Calcium	57200	0.1	mg/L	51000	62.7	80-120			QM-07
Chromium	48.4	0.001	mg/L	0.094	96.6	80-120			
Cobalt	47.2	0.0005	mg/L	0.0484	94.4	80-120			
Copper	47.2	0.0005	mg/L	0.910	92.6	80-120			
Iron	2660	0.1	mg/L	462	88.1	80-120			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Lead	44.7	0.0001	mg/L	0.143	89.2	80-120			
Magnesium	25800	0.2	mg/L	18500	73.2	80-120			QM-07
Manganese	58.1	0.005	mg/L	14.5	87.0	80-120			
Molybdenum	46.6	0.0005	mg/L	3.81	85.5	80-120			
Nickel	47.2	0.001	mg/L	0.115	94.1	80-120			
Potassium	11600	0.1	mg/L	2000	96.1	80-120			
Selenium	48.6	0.001	mg/L	0.180	96.9	80-120			
Silver	48.2	0.0001	mg/L	0.112	96.3	80-120			
Sodium	19400	0.2	mg/L	11200	82.0	80-120			
Thallium	47.0	0.001	mg/L	0.044	93.9	80-120			
Tin	46.8	0.01	mg/L	0.23	93.1	80-120			
Titanium	58.7	0.005	mg/L	ND	117	70-130			
Tungsten	47.3	0.01	mg/L	0.61	93.4	80-120			
Uranium	48.8	0.0001	mg/L	0.443	96.7	80-120			
Vanadium	48.4	0.0005	mg/L	0.0464	96.7	80-120			
Zinc	46.9	0.005	mg/L	2.05	89.6	80-120			
Semi-Volatiles									
Acenaphthene	3.89	0.05	ug/L	ND	77.8	50-140			
Acenaphthylene	4.30	0.05	ug/L	ND	85.9	50-140			
Anthracene	4.96	0.01	ug/L	ND	99.2	50-140			
Benzo [a] anthracene	4.41	0.01	ug/L	ND	88.2	50-140			
Benzo [a] pyrene	3.23	0.01	ug/L	ND	64.6	50-140			
Benzo [b] fluoranthene	4.01	0.05	ug/L	ND	80.2	50-140			
Benzo [g,h,i] perylene	3.80	0.05	ug/L	ND	75.9	50-140			
Benzo [k] fluoranthene	4.49	0.05	ug/L	ND	89.7	50-140			
Chrysene	4.30	0.05	ug/L	ND	86.0	50-140			
Dibenzo [a,h] anthracene	3.89	0.05	ug/L	ND	77.8	50-140			
Fluoranthene	5.21	0.01	ug/L	ND	104	50-140			
Fluorene	3.80	0.05	ug/L	ND	76.0	50-140			
Indeno [1,2,3-cd] pyrene	3.54	0.05	ug/L	ND	70.9	50-140			
1-Methylnaphthalene	3.43	0.05	ug/L	ND	68.6	50-140			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
2-Methylnaphthalene	3.67	0.05	ug/L	ND	73.5	50-140			
Naphthalene	3.72	0.05	ug/L	ND	74.4	50-140			
Phenanthrene	4.14	0.05	ug/L	ND	82.7	50-140			
Pyrene	5.20	0.01	ug/L	ND	104	50-140			
Surrogate: 2-Fluorobiphenyl	*15.4*		*%*		*77.1*	*50-140*			
Surrogate: Terphenyl-d14	*14.0*		*%*		*70.2*	*50-140*			
Volatiles									
Acetone	0.127	0.0050	mg/L	ND	127	50-140			
Benzene	0.0377	0.0005	mg/L	ND	94.4	60-130			
Bromodichloromethane	0.0349	0.0005	mg/L	ND	87.3	60-130			
Bromoform	0.0411	0.0005	mg/L	ND	103	60-130			
Bromomethane	0.0373	0.0005	mg/L	ND	93.2	50-140			
Carbon Tetrachloride	0.0341	0.0002	mg/L	ND	85.2	60-130			
Chlorobenzene	0.0430	0.0005	mg/L	ND	108	60-130			
Chloroethane	0.0475	0.0010	mg/L	ND	119	50-140			
Chloroform	0.0450	0.0005	mg/L	ND	112	60-130			
Dibromochloromethane	0.0340	0.0005	mg/L	ND	84.9	60-130			
Dichlorodifluoromethane	0.0454	0.0010	mg/L	ND	114	50-140			
1,2-Dibromoethane	0.0449	0.0002	mg/L	ND	112	60-130			
1,2-Dichlorobenzene	0.0458	0.0005	mg/L	ND	114	60-130			
1,3-Dichlorobenzene	0.0432	0.0005	mg/L	ND	108	60-130			
1,4-Dichlorobenzene	0.0464	0.0005	mg/L	ND	116	60-130			
1,1-Dichloroethane	0.0335	0.0005	mg/L	ND	83.8	60-130			
1,2-Dichloroethane	0.0367	0.0005	mg/L	ND	91.7	60-130			
1,1-Dichloroethylene	0.0482	0.0005	mg/L	ND	120	60-130			
cis-1,2-Dichloroethylene	0.0383	0.0005	mg/L	ND	95.7	60-130			
trans-1,2-Dichloroethylene	0.0371	0.0005	mg/L	ND	92.7	60-130			
1,2-Dichloropropane	0.0364	0.0005	mg/L	ND	91.1	60-130			
cis-1,3-Dichloropropylene	0.0411	0.0005	mg/L	ND	103	60-130			
trans-1,3-Dichloropropylene	0.0340	0.0005	mg/L	ND	85.0	60-130			
Ethylbenzene	0.0408	0.0005	mg/L	ND	102	60-130			

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hexane	0.0353	0.0010	mg/L	ND	88.2	60-130			
Methyl Ethyl Ketone (2-Butanone)	0.0816	0.0050	mg/L	ND	81.6	50-140			
Methyl Isobutyl Ketone	0.0625	0.0050	mg/L	ND	62.5	50-140			
Methyl tert-butyl ether	0.0798	0.0020	mg/L	ND	79.8	50-140			
Methylene Chloride	0.0364	0.0050	mg/L	ND	91.1	60-130			
Styrene	0.0307	0.0005	mg/L	ND	76.8	60-130			
1,1,1,2-Tetrachloroethane	0.0349	0.0005	mg/L	ND	87.2	60-130			
1,1,2,2-Tetrachloroethane	0.0337	0.0005	mg/L	ND	84.2	60-130			
Tetrachloroethylene	0.0473	0.0005	mg/L	ND	118	60-130			
Toluene	0.0420	0.0005	mg/L	ND	105	60-130			
1,1,1-Trichloroethane	0.0423	0.0005	mg/L	ND	106	60-130			
1,1,2-Trichloroethane	0.0438	0.0005	mg/L	ND	110	60-130			
Trichloroethylene	0.0422	0.0005	mg/L	ND	106	60-130			
Trichlorofluoromethane	0.0467	0.0010	mg/L	ND	117	60-130			
Vinyl chloride	0.0508	0.0002	mg/L	ND	127	50-140			
m,p-Xylenes	0.103	0.0005	mg/L	ND	128	60-130			
o-Xylene	0.0429	0.0005	mg/L	ND	107	60-130			
Surrogate: 4-Bromofluorobenzene	*0.0865*		*%*		*108*	*50-140*			
Surrogate: Dibromofluoromethane	*0.0728*		*%*		*91.0*	*50-140*			
Surrogate: Toluene-d8	*0.0734*		*%*		*91.8*	*50-140*			

Qualifier Notes:

Login Qualifiers :

Container(s) - Labeled improperly/insufficient information - All bottles missing sample time.

Applies to Samples: 5546 Albion Road

Sample Qualifiers :

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.

PARACE LABORATORIES LT

Paracel ID: 2347319

Paracel Order Number	Chain Of Custody
2347319	Ontario Drinking Water Samples
	№ 13259

Client Name:	LRL Associates ltd	Project Ref:	01348	Waterworks Name:	MacEwen Petroleum	Samples Taken By:	
Contact Name:	Jessica Arthurs	Quote #:		Waterworks Number:		Name:	Jessica Arthurs
Address:	5430 Canotek Rd Ottawa, on K1J 9G2	PO #:		Address:	5546 Albion Road	Signature:	
After Hours Contact:	Jessica Arthurs	E-mail:	Jarthurs@lrl.ca		Ottawa, ontario	Page 1 of 1	
Telephone:	613 978 0658	Fax:	613 842 4338	Public Health Unit:		Turn Around Time Required: ☐ 1 day ☐ 2 day ☐ 3 day ☒ 4 day	

Samples Submitted Under: (Indicate **ONLY one**)
☑ ON REG 170/03 ☐ ON REG 319/08 ☐ Private Well
☐ ON REG 243/07 ☐ Other

Have LSN forms been submitted to MOE/MOHLTC?: ☐ Yes ☑ No ☐ N/A

Are these samples for human consumption?: ☑ Yes ☐ No

All information must be completed before samples will be processed.

Sample Type: R = Raw ; T = Treated ; D = Distribution; P = Plumbing
Source Type: G = Ground Water; S = Surface Water
Reportable: Requires AWQI reporting as per Regulation - Y = Yes; N = No

	LOCATION NAME	SAMPLE ID	Sample Type: R/T/D/P	Source Type: G/S	Reportable: Y/N	Resample	SAMPLE COLLECTED DATE	SAMPLE COLLECTED TIME	# of Containers	Free/Combined Chlorine Residual mg/L	Standing / Flushed: S/F (REG 243)	Required Analyses: Total Coliform/E. Coli	HPC	Lead	THM	Subdivision 9K9	Trace Metals	PAH	VOC, PHC
1	5546 Albion Road	5546 Albion Road	R	G	N	N	2023/11/23	8:05 AM	13	-0.01	F					X	X	X	X
2																			
3																			
4																			
5																			
6																			
7																			
8																			
9																			
10																			

Comments:

Method of Delivery: Walk in

Relinquished By (Sign):	Received By Driver/Depot:	Received at Lab: CB 855	Verified By: SD
Relinquished By (Print): Jessica Arthurs	Date/Time:	Date/Time: Nov 23/23	Date/Time: Nov 23, 2023 12:29pm
Date/Time: Nov 23, 2023 855 AM	Temperature: °C	Temperature: 11.4 °C	pH Verified: ☑ By: SD

ATTACHMENT J

OSSO Permit

SEPTIC FILE # 22-398 OTTAWA

Phone Folder Name: ☐ PickUp
Canada Post to:
Weekly Courier

R.V.C.A. RECEIVED
SEP 19 2022

Ottawa Septic System Office / Bureau des systèmes septiques d'Ottawa
3889 Rideau Valley Drive Box 599 Manotick, ON K4M 1A5

Phone: 613-692-3571 PRESS "4" for septic office 1-800-267-3504 Fax: 613-692-1507 Email: septic@rvca.ca

Address of property: 5546 Albion Rd Township: OSG-HUN-GLO-FIT-CUM-NEP-GOU-RID-KAN-TOR

Contact for pickup: GVE/MacEwen Phone#/Email:

NON-RESIDENTIAL
☐ Commercial
☐ Industrial
☐ Institutional

INFORMATION FOR OWNER/APP

Attached is your Sewage System Permit. **A minimum of two inspections are required before your proposed sewage system can be approved for use (additional inspections may be required for clay soils/bedrock and/or re-inspections).** Inspections must be requested in writing. Please see attached:

- Inspection fax request form (all inspections MUST be requested in writing)
- As-built components and drawing form
- Copy of the approved application and schedule pages
- Approved Part 8 permit 2x copies: Copy 1: APPLICANT + Copy 2:Plans Examiner ** Agent Deliver Direct To City

Special Note

- A permit is valid for 12 months from the original date of issuance noted in "*permit date*". If lapsed, it may be renewed only once for a period of 12 months *from the date of expiry.*

- No person shall make a material change or cause a material change to be made to a plan, specification, document or other information on the basis of which a permit was issued without notifying, filing details with and obtaining the authorization of the Chief Building Official. *(Building Code Act 1992, c.23, s.8(12))*

Sewage System Permit Construction Requirements

1. Clay Soils/Bedrock only (if required per issued Approval)
In clay soils/bedrock, a site preparation inspection is required. The total contact area must be properly prepared. Scarification must be done under dry conditions prior to importing leaching bed fill.

2. Installation Inspection – 2nd inspection
When the sewage system is substantially completed (i.e., before the final fill is placed over the septic tank and leaching bed system) an installation inspection is required. Prior to any inspection request, the following must be submitted:

a) "as-built components" and "as-built drawings" — see attached form
b) "engineer letter" — if the system is engineered
c) grain size analysis and weight bills for all Filter Media types of septic systems
d) Weigh bills for washed septic stone, where applicable
e) Maintenance/service contract for treatment unit installed

3. Final Grading Inspection – 3rd inspection
When construction of the sewage system is complete, a final grading inspection is required. Before a Certificate of Completion can be issued, the following must be complete:

a) The leaching bed and septic tank must be covered with sand fill and topsoil and graded accordingly
b) All conditions of the Sewage System Permit & comments on the installation inspection report must be met
c) The depth of cover & material type must be identified by inspection pipes or holes placed over trenches at 4 corners of bed
d) The 4 corners of the bed must be staked

Green Valley Environmental Inc.

LETTER OF AUTHORIZATION

Owner: MacEwen Petroleum Inc.

Address: 18 Adelaide St.
Maxville, ON. K0C 1T0

Phone No.: (613) 527-2100 **Cell No.:**

Work No.: (613) 527-2728 **Fax No.:**

LOCATION OF PROPERTY:

Lot No.: 30

Concession No.: 3

Sub lot/Part No.:

R. Plan No.:

Civic Address: 5546 Albion Rd.

Municipality: Gloucester

Roll No.:

Commercial: **(provide description of building and intended use)**
Convenience store + Gas Station

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SEPTIC FILE #
22-398
OTTAWA

I, the above – mentioned authorize Green Valley Environmental Services to act as my agent to apply for and obtain a sewage system permit from the responsible Approval Agency.

Signature: Frank Lortie Date: 08/10/2022

6107 First Line Rd. • P.O. Box 882 Manotick, Ontario, K4M 1A7 • Phone: (613) 692-2616 • Fax: (613) 692-1802
www.gvegroup.ca

Application for a Permit to Construct or Demolish

This form is authorized under subsection 8(1.1) of the *Building Code Act, 1992*

For use by Principal Authority

Application number:	Permit number (if different): SEPTIC FILE #
Date received: R.V.C.A. RECEIVED OCT 13 2023	Roll number: 22-398

Application submitted to: OTTAWA SEPTIC SYSTEM OFFICE
(Name of municipality, upper-tier municipality, board of health or conservation authority)

A. Project information

Building number, street name	Unit number	Lot/con.
5546 Albion Rd.		30/3

Municipality	Postal code	Plan number/other description
Gloucester	K1X 1A8	

Project value est. $	Area of work (m²)

B. Purpose of application

✓ New construction | Addition to an existing building | Alteration/repair | Demolition | Conditional Permit

Proposed use of building	Current use of building
Commercial	Commercial

Description of proposed work
Install new septic system for proposed/replacement Commercial.

C. Applicant Applicant is: Owner or Authorized agent of owner

Last name	First name	Corporation or partnership	
Patel	Dawis	Green Valley Environmental Inc.	
Street address: 6107 First Line Rd.		Unit number	Lot/con.
Municipality: North Gower	Postal code: K4M 1A7	Province: ON	E-mail: engineering@agvegroup.ca
Telephone number: (613) 692-2616	Fax: ( )	Cell number: (613) 229-3980	

D. Owner (if different from applicant)

Last name	First name	Corporation or partnership	
		MacEwen Petroleum Inc.	
Street address: 18 Adelaide St.		Unit number	Lot/con.
Municipality: Maxville	Postal code: K0C 1T0	Province: ON	E-mail
Telephone number: (613) 527-2100	Fax: ( )	Cell number: (613) 527-2728	

Application for a Permit to Construct or Demolish – Effective January 1, 2014

E. Builder (optional)

Last name	First name	Corporation or partnership (if applicable)	
Street address		Unit number	Lot/con.
Municipality	Postal code	Province	E-mail
Telephone number ( )	Fax ( )		Cell number ( )

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SEPTIC FILE # 22-308

OTTAWA

F. Tarion Warranty Corporation (Ontario New Home Warranty Program)

i. Is proposed construction for a new home as defined in the *Ontario New Home Warranties Plan Act*? If no, go to section G.	Yes	No ✓
ii. Is registration required under the *Ontario New Home Warranties Plan Act*?	Yes	No ✓

iii. If yes to (ii) provide registration number(s): _____

G. Required Schedules

i) Attach Schedule 1 for each individual who reviews and takes responsibility for design activities.

ii) Attach Schedule 2 where application is to construct on-site, install or repair a sewage system.

H. Completeness and compliance with applicable law

i) This application meets all the requirements of clauses 1.3.1.3 (5) (a) to (d) of Division C of the Building Code (the application is made in the correct form and by the owner or authorized agent, all applicable fields have been completed on the application and required schedules, and all required schedules are submitted).	Yes ✓	No
Payment has been made of all fees that are required, under the applicable by-law, resolution or regulation made under clause 7(1)(c) of the *Building Code Act, 1992*, to be paid when the application is made.	Yes ✓	No
ii) This application is accompanied by the plans and specifications prescribed by the applicable by-law, resolution or regulation made under clause 7(1)(b) of the *Building Code Act, 1992*.	Yes ✓	No
iii) This application is accompanied by the information and documents prescribed by the applicable by-law, resolution or regulation made under clause 7(1)(b) of the *Building Code Act, 1992* which enable the chief building official to determine whether the proposed building, construction or demolition will contravene any applicable law.	Yes ✓	No
iv) The proposed building, construction or demolition will not contravene any applicable law.	Yes ✓	No

I. Declaration of applicant

I Davis Patel declare that:
(print name)

1. The information contained in this application, attached schedules, attached plans and specifications, and other attached documentation is true to the best of my knowledge.
2. If the owner is a corporation or partnership, I have the authority to bind the corporation or partnership.

Date Oct 13, 2023 Signature of applicant

Personal information contained in this form and schedules is collected under the authority of subsection 8(1.1) of the *Building Code Act, 1992*, and will be used in the administration and enforcement of the *Building Code Act, 1992*. Questions about the collection of personal information may be addressed to: a) the Chief Building Official of the municipality or upper-tier municipality to which this application is being made, or, b) the inspector having the powers and duties of a chief building official in relation to sewage systems or plumbing for an upper-tier municipality, board of health or conservation authority to whom this application is made, or, c) Director, Building and Development Branch, Ministry of Municipal Affairs and Housing 777 Bay St., 2nd Floor, Toronto, M5G 2E5 (416) 585-6666.

Schedule 1: Designer Information

Use one form for each individual who reviews and takes responsibility for design activities with respect to the project.

A. Project Information

Building number, street name		Unit no.	Lot/con.
5546 Albion Rd.			30/3
Municipality	**Postal code**	**Plan number/ other description**	
Gloucester	K1X 1A6		

B. Individual who reviews and takes responsibility for design activities

Name		Firm	
Davis Patel		Green Valley Convironmental Inc.	
Street address		**Unit no.**	**Lot/con.**
6107 First Line Rd.			
Municipality	**Postal code** / **Province**	**E-mail**	
North Gower	K4M 1A4 / ON	engineering@agvegroup.ca	
Telephone number	**Fax number**	**Cell number**	
(613) 692-2616	( )	(613) 229-3980	

C. Design activities undertaken by individual identified in Section B. [Building Code Table 3.5.2.1. of Division C]

House	HVAC – House	Building Structural
Small Buildings	Building Services	Plumbing – House
Large Buildings	Detection, Lighting and Power	Plumbing – All Buildings
Complex Buildings	Fire Protection	✓ On-site Sewage Systems

Description of designer's work

Design a septic system for proposed/replacement commercial building.

D. Declaration of Designer

I Davis Patel declare that (choose one as appropriate):
(print name)

I review and take responsibility for the design work on behalf of a firm registered under subsection 3.2.4.of Division C, of the Building Code. I am qualified, and the firm is registered, in the appropriate classes/categories.

Individual BCIN: 119685

Firm BCIN: 16035

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I review and take responsibility for the design and am qualified in the appropriate category as an "other designer" under subsection 3.2.5.of Division C, of the Building Code.

Individual BCIN: _____

OTTAWA

Basis for exemption from registration: _____

The design work is exempt from the registration and qualification requirements of the Building Code.

Basis for exemption from registration and qualification: _____

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. I have submitted this application with the knowledge and consent of the firm.

Date Oct 13, 2023 Signature of Designer

NOTE:

1. For the purposes of this form, "individual" means the "person" referred to in Clause 3.2.4.7(1) (c).of Division C, Article 3.2.5.1. of Division C, and all other persons who are exempt from qualification under Subsections 3.2.4. and 3.2.5. of Division C.
2. Schedule 1 is not required to be completed by a holder of a license, temporary license, or a certificate of practice, issued by the Ontario Association of Architects. Schedule 1 is also not required to be completed by a holder of a license to practise, a limited license to practise, or a certificate of authorization, issued by the Association of Professional Engineers of Ontario.

Schedule 2: Sewage System Installer Information

A. Project Information

Building number, street name	Unit number	Lot/con.
5546 Albion Rd.		30/3

Municipality	Postal code	Plan number/ other description
Gloucester	K1X 1A8	

B. Sewage system installer

Is the installer of the sewage system engaged in the business of constructing on-site, installing, repairing, servicing, cleaning or emptying sewage systems, in accordance with Building Code Article 3.3.1.1, Division C?

Yes (Continue to Section C) No (Continue to Section E) ✓ Installer unknown at time of application (Continue to Section E)

C. Registered installer information (where answer to B is "Yes")

Name			BCIN	
Street address			Unit number	Lot/con.
Municipality	Postal code	Province	E-mail	
Telephone number ( )	Fax ( )		Cell number ( )	

D. Qualified supervisor information (where answer to section B is "Yes")

Name of qualified supervisor(s)	Building Code Identification Number (BCIN)

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E. Declaration of Applicant:

I Davis Patil (print name) declare that:

I am the applicant for the permit to construct the sewage system. If the installer is unknown at time of application, I shall submit a new Schedule 2 prior to construction when the installer is known;

OR

I am the holder of the permit to construct the sewage system, and am submitting a new Schedule 2, now that the installer is known.

I certify that:

1. The information contained in this schedule is true to the best of my knowledge.
2. If the owner is a corporation or partnership, I have the authority to bind the corporation or partnership.

Date Oct 13, 2023 Signature of applicant

Ottawa Septic System Office | Bureau des systèmes septiques d'Ottawa

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Permit # _____
Revision # _____
Date _____

Schedule 4
Proposed Services
Complete Sections 1 thru 7

SEPTIC FILE # 22-398 OTTAWA

1. **Engineered**
   - ☐ Yes
   - ☑ No

2. **Water supply**
   - ☐ Proposed
   - ☑ Existing

3. **Type of work proposed**
   - ☑ New Installation
   - ☐ Replacement
   - ☐ Alteration

4. **Type of Well**
   - ☐ Dug/bored/Sandpoint well
   - ☑ Drilled well
   - ☐ Municipal
   - ☐ Other

5. **Residential** Sewage Design Flow Info.
   Bedrooms _____
   House (floor area) _____ **m²**
   People _____
   Total Fixture Units _____ **(Schedule 8)**
   Residential Flow _____ **L/day**

6. Sewage Design Flow **Other Occupancies**
   Design Flow 7720 L/day
   Detailed sewage flow calculations:
   Store: Water Closets 4 x 950 = 3800 L/day
   Fuel Outlets 7 x 560 = 3920 L/day
   7720 L/day

7. **Type of System**
   - ☐ Treatment Unit _____
   - ☐ Class 2 – Leaching Pit
   - ☐ Class 3 – Cesspool
   - ☐ Class 4 – Shallow Buried Trench

   _____

   - ☐ Class 4 – Trench **(Schedule 9)**
     - ☐ Fully raised
     - ☐ Partially raised
     - ☐ In-ground
   - ☑ Class 4 – Filter Media **(Schedule 10)**
     - ☐ Fully raised
     - ☐ Partially raised
     - ☐ In-ground
   - ☐ Class 4 – BMEC Area Bed **(Schedule 11)**
     - ☐ Fully raised
     - ☐ Partially raised
     - ☐ In-ground
   - ☐ Class 4 – "Type A" Dispersal **(Schedule 13)**
     - ☐ Fully raised
     - ☐ Partially raised
     - ☐ In-ground
   - ☐ Class 4 – "Type B" Dispersal **(Schedule 14)**
     - ☐ Fully raised
     - ☐ Partially raised
     - ☐ In-ground
   - ☐ **Class 5 – Holding Tank (9000L min)**
   - ☐ **Tank/TreatmentUnit/PumpChamber ONLY**
   - ☐ **Effluent Filter/Risers ONLY**

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Do Not Complete
Permit No _____
Revision No _____
Date _____

Schedule 5
Sewage System Details

Type of System Class 4 Filter Media Bed (Schedule 4)
Septic/~~Holding~~ Tank Size: 9000 Litres Make: Mac Gregor
Septic Tank Effluent Filter Make: Polylok Model: PL-250

Treatment Unit – Make & Model Norweco HK 4730L-3M
Number of Units: 2
Refer to Typical Drawing # PC-5-1174
Mantle Information:
Native or imported =15m in _____ direction(s)

Other: _____
Pump(s) required Liberty 250 (0.5hp)
Pump Rate _____ L/15min
Note: Alarm required for all pumping systems

Slope subgrade _____ % slope
_____ direction(s)

Site to be Scarified (If clay) YES / (NO)
Clay Seal Required (If bedrock) YES / (NO)

☐ **Trench**
Distribution Pipe Length _____ m
Loading Area _____ m²
Type of Chamber _____
Length of Chamber _____ m

☐ **Dispersal Bed**

☐ **BMEC** ☐ **Type A** ☐ **Type B**
Stone _____ m²
Sand _____ m²
Pipe _____ m²
Linear Loading _____ L/m²

☐ **Shallow Buried Trench**
Pipe Length _____ m

☑ **Filter Media Bed**
Stone 96 m²
Extended Base 96 m²
Pipe 84 m
Weight of Filter Media _____ Kg
Loading Area 772 m² (Native)

☐ **Tank/Treatment Unit/Pump Chamber Replacement** ONLY
☐ **Effluent Filter & Riser** ONLY

Construction Notes:

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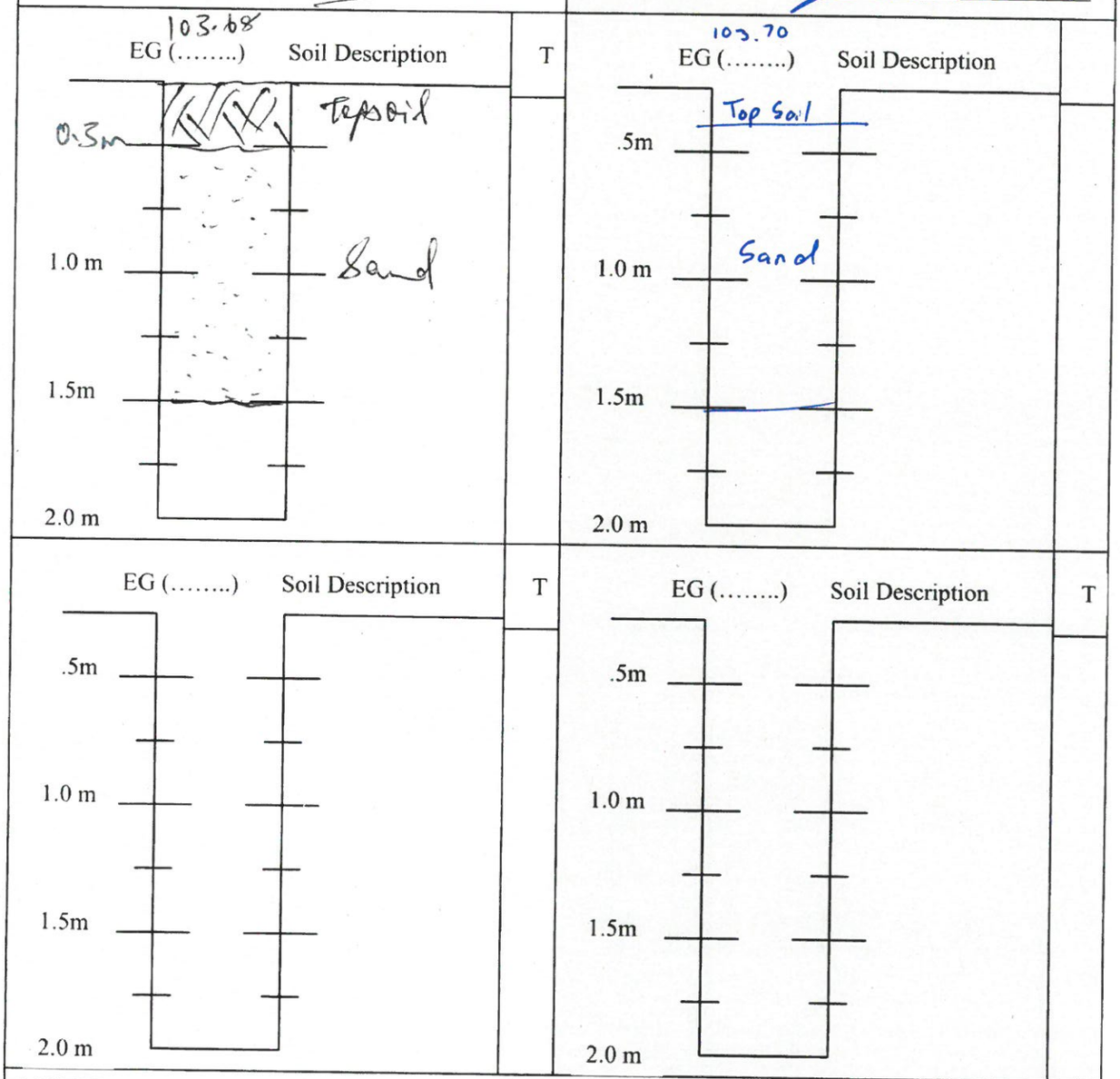
SEPTIC FILE # 22-398

Do Not Complete
Permit # _____
Revision # _____
Date _____

Schedule 6
Soil and Water Table Information
(Minimum depth of test pit: 2 metres)

Name of Applicant/Agent: Davis Patel
Date: Apr 19, 2022 Time: 9 AM
Applicant/Agent Signature: Davis

Inspector: Ryan Hiemstra
Date: Oct 23/23 Time: _____
Inspector Signature: Ryan Hiemstra



LEGEND

BR = Bedrock
GWT = Ground water table
HGWT = High ground water table
M = metres
EG = Existing grade
T = percolation rate

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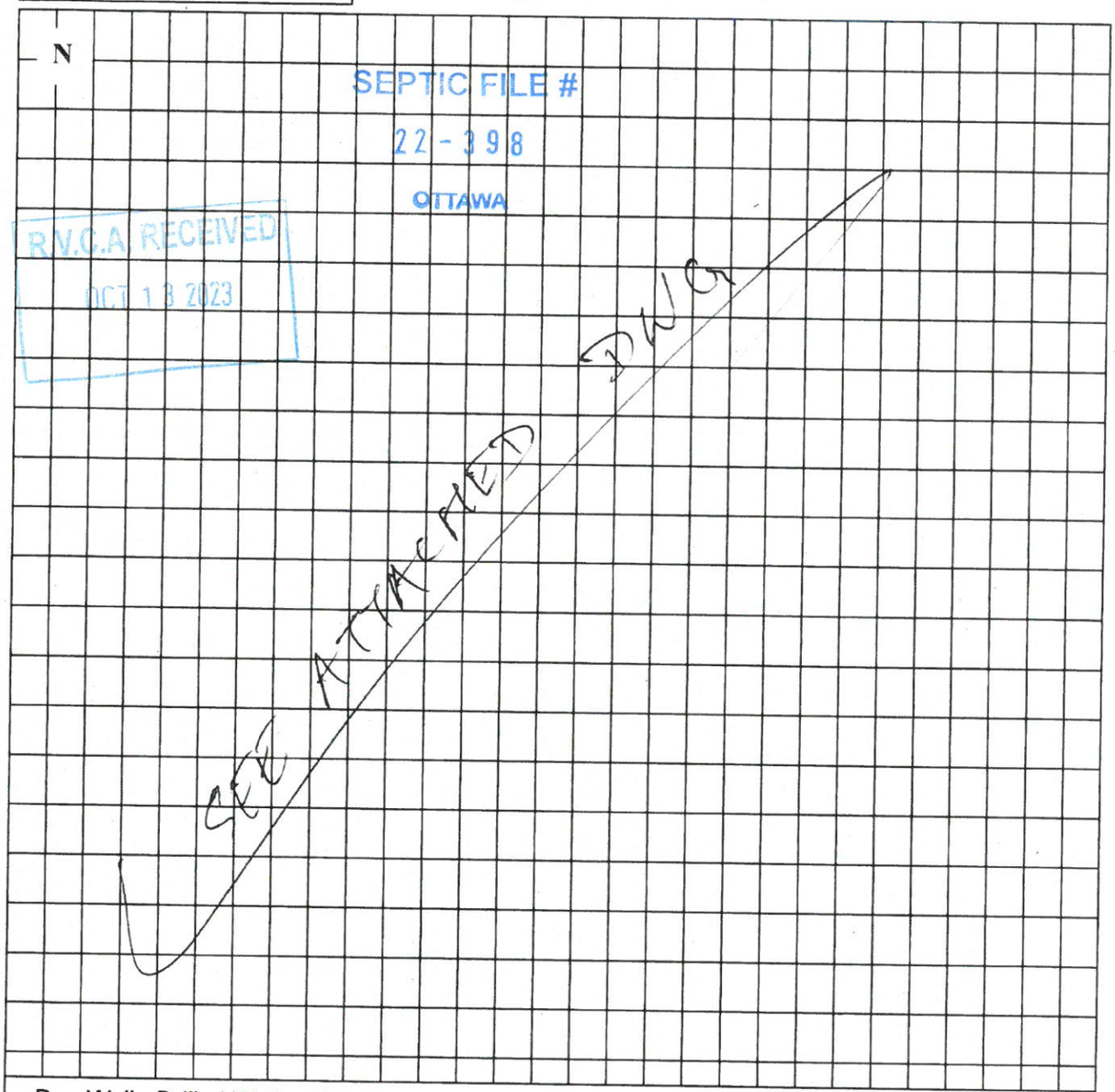
Revision # _____
Date _____

Scale: 1Block = NTS

Schedule 7
Layout Section



○Dug Well ●Drilled Well ▲Neighbouring Homes ◊Benchmark ---Tile Drainage —Property Line

Elevations (metric only)
B.M. 104.48 m
B.M.Description Nail on hydrapole North corner of property.
Exact Location _____

Min. of 5 elevations in proposed system area (in X pattern)
X_1 _____ X_2 SEE ATTACHED DWG
X_3 _____ X_4 _____
X_5 _____ X_6 (toe) _____
X_7 _____ X_8 _____

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Permit # _____
Revision # _____
Date _____

Schedule 8
Fixture unit count

Fixtures	# Existing	+	# Proposed	X	unit count	=	Fixture Count
Bathroom Bathroom group (toilet, sink and tub or shower) installed in the same room		+		X	6	=	
Bathtub with/without overhead shower		+		X	1.5	=	
Urinal	2	+		X	1.5	=	3
Wash basin (SINK) (1½inch trap)	5	+		X	1.5	=	7.5
Watercloset (TOILET) tank operated	4	+		X	4	=	16
Bidet		+		X	1	=	
Kitchen Dishwasher		+		X	1	=	
Sink with/without garbage grinder(s), domestic and other small type single, double or 2 single with a common trap		+		X	1.5	=	
Other Domestic washing machine		+		X	1.5	=	
Combination sink and laundry tray single or double (Installed on 1½ trap)		+		X	1.5	=	

***Total:** 26.5

***Insert the TOTAL in section 5 of Schedule 4** (0.Reg 151/13 Table 7.4.9.3)

1. **Sump pumps and floor drains are not to be connected to the sewage system.** Connection of such fixtures to a sewage system may lead to a hydraulic failure of the said system. The above mentioned fixtures should be discharged separately to an approved Class 2 (leaching pit) sewage system.
2. Where laundry waste is not more than 20% of the total daily design sanitary sewage flow, it may discharge to a sewage system (Part 8, OBC, 8.1.3.1(2)).

Agent/Owner signature

Oct 13, 2023
Date

Do Not Complete
Permit # _____
Revision # _____
Date _____

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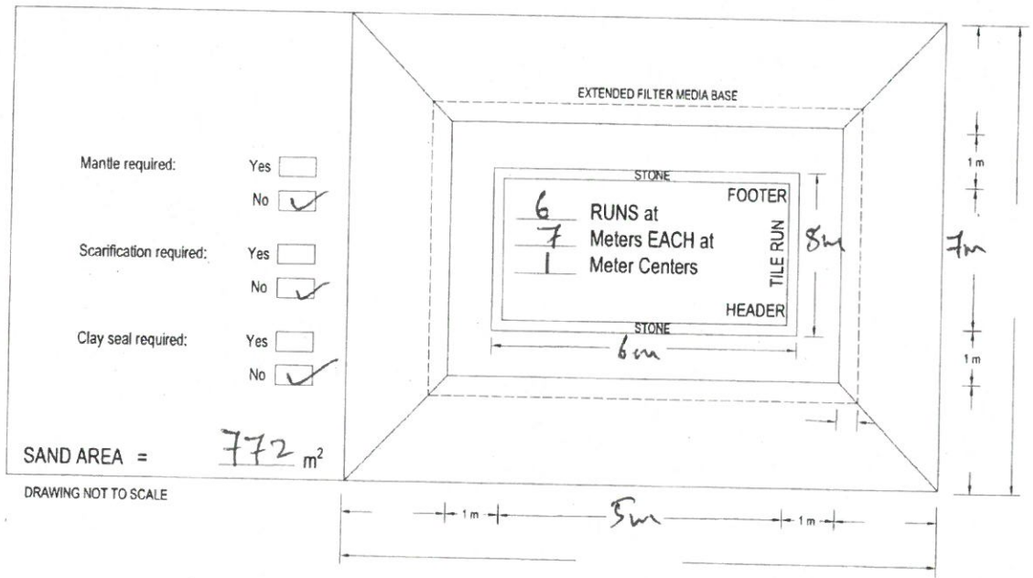
TYPICAL DRAWING B

BURIED OR RAISED TILE BED
FILTER MEDIA METHOD

Plan View



Mantle required: Yes ☐ No ☑
Scarification required: Yes ☐ No ☑
Clay seal required: Yes ☐ No ☑

SAND AREA = 772 m²

DRAWING NOT TO SCALE

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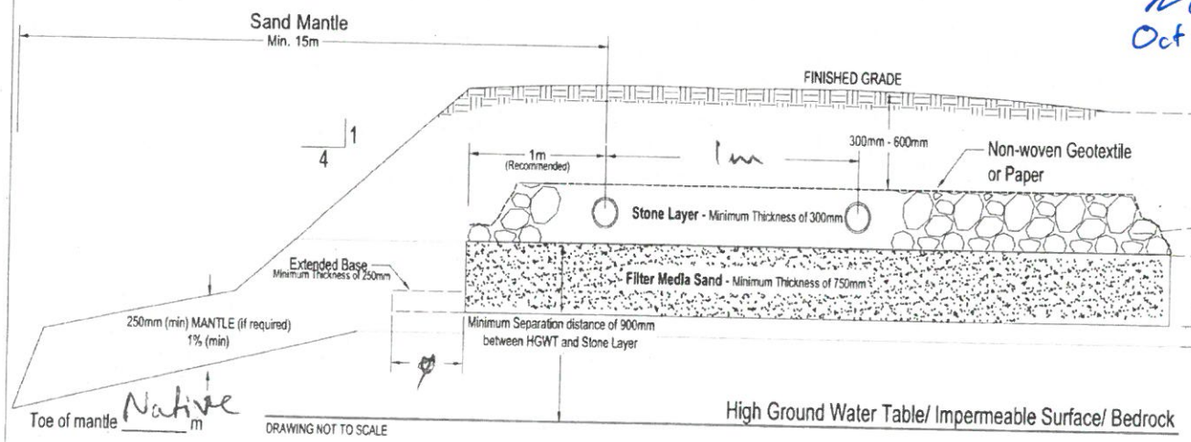
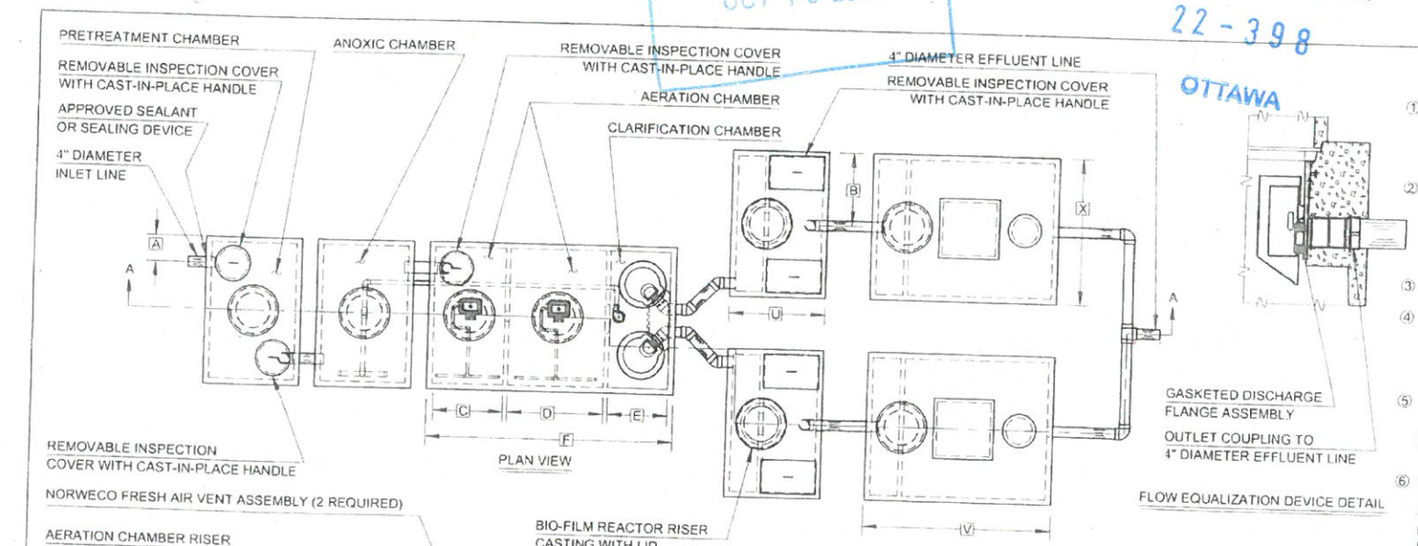
OTTAWA

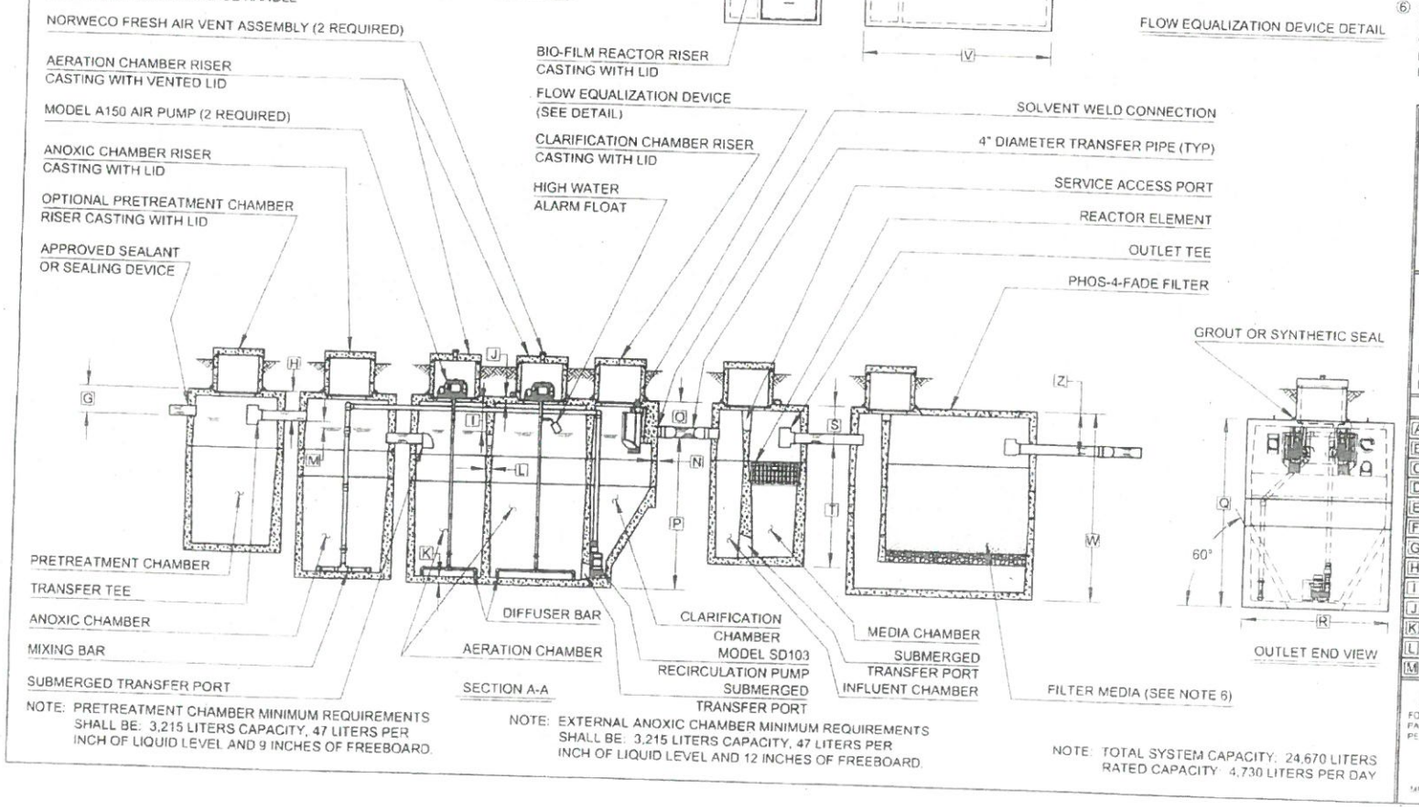
Cross-Section Profile



Oct 23/23

	Proposed Installation Grades	Approved Installation Grades	Existing Grade
Finished Grade	103.90	As per Agent	
Pipe invert	103.45		
Top of Filter Media Sand	103.30		
Bottom of Filter Media Sand	102.55		
	102.40		





NOTE: PRETREATMENT CHAMBER MINIMUM REQUIREMENTS SHALL BE: 3,215 LITERS CAPACITY, 47 LITERS PER INCH OF LIQUID LEVEL AND 9 INCHES OF FREEBOARD.

NOTE: EXTERNAL ANOXIC CHAMBER MINIMUM REQUIREMENTS SHALL BE: 3,215 LITERS CAPACITY, 47 LITERS PER INCH OF LIQUID LEVEL AND 12 INCHES OF FREEBOARD.

NOTE: TOTAL SYSTEM CAPACITY: 24,670 LITERS
RATED CAPACITY: 4,730 LITERS PER DAY

GENERAL NOTES:

1. FALL THROUGH THE HYDRO-KINETIC® PLANT FROM INLET INVERT TO OUTLET INVERT IS SEVEN INCHES. INLET INVERT IS TWELVE INCHES BELOW TANK TOP.
2. ON DEEPER INSTALLATIONS, PRECAST RISERS MUST BE USED TO EXTEND CASTINGS TO GRADE. INSPECTION COVERS MUST BE DEVELOPED TO WITHIN TWELVE INCHES OF GRADE.
3. TANK REINFORCED PER ACI STD. 318.
4. REMOVABLE COVERS ON RISERS WEIGH IN EXCESS OF SEVENTY-FIVE POUNDS EACH TO PREVENT UNAUTHORIZED ACCESS.
5. AIR PUMPS MAY BE MOUNTED INSIDE THE RISERS ABOVE THE AERATION CHAMBERS OR MAY BE REMOTE MOUNTED UP TO 100 FEET FROM TANK.
6. BOTTOM LAYER CONTAINS 3" OF 3/4" TO 1" BASE MATERIAL. MIDDLE LAYER CONTAINS 2" OF 3/8" TO 1/2" BASE MATERIAL. TOP LAYER CONTAINS 23" OF PHOS-4-FADE ADSORPTIVE MEDIA.

CAN/BNQ 3680-600 TREATMENT LEVEL
CLASS B - IV, D - I, N - I, P - II

PROJECT ENGINEER'S APPROVAL:
I (WE) HEREBY CERTIFY THAT THIS DRAWING HAS BEEN CHECKED AND IS APPROVED.

DATE:
NAME:

CONTRACTOR'S CERTIFICATION:
I (WE) HEREBY CERTIFY THAT THIS DRAWING HAS BEEN CHECKED AND IS APPROVED.

DATE:
NAME:

CRITICAL DIMENSIONS

A	1'- 0"	N	0'- 2 1/2"
B	2'- 9"	O	1'- 4"
C	2'- 8"	P	5'- 8"
D	3'- 7"	Q	7'- 0"
E	2'- 3"	R	5'- 6"
F	9'- 3"	S	1'- 5"
G	1'- 0"	T	4'- 7"
H	1'- 1"	U	3'- 7 1/2"
I	1'- 1"	V	7'- 0"
J	0'- 3"	W	7'- 0"
K	0'- 3"	X	5'- 6"
L	0'- 2"	Y	
M	0'- 3"	Z	1'- 7"

U.S. AND FOREIGN PATENTS PENDING
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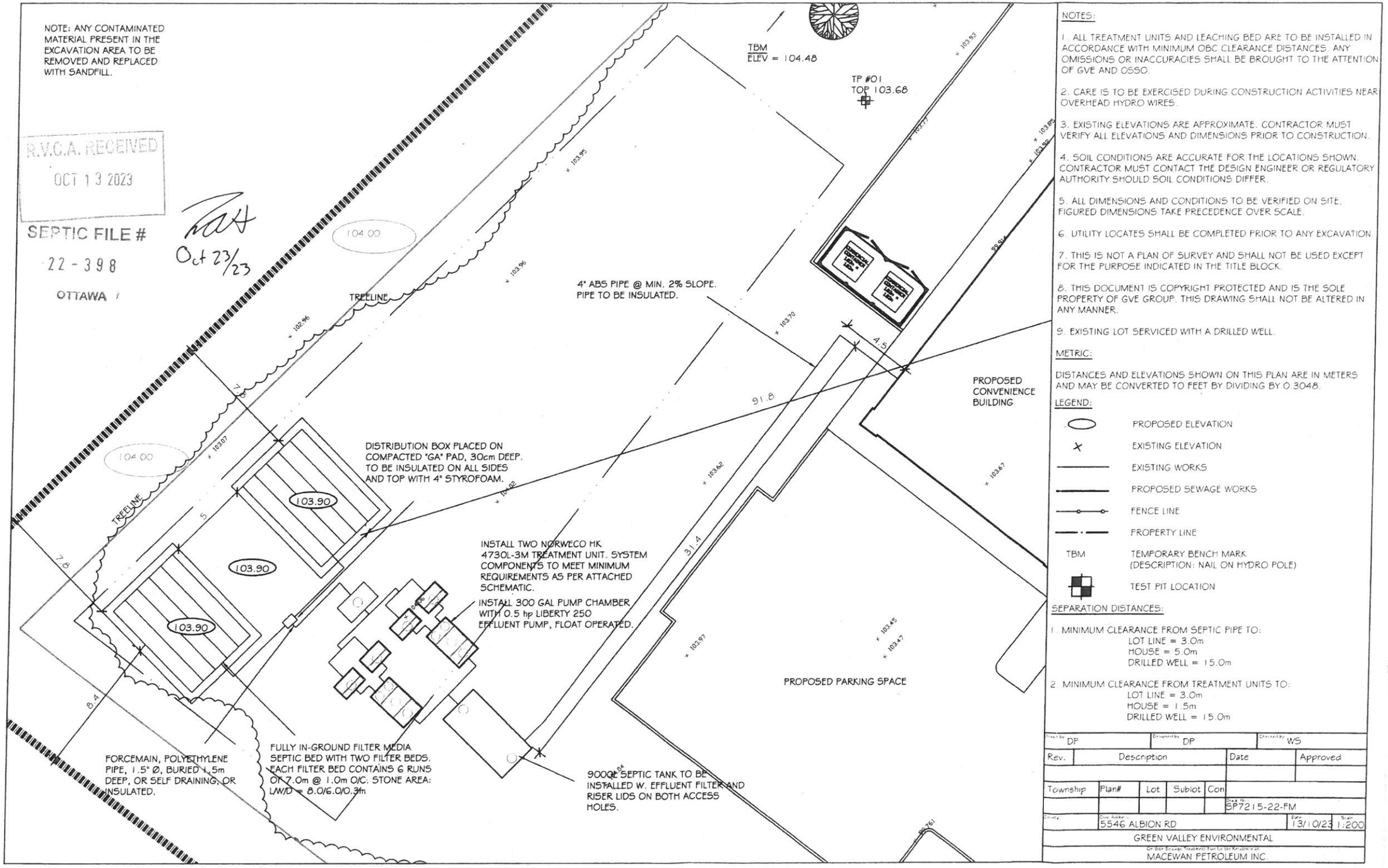
norweco®

HYDRO-KINETIC® MODEL 4730LP 3H WASTEWATER TREATMENT SYSTEM WITH PHOS-4-FADE FILTER

DATE	01-10-2017
REVISION	A
DRAWN	NPD
CHECKED	JMM
SCALE	05-27-2016
FILE	NTS
DRAWING NO.	PC-5-1174



NOTES:

1. ALL TREATMENT UNITS AND LEACHING BED ARE TO BE INSTALLED IN ACCORDANCE WITH MINIMUM OBC CLEARANCE DISTANCES. ANY OMISSIONS OR INACCURACIES SHALL BE BROUGHT TO THE ATTENTION OF GVE AND OSSO.

2. CARE IS TO BE EXERCISED DURING CONSTRUCTION ACTIVITIES NEAR OVERHEAD HYDRO WIRES.

3. EXISTING ELEVATIONS ARE APPROXIMATE. CONTRACTOR MUST VERIFY ALL ELEVATIONS AND DIMENSIONS PRIOR TO CONSTRUCTION.

4. SOIL CONDITIONS ARE ACCURATE FOR THE LOCATIONS SHOWN. CONTRACTOR MUST CONTACT THE DESIGN ENGINEER OR REGULATORY AUTHORITY SHOULD SOIL CONDITIONS DIFFER.

5. ALL DIMENSIONS AND CONDITIONS TO BE VERIFIED ON SITE. FIGURED DIMENSIONS TAKE PRECEDENCE OVER SCALE.

6. UTILITY LOCATES SHALL BE COMPLETED PRIOR TO ANY EXCAVATION.

7. THIS IS NOT A PLAN OF SURVEY AND SHALL NOT BE USED EXCEPT FOR THE PURPOSE INDICATED IN THE TITLE BLOCK.

8. THIS DOCUMENT IS COPYRIGHT PROTECTED AND IS THE SOLE PROPERTY OF GVE GROUP. THIS DRAWING SHALL NOT BE ALTERED IN ANY MANNER.

9. EXISTING LOT SERVICED WITH A DRILLED WELL.

METRIC:

DISTANCES AND ELEVATIONS SHOWN ON THIS PLAN ARE IN METERS AND MAY BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

LEGEND:

- PROPOSED ELEVATION
- EXISTING ELEVATION
- EXISTING WORKS
- PROPOSED SEWAGE WORKS
- FENCE LINE
- PROPERTY LINE
- TBM — TEMPORARY BENCH MARK (DESCRIPTION: NAIL ON HYDRO POLE)
- TEST PIT LOCATION

SEPARATION DISTANCES:

1. MINIMUM CLEARANCE FROM SEPTIC PIPE TO:
   LOT LINE = 3.0m
   HOUSE = 5.0m
   DRILLED WELL = 15.0m

2. MINIMUM CLEARANCE FROM TREATMENT UNITS TO:
   LOT LINE = 3.0m
   HOUSE = 1.5m
   DRILLED WELL = 15.0m

Drawn by: DP	Designed by: DP	Checked by: WS	
Rev.	Description	Date	Approved

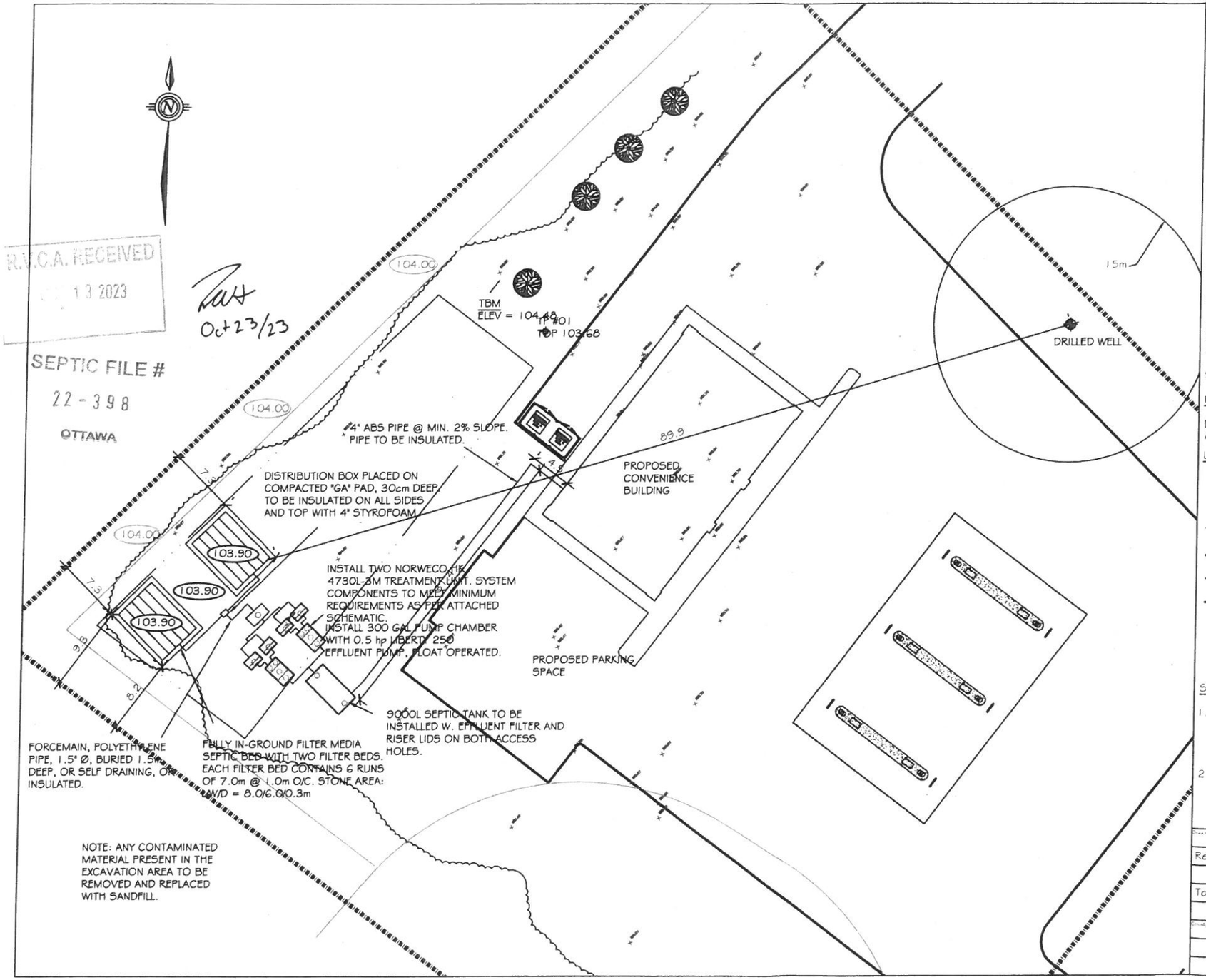
Township	Plan#	Lot	Sublot	Con	
					Dwg No. SP7215-22-FM

Owner	Civic Address: 5546 ALBION RD	Date: 13/10/23	Scale: 1:200

GREEN VALLEY ENVIRONMENTAL

On Site Sewage Treatment Systems Designers

MACEWAN PETROLEUM INC.



R.V.C.A. RECEIVED
OCT 13 2023

Oct 23/23

SEPTIC FILE #
22-398
OTTAWA

NOTES:

1. ALL TREATMENT UNITS AND LEACHING BED ARE TO BE INSTALLED IN ACCORDANCE WITH MINIMUM OBC CLEARANCE DISTANCES. ANY OMISSIONS OR INACCURACIES SHALL BE BROUGHT TO THE ATTENTION OF GVE AND OSSO.

2. CARE IS TO BE EXERCISED DURING CONSTRUCTION ACTIVITIES NEAR OVERHEAD HYDRO WIRES.

3. EXISTING ELEVATIONS ARE APPROXIMATE. CONTRACTOR MUST VERIFY ALL ELEVATIONS AND DIMENSIONS PRIOR TO CONSTRUCTION.

4. SOIL CONDITIONS ARE ACCURATE FOR THE LOCATIONS SHOWN. CONTRACTOR MUST CONTACT THE DESIGN ENGINEER OR REGULATORY AUTHORITY SHOULD SOIL CONDITIONS DIFFER.

5. ALL DIMENSIONS AND CONDITIONS TO BE VERIFIED ON SITE. FIGURED DIMENSIONS TAKE PRECEDENCE OVER SCALE.

6. UTILITY LOCATES SHALL BE COMPLETED PRIOR TO ANY EXCAVATION.

7. THIS IS NOT A PLAN OF SURVEY AND SHALL NOT BE USED EXCEPT FOR THE PURPOSE INDICATED IN THE TITLE BLOCK.

8. THIS DOCUMENT IS COPYRIGHT PROTECTED AND IS THE SOLE PROPERTY OF GVE GROUP. THIS DRAWING SHALL NOT BE ALTERED IN ANY MANNER.

9. EXISTING LOT SERVICED WITH A DRILLED WELL.

METRIC:

DISTANCES AND ELEVATIONS SHOWN ON THIS PLAN ARE IN METERS AND MAY BE CONVERTED TO FEET BY DIVIDING BY 0.3048.

LEGEND:

- PROPOSED ELEVATION
- EXISTING ELEVATION
- EXISTING WORKS
- PROPOSED SEWAGE WORKS
- FENCE LINE
- PROPERTY LINE
- TBM — TEMPORARY BENCH MARK (DESCRIPTION: NAIL ON HYDRO POLE)
- TEST PIT LOCATION

SEPARATION DISTANCES:

1. MINIMUM CLEARANCE FROM SEPTIC PIPE TO:
   LOT LINE = 3.0m
   HOUSE = 5.0m
   DRILLED WELL = 15.0m

2. MINIMUM CLEARANCE FROM TREATMENT UNITS TO:
   LOT LINE = 3.0m
   HOUSE = 1.5m
   DRILLED WELL = 15.0m

Drawn by: DP	Designed by: DP	Checked by: WS

Rev.	Description	Date	Approved

Township:	Plan#	Lot	Sublot	Con	
					Dwg No: SP7215-22-FM

Property:	Civic Address: 5546 ALBION RD	Date: 13/10/23	Scale: 1:400

GREEN VALLEY ENVIRONMENTAL

On Site Sewage Treatment Plan for the Renovation of
MACEWAN PETROLEUM INC.

COLD BEVERAGE EQUIPMENT

DRAWING SYMBOL	EQUIPMENT DESCRIPTION
A1	BLENDING BAR FREEZER 1130 W X 818 D X 1422 H
A	B4 BLENDER 343 W X 556 D X 1060 H
B	ICEE 4 BARREL 860 W X 833 D X 1063 H
C	SLUSH PUPPY FCI FREEZER 409 W X 555 D X 780 H
D	BUNN ULTRA 2 ICE CAP 410 W X 600 D X 810 H

HOT BEVERAGE EQUIPMENT

DRAWING SYMBOL	EQUIPMENT DESCRIPTION
E	PASTRY UNIT 305 W X 406 D X 506 H
F	COFFEE CONDIMENTS HOLDER 254 W X 483 D X 584 H
G	CREAM AND MILK MACHINE 203 W X 343 D X 343 H
AA	ICE MACHINE 425 W X 613 D X 812 H
AB	FLAVOUR SHOT 275 W X 340 D X 406 H
AC	SCHAERER 432 W X 560 D X 712 H
AD	VNI 533 W X 686 D X 890 H

FOOD VENDING EQUIPMENT

DRAWING SYMBOL	EQUIPMENT DESCRIPTION
O	ROLLER GRILL & BUN WARMER (2 STACKED UNITS) 908 W X 524 D X 494 H (PROVIDE SEPARATE CIRCUITS FOR EACH UNIT)
R	MICROWAVE OVEN 714 W X 449 D X 310 H
FPT	STAINLESS STEEL FOOD PREP TABLE 1535 W X 766 D X 934 H
FW 1	VENDO FOOD WARMER HFDHC 1065 W X 760 D X 1665 H
P 2	PIZZA WARMER TURBOCHEF STAKED OVENS 826 W X 795 D X 1675 H
	STAND ALONE COOLER 48" W X 29" D X 35" H
FS	FOOD SCALE 385 W X 480 D X 472 H
S	REFRIGERATED DISPLAY WG84529P 3048 W X 825 D X 1320 H
MAN	MANHATTAN FREEZER AND CHILLER 2105 W X 990 D X 910 H
OFC 1	OPEN FACE COOLER MODEL NOT KNOWN 1830 W X 1830 D X UNKNOWN H
V	18L WATER RACK 1220 W X 560 D X H

OTHER VENDING EQUIPMENT

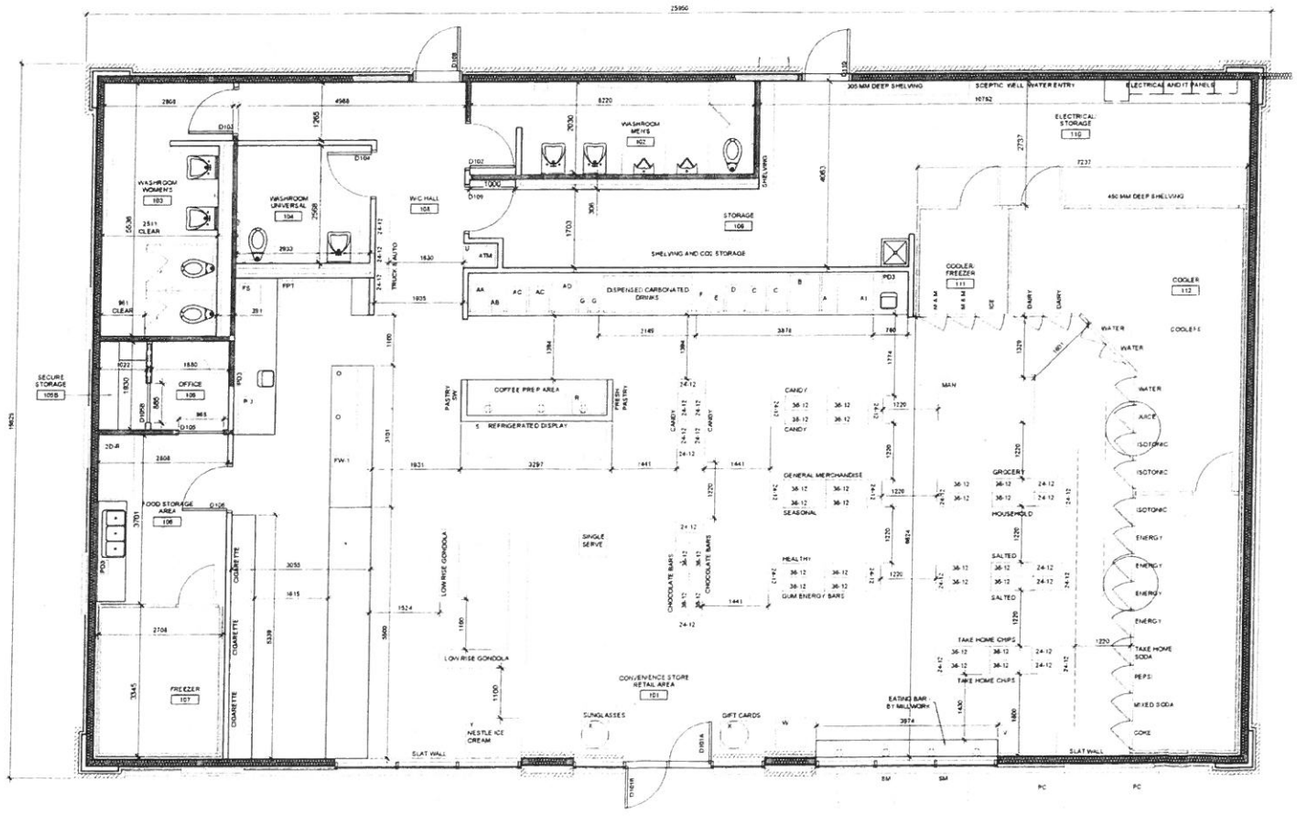
PD3	PAPER TOWEL DISPENSER / SANITIZER T7080BWH 290 W X 230 D X 419 H	PC	PROPANE CAGE 2080 W X 760 D X 1130 H	CANDY GRID	CANDY WALL GRIDS 610 W X 1830 H
R	SPINNING MERCHANDIZING RACK 610 W X 610 D X H	W	OLG LOTTERY STAND 660 W X 660 D X H	FW	SLATWALL MERCHANDIZING 915 W X __ D X __ H * BY MILLWORK MANUFACTURER
ATM	ATM MACHINE 437 W X 712 D X H			CIGARETTE	CIGARETTE VENDING MACHINE 1378 W X 482 D X 1280 H
WRM	WORM FRIDGE __ W X __ D X __ H	V	18L WATER RACK 1220 W X 560 D X H	2DR	2 DOOR REFRIGERATOR 1375 W X 750 D X 1991 H

GONDOLA EQUIPMENT

36-12	SHELF UNIT 915 W X 305 D X 1371 H
24-12	SHELF UNIT 610 W X 305 D X 1371 H

REFRIGERATED DISPLAY WG84529P 3048 W X 815 D X 1320 H

03 A104 EQUIPMENT LEGEND
SCALE 1:50



02 A104 EQUIPMENT LIST
SCALE N.A.

01 A104 EQUIPMENT LAYOUT PLAN
SCALE 1:50

24 X 36 - PLOT ARCH D

P:\Projects_2021\21-146\3000 Design Documents\3300 Drawings\3350 Drawings\3351 ACAD\21-146 MPI Albion (8).dwg, 2021-08-25

MCROBIE
ARCHITECTS · INTERIOR DESIGNERS

North

Revisions

No	By	Description	Date
11	MW	ISSUED FOR REVIEW	2021-AUG-25
10	MW	ISSUED FOR REVIEW	2021-AUG-24
09	MW	ISSUED FOR REVIEW	2021-AUG-20
08	MW	ISSUED FOR REVIEW	2021-AUG-19
07	MW	ISSUED FOR REVIEW	2021-AUG-18
06	MW	ISSUED FOR REVIEW	2021-AUG-13
05	MW	ISSUED FOR REVIEW	2021-AUG-11
04	MW	ISSUED FOR REVIEW	2021-AUG-10

MacEWEN
PETROLEUM INC.
16 MAIN ST.
MAXVILLE ON, K0C 1T0

Project
CONVENIENCE STORE

ALBION ROAD, OTTAWA

Drawing
EQUIPMENT LAYOUT PLAN

Scale 1:50
Stamp

Drawn IW

Checked

Project No. 21-146

Drawing No. A104

Date

Rideau Valley Conservation Authority

Permit
Part 8 – Sewage System
Ontario Building Code

Do Not Complete
Permit No 22-398
Revision No
Date
Related Application

A copy of this permit must be posted on the property at all time during construction. OBC, Division C — Part 1, Section 1.3.2.1

This permit verifies that the on-site sewage system was reviewed and approved for construction under the *Ontario Building Code* and *O.Reg. 323/12* as amended by *O.Reg. 151/13.*

Inspected & Recommended by: Ryan Hiemstra
Owner: MacEwen Petroleum
Inspection Date & Time: Sept 28, 2022
Weather: Sunny
Civic Address: 5546 Albion Road
Legal: Lot 30, Con 3
In the former Township/City of Gloucester

Design Flow for Commercial / Institutional / Industrial (as per Table 8.2.1.3.B)

Q: 3800 (Water closets) + 3920 (Fuel pumps) L/day

pretreatment tank 9000 L
effluent filter YES
pump rate system pumps L/15 MIN
treatment unit Norweco HK 4730L-3M
number of units 2

weigh bills for Filter Media	■ yes	☐ no
grain size analysis required	■ yes	☐ no
site to be scarified	■ yes	☐ no
clay seal inspection	☐ yes	■ no
mantle required	☐ yes	■ no
sub-grade inspection	■ yes	☐ no

ELEVATION ☐ In Ground ☐ Partially Raised ☒ Fully Raised

TYPE OF SYSTEM

☐ **Trench**
○ **Pipe and Stone or** ○ **Chambers**

type of chamber
loading area m^2
total trench length m
trench configuration

☐ **Dispersal Bed**

○ BMEC ○ Type A ○ Type B

stone m^2
sand m^2
pipe
weight of sand kg

☐ **Shallow Buried Trench**

pipe length m
orifice spacing m

■ **Filter Media Bed**

stone 96 m^2
extended base 96 m^2
pipe 2 cells (6 runs at 7m)
weight of filter media 115,200 kg
loading area Native m^2

☐ **Class 5 Holding Tank**

☐ **Septic Tank Only**

Manager, Septic System Approvals: Terry Davidson Permit Date: OCTOBER 23, 2023
Comments: 1. RVCA to inspect subgrade before placement of sandfill

■ maintenance/pumping required ■ ESA permit # required ■ engineer to verify ■ subgrade ☐ squirt height

☐ Class 5 Holding Tank approval only valid for three years from date of issue

Manager, Septic System Approvals: Revision Date:
Comments:

NOTE: For further details, refer to corresponding application.

ATTACHMENT K

Moisture Surplus Print Outs

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY... 50 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE..... 30 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	27	83	50	299
28- 2	-8.8	57	12	18	1	1	0	29	110	50	356
31- 3	-2.7	66	32	80	5	5	0	107	64	50	422
30- 4	5.9	72	67	69	32	32	0	104	0	50	494
31- 5	13.0	74	74	0	80	79	-1	13	0	32	568
30- 6	18.3	82	82	0	116	97	-19	4	0	14	651
31- 7	20.8	89	89	0	135	94	-41	3	0	5	740
31- 8	19.5	87	87	0	117	83	-34	1	0	9	827
30- 9	14.6	84	84	0	75	66	-9	7	0	20	912
31-10	8.1	77	76	0	36	35	-1	24	0	37	77
30-11	1.3	80	63	8	10	10	0	50	9	49	157
31-12	-7.0	78	26	15	1	1	0	38	47	50	236
AVE	5.9 TTL	911	705	205	608	503	-105	407			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	31	43	0	55
28- 2	2.6	29	15	27	1	1	0	37	59	0	59
31- 3	2.3	28	22	47	4	4	0	53	83	0	65
30- 4	1.7	31	31	84	8	8	0	84	0	2	74
31- 5	1.9	32	32	0	12	11	5	21	0	19	85
30- 6	1.2	38	38	0	9	26	26	17	0	19	93
31- 7	1.2	42	42	0	8	30	31	12	0	14	93
31- 8	1.3	39	39	0	8	30	32	5	0	16	107
30- 9	1.5	38	38	0	8	14	13	20	0	21	110
31-10	1.4	37	37	2	7	7	3	27	0	19	37
30-11	1.7	27	28	9	4	4	0	30	13	6	45
31-12	3.0	30	22	14	1	1	0	29	34	0	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY... 75 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE..... 45 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	27	83	75	299
28- 2	-8.8	57	12	18	1	1	0	29	110	75	356
31- 3	-2.7	66	32	80	5	5	0	107	64	75	422
30- 4	5.9	72	67	69	32	32	0	104	0	75	494
31- 5	13.0	74	74	0	80	80	0	13	0	56	568
30- 6	18.3	82	82	0	116	107	-10	4	0	28	651
31- 7	20.8	89	89	0	135	104	-32	2	0	10	740
31- 8	19.5	87	87	0	117	85	-32	1	0	12	827
30- 9	14.6	84	84	0	75	66	-9	4	0	26	912
31-10	8.1	77	76	0	36	35	-1	15	0	52	77
30-11	1.3	80	63	8	10	10	0	42	9	71	157
31-12	-7.0	78	26	15	1	1	0	36	47	75	236
AVE	5.9 TTL	911	705	205	608	526	-84	384			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	30	43	0	55
28- 2	2.6	29	15	27	1	1	0	37	59	0	59
31- 3	2.3	28	22	47	4	4	0	53	83	0	65
30- 4	1.7	31	31	84	8	8	0	84	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	19	19	17	0	28	93
31- 7	1.2	42	42	0	8	28	30	11	0	22	93
31- 8	1.3	39	39	0	8	29	31	5	0	23	107
30- 9	1.5	38	38	0	8	14	14	17	0	29	110
31-10	1.4	37	37	2	7	7	2	23	0	28	37
30-11	1.7	27	28	9	4	4	0	33	13	11	45
31-12	3.0	30	22	14	1	1	0	30	34	3	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...100 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE..... 60 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	25	83	99	299
28- 2	-8.8	57	12	18	1	1	0	28	110	99	356
31- 3	-2.7	66	32	80	5	5	0	106	64	100	422
30- 4	5.9	72	67	69	32	32	0	104	0	100	494
31- 5	13.0	74	74	0	80	80	0	13	0	81	568
30- 6	18.3	82	82	0	116	112	-4	4	0	47	651
31- 7	20.8	89	89	0	135	115	-21	2	0	19	740
31- 8	19.5	87	87	0	117	88	-29	1	0	18	827
30- 9	14.6	84	84	0	75	66	-8	3	0	32	912
31-10	8.1	77	76	0	36	35	-1	10	0	63	77
30-11	1.3	80	63	8	10	10	0	34	9	91	157
31-12	-7.0	78	26	15	1	1	0	33	47	97	236
AVE	5.9 TTL	911	705	205	608	545	-63	363			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	30	43	5	55
28- 2	2.6	29	15	27	1	1	0	37	59	3	59
31- 3	2.3	28	22	47	4	4	0	53	83	0	65
30- 4	1.7	31	31	84	8	8	0	84	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	12	11	17	0	34	93
31- 7	1.2	42	42	0	8	25	26	11	0	30	93
31- 8	1.3	39	39	0	8	29	30	5	0	30	107
30- 9	1.5	38	38	0	8	14	13	15	0	35	110
31-10	1.4	37	37	2	7	6	2	21	0	36	37
30-11	1.7	27	28	9	4	4	0	34	13	19	45
31-12	3.0	30	22	14	1	1	0	30	34	8	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...125 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE..... 75 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	24	83	122	299
28- 2	-8.8	57	12	18	1	1	0	28	110	123	356
31- 3	-2.7	66	32	80	5	5	0	105	64	125	422
30- 4	5.9	72	67	69	32	32	0	104	0	125	494
31- 5	13.0	74	74	0	80	80	0	13	0	106	568
30- 6	18.3	82	82	0	116	115	-1	4	0	69	651
31- 7	20.8	89	89	0	135	122	-13	2	0	33	740
31- 8	19.5	87	87	0	117	92	-25	1	0	28	827
30- 9	14.6	84	84	0	75	67	-7	3	0	41	912
31-10	8.1	77	76	0	36	35	-1	9	0	74	77
30-11	1.3	80	63	8	10	10	0	27	9	108	157
31-12	-7.0	78	26	15	1	1	0	29	47	119	236
AVE	5.9 TTL	911	705	205	608	560	-47	349			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	31	43	10	55
28- 2	2.6	29	15	27	1	1	0	37	59	8	59
31- 3	2.3	28	22	47	4	4	0	54	83	0	65
30- 4	1.7	31	31	84	8	8	0	84	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	4	17	0	39	93
31- 7	1.2	42	42	0	8	21	23	11	0	37	93
31- 8	1.3	39	39	0	8	26	28	5	0	38	107
30- 9	1.5	38	38	0	8	13	11	14	0	42	110
31-10	1.4	37	37	2	7	6	2	20	0	42	37
30-11	1.7	27	28	9	4	4	0	32	13	25	45
31-12	3.0	30	22	14	1	1	0	30	34	14	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...150 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE..... 90 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	23	83	144	299
28- 2	-8.8	57	12	18	1	1	0	26	110	146	356
31- 3	-2.7	66	32	80	5	5	0	103	64	150	422
30- 4	5.9	72	67	69	32	32	0	104	0	150	494
31- 5	13.0	74	74	0	80	80	0	13	0	131	568
30- 6	18.3	82	82	0	116	116	0	4	0	93	651
31- 7	20.8	89	89	0	135	127	-8	2	0	52	740
31- 8	19.5	87	87	0	117	97	-19	1	0	41	827
30- 9	14.6	84	84	0	75	68	-6	3	0	54	912
31-10	8.1	77	76	0	36	36	-1	8	0	88	77
30-11	1.3	80	63	8	10	10	0	23	9	126	157
31-12	-7.0	78	26	15	1	1	0	26	47	140	236
AVE	5.9 TTL	911	705	205	608	573	-34	336			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	31	43	15	55
28- 2	2.6	29	15	27	1	1	0	37	59	12	59
31- 3	2.3	28	22	47	4	4	0	54	83	0	65
30- 4	1.7	31	31	84	8	8	0	84	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	8	1	17	0	41	93
31- 7	1.2	42	42	0	8	18	18	11	0	42	93
31- 8	1.3	39	39	0	8	22	23	5	0	44	107
30- 9	1.5	38	38	0	8	12	10	14	0	49	110
31-10	1.4	37	37	2	7	6	2	19	0	47	37
30-11	1.7	27	28	9	4	4	0	30	13	31	45
31-12	3.0	30	22	14	1	1	0	29	34	20	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...200 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE.....120 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	21	83	187	299
28- 2	-8.8	57	12	18	1	1	0	24	110	191	356
31- 3	-2.7	66	32	80	5	5	0	99	64	199	422
30- 4	5.9	72	67	69	32	32	0	103	0	200	494
31- 5	13.0	74	74	0	80	80	0	13	0	181	568
30- 6	18.3	82	82	0	116	116	0	4	0	143	651
31- 7	20.8	89	89	0	135	132	-3	2	0	97	740
31- 8	19.5	87	87	0	117	106	-11	1	0	78	827
30- 9	14.6	84	84	0	75	70	-4	3	0	89	912
31-10	8.1	77	76	0	36	36	0	7	0	123	77
30-11	1.3	80	63	8	10	10	0	19	9	164	157
31-12	-7.0	78	26	15	1	1	0	22	47	182	236
AVE	5.9 TTL	911	705	205	608	589	-18	318			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	30	43	24	55
28- 2	2.6	29	15	27	1	1	0	36	59	20	59
31- 3	2.3	28	22	47	4	4	0	55	83	4	65
30- 4	1.7	31	31	84	8	8	0	83	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	0	17	0	41	93
31- 7	1.2	42	42	0	8	11	10	11	0	48	93
31- 8	1.3	39	39	0	8	16	16	5	0	54	107
30- 9	1.5	38	38	0	8	10	8	14	0	59	110
31-10	1.4	37	37	2	7	6	1	19	0	55	37
30-11	1.7	27	28	9	4	4	0	29	13	41	45
31-12	3.0	30	22	14	1	1	0	28	34	29	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...225 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE.....135 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	21	83	209	299
28- 2	-8.8	57	12	18	1	1	0	24	110	214	356
31- 3	-2.7	66	32	80	5	5	0	97	64	224	422
30- 4	5.9	72	67	69	32	32	0	103	0	225	494
31- 5	13.0	74	74	0	80	80	0	13	0	206	568
30- 6	18.3	82	82	0	116	116	0	4	0	168	651
31- 7	20.8	89	89	0	135	133	-2	2	0	121	740
31- 8	19.5	87	87	0	117	109	-8	1	0	99	827
30- 9	14.6	84	84	0	75	71	-4	3	0	109	912
31-10	8.1	77	76	0	36	36	0	7	0	143	77
30-11	1.3	80	63	8	10	10	0	18	9	185	157
31-12	-7.0	78	26	15	1	1	0	21	47	204	236
AVE	5.9 TTL	911	705	205	608	594	-14	314			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	30	43	28	55
28- 2	2.6	29	15	27	1	1	0	36	59	24	59
31- 3	2.3	28	22	47	4	4	0	56	83	7	65
30- 4	1.7	31	31	84	8	8	0	82	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	0	17	0	41	93
31- 7	1.2	42	42	0	8	10	7	11	0	49	93
31- 8	1.3	39	39	0	8	14	13	5	0	58	107
30- 9	1.5	38	38	0	8	10	7	14	0	63	110
31-10	1.4	37	37	2	7	6	1	19	0	58	37
30-11	1.7	27	28	9	4	4	0	29	13	44	45
31-12	3.0	30	22	14	1	1	0	28	34	33	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...250 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE.....150 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	20	83	232	299
28- 2	-8.8	57	12	18	1	1	0	23	110	238	356
31- 3	-2.7	66	32	80	5	5	0	96	64	248	422
30- 4	5.9	72	67	69	32	32	0	102	0	250	494
31- 5	13.0	74	74	0	80	80	0	13	0	231	568
30- 6	18.3	82	82	0	116	116	0	4	0	193	651
31- 7	20.8	89	89	0	135	134	-1	2	0	145	740
31- 8	19.5	87	87	0	117	111	-6	1	0	121	827
30- 9	14.6	84	84	0	75	72	-3	3	0	130	912
31-10	8.1	77	76	0	36	36	0	7	0	164	77
30-11	1.3	80	63	8	10	10	0	18	9	207	157
31-12	-7.0	78	26	15	1	1	0	20	47	226	236
AVE	5.9 TTL	911	705	205	608	598	-10	309			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	29	43	32	55
28- 2	2.6	29	15	27	1	1	0	36	59	27	59
31- 3	2.3	28	22	47	4	4	0	56	83	9	65
30- 4	1.7	31	31	84	8	8	0	82	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	0	17	0	41	93
31- 7	1.2	42	42	0	8	9	5	11	0	50	93
31- 8	1.3	39	39	0	8	12	11	5	0	61	107
30- 9	1.5	38	38	0	8	9	6	14	0	66	110
31-10	1.4	37	37	2	7	7	1	19	0	61	37
30-11	1.7	27	28	9	4	4	0	29	13	47	45
31-12	3.0	30	22	14	1	1	0	28	34	36	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...265 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE.....159 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	20	83	246	299
28- 2	-8.8	57	12	18	1	1	0	23	110	252	356
31- 3	-2.7	66	32	80	5	5	0	96	64	263	422
30- 4	5.9	72	67	69	32	32	0	102	0	265	494
31- 5	13.0	74	74	0	80	80	0	13	0	246	568
30- 6	18.3	82	82	0	116	116	0	4	0	208	651
31- 7	20.8	89	89	0	135	134	-1	2	0	160	740
31- 8	19.5	87	87	0	117	112	-5	1	0	135	827
30- 9	14.6	84	84	0	75	72	-3	3	0	144	912
31-10	8.1	77	76	0	36	36	0	7	0	177	77
30-11	1.3	80	63	8	10	10	0	18	9	221	157
31-12	-7.0	78	26	15	1	1	0	20	47	240	236
AVE	5.9 TTL	911	705	205	608	599	-9	309			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	29	43	34	55
28- 2	2.6	29	15	27	1	1	0	36	59	29	59
31- 3	2.3	28	22	47	4	4	0	56	83	10	65
30- 4	1.7	31	31	84	8	8	0	82	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	0	17	0	41	93
31- 7	1.2	42	42	0	8	8	4	11	0	51	93
31- 8	1.3	39	39	0	8	11	10	5	0	62	107
30- 9	1.5	38	38	0	8	9	5	14	0	68	110
31-10	1.4	37	37	2	7	7	1	19	0	62	37
30-11	1.7	27	28	9	4	4	0	29	13	49	45
31-12	3.0	30	22	14	1	1	0	28	34	38	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...275 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE.....165 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	19	83	255	299
28- 2	-8.8	57	12	18	1	1	0	23	110	261	356
31- 3	-2.7	66	32	80	5	5	0	96	64	272	422
30- 4	5.9	72	67	69	32	32	0	101	0	275	494
31- 5	13.0	74	74	0	80	80	0	13	0	256	568
30- 6	18.3	82	82	0	116	116	0	4	0	218	651
31- 7	20.8	89	89	0	135	135	-1	2	0	170	740
31- 8	19.5	87	87	0	117	113	-4	1	0	144	827
30- 9	14.6	84	84	0	75	72	-2	3	0	153	912
31-10	8.1	77	76	0	36	36	0	7	0	186	77
30-11	1.3	80	63	8	10	10	0	18	9	230	157
31-12	-7.0	78	26	15	1	1	0	20	47	249	236
AVE	5.9 TTL	911	705	205	608	601	-7	307			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	29	43	35	55
28- 2	2.6	29	15	27	1	1	0	36	59	30	59
31- 3	2.3	28	22	47	4	4	0	56	83	11	65
30- 4	1.7	31	31	84	8	8	0	81	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	0	17	0	41	93
31- 7	1.2	42	42	0	8	8	3	11	0	51	93
31- 8	1.3	39	39	0	8	11	9	5	0	63	107
30- 9	1.5	38	38	0	8	9	5	14	0	69	110
31-10	1.4	37	37	2	7	7	1	19	0	63	37
30-11	1.7	27	28	9	4	4	0	29	13	50	45
31-12	3.0	30	22	14	1	1	0	28	34	39	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...280 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE.....168 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	19	83	260	299
28- 2	-8.8	57	12	18	1	1	0	23	110	266	356
31- 3	-2.7	66	32	80	5	5	0	95	64	277	422
30- 4	5.9	72	67	69	32	32	0	101	0	280	494
31- 5	13.0	74	74	0	80	80	0	13	0	261	568
30- 6	18.3	82	82	0	116	116	0	4	0	223	651
31- 7	20.8	89	89	0	135	135	-1	2	0	175	740
31- 8	19.5	87	87	0	117	113	-4	1	0	148	827
30- 9	14.6	84	84	0	75	72	-2	3	0	157	912
31-10	8.1	77	76	0	36	36	0	7	0	191	77
30-11	1.3	80	63	8	10	10	0	18	9	234	157
31-12	-7.0	78	26	15	1	1	0	20	47	254	236
AVE	5.9 TTL	911	705	205	608	601	-7	306			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	29	43	35	55
28- 2	2.6	29	15	27	1	1	0	36	59	31	59
31- 3	2.3	28	22	47	4	4	0	56	83	12	65
30- 4	1.7	31	31	84	8	8	0	81	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	0	17	0	41	93
31- 7	1.2	42	42	0	8	8	3	11	0	52	93
31- 8	1.3	39	39	0	8	10	9	5	0	64	107
30- 9	1.5	38	38	0	8	9	5	14	0	69	110
31-10	1.4	37	37	2	7	7	1	19	0	64	37
30-11	1.7	27	28	9	4	4	0	29	13	50	45
31-12	3.0	30	22	14	1	1	0	28	34	39	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...300 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE.....180 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	19	83	279	299
28- 2	-8.8	57	12	18	1	1	0	23	110	285	356
31- 3	-2.7	66	32	80	5	5	0	95	64	297	422
30- 4	5.9	72	67	69	32	32	0	101	0	300	494
31- 5	13.0	74	74	0	80	80	0	13	0	281	568
30- 6	18.3	82	82	0	116	116	0	4	0	243	651
31- 7	20.8	89	89	0	135	135	0	2	0	194	740
31- 8	19.5	87	87	0	117	114	-3	1	0	167	827
30- 9	14.6	84	84	0	75	73	-2	3	0	176	912
31-10	8.1	77	76	0	36	36	0	7	0	209	77
30-11	1.3	80	63	8	10	10	0	18	9	252	157
31-12	-7.0	78	26	15	1	1	0	20	47	272	236
AVE	5.9 TTL	911	705	205	608	603	-5	306			

Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	29	43	37	55
28- 2	2.6	29	15	27	1	1	0	36	59	33	59
31- 3	2.3	28	22	47	4	4	0	57	83	13	65
30- 4	1.7	31	31	84	8	8	0	81	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	0	17	0	41	93
31- 7	1.2	42	42	0	8	8	2	11	0	52	93
31- 8	1.3	39	39	0	8	10	8	5	0	65	107
30- 9	1.5	38	38	0	8	9	5	14	0	71	110
31-10	1.4	37	37	2	7	7	1	19	0	65	37
30-11	1.7	27	28	9	4	4	0	29	13	52	45
31-12	3.0	30	22	14	1	1	0	28	34	41	56

Ottawa Airport, ON WATER BUDGET MEANS FOR THE PERIOD 1950-2010 DC20492

LAT.... 45.32 WATER HOLDING CAPACITY...400 MM HEAT INDEX... 36.41
LONG... 75.67 LOWER ZONE.....240 MM A..... 1.075

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	-10.6	64	13	15	0	0	0	19	83	375	299
28- 2	-8.8	57	12	18	1	1	0	22	110	382	356
31- 3	-2.7	66	32	80	5	5	0	94	64	395	422
30- 4	5.9	72	67	69	32	32	0	99	0	400	494
31- 5	13.0	74	74	0	80	80	0	13	0	381	568
30- 6	18.3	82	82	0	116	116	0	4	0	343	651
31- 7	20.8	89	89	0	135	135	0	2	0	294	740
31- 8	19.5	87	87	0	117	116	-1	1	0	265	827
30- 9	14.6	84	84	0	75	74	-1	3	0	272	912
31-10	8.1	77	76	0	36	36	0	7	0	305	77
30-11	1.3	80	63	8	10	10	0	18	9	349	157
31-12	-7.0	78	26	15	1	1	0	19	47	369	236
AVE	5.9 TTL	911	705	205	608	606	-2	301			

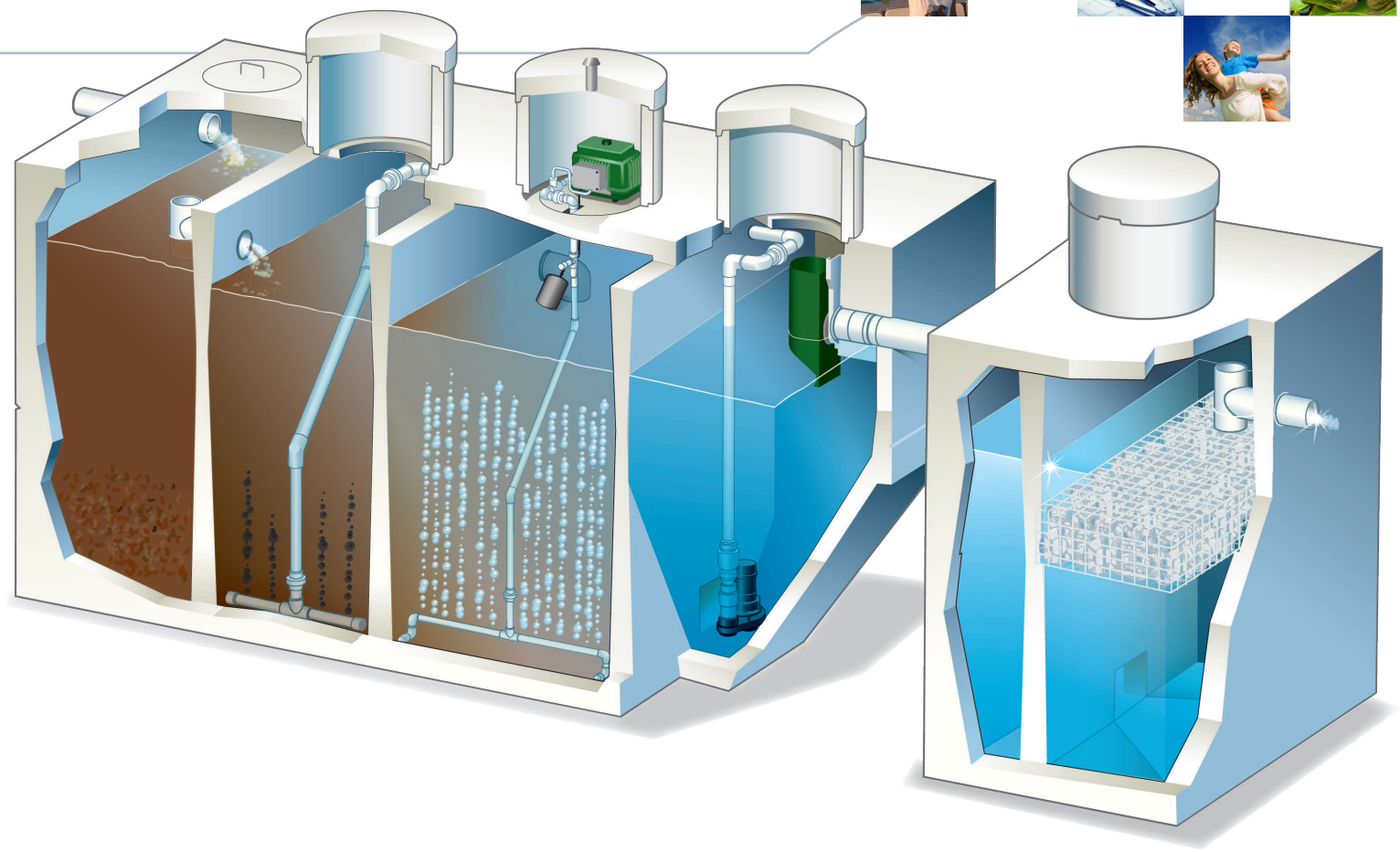
Ottawa Airport, ON STANDARD DEVIATIONS FOR THE PERIOD 1950-2010 DC20492

DATE	TEMP (C)	PCPN	RAIN	MELT	PE	AE	DEF	SURP	SNOW	SOIL	ACC P
31- 1	3.0	26	16	18	1	1	0	29	43	44	55
28- 2	2.6	29	15	27	1	1	0	36	59	39	59
31- 3	2.3	28	22	47	4	4	0	57	83	20	65
30- 4	1.7	31	31	84	8	8	0	80	0	2	74
31- 5	1.9	32	32	0	12	12	0	21	0	22	85
30- 6	1.2	38	38	0	9	9	0	17	0	41	93
31- 7	1.2	42	42	0	8	8	0	11	0	53	93
31- 8	1.3	39	39	0	8	8	4	5	0	69	107
30- 9	1.5	38	38	0	8	8	2	14	0	76	110
31-10	1.4	37	37	2	7	7	0	19	0	69	37
30-11	1.7	27	28	9	4	4	0	29	13	57	45
31-12	3.0	30	22	14	1	1	0	28	34	46	56

ATTACHMENT L

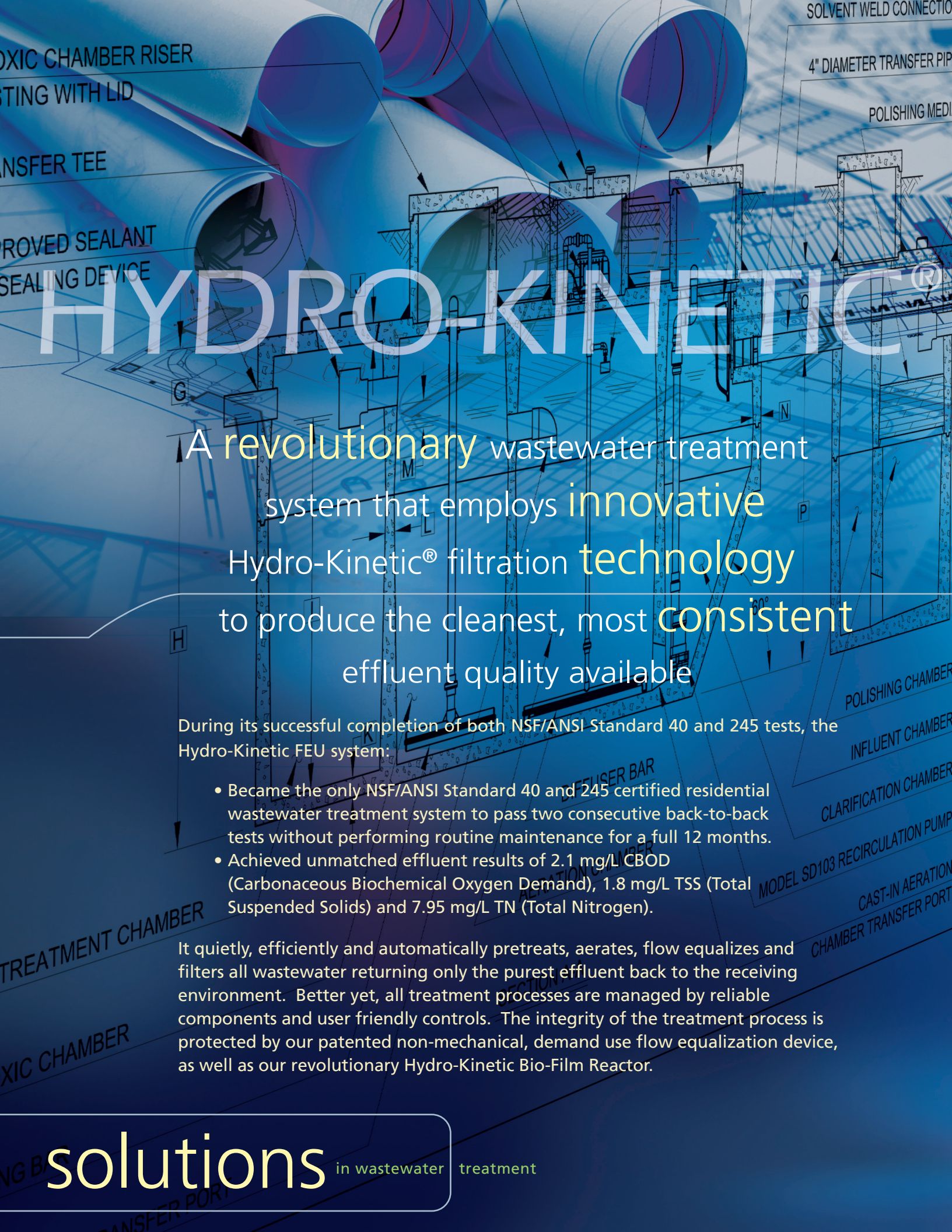
Norweco Tertiary System Specifications

HYDRO-KINETIC® FEU



norweco®

Engineering the future of water and wastewater treatment



HYDRO-KINETIC®

A revolutionary wastewater treatment system that employs innovative Hydro-Kinetic® filtration technology to produce the cleanest, most consistent effluent quality available

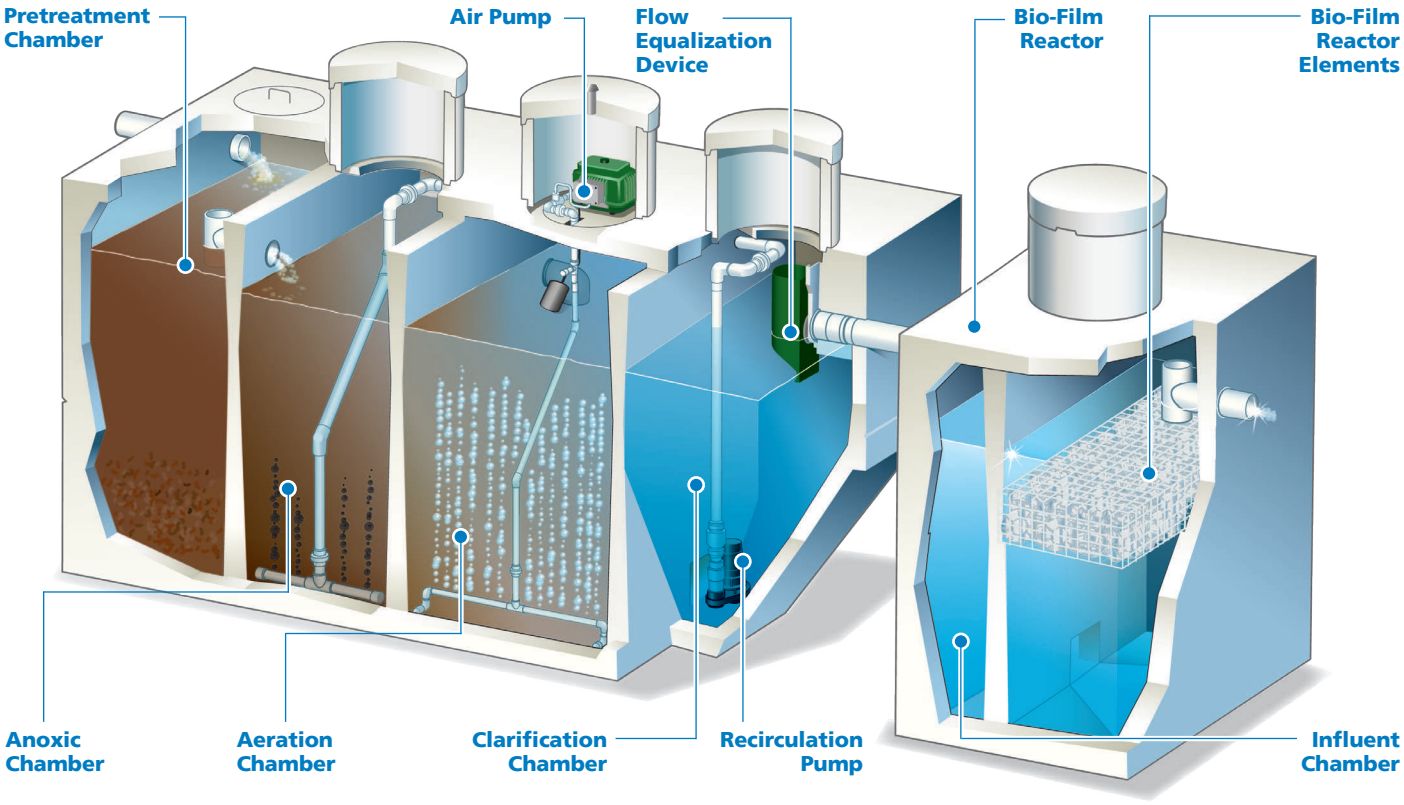
During its successful completion of both NSF/ANSI Standard 40 and 245 tests, the Hydro-Kinetic FEU system:

- Became the only NSF/ANSI Standard 40 and 245 certified residential wastewater treatment system to pass two consecutive back-to-back tests without performing routine maintenance for a full 12 months.
- Achieved unmatched effluent results of 2.1 mg/L CBOD (Carbonaceous Biochemical Oxygen Demand), 1.8 mg/L TSS (Total Suspended Solids) and 7.95 mg/L TN (Total Nitrogen).

It quietly, efficiently and automatically pretreats, aerates, flow equalizes and filters all wastewater returning only the purest effluent back to the receiving environment. Better yet, all treatment processes are managed by reliable components and user friendly controls. The integrity of the treatment process is protected by our patented non-mechanical, demand use flow equalization device, as well as our revolutionary Hydro-Kinetic Bio-Film Reactor.

solutions in wastewater treatment

Revolutionary in design, unparalleled in performance



Pretreatment Chamber
Anaerobic bacteria and gravity precondition the wastewater here to protect the integrity of downstream treatment processes.

Anoxic Chamber
Pretreatment Chamber effluent is mixed with nitrified liquid recirculated from the clarifier in measured doses, via a mixing bar in this chamber. Under carefully controlled conditions, bacteria remove nitrogen by consuming nitrate-bound oxygen during their respiratory process.

Aeration Chamber
Here, safe, living aerobic bacteria convert the wastewater into stable substances. Flow equalization maximizes this biological oxidation and assures proper retention and treatment.

Model A100 Air Pump
Our exclusive Model A100 air pump is a precision engineered electro-mechanical device that has been specifically designed for use in the system. It can be installed below grade or remotely located up to 75 feet from the system.

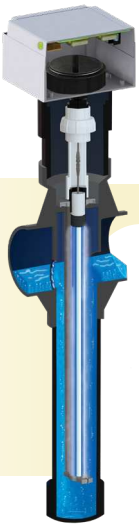
Clarification Chamber
Flow equalization enhances the settling of biologically active substances inside the Clarification Chamber. Pretreated, aerated wastewater has now been converted to clarified liquids for discharge from this chamber.

Model SD103 Recirculation Pump
This highly efficient recirculation pump is installed at the bottom of the Clarification Chamber and is used to transfer nitrified liquid back to the Anoxic Chamber for denitrification.

Flow Equalization Device
Controls flow through the treatment process and regulates the velocity of treated effluent that can leave the system, enhancing the efficiency of the attached growth filtration media in the Hydro-Kinetic system.

Bio-Film Reactor
Flow equalized liquid from the clarifier enters the Bio-Film Reactor where it flows downward and is evenly distributed beneath our exclusive Hydro-Kinetic filtration media. The liquid then travels through the proprietary attached growth filtration media where the final treatment takes place.

Precast Concrete Tank
Every tank is constructed of high quality, non-corrosive materials under rigid quality control standards. The tank, access risers and covers are reinforced precast concrete manufactured locally by your licensed Norweco distributor.

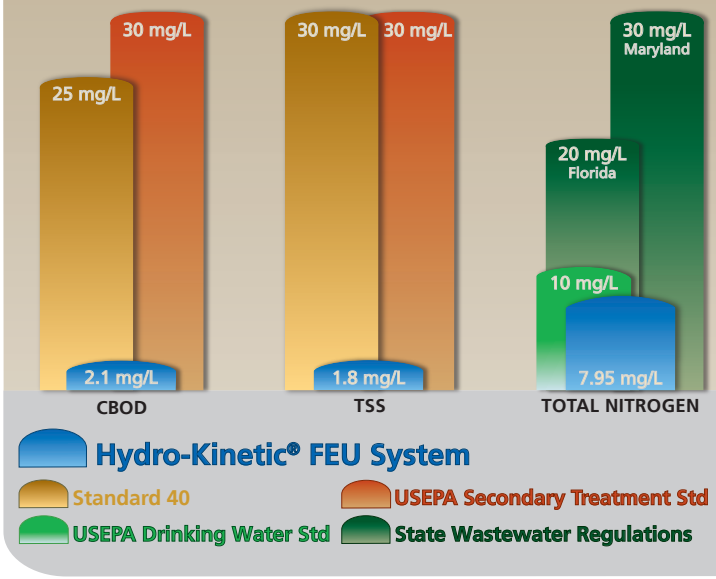


AT 1500 Ultraviolet Disinfection System
CAPABLE OF MEETING EVEN THE MOST STRINGENT ENVIRONMENTAL REQUIREMENTS, THE MODEL AT 1500 UV DISINFECTION SYSTEM REDUCES BACTERIA LEVELS FROM SECONDARY EFFLUENT TO MEET STRICT WATER QUALITY STANDARDS. THE AT 1500 IS THE ONLY UV TREATMENT SYSTEM LISTED BY UNDERWRITERS LABORATORIES FOR RESIDENTIAL APPLICATIONS.

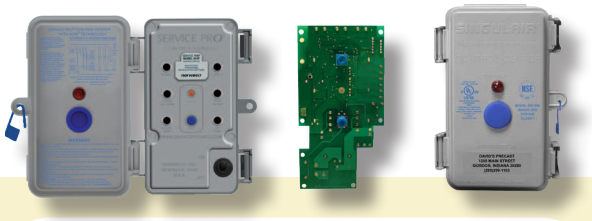
Consider the facts:

- The Hydro-Kinetic FEU system meets or exceeds regulatory standards and is performance certified and listed by NSF International to Standards 40 and 245. The system achieved an astounding effluent quality of 2.1 mg/L CBOD, 1.8 mg/L TSS and 7.95 mg/L TN.
- The system produced these unmatched effluent results while being tested for 12 continuous months without service. The Hydro-Kinetic system passed two consecutive 6 month tests with flying colors, including duplicate multi-stress sequences.
- We have engineered the Model A100 air pump to maximize operational efficiency and increase service life. It requires minimal electricity to operate and utilizes a standard 115V power connection. Multiple air pump mounting locations are available.
- The Model SD103 recirculation pump features a ⅓ horsepower electric motor that is securely mounted in an oil-filled, watertight, corrosion resistant housing with lubricated ball bearings to assure long life. The recirculation pump features a 2" discharge connection.
- The Hydro-Kinetic Bio-Film Reactor provides final treatment of the wastewater to a near pristine state. As liquid flows up through our proprietary attached growth filtration media, final polishing takes place insuring only the highest quality effluent is safely returned to the environment.

Unmatched Effluent Results



- 70-hour retention in the Hydro-Kinetic system insures adequate exposure to all treatment processes and reduces pumping frequency as compared to smaller capacity systems.
- Our patented non-mechanical flow equalization device guarantees that all incoming wastewater is fully treated, regardless of heavy use periods.
- All flow is equalized an average of 50% at the NSF Standard 40/245 600 GPD (gallons per day) design loading pattern.
- Durable, reliable components are safely installed out-of-sight below grade. No exposed power cords or air lines that are above ground.
- Your local licensed Norweco distributor sells, installs and services your Hydro-Kinetic system with pride. You'll find their name and contact info conveniently posted on the system's control center.



SERVICE PRO® Model 801P

EVERY SYSTEM COMES WITH THE SERVICE PRO MODEL 801P CONTROL CENTER THAT USES MCD TECHNOLOGY TO PROVIDE MONITORING, COMPLIANCE AND DIAGNOSTIC FUNCTIONS FOR THE TREATMENT SYSTEM. EACH CONTROL CENTER INCLUDES A TIME CLOCK, ALARM LIGHT, RESET BUTTON, POWER SWITCH, POWER LIGHT, PHONE/NETWORK LIGHT, RECIRCULATION PUMP ALARM, AIR PUMP ALARM, HIGH WATER ALARM AND ADDITIONAL AUXILIARY COMPONENT INPUT.

Blue Crystal® Residential Disinfecting Tablets and Bio-Max® Dechlorination Tablets

PURE CALCIUM HYPOCHLORITE TABLETS FORMULATED FOR USE IN RESIDENTIAL SYSTEMS, BLUE CRYSTAL TABLETS CONTAIN 70% AVAILABLE CHLORINE TO PROVIDE EFFICIENT, RELIABLE DISINFECTION. BIO-MAX TABLETS PROVIDE A CONVENIENT SOURCE TO INSTANTLY REMOVE CHLORINE FROM WASTEWATER, POTABLE WATER AND PROCESS WATER. EACH TABLET CONTAINS 92% SODIUM SULFITE.





Norweco distributors are located throughout the United States and much of the rest of the world. Research, product development, manufacturing, marketing and sales support are conducted inside our offices and factory in Norwalk, Ohio USA. Everyone at Norweco is committed to shaping the future of our industry.

engineering the future

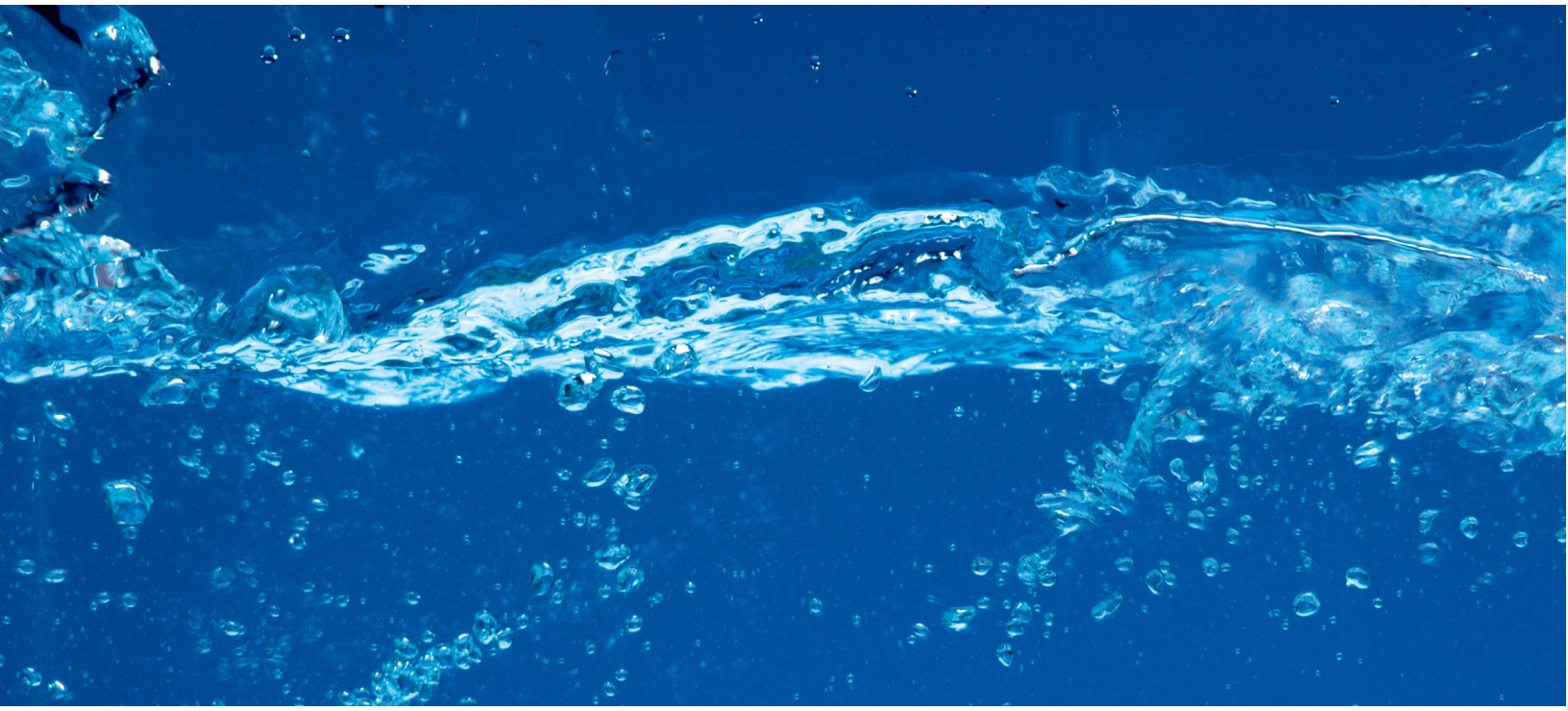
of water and wastewater treatment

Specify Hydro-Kinetic®

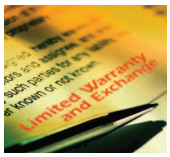
As a designer, choosing to incorporate the Hydro-Kinetic system in your project will insure that you achieve successful treatment while offering outstanding quality and reliability. At the same time, the reputation of your company will be protected for years to come. Your local Norweco distributor is fully trained to assist you in the design, installation and operation of a Norweco Hydro-Kinetic FEU (Flow Equalized Upflow) system.

As a homeowner, getting the highest quality product is essential. The Hydro-Kinetic system arrives to the jobsite complete, including delivery, tank setting, equipment installation, plant start-up and service. A series of service and adjustment inspections are prescheduled for the first two years of operation at the time your system is installed. These inspections are included in the sale so that your system continues to perform at the highest level to protect you and your investment. Extended service contracts are also available from your local Norweco distributor.

Today's Answer for the Protection of Tomorrow's Environment



comprehensive protection, guaranteed



The Hydro-Kinetic wastewater treatment system, Service Pro control center, and all Norweco components are warranted against defects in material and workmanship under normal use and service by our comprehensive 2 year Limited Warranty. A Warranty Registration Card and Owner's Manual are included with purchase. Warranty information is detailed on the back page of the Hydro-Kinetic System Owner's Manual.

Other Products

Singulair® Wastewater Treatment Plants
FOR RESIDENTIAL APPLICATIONS

Modulair® Wastewater Treatment Plants
FOR SEMI-COMMERCIAL APPLICATIONS

Travalair® Wastewater Treatment Plants
FEATURING AUTO SLUDGE AND SKIMMER SYSTEM

norweco®

Engineering the future of water and wastewater treatment

220 Republic Street
Norwalk, Ohio, U.S.A. 44857-1156
PH: 419.668.4471
FAX: 419.663.5440
www.norweco.com

The Hydro-Kinetic system components are listed, licensed, and/or certified by each of the following agencies/organizations.

CAN/BNQ 3680-600 2406 NQ 3680-910 2783

Progress Through Service Since 1906

We engineer, manufacture, install, and maintain advanced water and wastewater treatment technologies for residential properties, communities, and commercial properties that are not connected to sewer lines. Norweco treatment systems are in service all over the world.

norweco®

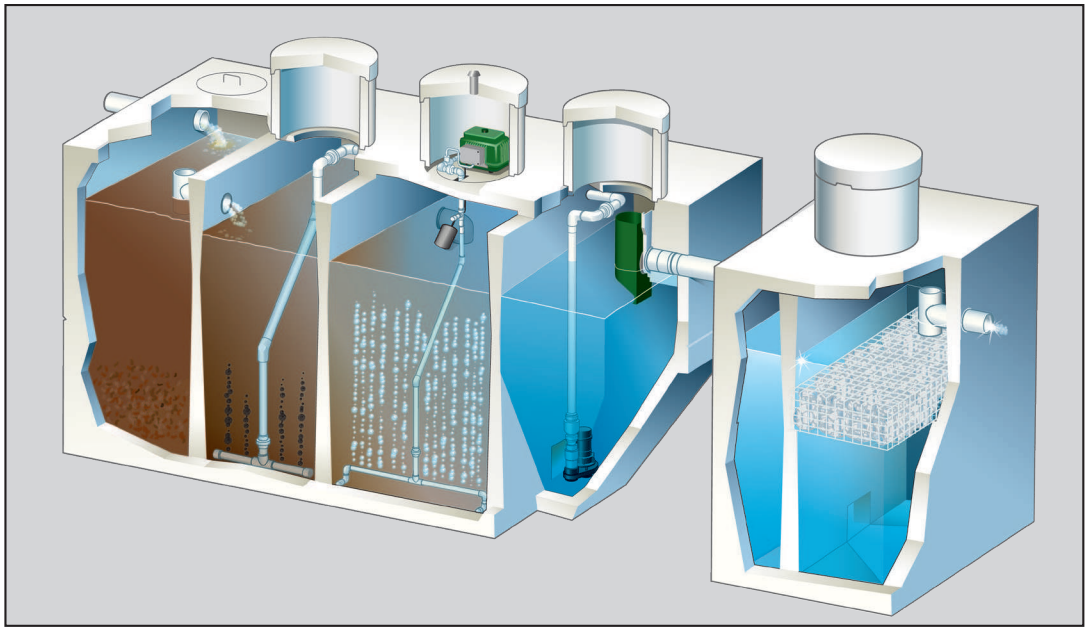
HYDRO-KINETIC®

WASTEWATER TREATMENT SYSTEM
MODEL 600 FEU

SPECIFICATIONS

GENERAL SPECIFICATIONS

The contractor shall furnish and install one complete Hydro-Kinetic wastewater treatment system with all necessary parts and equipment as described in the following specifications. Treatment of the domestic wastewater shall be accomplished by the extended aeration process with non-mechanical flow equalization, pretreatment of the influent and filtration of the final effluent. The treatment system shall provide primary, secondary and tertiary treatment of the wastewater flow, denitrification, and if required, chlorination/dechlorination or ultraviolet disinfection of the effluent prior to discharge. All treatment processes shall be contained within reinforced precast concrete tankage meeting the requirements of ACI Standard 318. The wastewater treatment system shall be a Hydro-Kinetic Model 600 FEU as manufactured by Norweco, Inc., Norwalk, Ohio, USA.



The wastewater treatment system shall include precast concrete tankage providing separate pretreatment, anoxic, aeration, clarification and final filtration chambers. The tankage shall be furnished with cast-in-place inlets, submerged transfer ports, access risers with removable covers, cast-in-place molded plastic vent assembly, cast-in-place clarification outlet coupling and cast-in-place outlet tee. Principal items of electro-mechanical equipment supplied with the Hydro-Kinetic system shall be a Model A100 air pump, Model SD103 recirculation pump, UL Listed Service Pro Model 801P electrical control center with MCD technology, flow equalization device and Hydro-Kinetic FEU filter for final filtration of system effluent.

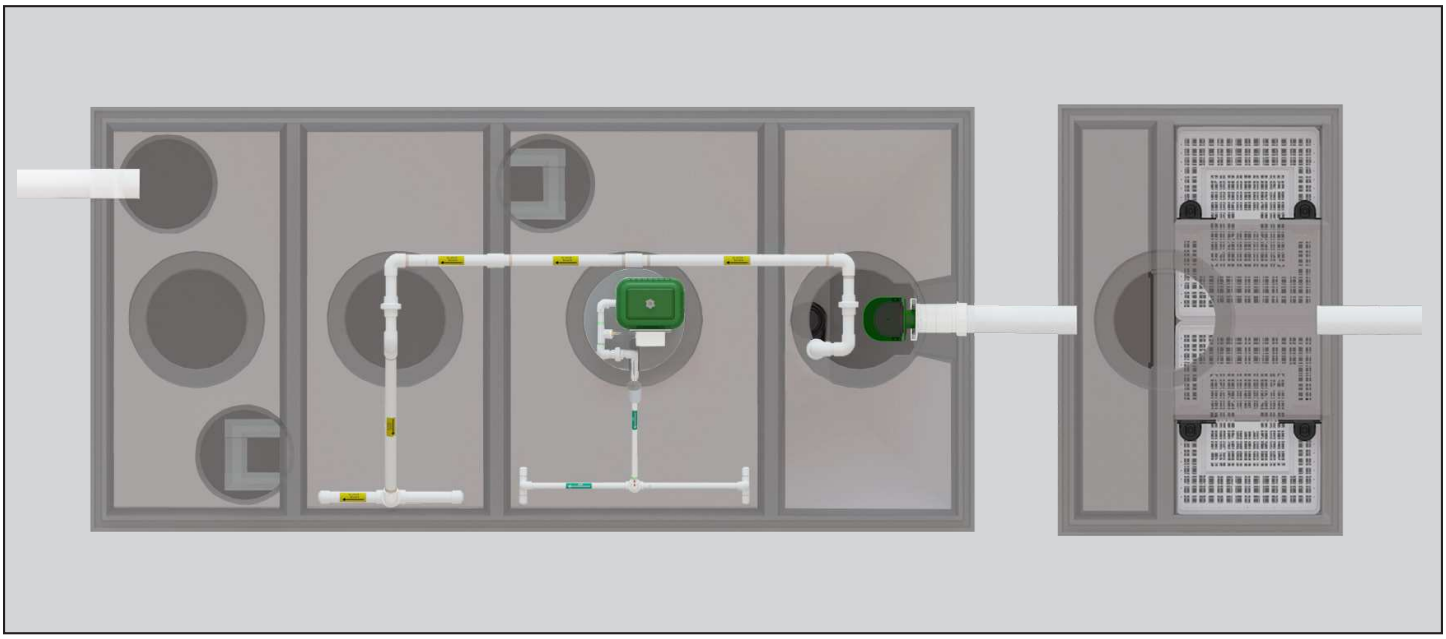
HYDRO-KINETIC®

OPERATING CONDITIONS

Total holding capacity of the system shall provide a minimum of 70 hour retention of the daily flow. The pretreatment chamber shall provide at least 15 hour retention, the anoxic chamber shall provide at least 15 hour retention, the extended aeration chamber shall provide at least 21 hour retention, the clarification chamber shall provide at least 7 hour retention and the Hydro-Kinetic filter shall provide at least 12 hour retention of the daily flow. The non-mechanical flow equalization device shall increase individual chamber and total system retention time in direct proportion to loading. Design of the system shall include a compartmented tank and non-mechanical flow equalization device to insure successful treatment performance without upset even when the significant runoff period is six hours. Hydraulic design considerations of the system and flow equalization device shall be such that intermittent peak flow factors as high as four shall not upset hydraulic reliability within the system. Capability of the system to perform as outlined, when built by an approved manufacturer, shall be certified by an independent testing laboratory and approved for use by the local governing regulatory agency.

PRETREATMENT CHAMBER

All domestic wastewater shall be preconditioned while passing through the pretreatment chamber prior to being introduced to the anoxic chamber. The outlet of the pretreatment chamber shall be equipped with a discharge tee that extends vertically into the liquid so that only the preconditioned flow from the center area of the chamber is displaced to the anoxic chamber. The discharge tee and transfer port shall be of adequate size to handle a peak flow factor of four without restricting the outlet and disturbing hydraulic displacement to the anoxic chamber. A removable inspection cover shall be cast into the top of the pretreatment chamber to allow tank and transfer tee inspection. As a safety measure, the uncovered opening shall be small enough to insure that the tank cannot be entered for inspection or service.



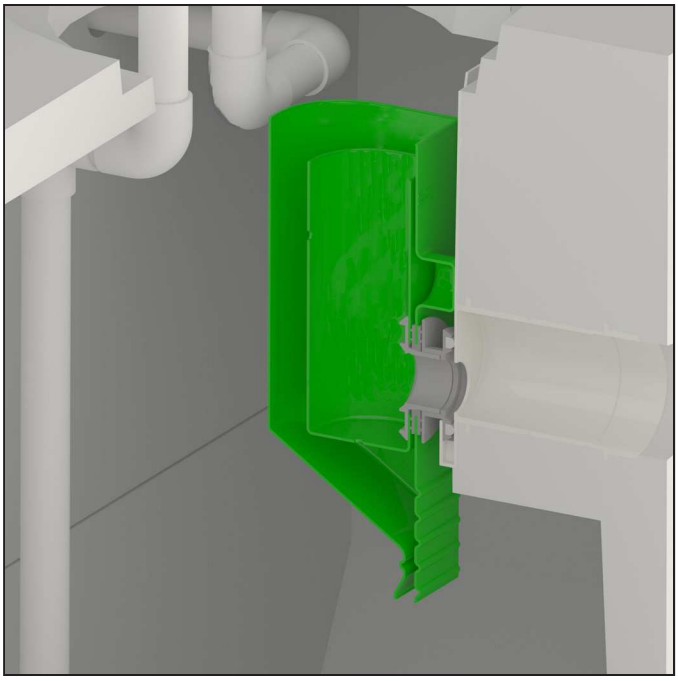
ANOXIC CHAMBER

The anoxic chamber shall provide in excess of 15 hour retention of the equalized daily flow. In the anoxic chamber, low oxygen levels shall compel facultative heterotrophic bacteria to use nitrate-bound oxygen in their respiratory process. Nitrified liquid from the clarifier shall enter the chamber in measured doses and nitrogen compounds shall be converted to harmless nitrogen gas which shall escape into the atmosphere. Overall design of the chamber shall insure that effective mixing and suspension of the biomass is maintained in an anoxic condition to insure consistent biological denitrification. Systems that have not been performance certified to reduce Total Nitrogen (TN) to less than 10 mg/L shall not be considered for this application.

AERATION CHAMBER

The extended aeration chamber shall provide in excess of 21 hour retention of the equalized daily flow. The chamber shall be of sufficient size to provide a minimum of 80 cubic feet of tank capacity per pound of applied BOD. The aeration chamber length-width-depth ratio shall be designed to insure uniform tank mixing and provide optimum treatment. The aeration chamber(s) shall be an integral part of the system flow path and constructed of properly reinforced 5,000 PSI, 28 day compression strength precast concrete. All castings used to construct the precast concrete tankage shall be monolithic units with external and internal walls incorporated into each section.

FINAL CLARIFICATION CHAMBER



The final clarification chamber shall consist of 5 functionally independent zones operating together to provide satisfactory settling and clarification of the equalized flow. An inlet zone shall be provided and shall dissipate transfer turbulence at the flow inlet of the clarification chamber. A recirculation pump in the settled sludge zone shall transfer a portion of the wastewater back to the anoxic chamber. Liquid is then displaced into the hopper zone of the clarifier. In this zone, settling by gravity takes place. Three of the four sidewalls are slanted to form a hopper which directs all settled material back to the settled sludge zone. Clarified liquid from the hopper zone shall be displaced into the final settling zone to provide additional clarification of the liquid. The liquid is finally displaced to the outlet zone where the treated effluent shall pass through the flow equalization device and be discharged from the final clarification chamber.

FLOW EQUALIZATION DEVICE

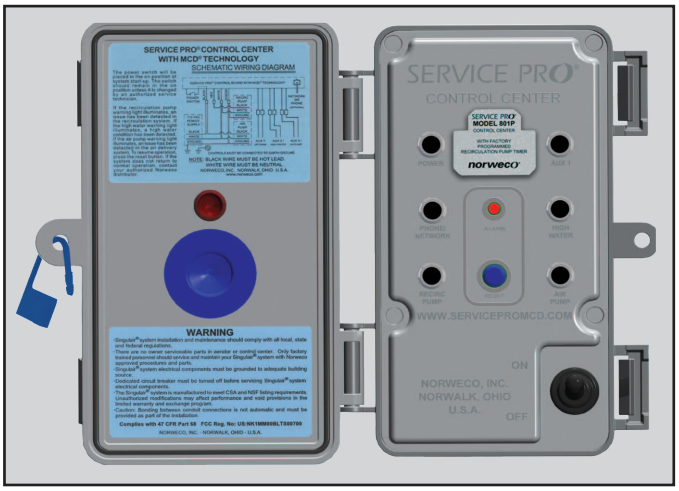
The system shall include a non-mechanical, demand use, flow equalization device. The device shall be installed with the design flow equalization port located below the normal liquid level of the clarifier. If intermittent flow rates exceed the capacity of the design flow port, flow shall be held upstream until the intermittent flow dissipates. If the intermittent flow continues to increase, the liquid level may reach a sustained flow equalization port. With both ports in use, flow through the system increases while continuing to provide flow equalization to upstream and downstream processes. A peak flow equalization port is supplied but should not be required in a properly sized system. The device shall control normal residential flow rates and reduce typical residential flow surges. The flow equalization rate shall be dependent upon the specific loading pattern and the duration of flow surges. At the 600 GPD (gallons per day) NSF Standard 40/245 design loading schedule, minimum performance of the device shall equalize daily flow an average of 50%.

HYDRO-KINETIC® FILTER

Significant reduction of organic matter shall occur in the treatment system prior to the Hydro-Kinetic filter. This Bio-Film reactor shall provide final treatment of the effluent to a near pristine state. Flow equalized liquid from the clarifier shall enter the influent chamber, travel down and be evenly distributed beneath the filtration media. The effects of gravity shall cause solids to settle to the bottom of the tank. As liquid travels up through the proprietary attached growth media, further reduction of organic matter shall take place. Additional settling and consolidation of solids shall take place downstream of the filter media. After passing through the filtration media for final polishing, the highly treated liquid shall flow into the final effluent zone before exiting the Hydro-Kinetic filter through the outlet tee.

MODEL 600 FEU

SERVICE PRO® MODEL 801P ELECTRICAL CONTROL CENTER



The Model 801P control center with MCD technology shall provide Monitoring, Compliance and Diagnostic functions for the treatment system. The pre-wired controls shall be mounted in a lockable NEMA rated enclosure designed specifically for outdoor use. The control center shall be a UL Listed assembly and shall include a time clock, alarm light, reset button, power switch, power light, phone/network light, recirculation pump light, air pump light, high water light and auxiliary alarm light. A pre-programmed time clock shall control the recirculation pump to insure that approximately 400% of the average daily flow is returned to the anoxic chamber. The control center shall monitor recirculation pump current, air pump operation, high water and auxiliary alarm circuitry. In the event of an alarm from the air pump or auxiliary input, the audible and visual alarms shall activate and the optional telemetry system shall report the condition. If abnormal operation of the recirculation pump is detected, a diagnostic sequence shall begin and the visual alarm shall activate. After a factory programmed recovery interval, an automatic restart attempt shall be initiated. If normal pump operation does not resume during 24 programmed recovery and restart cycles, the audible alarm shall activate and the optional telemetry system shall report the condition to the Service Pro monitoring center.

SERVICE PRO® MONITORING CENTER

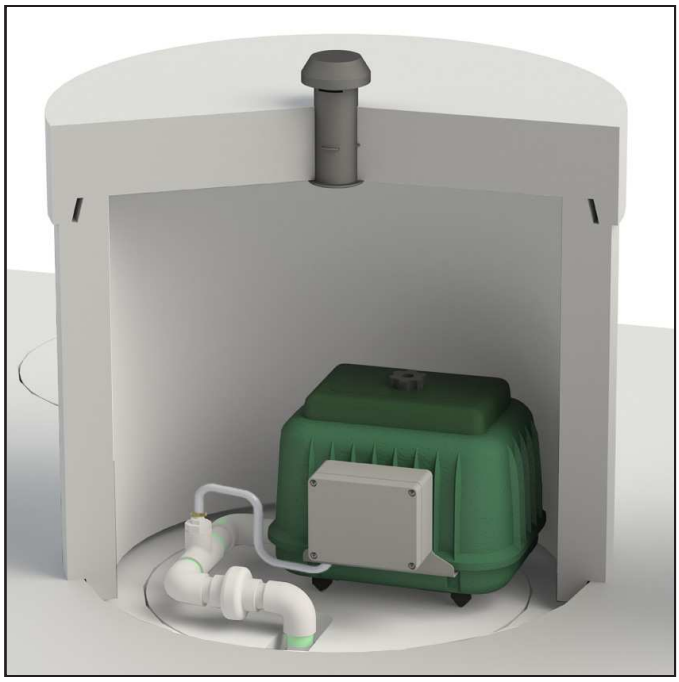
The Service Pro monitoring center shall include a 256 bit encrypted password protected website for interface with the monitoring center database. Access to the secure website shall be obtained through a unique user name and password that provides tiered access to data from monitored treatment systems. Access level tiers shall include distributors, service providers, regulatory agencies and individual system owners. Distributors and service providers shall be able to create accounts, enter serial numbers for system equipment, maintain service records and grant regulatory agencies access to the information. The monitoring center shall have the capability to schedule future service inspections and provide notification. Individual system owners shall be able to view information regarding their own systems, as well as download instructional information. Integrity of stored data shall be maintained through the use of multiple servers operating in geographically isolated locations.

MODEL AT 1500 ULTRAVIOLET DISINFECTION SYSTEM (Optional)

The Hydro-Kinetic system shall be furnished complete with a Model AT 1500 ultraviolet disinfection system. The AT 1500 system shall incorporate a turbulence inducer and dual-pass design to insure pathogenic organisms receive maximum exposure to the ultraviolet light source. Effluent fecal coliform concentrations shall be consistently reduced to less than 200 mg/L. The ultraviolet disinfection system shall be UL Listed under Standard 979 as a residential treatment device and shall include a disinfection chamber, turbulence inducer, extension riser, quartz tube, Teflon cover, ultraviolet bulb and controls. An interlock switch shall be furnished to automatically disable the ultraviolet light source when the disinfection chamber is accessed. Ultraviolet disinfection systems without a residential UL Listing and an interlock switch have not demonstrated compliance with international electrical standards for safety and reliability and shall not be considered for this application.

SPECIFICATIONS

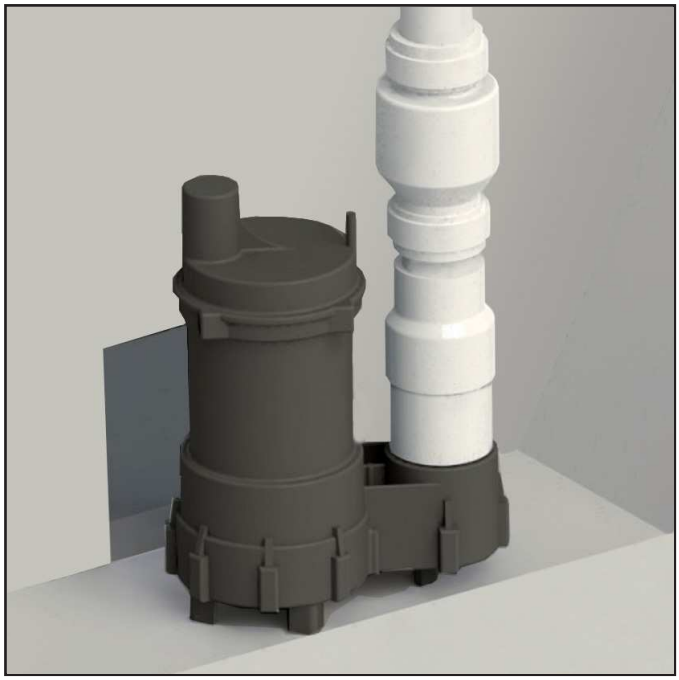
CERTIFIED PERFORMANCE



The wastewater treatment system shall be certified to operate for 12 consecutive months at the rated daily capacity without routine service. This performance shall be demonstrated by a continuous 12 month evaluation performed by an independent ANSI accredited, third-party testing facility. The evaluation shall consist of 2 consecutive ANSI/NSF Standard 40 and 245 evaluations back-to-back, including the stress sequences, with no maintenance allowed in between. When the first six-month evaluation is complete, the second full six-month evaluation shall immediately begin. For the entire certification protocol, the system shall achieve a total test average for the consecutive 12 month period of less than 5 mg/L Biochemical Oxygen Demand (CBOD), less than 5 mg/L Total Suspended Solids (TSS), and less than 10 mg/L Total Nitrogen (TN) in the effluent. Systems unable to meet these effluent quality parameters for at least 12 months of continuous testing by an independent ANSI accredited, third-party testing facility without service do not provide the desired level of effluent quality or service frequency, and shall not be considered for this application.

MODEL A100 AIR PUMP

The Model A100 air pump shall be configured to allow remote mounting or installation within the access riser above the aeration chamber. When installed in the access riser, fresh air shall enter through a molded plastic vent assembly or integral perimeter vent in the access cover above the air pump. Fresh air shall enter the air pump through a filter located under the housing cover and be introduced below the liquid surface through a prefabricated diffuser assembly. Only the plastic diffuser assembly and the air piping shall be installed in contact with the liquid. The Model A100 air pump shall be wired for 115 volt, single phase, 60 cycle operation. The air pump shall include impact-resistant rubber diaphragms and valves which prolong operational life. The unique design and construction shall provide easy maintenance, excellent cooling and quiet operation. The air pump shall continue aerating and mixing the aeration chamber even during high water conditions. Treatment systems that interrupt air delivery during high water conditions disrupt biological activity and shall not be considered for this application.



MODEL SD103 RECIRCULATION PUMP

The Model SD103 submersible recirculation pump shall be wired for 115 volt, single phase, 60 cycle operation and shall be installed in the clarification chamber. The pump motor shall be ⅓ horsepower, operating at 3000 RPM. All openings in the flow path of the recirculation pump shall be of sufficient size to permit the passage of a ¾" diameter sphere. The pump shall be designed to be non-overloading throughout the entire pump curve and shall draw less than 7 full load amps. The pump motor shall contain moisture resistant windings and shall be securely mounted inside an oil-filled, watertight housing for maximum pump life. The stator housing and casing shall be of high grade cast iron or thermoplastic construction.

BLUE CRYSTAL® CHLORINATION SYSTEM (Optional)

The Hydro-Kinetic system shall be furnished complete with a tablet feeder and a six month supply of Blue Crystal disinfecting tablets. Blue Crystal tablets shall be specifically formulated for consistent chlorine dosage and effluent disinfection to the sustained, variable and intermittent flows that are typical of domestic wastewater treatment systems. The tablets shall be manufactured from pure calcium hypochlorite and contain a minimum of 70% available chlorine. Each tablet shall be 2⅝" diameter, compressed to a 1" thickness, weigh approximately 5 ounces and be white in color with blue crystals for easy identification. The tablets shall dissolve in direct proportion to the flow rate, releasing controlled amounts of chlorine.

BIO-MAX® DECHLORINATION SYSTEM (Optional)

The Hydro-Kinetic system shall be furnished complete with a tablet feeder and a six month supply of Bio-Max dechlorination tablets. The dechlorination tablets shall contain 92% sodium sulfite as the active ingredient and shall be specially formulated to chemically neutralize both free and combined chlorine. Each tablet shall be 2⅝" diameter, compressed to a 13⁄16" thickness, weigh approximately 5 ounces and be green in color for easy identification. The tablets shall dissolve slowly, releasing controlled amounts of chemical for the instantaneous removal of residual chlorine from the system effluent.

LIMITED WARRANTY

The wastewater treatment system shall be covered by a two year limited warranty. The Model A100 air pump, Model SD103 recirculation pump, Service Pro Model 801P control center and any other Hydro-Kinetic components purchased from the manufacturer shall be warranted to be free from defects in material and workmanship, under normal use and service, for a period of two years from the date of purchase. A warranty registration card shall be attached to the system before shipment from the factory. A means to register the wastewater treatment system for warranty protection via the internet shall be provided by the manufacturer for the convenience of the distributor, customer and regulatory agency. The distributor shall provide details of the limited warranty to the regulatory agency, contractor and customer as required.

EQUIPMENT MANUFACTURER

The equipment specified herein shall be the product of a manufacturer having a minimum of seven years experience in the construction of prefabricated wastewater treatment equipment and systems. Bids shall be prepared on the basis of the equipment and material specified herein for purposes of determining the low bid. This is not done, however, to eliminate other products or equipment of equal quality and efficiency. If equipment is to be substituted, approval of such substitution must be made prior to execution of any order. It is assumed that substitution will result in a reduction of cost to the contractor and that if accepted, these savings will be passed along by a reduction in the base bid.

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