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December 20, 2024

PH4979-LET.01

Air Rock Drilling Company Ltd.
6659 Franktown Road
Ottawa (Richmond), Ontario
K0A 2Z0

Attention: **Jeremy Hanna**

Subject: **Scoped Hydrogeological Assessment and Terrain Analysis**
Proposed Re-Zoning and Site Plan
6659 Franktown Road, Ottawa (Richmond), Ontario

INTRODUCTION

Further to your request, Paterson Group (Paterson) has conducted a Scoped Hydrogeological Assessment and Terrain Analysis in support of a Re-zoning Application and Site Plan Control Application for the proposed Zoning By-law Amendment and retroactive Site Plan approval of the property at 6659 Franktown Road in Ottawa (Richmond), Ontario. Please refer to the Key Plan (attached) for the approximate site location. The subject site refers to the parcel at 6659 Franktown Road. This report is a scoped assessment based on discussion with the City reviewer and uses available information for a lot severance application using the existing well at the subject site. The severance application was approved with the Gemtec Report No. 101638.001 “Hydrogeological Investigation & Terrain Analysis”, dated Aug 11, 2022 (City Application numbers D08-01-21/B-00171 & D08-01-21/B-00172).

The purpose of this work has been to re-affirm the quality of the water supply aquifer underlying the site in accordance with the Ontario Ministry of Environment, Conservation and Parks (MECP) Procedure D-5-5 and septic impact assessment to support the Re-zoning and Site Plan Application for the subject site.

The Subject Site consists of a 40.2 hectares (ha) lot and is currently occupied by a residence and home-based business for water well drilling with associated private infrastructure located at the southeast end of the property. The majority of the property is undeveloped. The ground surface at the subject site is generally flat with a slight slope from northwest to southeast towards Franktown Road.

The general groundwater flow is anticipated to be towards the southeast with localized flow variations expected.

The Subject Site is situated in a rural area which is serviced by private water supplies and private on-site septic fields. The site is bordered to the northwest by treed areas, to the northeast by residential properties followed by agricultural lands, to the southwest by residential properties and undeveloped lands, and to the southeast by Franktown Road followed by a commercial property and undeveloped lands.

The south end of the subject site and surrounding lots are zoned as RU for Rural Countryside Zone which allows for home-based businesses, while the treed area in the northwest portion of the lot is zoned as EP3 for Environmental Protection Zone Type 3. The area directly southeast of the subject site is zoned as RI for Rural Institution.

Description of Subject Site

The subject site is approximately 40.22 ha in size and is currently occupied by a two-storey residential dwelling and home-based business for well drilling. The Site Plan application is to retroactively provide site plan approval for the existing development. There are no changes to the existing use or to water usage anticipated as part of this Site Plan application. Please refer to Figure-1 Key Plan and Site Plan Drawing P1, dated July 11, 2022 by FOTENN, attached, for the subject site location and layout.

The subject site is currently serviced by two onsite sewage systems and private drilled wells. The existing site usage requires limited water capacity and the proposed site usage is being maintained within the historical site use. Therefore, there is no change in the private service capacity for this application. The existing residence has a sewage system capacity of 1,725 L/day per the approved OSSO Certificate of Compliance. A new sewage system is proposed for the home-based business to comply with Part 8 – Ontario Building Code (OBC). A septic flow calculation was completed by Paterson and resulted in a total daily water demand calculation of 2,700 L/day from a combined 1,725 L/day from the residential building and 975 L/day from the business. Please refer to Paterson Sewage System design PH4979-1 and PH4979-2, attached, for full details.

As part of this study, the water supply well was inspected and confirmed to be O.Reg.903 compliant.

Karst Mapping

Available Karst mapping (OGS GRS005) was reviewed as part of this assessment. The available mapping does not indicate the presence of any inferred or potential karstic features. Furthermore, no indication of karstic features were observed during the site visits completed by Paterson personnel.

Mississippi-Rideau Source Protection Plan

The Mississippi-Rideau Source Protection Plan (MPSPP) provides guidance as to which policies apply to a given property, municipality or specific activity and if there are specific designations that apply to the area. The subject site has been designated three of the four groundwater related vulnerable areas identified within the Clean Water Act (2006), specifically; as a Wellhead Protection Area (WHPA), a Significant Groundwater Recharge Area (SGRA), Highly Vulnerable Aquifer (HVA). The four vulnerable areas consist of Significant Groundwater Recharge Area (SGRA), Highly Vulnerable Aquifer (HVA), Intake Protection Zone (IPZ) and Wellhead Protection Area (WHPA).

The subject site has been designated as a WHPA-B, SGRA, and HVA. The WHPA-B is scored a value of 6. This rating prohibits the storage of Dense Non-aqueous Phase Liquids (DNAPLs) and a Risk Management Plan is required for the storage of Liquid Fuels, which Air Rock has completed with the Risk Management Official with the City of Ottawa. There are no current outstanding comments related to Source Water Protection. The existing site usage pre-dates the municipal supply wells constructed for the Fox Run development and surrounding area with associated extensive modeling and approvals.

HYDROGEOLOGICAL ASSESSMENT

The purpose of this work has been to determine the suitability of the water supply aquifer underlying the site to support the Site Plan Application to maintain the existing usage of the aquifer. Specifically, the intent of this report is to review the availability of a safe and reliable water supply having sufficient quantity and quality to continue providing potable water for the proposed redevelopment. The area is known to have access to bedrock aquifers with good quality and quantity as evidenced by the municipal wells in the area and historical test results by others.

Fieldwork Program

Geotechnical Program

A geotechnical investigation was carried out May 5, 2022 by others on adjacent properties in support of two lot severances, and consisted of a total of five test pits excavated to a maximum depth of 4.5 m below ground surface (bgs). The test pits were distributed in a manner to provide general coverage of the associated lot severances, taking into account underground utilities and site features.

Paterson completed a sewage system design for the existing home-based business. Paterson drawings PH4979-1 and PH4979-2 are attached and denote soils information in the southeast portion of the site with three hand auger holes.

Well Testing

As a means to demonstrate the adequacy of the aquifer underlying the subject lands, with respect to water quality and quantity, the existing drilled well (TW22-1 as referenced by others), hereafter referred to as TW22-1, on the subject site was tested. TW22-1 has a Water Well Record (WWR) Well ID of A079370. TW22-1 has a 150 mm diameter steel casing that extends to 7.9 m below ground surface (bgs) with a 0.60 m stick up. The well itself extends to a depth of 73.5 m bgs. Based on available geological mapping, the drift thickness at TW22-1 varies from 3 to 15 m. According to the Water Well Record (WWR) for the drilled well, the overburden generally consists of sand to a depth of 6.1 m, where limestone bedrock was encountered. Refer to the report by others for the approximate location of TW22-1.

As a means to evaluate the water supply aquifer intercepted by the well, the well was subjected to a 6-hour constant rate pumping test in support of the severance application. The pumping test was conducted on March 14, 2022 by others. The pumping test was carried out at a pumping rate of 104 L/min for a duration of 6 hours. Water level and flow rate measurements were taken at regular intervals throughout the pumping test. The pumping test withdrew a total volume of approximately 37,440 L. The volume of the test significantly exceeds the required daily sewage system flows for the residence and home-based business (1,725 L/day for the residence and 975 L/day for the business). This is approximately 13.9 times the theoretical daily flows.

Recovery data was collected from the well following the completion of the pumping by others. The well was noted to have fully recovered within 5 minutes after the end of pumping.

Groundwater samples were collected by others in accordance with MECP Procedure D-5-5 and City of Ottawa HTAG in support of the previously approved severance application.

Paterson returned to site on December 10, 2024 to obtain an additional water sample from the same water spigot sampled January 20, 2022. The spigot was sanitized and purged for 15 minutes before sampling. Field measurements including pH, total dissolved solids, conductivity, turbidity, apparent colour, and temperature were measured prior to sampling until stabilized. The water sample was submitted for comprehensive testing of bacteriological, chemical, and physical water quality parameters consistent with the standard “Subdivision Supply” suite of parameters and trace metals. The sample was placed immediately into a cooler with ice and transported directly to Eurofins Environmental Laboratory in Ottawa. A Phase II ESA investigation was completed by others and noted that no regulatory exceedances were found in the groundwater (exp Report – Phase Two Environmental Site Assessment – Project OTT-00243705-B0 dated August 11, 2023)

Well Inspection

A visual inspection of TW22-1 was performed by others and confirmed that the well is in good condition and met O.Reg. 903 minimum casing requirements. The existing well was considered to be technically representative of future supply wells and the severance application was approved by the City. Paterson agrees with the assessment and considers the well to meet requirements for this application.

Aquifer Analysis

Water Quantity

Drawdown data was measured using an electronic water level tape and an electronic datalogger unit.

Table 1: SUMMARY OF WATER SUPPLY AQUIFER CHARACTERISTICS OF TW22-1 by OTHERS

AQUIFER PARAMETER	RESULT OF ANALYSIS
Pumping Rate (L/min)	104
Pre-test Static Water Level (m)	2.6
Post-test Static Water Level (m)	2.8
Available Drawdown (m)	70.9
% Drawdown During Pump Test (%)	0.3
Specific Capacity (L/min/m drawdown)	520

The pumping test results show that TW22-1 has a high yield to support the water demands that significantly exceeds the existing and historical use. Overall maximum drawdown at a constant pumping rate for a period of 6 hours was approximately 0.2 m (0.3% of the available drawdown). It should be noted that full recovery was achieved within 5 minutes after the end of pumping.

The total volume of water pumped during the 6-hour pumping event was approximately 37,440 L. This is approximately 13.8 times the maximum total daily design volume of water required (2,700 L/day) to support the existing development. In addition to water use for domestic usage, water is also used to fill trucks for use while drilling. This amounts to approximately 20,000 L per day. This results in a total approximate daily usage of 22,700 L/d. The total pumped in the 6-hour pumping test was approximately 1.7 times the anticipated maximum daily water demand. It should be noted that pumping this amount resulted in a drawdown of 3% which recovered within 5 minutes.

The suitability of the aquifer to supply the Re-Zoning and Site Plan Application for the existing site usage was assessed using a scoped methodology provided in discussion with the City of Ottawa and based on the Hydrogeological and Terrain Analysis Guidelines (HTAG).

Based on the information summarized in Table 1, it is readily apparent that the water supply well has intercepted an adequately strong water supply aquifer which has sufficient quantity to continue to service the existing usage and has adequately serviced the site for an extended period of time.

Given the analyses presented and summarized above, it is our opinion that there is an adequate supply of water to support the proposed redevelopment as well as the neighbouring lots. Available water well records (WWR) of the neighboring properties on the MECP Well Record mapping website indicated that the wells were screened in limestone and sandstone. Surrounding WWR's are attached to this report.

Water Quality

Field Data

Turbidity, electrical conductivity, total dissolved solids (TDS), pH, apparent color and temperature were measured at the wellhead during the pumping test by others and by Paterson for the subsequent quality sampling. No chlorine residual was detected in the discharge water prior to the collection of the water samples as reported by others and for the Paterson sample.

Laboratory Data

A sample was taken from an outdoor spigot of the residential dwelling on January 20, 2022 by others. The Subdivision Package suite of parameters and heavy metals laboratory water quality obtained from the pumping test by others on March 14, 2022 from TW22-1 is appended to the report.

Paterson visited site on December 10, 2024 to obtained an additional sample to confirm water quality. The sample was taken after sanitizing the spigot and running the tap for 15 minutes. The laboratory results can be found below in Tables 2a and 2b. The laboratory results indicate that the water quality is consistent between the 2022 and 2024 sampling events.

TABLE 2a: GROUNDWATER MICROBIOLOGY & GENERAL GEOCHEMISTRY				
PARAMETER	UNITS	ODWS		TW1
		LIMIT	TYPE	TW22-1 12/10/2024
MICROBIOLOGICAL				
Escherichia Coli (E.Coli)	ct/100mL	0	MAC	0
Total Coliforms	ct/100mL	0	MAC	0
GENERAL CHEMICAL - HEALTH RELATED				
Fluoride (F)	mg/L	1.5	MAC	0.46
Ammonia ($N\text{-}NH_3$)	mg/L	-	-	0.09
Nitrite ($N\text{-}NO_2$)	mg/L	1	MAC	<0.1
Nitrate ($N\text{-}NO_3$)	mg/L	10	MAC	<0.1
Total Kjeldahl Nitrogen	mg/L	-	-	0.25
Turbidity (Field)	NTU	1.0 (5.0)	MAC/AO	0.88
Turbidity (Laboratory)	NTU	1.0 (5.0)	MAC/AO	1.1
GENERAL CHEMICAL - AESTHETIC RELATED				
Alkalinity (as CaCO3)	mg/L	30-500	OG	256
Chloride (Cl)	mg/L	250	AO	49
Colour (Apparent - Field)	TCU	5	AO	0
Colour (Apparent - Lab)	TCU	5	AO	9
Conductivity	uS/cm	-	-	671
Dissolved Organic Carbon	mg/L	5	AO	2.4
Hardness (as CaCO3)	mg/L	100	OG	282
Ion Balance	%	-	-	97
pH@25°C	unitless	6.5-8.5	AO	7.7
Phenols	mg/L	-	-	<0.001
Sulphate (SO_4)	mg/L	500	AO	41
Sulphide (S_2^-)	mg/L	0.05	AO	<0.01
Tannin & Lignin	mg/L	-	-	<0.1
Total Dissolved Solids	mg/L	500	AO	436

1. ODWS identifies the following types of parameters:
   MAC = Maximum Allowable Concentration
   AO = Aesthetic Objective
   OG = Operational Guideline
2. Shaded Concentration Indicates an Exceedance of the ODWS Objective

TABLE 2b: GROUNDWATER GEOCHEMISTRY - METALS				
PARAMETER	UNITS	ODWS		TW1
		LIMIT	TYPE	TW22-1 12/10/2024
METALS				
Aluminum (Al)	mg/L	0.1	OG	<0.001
Antimony (Sb)	mg/L	0.006	IMAC	<0.0005
Arsenic (As)	mg/L	0.01	IMAC	<0.001
Barium (Ba)	mg/L	1.0	MAC	0.08
Beryllium (Be)	mg/L	-	-	<0.0005
Boron (B)	mg/L	5.0	IMAC	0.15
Cadmium (Cd)	mg/L	0.005	MAC	<0.0001
Calcium (Ca)	mg/L	-	-	69
Chromium (Cr)	mg/L	0.05	MAC	<0.001
Cobalt (Co)	mg/L	-	-	<0.0002
Copper (Cu)	mg/L	1.0	AO	<0.001
Iron (Fe)	mg/L	0.3	AO	0.14
Lead (Pb)	mg/L	0.01	MAC	<0.001
Magnesium (Mg)	mg/L	-	-	27
Manganese (Mn)	mg/L	0.05	AO	<0.01
Mercury (Hg)	mg/L	0.001	MAC	<0.0001
Molybdenum (Mo)	mg/L	-	-	<0.005
Nickel (Ni)	mg/L	-	-	<0.005
Potassium (K)	mg/L	-	-	4
Selenium (Se)	mg/L	0.05	MAC	<0.001
Silver (Ag)	mg/L	-	-	<0.0001
Sodium (Na)	mg/L	200	AO	32
Strontium (Sr)	mg/L	-	-	2.47
Thallium (Tl)	mg/L	-	-	<0.001
Uranium (U)	mg/L	0.02	MAC	<0.001
Vanadium (V)	mg/L	-	-	<0.001
Zinc (Zn)	mg/L	5.0	AO	0.02

1. ODWS identifies the following types of parameters:
   MAC = Maximum Acceptable Concentration
   IMAC = Interim Maximum Acceptable Concentration
   AO = Aesthetic Objective
   OG = Operational Guideline
2. Shaded Concentration Indicates an Exceedance of the ODWS Objective

The bacteriological test results (Certificate of Analysis – Report No. 2205352; and 2212093) indicated that the test samples by others were non-detect (0 ct/100 mL) for

E.Coli and Total Coliforms. These values are consistent with Paterson's analysis with non-detect values found for the December 10, 2024 sample event.

The water quality of the subject water supply well meets all the Ontario Drinking Water Standards maximum acceptable concentrations (MAC) and has values consistent with the historical sampling by others. This shows that the available quality, which was approved by the City for the previous severance application, is consistent over an extended period of time. Furthermore, the water meets all of the Aesthetic Objectives (AO) and Operational Guidelines (OG) with the exception of the following.

- ❑ Hardness (as $CaCO_3$)
- ❑ Colour
- ❑ Turbidity

Exceedances of the above parameters are not uncommon for the water supply in the subject aquifer. Each of these groundwater parameters are discussed in detail below.

Hardness as $CaCO_3$

Hardness, expressed as calcium carbonate, is an operation guideline and does not appear in the ODWS. Rather, it appears in the Technical Support Documents for Ontario Drinking Water Standards, Objectives and Guidelines as a parameter with an operational guideline at 100 mg/L. At the measured concentration of 282 mg/L, the water is considered to be very hard, however, it is below the reasonable treatable limit of 500 mg/L specified in Table 3 of the MOECC guidance document Procedure D-5-5 (1996). The hardness concentration can be treated using conventional softening technologies, if desired by the owner. This value is consistent with the sample results by others.

Colour

Colour may occur in drinking water for several reasons. It may be due to organic substances from the decay of vegetation, or the presence of metals such as iron, manganese, and copper, which are abundant in nature. The provincial aesthetic objective for colour in drinking water is 5 True Colour Units (TCU). The federal (Health Canada) guideline aesthetic objective limit for colour is 15 TCU (Guidelines for Canadian Drinking Water Quality, Health Canada June 2019). Procedure D-5-5 gives a maximum concentration considered reasonably treatable for colour as 7 TCU.

During the field pumping test by others, apparent colour was measured in the groundwater to be <5 TCU. Whereas true colour and apparent colour from laboratory measurements was 2 and <2 TCU and 8 and 10 TCU, respectively. Furthermore, Paterson's sample in the field measured apparent colour of 0 TCU, while the laboratory reading was 9 TCU. The apparent colour in the lab is above the guideline, while the field parameters are within the appropriate range of <5 TCU. The elevated colour levels detected in the lab sample is attributed to the precipitation of minerals out of the groundwater, such as calcium-based hardness and iron. The apparent colour values are consistent with the previously measured values by others for the approved severance

application. As the field measurements are below the aesthetic objective, colour is considered to meet the appropriate objectives and will not require treatment.

Turbidity

Turbidity, which is generally an aesthetic parameter, was detected in the laboratory test samples at values of 0.9, 0.3, and 1.1 NTU in the January 2022, March 2022, and December 2024 samplings, respectively. Field testing of the samples detected values of 0.88 NTU in the December 2024 field tests. It is expected that ongoing use of the well would further reduce turbidity values as evidenced by the turbidity result of 0.3 NTU after 6 hours of pumping by others.

The ODWS maximum acceptable concentration for turbidity in drinking water entering the distribution system is 1 NTU. The Aesthetic Objective for turbidity in drinking water reaching the consumer is 5 NTU. The field test parameters are below the 5 NTU objective. Furthermore, total coliforms and E.Coli were non-detect (0 ct/100 mL) in all of the samples. Therefore, treatment for turbidity is not required.

Sodium

Sodium (Na), an aesthetic parameter, was detected in the laboratory test sample at concentrations of 31.6, 33.8 and 32 mg/L, which does not exceed the ODWS aesthetic objective of 200 mg/L. Although sodium is not toxic and no maximum acceptable concentration has been set, concentrations above 20 mg/L require that the Medical Officer of Health be notified of the water quality results, so that this information may be passed on to local physicians for use in treatment of those requiring a sodium-restricted diet. This recommendation was noted in the severance application by others. As such, the Medical Officer of Health should be aware of the sodium values in the area.

TERRAIN ANALYSIS

The purpose of this study is to determine the site's attenuation capacity for the existing usage and the suitability for private on-site wastewater systems. Specifically, the intent of this report is to assess the existing design details for private septic servicing.

Surficial Geology

A geotechnical investigation by others on May 5, 2022, where five test pits were extended in a manner to provide general coverage of the adjacent lots, with specific consideration to the lot severances occurring at 6695 and 6707 Franktown Road were excavated to a maximum depth of 4 m bgs. The general overburden was observed to be a layer of topsoil to a maximum depth of 1.17 m, except in TP22-4 where the top layer consists of a clay-based fill material. The topsoil/fill layer was followed by clay in TP22-1 to a depth of 2.7 m, and silty sand in the other test pits, to a maximum depth of 1.6 m. The silty sand or clay layer was further underlain by sandy silt with variable amounts of clay, to the depth of the test pits. TP22-3 had an additional silty sand layer underneath the sandy silt. The results of the geotechnical program are generally consistent with available geological mapping provided by the Ontario Geological Survey (OGS MRD128) and with the available historical surrounding Water Well Records (WWR). Further details can be found in the GEMTEC Hydrogeological Investigation and Terrain Analysis Report (File No. 1016638.001), dated August 11, 2022.

Available bedrock geological mapping provided by the Ontario Geological Survey (MRD 219) indicates that the bedrock underlying the subject site consists of sandstone, limestone and shale of the Rockcliffe Formation. Available overburden thickness mapping shows a drift thickness of 3 to 15 m across the subject site. The onsite well (TW22-1) indicates there is 6.1 m of overburden encountered.

Hydrogeological Sensitivity of the Site

The subject site currently consists of a residential dwelling and home-based business with associated infrastructure and private servicing. The subject site is serviced by a private potable well and septic system. The site is bordered to the northwest by treed areas, to the northeast by residential properties followed by agricultural lands, to the southwest by residential properties and undeveloped lands, and to the southeast by Franktown Road followed by an institutional property and undeveloped lands. The adjacent properties are serviced by private wells and septic systems.

According to the geotechnical investigation by others, onsite water well record and available geological mapping, the overburden thickness was observed to be greater than 2 m. As the proposed site does not have bedrock within 2 m of the ground surface, the site is not considered hydrogeologically sensitive.

Lot Development Plan

The Site Plan for the existing development was produced by FOTENN Designs and is attached (Drawing P1, dated July 11, 2022). The area shown on the site plan is only the developed portion of the site and does not display the northern portion of the subject site. The full site area is used for the Nitrate Impact Assessment.

Sewage System Volumes

The existing residence has an approved sewage system design with a capacity of 1,725 L/day per the Certificate of Compliance (attached). The home-based business has an existing sewage system that is undersized for the theoretical Part 8 – Ontario Building Code (OBC) calculations. Paterson has completed a design (PH4979-1 and PH4979-2) for a replacement sewage system. The maximum TDDSSF for the additional sewage system was calculated based on Ontario Building Code (OBC) section 8.2.1.3 and is outlined below:

- Office Area; the maximum of either;
  - 3 employee shifts per day x 75 L/day = 225 L/day; or
  - 87.3 m^2 x 75L/day per 9.3 m^2 = 675 L/day
- Warehouse / Mechanic area
  - 2 loading bay doors x 150 L/day per loading bay door = 300 L/day
- Total = 675 L/day + 300 L/day = 975 L/day

The maximum TDDSSF for the office and warehouse is 975 L/day. The TDDSSF for the subject site was determined to be 2,700 L/day. An approved Ottawa Septic System Office (OSSO) permit will be submitted with the Site Plan Application.

Predictive Nitrate Impact Assessment

In order to demonstrate that private services would adequately support the proposed Site Plan application, a Predictive Nitrate Impact Assessment (NIA) for the subject site was completed due to the residential and home-based business. If the Lot Size assessment was completed, the subject site significantly exceeds the average lot size requirement of 1.0 ha. The values shown in the Predictive NIA attached to this report are summarized below.

- Site area — 40.23 ha
- Impervious area (%) — 1 %
- Daily sewage flow — 2.70 m^3/d
- Concentration of nitrate in effluent — 40 mg/L
  (Value based on typical effluent concentration)
- Surplus Water — 292 mm/yr
  (The surplus water value was estimated based on Environment Canada Climate Office values with a soil type comprised of a fine sandy loam (Urban lawns / Shallow Rooted

Crops) and anthropogenic sources.)

- ❑ Combined infiltration factor based on: 0.65
  - Topography infiltration factor 0.20
  - Soil texture infiltration factor 0.30
  - Cover infiltration factor 0.15

The topography infiltration factor of 0.20 is based upon a generally rolling land with an average slope between 2.8 to 3.8 m/km. The soil texture infiltration factor was based upon a mix between “open sandy loam” with a value of 0.4 and “medium combinations of clay and loam” with a value of 0.3 which is a reasonable generalization based upon the site investigations and available geological mapping. The “cover infiltration factor” was calculated at 0.15 based upon a mix of cultivated land type cover and treed areas.

The calculation for a conventional septic system results in a predicted nitrate concentration of **0.52 mg/L** nitrate for the subject site, using a value of 40 mg/L nitrate concentration within the effluent. This value was based upon a daily sewage flow of 2,700 L/day. It is expected that the actual usage is much lower.

Based on the results of the predictive NIA, it is our opinion that the property can adequately support the proposed Site Plan application without having an adverse impact on the underlying bedrock aquifer, using a conventional sewage system. The updated septic system design for the home-based business will be submitted to the OSSO at the time of the Site Plan application. Due to the costs associated with the application and the 1 year permit duration that begins upon permit approval, it is recommended to delay the submittal.

CONCLUSIONS

Based on the information contained within the body of this report the following conclusions can be drawn:

1. The water supply aquifer intercepted by the existing well is considered to be adequate to support the water quantity demands for the existing development.

2. The well construction is considered to meet O.Reg 903 requirements based on visual inspection by Paterson and previous review by others.

3. The preferred water supply intercepted by TW22-1 contains a water supply that is potable, and contains only elevated concentrations of hardness, colour, and turbidity. Colour and turbidity were below limits in field testing. The noted parameters can be treated with current readily available water conditioning equipment if desired by the owner.

4. A residential grade water softener is recommended to facilitate the reduction of the hardness concentration. If a water softener is in use for the existing residence, the owner should be made aware that additional sodium will be added to the water to reduce hardness. If desired, a point-of-use reverse osmosis system can be also used to provide a drinking tap source.

5. The sodium concentration was measured to be above the 20 mg/L reporting limit and, as such, the Medical Officer of Health for the City of Ottawa should be informed to assist area physicians in the treatment of local residents on sodium reduced diets.

6. The site is not considered hydrogeologically sensitive due to the available overburden in excess of 2 m.

7. The predicted nitrate concentrations at the property boundary is calculated to be well below the required 10 mg/L threshold when a conventional sewage system is used.

8. Paterson completed a sewage system design to support the site plan application. The sewage system application will be completed at the time of the Site Plan application due to the costs and permit expiry timeline. Due to the available space on site, there will be no issues receiving an approval for the designed system.

9. The results of the Hydrogeological Assessment and Terrain Analysis have provided satisfactory evidence that the subject site can support the proposed redevelopment with respect to water quality, quantity and sewage system impact assessment.

We trust that the current submission satisfies your immediate requirements.

Best Regards,

Paterson Group Inc.

Alexander Schopf, PhD, EIT

Michael Killam, P.Eng

Attachments:

- ❑ Key Plan
- ❑ FOTENN Design- Drawing P1, dated July 11, 2022
- ❑ MECP Water Well Records
- ❑ Eurofins Certificate of Analysis
- ❑ Nitrate Impact Assessment Calculations
- ❑ Gemtec Report excerpts from “Hydrogeological Investigation & Terrain Analysis; Proposed Severance - D08-01-21/B-00171 and D08-01-21/B-00172”, dated August 11, 2022
- ❑ Paterson Sewage System Design Drawings – PH4979-1 and PH4979-2

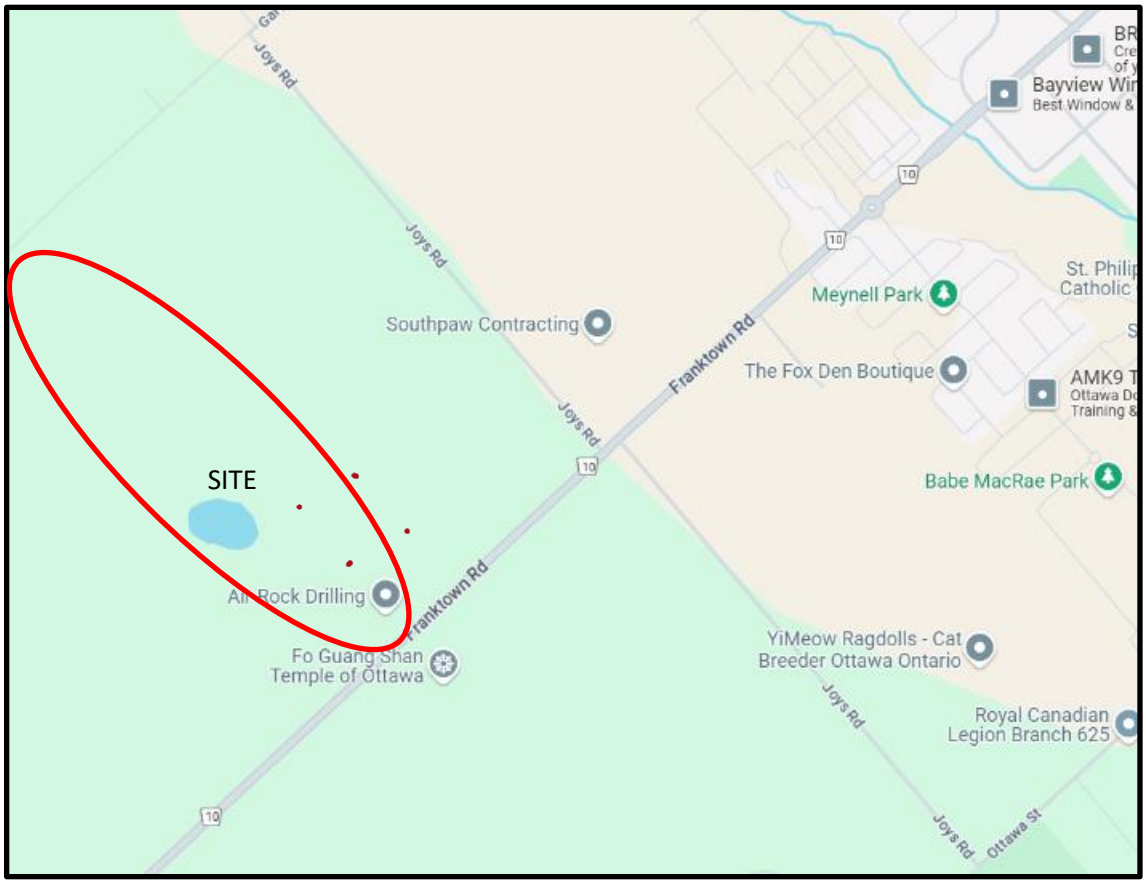
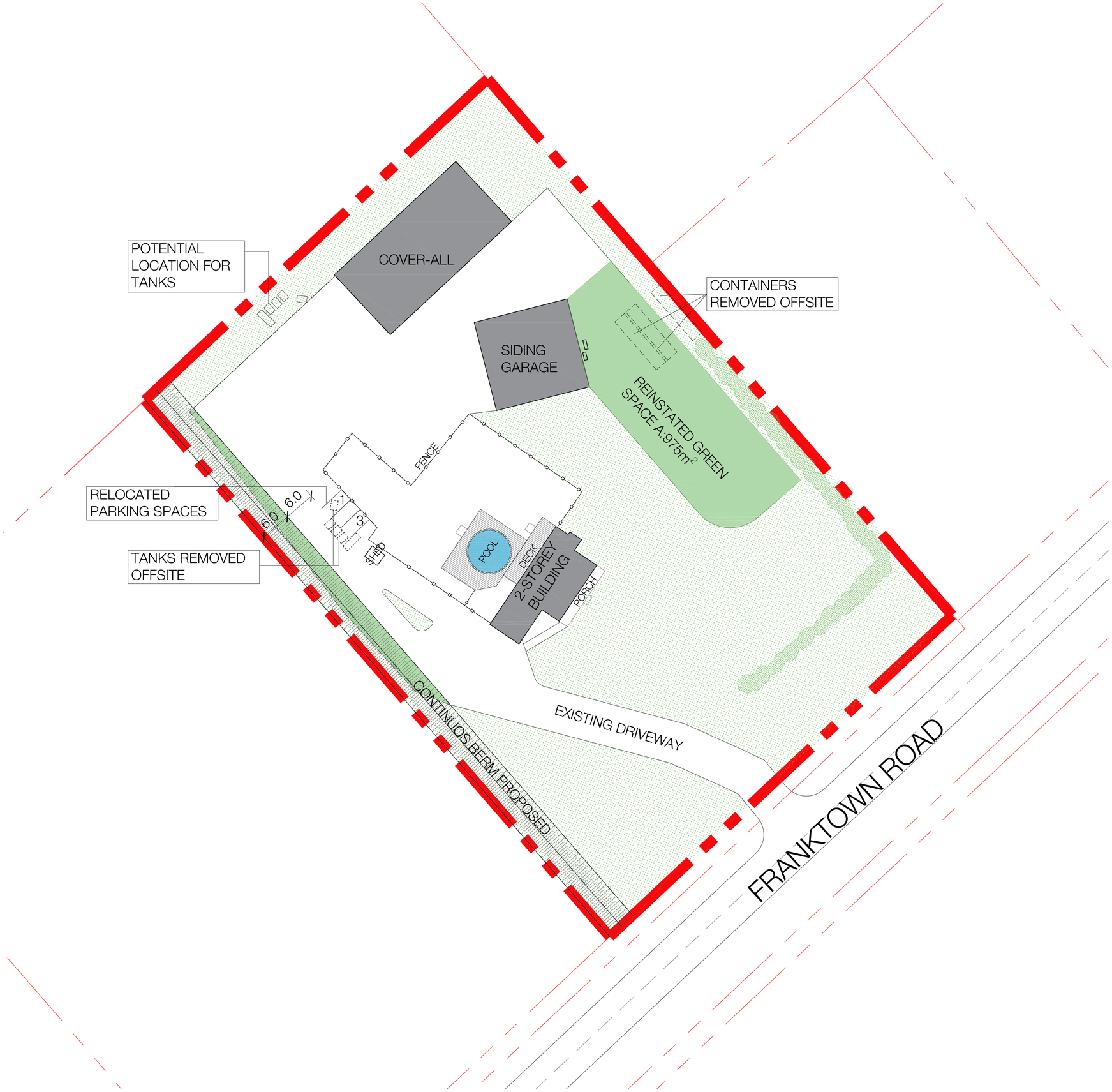


FIGURE 1

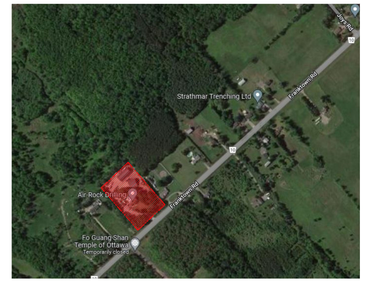
KEY PLAN

PATERSON GROUP



6659 FRANKTOWN RD

Concept Plan



LEGEND

- EXISTING BUILDINGS
- EXISTING LANDSCAPED AREAS
- REINSTATED LANDSCAPED AREAS
- PROPERTY BOUNDARY

0 5m 10m 15m 30m

No.	REVISION	DATE	BY
1	CONCEPT PLAN	2022.07.21	RP
1	BASE PLAN	2022.07.11	RP

CLIENT
AIR ROCK DRILLING

FOTENN
Planning + Design
396 Cooper Street, Suite 300, Ottawa ON K2P 2H7
613.730.5709 www.fotenn.com

DESIGNED	RP
REVIEWED	RP
DATE	2022.07.11

P1

#473 31G/4f

UTM 1 18 Z 4 3 2 1 7 0 E

15 R 5 0 0 2 9 5 0 N

Elev. 4 R 0 3 2 5

Basin 2 5

The Ontario Water Resources Commission Act

WATER WELL RECORD

County or District Carleton Township, Village, Town or City Goulbourn.

Con. 3 Lot 20 Date completed 15th (day) August (month) 1964. (year)

[redacted] ress Richmond Ont.

Casing and Screen Record	
Inside diameter of casing	6 ¼"
Total length of casing	10'
Type of screen	
Length of screen	
Depth to top of screen	
Diameter of finished hole	6"

Pumping Test	
Static level	4'
Test-pumping rate	10 G.P.M.
Pumping level	28'
Duration of test pumping	30 min
Water clear or cloudy at end of test	clear
Recommended pumping rate	5' G.P.M.
with pump setting of	52 feet below ground surface

Well Log / **Water Record**

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	Kind of water (fresh, salty, sulphur)
clay loam	0	8		
sandstone rock	8	65	60'	fresh

For what purpose(s) is the water to be used? NEW house.

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

Drilling or Boring Firm Melville McLaughlin

Address Ashton Ont

Licence Number 1241

Name of Driller or Borer Melville McLaughlin

Address Ashton Ont

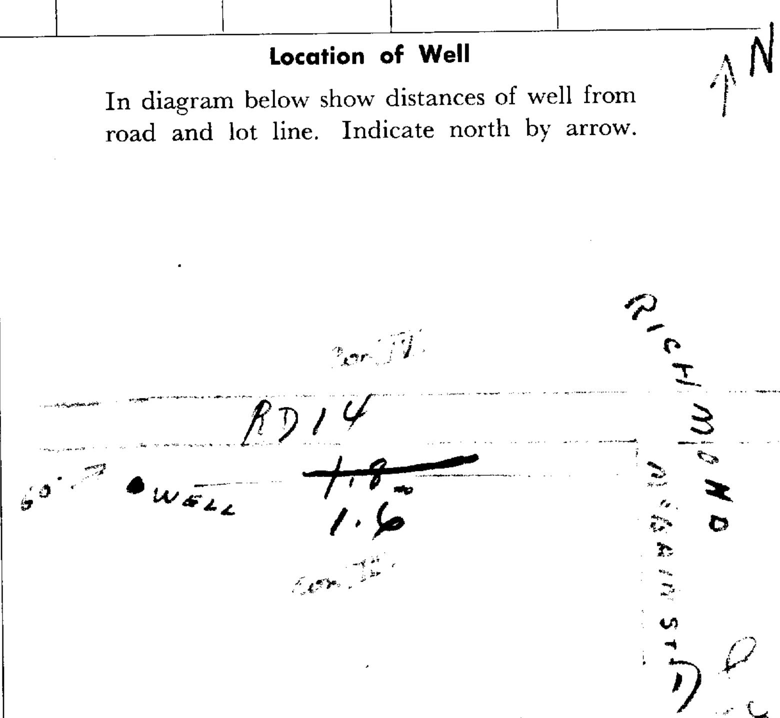
Date August 15' 1964

Melville McLaughlin

(Signature of Licensed Drilling or Boring Contractor)

Location of Well

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



Form 7 10M-62-1152

OWRC COPY

31G/4f.

WATER RESOURCES DIVISION
15 SEP 1967 No. 2410
ONTARIO WATER RESOURCES COMMISSION

UTM 18 Z 413216 E
5 R 5010291 N

The Ontario Water Resources Commission Act

Elev. 4 R 0325

WATER WELL RECORD

Basin 25 County or District CARLETON Township, Village, Town or City GOULBOURN

Con. 3 Lot 20 Date completed 12 (day) JUNE (month) 67 (year)

[redacted] ress Richmond

Casing and Screen Record

Inside diameter of casing 5

Total length of casing 22

Type of screen

Length of screen

Depth to top of screen

Diameter of finished hole 5

Pumping Test

Static level 8

Test-pumping rate 5 G.P.M.

Pumping level 12

Duration of test pumping 1 Hr

Water clear or cloudy at end of test CLEAR

Recommended pumping rate 5 G.P.M.

with pump setting of 18 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)
LOAM & BOULDERS	0	20		
GRAVEL	20	22	22	FRESH

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

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

Drilling or Boring Firm M MEAGHER

Address OTTAWA

Licence Number 2673

Name of Driller or Borer JAME

Address

Date SEPT/67

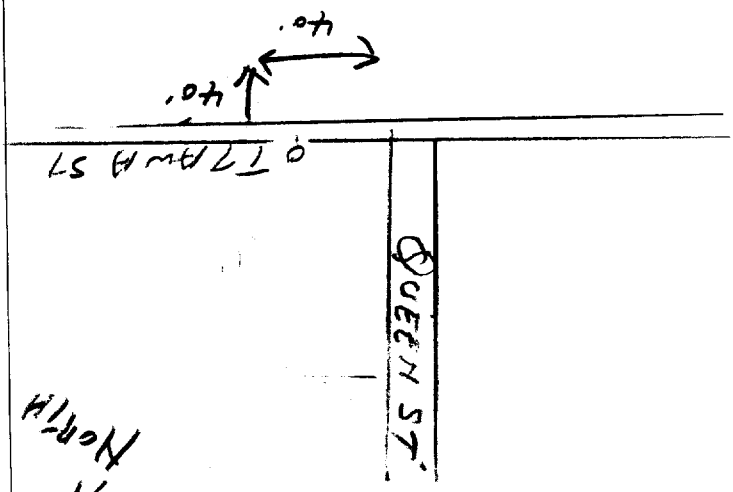
Matt Meagher
(Signature of Licensed Drilling or Boring Contractor)

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.



CSS.58

316/4F

UTM | 18 | Z | 4 3 2 1 6 1 0 | E
| 9 | R | 5 1 0 1 3 1 0 3 1 0 | N
Elev. | 9 | R | 0 3 2 1 5 |
Basin | 3 | 8 | | |

ONTARIO

The Well Drillers Act
Department of Mines, Province of Ontario

2428

Water Well Record

[redacted] Con. 4 Lot ..... Pt. Lot .....
Richmond Acres 1 acre
Date Completed ..... Cost of Well (not including pump) 20.00

Pipe and Casing Record

Casing diameter(s) 4"
Length(s) of casing(s) 30'
Length of screen no screen
Type of screen
Type of pump no pump
Capacity of pump
Depth of pump setting

Pumping Test

Date June 16/49
Developed Capacity 200 G.P.H.
Duration of Test 1 hr.
Pumping Rate
Drawdown
Static level of completed well 15'
Is well a gravel-wall type? gravel

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? house
How far is well from possible source of contamination? 200 ft
What is source of contamination? barn
Enclose a copy of any mineral analysis that has been made of water

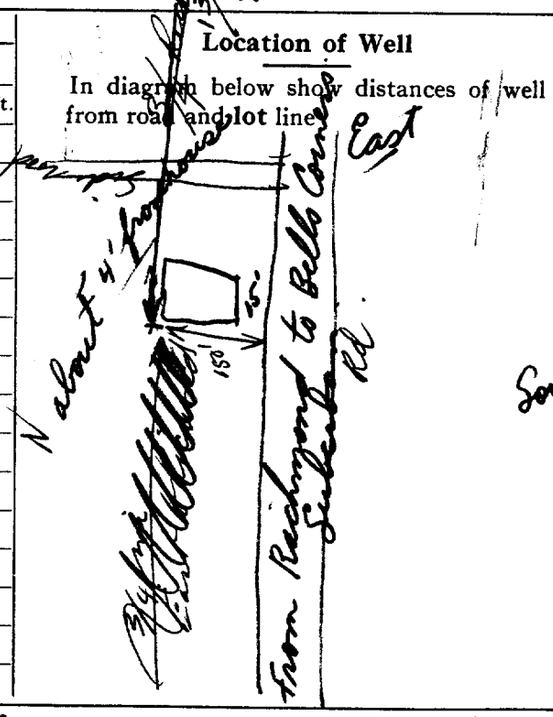
Depth(s) to Water Horizon(s)	Kind of Water	No. of Feet Water Rises
50'	Good	35'
60		45'

Well Log

Drift and Bedrock Record	From	To
gravel	0 ft.	30 ft.
limestone rock	30	60

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? flat
Drilling Firm F P Sparks
Address Stittsville Ont
Recorded by F P Sparks Address Stittsville
Date Dec 8/49 Licence Number Ont

UTM | 1 | 8 | Z | 4 | 3 | 2 | 2 | 0 | 0 | E
| 5 | R | 5 | 0 | 0 | 3 | 0 | 4 | 0 | N
Elev | 9 | R | 1 | 3 | 2 | 5 |
Basin | 4 | 5 | 8 | 9 | | |

31G/4 F.

ONTARIO

The Water-well Drillers Act, 1954
Department of Mines

GROUND WATER BRANCH
OCT 6 1958
ONTARIO WATER RESOURCES COMMISSION

15 No. 2129

Water-Well Record

County or Territorial District ..... Township, Village, Town or City .....
[redacted] in Village, Town or City) .....
Address .....

Formerly (day) (month) (year)

Pipe and Casing Record

Casing diameter(s) ..... 2"
Length(s) 91
Type of screen ..... No
Length of screen .....

Pumping Test

Static level ..... Level
Pumping rate ..... 60 GPH
Pumping level ..... Top
Duration of test ..... 1/2 Hr

Well Log

Overburden and Bedrock Record	From ft.	To ft.
Clay	0	9
Limestone	9	91

Water Record

Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, or sulphur)
91	91	Fresh

For what purpose(s) is the water to be used?
House
Is water clear or cloudy? Clear
Is well on upland, in valley, or on hillside? Upland

Drilling firm Blair Phillips Drilling Co
Address Otto

Name of Driller Blair Phillips
Address

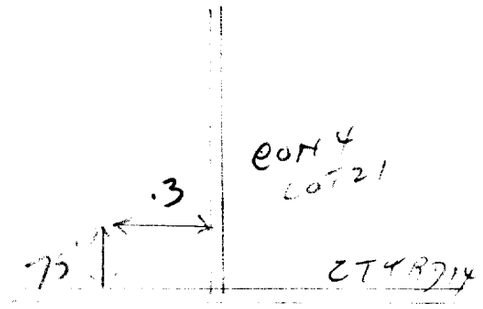
Licence Number 190

I certify that the foregoing statements of fact are true.

Date SEP 24 B Phillips
Signature of Licensee

Location of Well

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



Form 5

316/4f.

UTM 18 Z 418213010 E

5 R 5101312210 N

Elev. 14 R ~~et~~ 3215

Basin 215

Con IV Lot 20

The Ontario Water Resources Commission Act, 1957

ONTARIO WATER RESOURCES COMMISSION 15 No. 2430 MAY 20 1961

WATER WELL RECORD

County or District Carleton Township, Village, Town or City Gaulbourn

Con. 4 Lot 20 Date completed 24 (day) Nov. (month) 1960 (year)

[redacted] ress Richmond Ont.

Casing and Screen Record

Inside diameter of casing 4"

Total length of casing 17'

Type of screen —

Length of screen —

Depth to top of screen —

Diameter of finished hole 4"

Pumping Test

Static level 15'

Test-pumping rate 5' G.P.M.

Pumping level 20'

Duration of test pumping ½ hr.

Water clear or cloudy at end of test clear

Recommended pumping rate 5' G.P.M.

with pumping level of 20'

Well Log

Overburden and Bedrock Record	From ft.	To ft.	Depth(s) at which water(s) found	No. of feet water rises	Kind of water (fresh, salty, sulphur)
Red Sand	0	17'			
Gray lime stone	17'	60	60	30'	Fresh

Water Record

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

House

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

valley

Drilling Firm F. P. Sparks

Address Stittsville Ont.

Licence Number

Name of Driller Clayton H Sparks

Address Stittsville Ont.

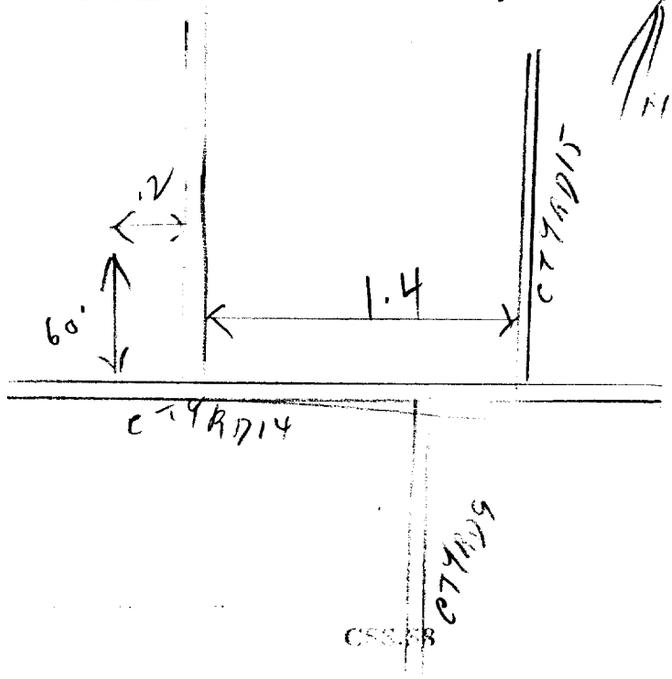
Date Nov. 24 1960

F. P. Sparks

(Signature of Licensed Drilling Contractor)

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

3161 9 R

Water management in Ontario

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

1510152

11 | MUNICIP. 15003 | CON. CON 04

COUNTY OR DISTRICT: Carleton | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Goulbourn | CON., BLOCK, TRACT, SURVEY, ETC.: Con 4 | LOT: 25-27 Pt Lot 20

[redacted] RR#1, Richmond Ont.

DATE COMPLETED: DAY 22 MO. July YR. 69

ELEVATION: 03170 | RC. 4 | ELEVATION: 0325 | RC. 5 | BASIN CODE 25

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		packed	0	12
grey	limestone		hard	12	51

31 00126 09 | 09512 15

32

41 WATER RECORD

WATER FOUND AT – FEET	KIND OF WATER
0050	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
05	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	188	0	~~78~~ 0018
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE			0051
	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.)

71 PUMPING TEST

PUMPING TEST METHOD: 1 ☐ PUMP 2 ☒ BAILER

PUMPING RATE: 0020 GPM. | DURATION OF PUMPING: 01 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
000 FEET	020 FEET	015 FEET	020 FEET	020 FEET	020 FEET

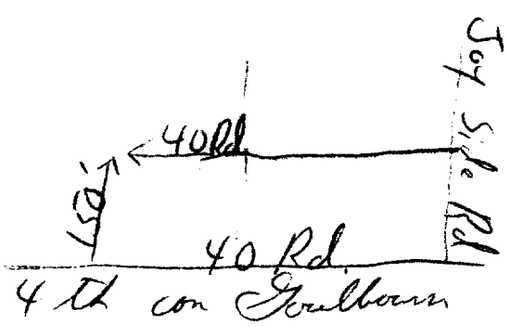
IF FLOWING, GIVE RATE: GPM. | PUMP INTAKE SET AT: FEET | WATER AT END OF TEST: ☒ CLEAR 2 ☐ CLOUDY

RECOMMENDED PUMP TYPE: ☒ SHALLOW ☐ DEEP | RECOMMENDED PUMP SETTING: 025 FEET | RECOMMENDED PUMPING RATE: 0010 GPM.

0010 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

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 ☒ 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: Henry Mennis Well Drilling | LICENCE NUMBER: 3250

ADDRESS: PO Box 326 Richmond

NAME OF DRILLER OR BORER: Henry Mennis | LICENCE NUMBER:

SIGNATURE OF CONTRACTOR: Henry Mennis | SUBMISSION DATE: DAY 22 MO. July YR. 69

OFFICE USE ONLY

DATA SOURCE: 1 | CONTRACTOR: 3644 | DATE RECEIVED: 12 08 69

DATE OF INSPECTION: | INSPECTOR:

REMARKS:

OWRC COPY

MINISTRY OF THE ENVIRONMENT
The Ontario Water Resources Act

WATER WELL RECORD

Ontario

31G4E

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

(11) 1515832

MUNICIP 15003 CON. CON 04

COUNTY OR DISTRICT: Carleton
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Goulbourn
CON., BLOCK, TRACT, SURVEY, ETC.: Con 4
LOT: 019
[redacted]
RR#2, Ashton
DATE COMPLETED: DAY 18 MO. 11 YR. 76
THING: 0029919 RC: 4 ELEVATION: 0325 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
grey	sand			0	12
grey	limestone			12	64

(31) 00122 28 00642 15

(32)

(41) WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
062	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	1 ☑ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE	.188	0	025
	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.)
10-13	14-17	
18-21	22-25	
26-29	30-33	

(71) PUMPING TEST

PUMPING TEST METHOD	PUMPING RATE	DURATION OF PUMPING
1 ☑ PUMP 2 ☐ BAILER	0006 GPM	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
000 FEET	050 FEET	050 FEET	050 FEET	050 FEET	050 FEET

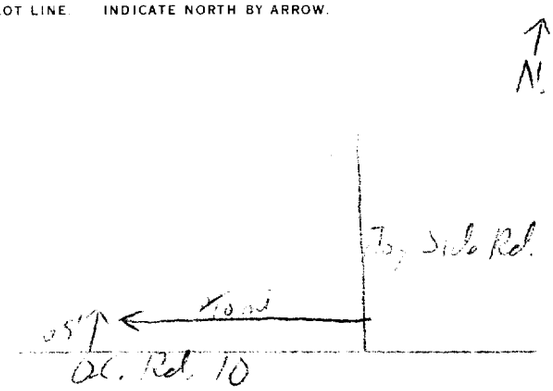
IF FLOWING, GIVE RATE	PUMP INTAKE SET AT	WATER AT END OF TEST
GPM	FEET	1 ☐ CLEAR 2 ☑ CLOUDY

RECOMMENDED PUMP TYPE	RECOMMENDED PUMP SETTING	RECOMMENDED PUMPING RATE
☐ SHALLOW ☑ DEEP	050 FEET	0005 GPM

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

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): 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: Henry Mains Well Drilling — LICENCE NUMBER: 3644
ADDRESS: Box 326, Richmond Ont.
NAME OF DRILLER OR BORER: Henry Mains — LICENCE NUMBER:
SIGNATURE OF CONTRACTOR: Henry Mains
SUBMISSION DATE: DAY 20 MO. 11 YR. 76

OFFICE USE ONLY

DATA SOURCE (58): 1 — CONTRACTOR (59-62): 3644 — DATE RECEIVED (63-66): 190177
DATE OF INSPECTION — INSPECTOR
REMARKS:
P
WI

MINISTRY OF THE ENVIRONMENT COPY

FORM 7 MOE 07-091

MINISTRY OF THE ENVIRONMENT

The Ontario Water Resources Act

WATER WELL RECORD

Ontario

L.P.M.

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

11 | 1516119 | MUNICIP. 15003 | CON. CON | 04

COUNTY OR DISTRICT: Carleton | TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Goulbourn | CON., BLOCK, TRACT, SURVEY, ETC.: Con 4, | LOT: 19

[redacted] | ADDRESS OF WELL: RR#1, Richmond Ont. | DATE COMPLETED: DAY 27 MO 07 YR 77

UTM - NORTHING 002880 | ZONE 4 | EASTING 0326 | ZONE 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
grey	sand			0	15
grey	limestone			15	105

31 | 00152 28 | 01052 15

32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
0102	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	0025 ~~25~~
	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: 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
006 FEET	025 FEET		025 FEET	025 FEET	025 FEET	025 FEET

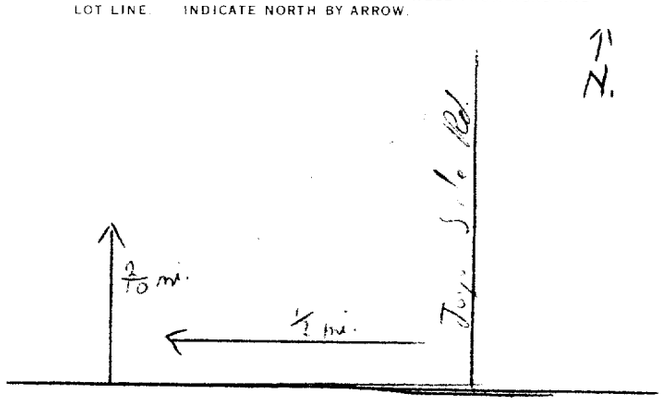
IF FLOWING GIVE RATE: GPM | PUMP INTAKE SET AT: FEET | WATER AT END OF TEST: 1 ☐ CLEAR 2 ☑ CLOUDY

RECOMMENDED PUMP TYPE: ☑ SHALLOW ☐ DEEP | RECOMMENDED PUMP SETTING: 025 FEET | RECOMMENDED PUMPING RATE: 0010 GPM

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)
1 ☑ DOMESTIC 2 ☐ STOCK 3 ☐ IRRIGATION 4 ☐ INDUSTRIAL 5 ☐ COMMERCIAL 6 ☐ MUNICIPAL 7 ☐ PUBLIC SUPPLY 8 ☐ COOLING OR AIR CONDITIONING 9 ☐ NOT USED 10 ☐ OTHER

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: Henry Mains Well Drilling | LICENCE NUMBER: 3644

ADDRESS: Box 326, Richmond Ont

NAME OF DRILLER OR BORER: Henry Mains | LICENCE NUMBER:

SIGNATURE OF CONTRACTOR | SUBMISSION DATE: DAY 1 MO. 8 YR. 77

OFFICE USE ONLY

DATA SOURCE 58: 1 | CONTRACTOR 59-62: 3644 | DATE RECEIVED 63-68: 250877

DATE OF INSPECTION: MAY 16 79 | INSPECTOR: Km. DAI

REMARKS: WHITE FARM HOUSE WITH BLACK EXTENSION

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MINISTRY OF THE ENVIRONMENT COPY

FORM 7 MOE 07-091

Ministry of the Environment
Ontario

The Ontario Water Resources Act

WATER WELL RECORD

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

11 1523647 MUNICIP. 15093 CON. CON 03

COUNTY OR DISTRICT: Carleton
TOWNSHIP, BOROUGH, CITY, TOWN, VILLAGE: Gloucester
CON., BLOCK, TRACT, SURVEY, ETC.: Con 3
LOT: Pt 18

[redacted] Box 1353, Richmond K0A2Z0

DATE COMPLETED: DAY 10 MO 4 YR 89

NG | RC. | ELEVATION | RC. | BASIN CODE

LOG OF OVERBURDEN AND BEDROCK MATERIALS (SEE INSTRUCTIONS)

GENERAL COLOUR	MOST COMMON MATERIAL	OTHER MATERIALS	GENERAL DESCRIPTION	DEPTH - FEET FROM	DEPTH - FEET TO
grey	clay			0	50
grey	limestone			50	75

31
32

41 WATER RECORD

WATER FOUND AT - FEET	KIND OF WATER
69	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
	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 1/4	1 ☒ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC	.188	0	53
6	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☒ OPEN HOLE 5 ☐ PLASTIC		53	75
	1 ☐ STEEL 2 ☐ GALVANIZED 3 ☐ CONCRETE 4 ☐ OPEN HOLE 5 ☐ PLASTIC			

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.)
10-13	14-17	cement grouted
18-21	22-25	
26-29	30-33	

71 PUMPING TEST

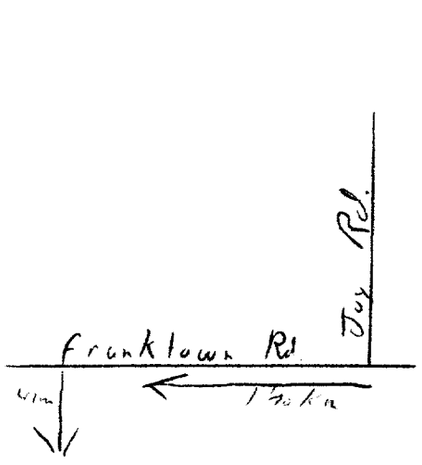
PUMPING TEST METHOD: 1 ☐ PUMP 2 ☐ BAILER — Air
PUMPING RATE: 20 GPM
DURATION OF PUMPING: 1 HOURS 0 MINS

STATIC LEVEL	WATER LEVEL END OF PUMPING	WATER LEVELS DURING: 1 ☐ PUMPING 2 ☐ RECOVERY			
		15 MINUTES	30 MINUTES	45 MINUTES	60 MINUTES
6 FEET	30 FEET	30 FEET	30 FEET	30 FEET	30 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: 30 FEET
RECOMMENDED PUMPING RATE: 10 GPM

LOCATION OF WELL

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



DRILLERS REMARKS: 49922

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 ☐ DEWATERING

WATER USE

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 CONSTRUCTION

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

CONTRACTOR

NAME OF WELL CONTRACTOR: R. Mains Well Drilling
WELL CONTRACTOR'S LICENCE NUMBER: 3644
ADDRESS: Box 326, Richmond Ont.
NAME OF WELL TECHNICIAN:
WELL TECHNICIAN'S LICENCE NUMBER:
SIGNATURE OF TECHNICIAN/CONTRACTOR:
SUBMISSION DATE: DAY 12 MO 4 YR 89

OFFICE USE ONLY

DATA SOURCE | CONTRACTOR 3644 | DATE RECEIVED AUG 04 1989
DATE OF INSPECTION | INSPECTOR
REMARKS

MINISTRY OF THE ENVIRONMENT COPY

FORM NO. 0506 (11/86) 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 — 1532709

Municipality 15003 — Con. CON 04 — Part 25

County or District	Township/Borough/City/Town/Village	Con	block	tract	survey, etc.	Lot
Ottawa Carleton	Goulbourn	4				19

[redacted]

Address: Richmond, Ont

Date completed: 11 (day) 03 (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			0	16
grey	limestone			16	176
grey	sandstone			176	220

31

32

41 WATER RECORD

Water found at - feet	Kind of water
94	1 Fresh 2 Salty 3 Sulphur 4 Minerals 5 Gas
210	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	24
8 3/4	1 Steel 2 Galvanized 3 Concrete 4 Open hole 5 Plastic		0	22
6	1 Steel 2 Galvanized 3 Concrete 4 Open hole 5 Plastic		22	220

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	24	cement grout

PUMPING TEST

71 — Pumping test method: 1 Pump 2 Bailer — Pumping rate: 30 GPM — Duration of pumping: 1 Hours ... Mins

25 — Water levels during: 1 Pumping 2 Recovery

Static level	Water level end of pumping	15 minutes	30 minutes	45 minutes	60 minutes
6 feet	100 feet	6 feet	6 feet	6 feet	6 feet

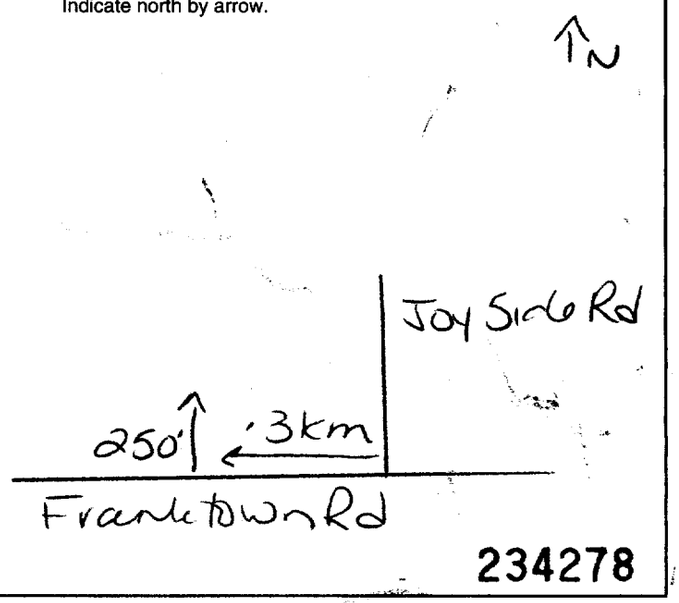
If flowing give rate: GPM — Pump intake set at: feet — Water at end of test: ☐ Clear ☒ Cloudy

Recommended pump type: ☐ Shallow ☒ Deep — Recommended pump setting: 100 feet — Recommended pump rate: 30 GPM

50-53

LOCATION OF WELL

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



234278

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.
Air Rock Drilling Ltd	1119
Address: RR#2 Jasper, Ont	
Name of Well Technician: Ken Desaulniers	Well Technician's Licence No.: T4
Signature of Technician/Contractor	Submission date: day mo yr

MINISTRY USE ONLY

Data source 58	Contractor 59-62	Date received 63-68
	1119	APR 16 2002
Date of inspection	Inspector	
Remarks: CSS.ES2		

0506 (07/00) Front Form 9

2 - MINISTRY OF THE ENVIRONMENT COPY

A 095968

Ontario — Ministry of the Environment

Well T... (See Instructions on the Back of This Form) A095968

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
Rebecca	Hanbidge		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
6619 Franktown Road	Richmond	Ont	K0A2Z0	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
#6619 Franktown Road	Goulbourn	20	4

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Richmond	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	432228	5003312		

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'	22'
	Grey limestone			22'	172'
	Grey & White Sandstone			172'	236'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
28'	0'	Neat Cement Slurry	10,92

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'	28'
6"	Open hole		28'	236'

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
227 (m/ft)	☐ Fresh ☒ Untested	☐	
Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
229 (m/ft)	☐ Fresh ☒ Untested	☐	
Water found at Depth (m/ft)	Kind of Water	Gas	Other, specify
	☐ Fresh ☐ Untested	☐	

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0'	236'	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) 160'

Pumping rate (l/min / GPM) 20

Duration of pumping ____ hrs + 0 min

Final water level end of pumping (m/ft) 6'7"

If flowing give rate (l/min / GPM)

Recommended pump depth (m/ft) 100'

Recommended pump rate (l/min / GPM) 20

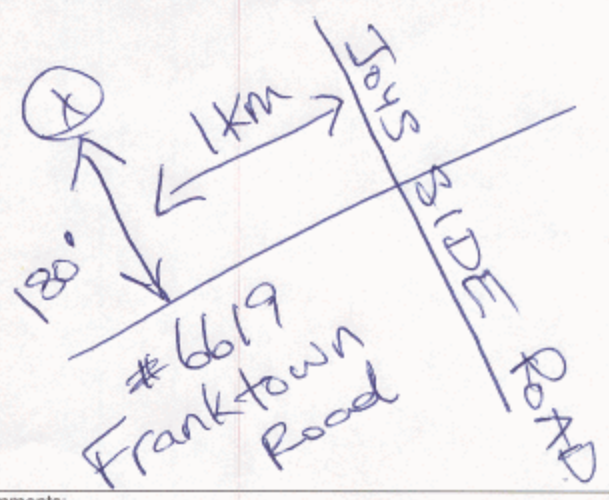
Well production (l/min / GPM) 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	6'6"		6'7"
1	6'7"	1	6'6"
2	6'7"	2	
3		3	
4		4	
5		5	
10		10	
15		15	
20		20	
25		25	
30		30	
40		40	
50		50	
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	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
T2122		20100510

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	20100319	20100319

Ministry Use Only

Audit No. Z108249

JUN 01 2010 Received

0506E (12/2007)

Ministry's Copy

Ontario — Ministry of the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

Tag#: A186910 (Print Below)

A186910

Well Record

Regulation 903 Ontario Water Resources Act

Page ____ of ____

[redacted]

Address of Well Location (Street Number/Name)	Township	Lot	Concession
6685 Franktown Road	Goulbourn	E P/L 19	4

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Richmond	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18	414346	5500167	4R-14477	Part 1 & 2

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'	16'
Grey	Limestone			16'	100'
White	Sandstone	W/ Grey	Limestone	100'	130'
White	Sandstone	W/ Grey	Limestone	130'	140'

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
22'	12'	Neat cement	12.5
12'	0'	Bentonite slurry	4.2

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'	22'
6"	Open Hole		22'	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	
130	☐ 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)
0'	22'	9 3/4"
22'	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): 120

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 43.8'

If flowing give rate (l/min / GPM): X

Recommended pump depth (m/ft): 120'

Recommended pump rate (l/min / GPM): 20

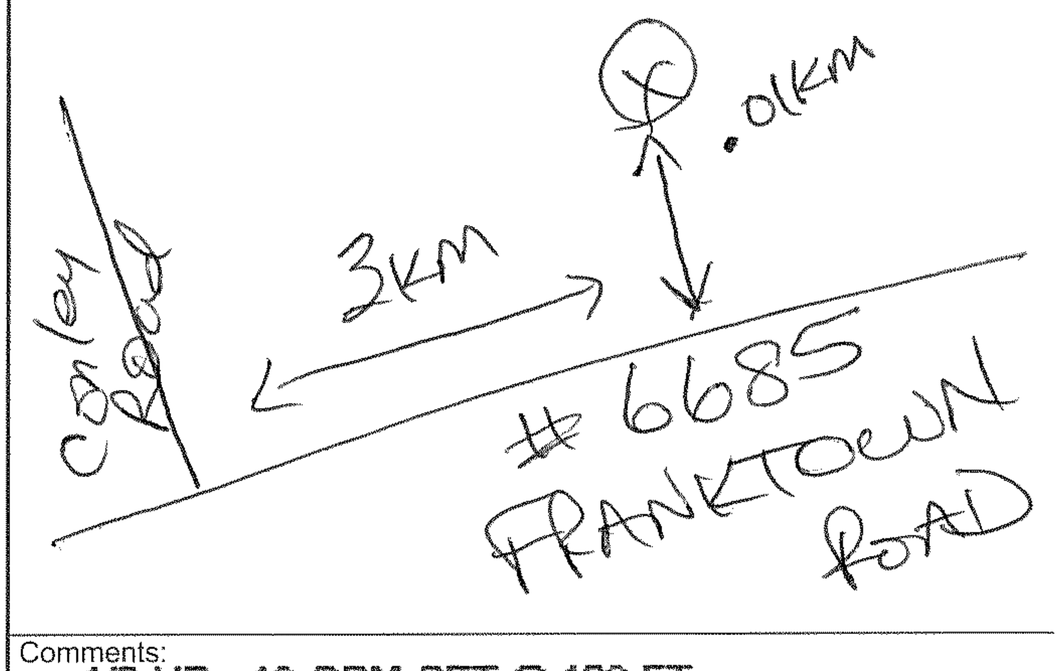
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level	14'3"		43.8'
1	21	1	43.8
2	24.7	2	30.1
3	28.1	3	22.9
4	31.6	4	19.1
5	33.2	5	17
10	37.8	10	143.3
15	40.5	15	14.3
20	41	20	14.3
25	43.2	25	14.3
30	43.6	30	14.3
40	43.8	40	14.3
50	43.8	50	14.3
60	43.8'	60	14.3'

Map of Well Location

Please provide a map below following instructions on the back.



Comments:
1/2 HP - 10 GPM SET @ 120 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
6685 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)
6138882170	Hanna, Jeremy

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
T3632		2015 08 31

Well owner's information package delivered	Date Package Delivered	Date Work Completed
☒ Yes ☐ No	2015 08 04	2015 08 03

Ministry Use Only

Audit No. Z191564

Received SEP 22 2015

Ministry's Copy

Ontario — Ministry of the Environment and Climate Change

Tag#:A252856 (or Print Below) A252856

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
	International Buddhist Progress Society of Ottawa		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
1950 Scott Street	Ottawa	ON	K1Z 8L8	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
6688 Franktown Road	Goulbourn	P/L 19	3

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa-Carleton	Richmond	Ontario	

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 8 3	18	[redacted]	[redacted]	RP 4R-7040	Part 1

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		0	10
Grey	Limestone			10	73
Grey	Limestone			73	142
Grey	Limestone			142	171
Grey	Sandstone			171	194
Grey	Sandstone			194	200

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/cu ft)
20	0	Neat cement	10.8

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	20
6 1/4"	Open Hole		20	200

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	Depth To	Diameter (cm/in)
73	☐ Fresh ☒ Untested ☐ Gas ☐ Other, specify	0	20	9 3/4"
2	☐ Fresh ☒ Untested ☐ Gas ☐ Other, specify	20	200	6 1/4"
94	☐ Fresh ☒ Untested ☐ Gas ☐ 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: ☒

Pump intake set at (m/ft): 150

Pumping rate (l/min / GPM): 20

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 15.5'

If flowing give rate (l/min / GPM): ☒

Recommended pump depth (m/ft): 100'

Recommended pump rate (l/min / GPM): 20

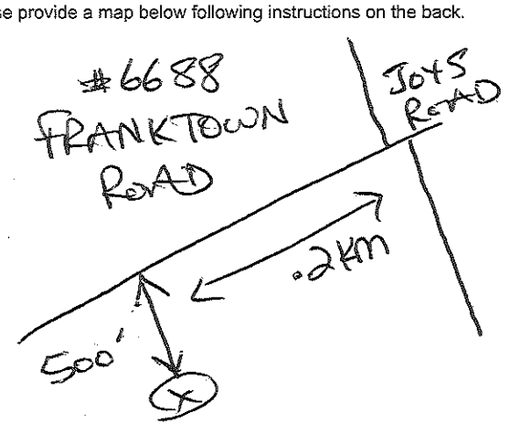
Well production (l/min / GPM): 20

Disinfected? ☒ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		14'2"		15'5"
1	15.4		1	14.2
2	15.4		2	14.2
3	15.4		3	14.2
4	15.4		4	14.2
5	15.4		5	14.2
10	15.5		10	14.2
15	15.5		15	14.2
20	15.5		20	14.2
25	15.5		25	14.2
30	15.5		30	14.2
40	15.5		40	14.2
50	15.5		50	14.2
60	15.5'		60	14'2"

Map of Well Location

Please provide a map below following instructions on the back.



Comments: 1 HP - 20 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
6688 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)
6132382170	Hanna, Jeremy

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
13652		2018 07 31

Well owner's information package delivered: ☒ Yes ☐ No

Date Package Delivered: 2018 07 12

Date Work Completed: 2018 07 11

Ministry Use Only

Audit No. Z276984

Received SEP 10 2018

0506E (2014/11) Ministry's Copy

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146 Colonnade Rd, Unit 8, Ottawa, ON K2E 7Y1 (613) 727-5692

OFFICIAL CERTIFICATE OF ANALYSIS : 4187002

WORK REQUEST : 100331614

Report Date : 2024-12-16

Paterson Group
9 Auriga Dr
Nepean, Ontario
K2E 7T9
Attention : Alex Schopf

Reception Date : 2024-12-10
Project : PH4717
Sampler : NA
PO Number : 61963
Temperature : 10 °C

Analysis	Quantity	External Method
Alkalinity (Water, Automated)	1	Modified from SM 2320 B
Ammonia, Total (Water, Colorimetry)	1	Modified from EPA 350.1
Chloride (Water, IC)	1	Modified from SM 4110 B and C
Colour, Apparent (Water, Spectrophotometry)	1	Modified from SM 2120 C
Conductivity (Water, Automated)	1	Modified from SM 2510 B
DOC (Water, IR)	1	Modified from SM 5310 B
Escherichia coli (DC Plate)	1	Modified from MECP E3407
Fluoride (Water, Auto/ISE)	1	Modified from SM 4500-F A and 4500-F C
Hardness (Water, Calculation Only)	1	SM 2340 B
Ion Balance (Water, Calculation)	1	Modified from SM1030 E
Metals Scan (Water, ICP/MS)	1	Modified from EPA 200.8
Metals Scan (Water, ICP/OES)	1	Modified from SM 3120 B
Nitrate (Water, IC)	1	Modified from SM 4110 B and C
Nitrite (Water, IC)	1	Modified from SM 4110 B and C
pH (25°C) (Water, Automated)	1	Modified from SM 4500-H+ B
Phenols (Water, Colorimetry)	1	Modified from EPA 420.2
Sulphate (Water, IC)	1	Modified from SM 4110 B and C
Sulphide (Water, Colorimetry)	1	Modified from SM 4500-S2 D
Tannin and Lignin (Water, Spec)	1	Modified from SM 5550 B
TDS (Estimated)	1	Modified from SM 2510 A
Total Coliforms (DC Plate)	1	Modified from MECP E3407
Total Kjeldahl Nitrogen (Water, Colorimetry)	1	Modified from EPA 351.2
Turbidity (Water, Turbidimeter)	1	Modified from SM 2130 B

Criteria :
A : Ontario Regulation 169/03 (Non-Regulated Drinking Water)

Sample status upon receipt :
8264503
Compliant

Notes :
- All analysis is completed at Eurofins Environment Testing Canada Inc. (Ottawa, Ontario) unless otherwise stated.
- Eurofins Environment Testing Canada Inc. is accredited by CALA, Canadian Association for Laboratory Accreditation to ISO/IEC 17025 for tests which appear on the scope of accreditation. The scope is available at https://directory.cala.ca/
- Please note: Field data, where presented on the report, has been provided by the client and is presented for informational purposes only. Guideline or regulatory limits listed on this report are provided for ease of use (informational purposes) only. Eurofins recommends consulting the official guideline or regulation as required. Unless otherwise stated, measurement uncertainty is not taken into account when determining guideline or regulatory exceedances.

Legend :
RL : Reporting limit
QC : Reference material (QC)
N/A : Not applicable
1 : Results in annex
* : Analysis conducted by external subcontracting
^ : Analysis not accredited

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OFFICIAL CERTIFICATE OF ANALYSIS - EXCEEDENCE SUMMARY

Client : Paterson Group
Project : PH4717

Reception Date : 2024-12-10

Eurofins Sample No	Client Sample Identification	Analyte	Result	Units	Exceeded Criteria		
					A	B	C
Colour, Apparent (Water, Spectrophotometry)							
8264503	6659F	Colour (Apparent)	9	TCU	5		
Hardness (Water, Calculation Only)							
8264503	6659F	Hardness as CaCO3 (Calculation)	282	mg/L	80-100		

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OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Paterson Group
Project : PH4717

Reception Date: 2024-12-10

					Eurofins Sample No :	8264503
					Matrix :	Groundwater
					Sampling Date :	2024-12-10
					Client Sample Identification :	6659F
Anions	**RL**	**Unit**	**Criteria A**	**Criteria B**	**Criteria C**	
Chloride	0.5	mg/L	250			49
Nitrate (as Nitrogen)	0.1	mg/L	10.0			<0.1
Nitrite (as Nitrogen)	0.1	mg/L	1.0			<0.1
Sulphate	1	mg/L	500			41

					Eurofins Sample No :	8264503
					Matrix :	Groundwater
					Sampling Date :	2024-12-10
					Client Sample Identification :	6659F
Calculations	**RL**	**Unit**				
Ion Balance (Calculation)^	0.1		0.97			

					Eurofins Sample No :	8264503
					Matrix :	Groundwater
					Sampling Date :	2024-12-10
					Client Sample Identification :	6659F
General Chemistry	**RL**	**Unit**	**Criteria A**	**Criteria B**	**Criteria C**	
Alkalinity (as CaCO3)	5	mg/L	500			256
Colour (Apparent)	2	TCU	5			9
Conductivity @ 25°C	5	µS/cm				671
Dissolved Organic Carbon	0.5	mg/L	5			2.4
Fluoride	0.1	mg/L	1.5			0.46
Hardness as CaCO3 (Calculation)	1	mg/L	80-100			282
pH @ 25°C	1		6.5-8.5			7.67
Phenols-4AAP	0.001	mg/L				<0.001
Sulphide (S2-)	0.01	mg/L	0.05			<0.01
Tannin and Lignin	0.1	mg/L				0.2
TDS (Estimated)^	5	mg/L	500			436
Turbidity	0.1	NTU	5			1.1

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OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Paterson Group
Project : PH4717

Reception Date: 2024-12-10

					Eurofins Sample No :	8264503				
					Matrix :	Groundwater				
					Sampling Date :	2024-12-10				
					Client Sample Identification :	6659F				
Metals			**Criteria**							
	RL	**Unit**	**A**	**B**	**C**					
Metals Scan (Water, ICP/MS)										
Aluminum	0.01	mg/L	0.1			<0.01				
Antimony	0.0005	mg/L	0.006			<0.0005				
Arsenic	0.001	mg/L	0.01			<0.001				
Barium	0.001	mg/L	1			0.082				
Beryllium	0.0005	mg/L				<0.0005				
Boron	0.01	mg/L	5			0.18				
Cadmium	0.0001	mg/L	0.005			<0.0001				
Chromium	0.001	mg/L	0.05			<0.001				
Cobalt	0.0002	mg/L				<0.0002				
Copper	0.001	mg/L	1			<0.001				
Iron	0.03	mg/L	0.3			0.14				
Lead	0.001	mg/L	0.01			<0.001				
Manganese	0.01	mg/L	0.05			<0.01				
Mercury	0.0001	mg/L	0.001			<0.0001				
Molybdenum	0.005	mg/L				<0.005				
Nickel	0.005	mg/L				<0.005				
Selenium	0.001	mg/L	0.05			<0.001				
Silver	0.0001	mg/L				<0.0001				
Strontium	0.001	mg/L				2.47				
Thallium	0.0001	mg/L				<0.0001				
Uranium	0.001	mg/L	0.02			<0.001				
Vanadium	0.001	mg/L				<0.001				
Zinc	0.01	mg/L	5			0.02				
Metals Scan (Water, ICP/OES)										
Calcium	1	mg/L				69				
Magnesium	1	mg/L				27				
Potassium	1	mg/L				4				
Sodium	1	mg/L	200			32				

					Eurofins Sample No :	8264503				
					Matrix :	Groundwater				
					Sampling Date :	2024-12-10				
					Client Sample Identification :	6659F				
Microbiology			**Criteria**							
	RL	**Unit**	**A**	**B**	**C**					
Escherichia coli (DC)	0	CFU/100mL	0			0				
Total Coliforms (DC)	0	CFU/100mL	0			0				

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OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Paterson Group
Project : PH4717

Reception Date: 2024-12-10

Eurofins Sample No :			8264503						
Matrix :			Groundwater						
Sampling Date :			2024-12-10						
Client Sample Identification :			6659F						
Nutrients	**RL**	**Unit**							
Ammonia (Total, as Nitrogen)	0.02	mg/L	0.087						
Total Kjeldahl Nitrogen	0.1	mg/L	0.253						

Approved by :
Patrick Jacques,
Ottawa, Environmental Chemist,

Approved by :
Dragana Dzeletovic-Andric,
Team Lead, Microbiology

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OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Paterson Group
Project : PH4717

Reception Date: 2024-12-10

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Alkalinity (Water, Automated)									
Method : Alkalinity (water, titration to pH 4.5, automated). Internal method: OTT-I-AT-WI45398.									
Alkalinity (as CaCO3)	mg/L	5	<5	99	95-105				
Associated Samples : 8264503								Prep Date: 2024-12-13 Analysis Date: 2024-12-16	
Ammonia, Total (Water, Colorimetry)									
Method : Ammonia (Water, Colorimetry). Internal method: OTT-I-NUT-WI46201.									
Ammonia (Total, as Nitrogen)	mg/L	0.02	<0.020	95	80-120	99	80-120	-	0-20
Associated Samples : 8264503								Prep Date: 2024-12-11 Analysis Date: 2024-12-11	
Chloride (Water, IC)									
Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.									
Chloride	mg/L	0.5	<0.5	96	80-120	104	80-120	-	0-20
Associated Samples : 8264503								Prep Date: 2024-12-16 Analysis Date: 2024-12-16	
Colour, Apparent (Water, Spectrophotometry)									
Method : Colour (Water, Spectrophotometric). Internal method: OTT-I-SPEC-WI45980.									
Colour (Apparent)	TCU	2	<2	95	49-146			-	0-40
Associated Samples : 8264503								Prep Date: 2024-12-13 Analysis Date: 2024-12-13	
Conductivity (Water, Automated)									
Method : Conductivity (Water, Autotitrator). Internal Method: OTT-I-AT-WI45398.									
Conductivity @ 25°C	uS/cm	5	<5	100	98-102			1	0-20
Associated Samples : 8264503								Prep Date: 2024-12-13 Analysis Date: 2024-12-16	
DOC (Water, IR)									
Method : Organic carbon (water, IR, combustion). Internal method: OTT-I-DEM-WI46148.									
Dissolved Organic Carbon	mg/L	0.5	<0.5	99	84-116	86	80-120	3	0-15
Associated Samples : 8264503								Prep Date: 2024-12-12 Analysis Date: 2024-12-13	
Escherichia coli (DC Plate)									
Method : Total Coliforms and E.Coli by MF (Water, DC plate). Internal method: OTT-M-BAC-WI45296.									
Escherichia coli (DC)	CFU/100mL	0	0					-	0-30
Associated Samples : 8264503								Prep Date: 2024-12-10 Analysis Date: 2024-12-11	
Fluoride (Water, Auto/ISE)									
Method : Fluoride by autotitrator, ion selective electrode. Internal method: OTT-I-AT-WI45398.									
Fluoride	mg/L	0.1	<0.10	106	90-110				
Associated Samples : 8264503								Prep Date: 2024-12-13 Analysis Date: 2024-12-16	

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OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Paterson Group
Project : PH4717

Reception Date: 2024-12-10

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Metals Scan (Water, ICP/MS)									
Method : Metals (Water, ICP/MS). Internal method: AMMTFQE1.									
Aluminum	mg/L	0.01	<0.01	100	80-130	102	70-130	-	0-20
Antimony	mg/L	0.0005	<0.0005	112	80-130	89	70-130	-	0-20
Arsenic	mg/L	0.001	<0.001	96	80-130	99	70-130	-	0-20
Barium	mg/L	0.001	<0.001	90	80-130	94	70-130	0	0-20
Beryllium	mg/L	0.0005	<0.0005	105	80-130	108	70-130	-	0-20
Boron	mg/L	0.01	<0.01	100	80-130	103	70-130	-	0-20
Cadmium	mg/L	0.0001	<0.0001	101	80-130	101	70-130	-	0-20
Chromium	mg/L	0.001	<0.001	100	80-130	100	70-130	-	0-20
Cobalt	mg/L	0.0002	<0.0002	100	80-130	97	70-130	-	0-20
Copper	mg/L	0.001	<0.001	100	80-130	85	70-130	1	0-20
Iron	mg/L	0.03	<0.03	100	80-130	95	70-130	-	0-20
Lead	mg/L	0.001	<0.001	110	80-130	96	70-130	-	0-20
Manganese	mg/L	0.01	<0.01	100	80-130	95	70-130	-	0-20
Mercury	mg/L	0.0001	<0.0001	103	80-120	100	70-130	-	0-20
Molybdenum	mg/L	0.005	<0.005	100	80-130	94	70-130	-	0-20
Nickel	mg/L	0.005	<0.005	100	80-130	95	70-130	-	0-20
Selenium	mg/L	0.001	<0.001	96	80-130	98	70-130	-	0-20
Silver	mg/L	0.0001	<0.0001	100	80-130	101	70-130	-	0-20
Strontium	mg/L	0.001	<0.001	100	80-130	91	70-130	0	0-20
Thallium	mg/L	0.0001	<0.0001	105	80-130	95	70-130	-	0-20
Uranium	mg/L	0.001	<0.001	100	80-130	99	70-130	-	0-20
Vanadium	mg/L	0.001	<0.001	100	80-130	99	70-130	-	0-20
Zinc	mg/L	0.01	<0.01	100	80-130	98	70-130	-	0-20
Associated Samples : 8264503								Prep Date: 2024-12-11 Analysis Date: 2024-12-11	
Metals Scan (Water, ICP/OES)									
Method : Metals (Water, ICP/OES). Internal method: OTT-I-MET-WI48491.									
Calcium	mg/L	1	<1	97	86-115	96	70-130	1	0-20
Magnesium	mg/L	1	<1	95	91-109	97	70-130	1	0-20
Potassium	mg/L	1	<1	101	87-113	99	70-130	-	0-20
Sodium	mg/L	1	<1	98	85-115	99	70-130	-	0-20
Associated Samples : 8264503								Prep Date: 2024-12-13 Analysis Date: 2024-12-10	
Nitrate (Water, IC)									
Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.									
Nitrate (as Nitrogen)	mg/L	0.1	<0.1	95	80-120	102	80-120	-	0-20
Associated Samples : 8264503								Prep Date: 2024-12-16 Analysis Date: 2024-12-16	
Nitrite (Water, IC)									
Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.									
Nitrite (as Nitrogen)	mg/L	0.1	<0.1	105	80-120				
Associated Samples : 8264503								Prep Date: 2024-12-16 Analysis Date: 2024-12-16	
pH (25°C) (Water, Automated)									
Method : pH (Water, Automated Meter). Internal method: OTT-I-AT-WI45398.									
pH @ 25°C		1	6.92	101	97-103			1	0-20
Associated Samples : 8264503								Prep Date: 2024-12-13 Analysis Date: 2024-12-16	

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OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Paterson Group
Project : PH4717

Reception Date: 2024-12-10

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Phenols (Water, Colorimetry)									
Method : Phenols (Water, Colorimetry). Internal method: OTT-I-4AAP-WI46150.									
Phenols-4AAP	mg/L	0.001	<0.001	110	75-125	110	70-130	-	0-20
Associated Samples : 8264503								Prep Date: 2024-12-11 Analysis Date: 2024-12-11	
Sulphate (Water, IC)									
Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.									
Sulphate	mg/L	1	<1	98	90-110	106	80-120	0	0-20
Associated Samples : 8264503								Prep Date: 2024-12-16 Analysis Date: 2024-12-16	
Sulphide (Water, Colorimetry)									
Method : Sulphide, S2- (Water, Colorimetry). Internal method: OTT-I-SPEC-WI45931.									
Sulphide (S2-)	mg/L	0.01	<0.01	87	80-120			-	0-20
Associated Samples : 8264503								Prep Date: 2024-12-12 Analysis Date: 2024-12-12	
Tannin and Lignin (Water, Spec)									
Method : Tannin and Lignin (Water, Spec), Internal method: OTT-I-SPEC-WI57693.									
Tannin and Lignin	mg/L	0.1	<0.1	102	80-120			-	0-20
Associated Samples : 8264503								Prep Date: 2024-12-11 Analysis Date: 2024-12-11	
Total Coliforms (DC Plate)									
Method : Total Coliforms and E.Coli by MF (Water, DC plate). Internal method: OTT-M-BAC-WI45296.									
Total Coliforms (DC)	CFU/100mL	0	0					-	0-30
Associated Samples : 8264503								Prep Date: 2024-12-10 Analysis Date: 2024-12-11	
Total Kjeldahl Nitrogen (Water, Colorimetry)									
Method : TKN (Water, colorimetry). Internal method: OTT-I-NUT-WI46201.									
Total Kjeldahl Nitrogen	mg/L	0.1	<0.100	105	70-130	103	70-130	5	0-20
Associated Samples : 8264503								Prep Date: 2024-12-11 Analysis Date: 2024-12-11	
Turbidity (Water, Turbidimeter)									
Method : Turbidity (Water, Turbidimeter). Internal method: OTT-I-TUR-WI46288.									
Turbidity	NTU	0.1	<0.1	101	80-120			3	0-30
Associated Samples : 8264503								Prep Date: 2024-12-11 Analysis Date: 2024-12-11	

Where RPD % is reported as "-" the calculation is not available because one or both of the duplicates is within 5 times the RL.

eurofins

STANDARD CHAIN-OF-CUST

146 Colonnade Road, Unit #8, Ottawa, ON, K2E 7Y1 - Phone: 613-727-5692,

Eurofins Workorder #: ____

100331614

Printed On : 2024-12-10 15:29:04

CLIENT INFORMATION

Company: Paterson Group

Contact: Alex Schopf

Address: 9 Auriga Drive

Telephone: 613-218-3444 Cell:

Email: #1: eardley@patersongroup.ca, mlaflamme@patersongroup.ca

Email: #2: aschopf@patersongroup.ca; mkillam@patersongroup.ca

Project: PH4717 Quote #:

INVOICE IN

NFORMATION: YES ☑ NO ☐)

Company:

Contact:

Address:

#1:

#2:

Telephone:

PO #: 61963

TURN-AROUND TIME (Business Days)

☐ 1 Day* (100%) ☐ 2 Day** (50%) ☐ 3-5 Days (25%) ☑ 5-7 Days (Standard)

Please contact Lab in advance to determine rush availability.

*For results reported after rush due date, surcharges will apply: before 12:00 - 100%, after 12:00 - 50%.

**For results reported after rush due date, surcharges will apply: before 12:00 - 50%, after 12:00 - 25%.

REGULATION/GUIDELINE REQUIRED

☐ Sanitary Sewer, City: Ottawa

☐ Storm Sewer, City: Ottawa

☑ ODWSOG

☐ PWQO

☐ O. Reg 347/558

☐ Other: ____

☐ None

☐ O. Reg 153

Table # ___, Course / Fine, Surface / subsurface.

Type: Com-Ind / Res-Park / Agri / GW / All Other / Sediment

☐ Excess Soil, Table: ____ Type: ____

The sample results from this submission will form part of a formal Record of Site Condition (RSC) under O.Reg. 153/04 ☐ Yes ☐ No

The optimal temperature conditions during transport should be less than 10°C. Sample(s) cannot be frozen, unless otherwise indicated or agreed upon with the Laboratory. Note that this COC is not to be used for drinking water samples. The COC must be complete upon submission of the samples, there will be a $25 surcharge if required information is missing (required fields are shaded in grey).

		Sample Details		Sample Analysis Required																
		Field Filtered -->																		RN# (Lab Use Only)
				O.Reg.153 parameters																
Sample ID	Date/Time Collected	Sample Matrix	# of Containers	PHC F1 - F4	BTEX	VOCs	PAHs	PCBs	Metals + Inorganics	Metals only	See attached paper	Subdivision Supply Bacti 2 (Ec/TC only)	TSS	pH	Total Metals	Hg				
6659F	December 10, 2024	GW	8	☐	☐	☐	☐	☐	☐	☐	☐	☑	☐	☐	☑	☐	☐	☐	☐	8264503
				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	
				☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐	

	PRINT	SIGN	DATE/TIME	TEMP (°C)
Sampled By:	Alex Schopf		December 10, 2024	
Relinquished By:	Alex Schopf		December 10, 2024	
Received By:	S. Situ		Dec 10/24 2pm	10

COMMENTS: Total and Trace Metals

CUSTODY SEAL: ☐ YES ☐ NO Ice packs submitted: ☐ Yes ☐ No

patersongroup

6659 Franktown Rd

PREDICTIVE NITRATE IMPACT ASSESSEMENT

Infiltration Factors		
Topography	0.20	
Soil	0.30	
Cover	0.15	
Total	**0.65**	
Site Characteristics		
Area of Site :	402275	m^2
Total of roof areas:	990	m^2
Total area of paved driveway areas:	4748	m^2
Roof + paved driveway areas	5738	m^2
Impervious Area	5738	m^2
Percent Impervious Area =	1	%
Infiltration Area =	396537	m^2
Septic Effluent		
Concentration of Effluent (Cs) =	40	mg/L
Infiltration Calculation		
Nitrate concentration in precipitation (C_i) =	0	mg/L
Surplus Water (Environment Canada)	292	mm/yr
Factored Water Surplus =	190	mm/yr
Infiltration % due to stormwater management measures	-	%
Infiltration rate from stormwater management measures =	0	mm/yr
Infiltration Flow Entering the System (Q_i) =	206	m^3/day
Mass Balance Model (MOEE, 1995)		
$C_T = (Q_bC_b+Q_eC_e+Q_iC_i)/(Q_b+Q_e+Q_i)$ = Cumulative Nitrate Concentration		
Q_b = flow entering the system across the upgradient area	0	m^3/day
C_b = background nitrate concentration	0	mg/L
Q_e = flow entering the system from the septic drainfield	2.725	m^3/day
C_e = concentration of nitrates in the septic effluent	40	mg/L
Q_i = flow entering the system from infiltration	206	m^3/day
C_i = Concentration of nitrates in the infiltrate	0	mg/L
C_T =	**0.52**	**mg/L**
Maximum Allowable Sewage Flow Volume		
Daily Sewage Flow (Qs)=	**2.725**	**m^3**

Notes: Site characteristic values were measured as approximate values from the available site plans and GeoOttawa.

Table E1

Summary of Measured Field Parameters

Test Well	Time Since Initiation of Pumping (Hours)	Temp (°C)	pH (-)	EC[1] (µS/cm)	Turbidity[2] (NTU)	TDS[3] (ppm)	Chlorine (mg/L)	Colour (ACU[4])	Colour (TCU[5])	Comments
TW22-1	1	8.2	6.5	-	0.84	-	-	-	-	-
	2	8.6	7.07	528	0.69	264	-	-	-	-
	3	8.7	7.25	528	0.82	264	0	< 5	< 5	-
	4	8.7	7.46	528	0.54	264	-	-	-	-
	5	8.9	7.68	524	0.75	262	-	-	-	-
	6	9.3	7.69	529	0.38	264.5	0	< 5	< 5	-

Notes:
1. EC: Electrical Conductivity
2. Turbidity is taken to be the average of three consecutive measurements.
3. TDS: Total Dissolved Solids (Calculated as 0.5 × EC)
4. ACU: Actual Colour Units (unfiltered)
5. TCU: True Colour Units (field-filtered using 0.45-micron filter)

Table E2

Summary of Laboratory Parameters Analyzed

	Parameter	Units	TW22-1 Lab ID: 2205352-01 26-Jan-22	TW22-1 6 hr Lab ID: 2212093-01 14-Mar-22	ODWQS	Standard
Microbial Parameters	E. Coli	CFU/100 mL	ND (1)	ND (1)	0	MAC
	Fecal Coliforms	CFU/100 mL	ND (1)	ND (1)	0	MAC
	Total Coliforms	CFU/100 mL	ND (1)	ND (1)	0	MAC
	Heterotrophic Plate Count	CFU/mL	ND (10)	ND (10)	-	-
General Inorganics	Alkalinity, total	mg/L	253	245	30-500	OG
	Ammonia as N	mg/L	0.1	0.05	-	-
	Dissolved Organic Carbon	mg/L	1.5	1.9	5/10	AO/MCT
	Colour	TCU	2	ND (2)	5/7	AO/MCT
	Colour, apparent	ACU	8	10	-	-
	Conductivity	uS/cm	694	718	-	-
	Hardness	mg/L	300	297	80-100	OG
	pH	pH Units	7.7	7.9	6.5-8.5	OG
	Phenolics	mg/L	ND (0.001)	ND (0.001)	-	-
	Total Dissolved Solids	mg/L	404	408	500	AO
	Sulphide	mg/L	ND (0.02)	ND (0.02)	0.05	AO

NOTES

1. ODWS = Ontario Drinking Water Standards
2. MAC = Maximum Acceptable Concentration
3. OG = Operational Guidelines
4. AO = Aesthetic Objectives
5. ND = Not Detectable
6. WL = Warning Level for a Person on Sodium Restricted Diet
7. MCT = Maximum Concentration Considered Reasonably Treatable

	Parameter	Units	TW22-1 Lab ID: 2205352-01 26-Jan-22	TW22-1 6 hr Lab ID: 2212093-01 14-Mar-22	ODWQS	Standard
General Inorganics	Tannin & Lignin	mg/L	ND (0.1)	ND (0.1)	-	-
	Total Kjeldahl Nitrogen	mg/L	0.2	0.2	-	-
	Organic Nitrogen	mg/L	0.1	0.15	0.15	OG
	Turbidity	NTU	0.9	0.3	5	AO/MCT
Anions	Chloride	mg/L	52	52	250/250	AO/MCT
	Fluoride	mg/L	0.4	0.4	1.5	MAC
	Nitrate as N	mg/L	ND (0.1)	ND (0.1)	10	MAC
	Nitrite as N	mg/L	ND (0.05)	ND (0.05)	0.1	MAC
	Sulphate	mg/L	42	42	500/500	AO/MCT
Metals	Mercury	mg/L	N/A	ND (0.0001)	0.001	MAC
	Aluminum	mg/L	N/A	ND (0.001)	0.1	MAC
	Antimony	mg/L	N/A	ND (0.0005)	0.006	MAC
	Arsenic	mg/L	N/A	ND (0.001)	0.01	MAC
	Barium	mg/L	N/A	0.111	1.0	MAC
	Beryllium	mg/L	N/A	ND (0.0005)	-	-
	Boron	mg/L	N/A	0.12	5.0	MAC
	Cadmium	mg/L	N/A	ND (0.0001)	0.005	MAC
	Calcium	mg/L	77	76.8	-	-

NOTES

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7. MCT = Maximum Concentration Considered Reasonably Treatable

	Parameter	Units	TW22-1 Lab ID: 2205352-01 26-Jan-22	TW22-1 6 hr Lab ID: 2212093-01 14-Mar-22	ODWQS	Standard
Metals	Chromium	mg/L	N/A	ND (0.001)	0.05	MAC
	Cobalt	mg/L	N/A	ND (0.0005)	-	-
	Copper	mg/L	N/A	ND (0.0005)	-	-
	Iron	mg/L	ND (0.1)	ND (0.1)	0.3/5-10	AO/MCT
	Lead	mg/L	N/A	0.0001	0.010	MAC
	Magnesium	mg/L	26.2	25.5	-	-
	Manganese	mg/L	0.009	0.007	0.05/1.0	AO/MCT
	Molybdenum	mg/L	N/A	0.0013	-	-
	Nickel	mg/L	N/A	ND (0.001)	-	-
	Potassium	mg/L	4.8	3.8	-	-
	Selenium	mg/L	N/A	ND (0.001)	0.05	MAC
	Silver	mg/L	N/A	ND (0.0001)	-	-
	Sodium	mg/L	**31.6**	**33.8**	20/200/200	WL/AO/MCT
	Strontium	mg/L	N/A	1.83	7.0	MAC
	Thallium	mg/L	N/A	ND (0.001)	-	-
	Tin	mg/L	N/A	ND (0.01)	-	-
	Titanium	mg/L	N/A	ND (0.005)	-	-
	Tungsten	mg/L	N/A	ND (0.01)	-	-

NOTES

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4. AO = Aesthetic Objectives
5. ND = Not Detectable
6. WL = Warning Level for a Person on Sodium Restricted Diet
7. MCT = Maximum Concentration Considered Reasonably Treatable

	Parameter	Units	TW22-1 Lab ID: 2205352-01 26-Jan-22	TW22-1 6 hr Lab ID: 2212093-01 14-Mar-22	ODWQS	Standard
Metals	Uranium	mg/L	N/A	0.0006	0.02	MAC
	Vanadium	mg/L	N/A	ND (0.0005)	-	-
	Zinc	mg/L	N/A	ND (0.005)	5	AO

NOTES

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2. MAC = Maximum Acceptable Concentration
3. OG = Operational Guidelines
4. AO = Aesthetic Objectives
5. ND = Not Detectable
6. WL = Warning Level for a Person on Sodium Restricted Diet
7. MCT = Maximum Concentration Considered Reasonably Treatable

Ontario Ministry of the Environment

Measurements recorded in: ☐ Metric ☒ Imperial

Well Tag No. **A 079370**

Well Record

Regulation 903 Ontario Water Resources Act

TW22-1

Page 1 of 1

Well Owner's Information

First Name	Last Name / Organization	E-mail Address	☐ Well Constructed by Well Owner
Ken	Desaulniers		

Mailing Address (Street Number/Name)	Municipality	Province	Postal Code	Telephone No. (inc. area code)
6659 Franktown Rd	Richmond	Ont	K0A2Z0	

Well Location

Address of Well Location (Street Number/Name)	Township	Lot	Concession
6659 Franktown Rd	Goulbourn	Part 19	4

County/District/Municipality	City/Town/Village	Province	Postal Code
Ottawa Carleton	Richmond	Ontario	K0A2Z0

UTM Coordinates	Zone	Easting	Northing	Municipal Plan and Sublot Number	Other
NAD 83	18	432028	5003192		

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	20
grey	Limestone			20	187
grey	sandstone			187	241

Annular Space

Depth Set at (m/ft) From	To	Type of Sealant Used (Material and Type)	Volume Placed (m³/ft³)
28'	0	Neat Cement Slurry	

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	28'
6"	Open Hole		28'	241

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
193'	☐ Fresh ☒ Untested	☐ Gas ☐ Other
232'	☐ Fresh ☒ Untested	☐ Gas ☐ Other
(m/ft)	☐ Fresh ☐ Untested	☐ Gas ☐ Other

Hole Diameter

Depth (m/ft) From	To	Diameter (cm/in)
0	241	6"

Results of Well Yield Testing

After test of well yield, water was:
☒ Clear and sand free
☐ Other, specify

If pumping discontinued, give reason: NA

Pump intake set at (m/ft): 200'

Pumping rate (l/min / GPM): 25 GPM

Duration of pumping: 1 hrs + 0 min

Final water level end of pumping (m/ft): 715"

If flowing give rate (l/min-/ GPM):

Recommended pump depth (m/ft): 200

Recommended pump rate (l/min / GPM): 80 GPM

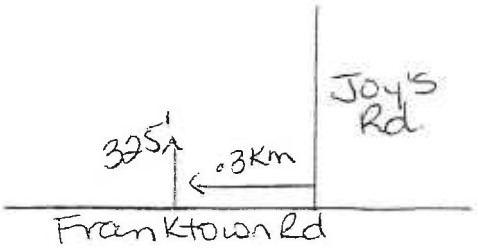
Well production (l/min / GPM): 80 GPM

Disinfected? ☒ Yes ☐ No

	Draw Down Time (min)	Draw Down Water Level (m/ft)	Recovery Time (min)	Recovery Water Level (m/ft)
Static Level		714"		715"
1	1	715"	1	714"
2			2	
3			3	
4			4	
5			5	
10			10	
15			15	
20			20	
25			25	
30			30	
40			40	
50		↓	50	↓
60	715"		60	714"

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 Ltd	1119

Business Address (Street Number/Name)	Municipality	Province	Postal Code	Business E-mail Address
6659 Franktown Rd	Richmond	Ont	K0A2Z0	

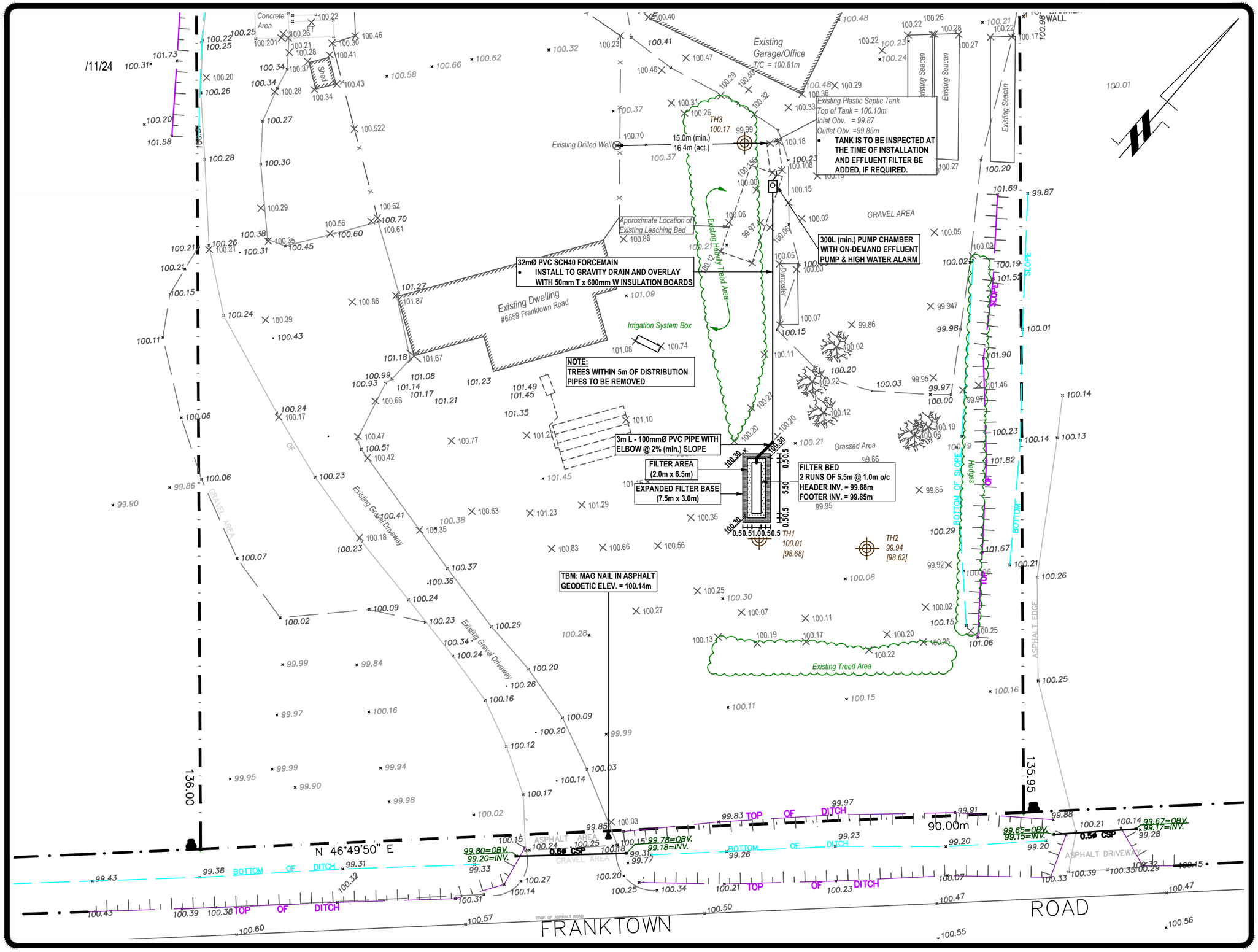
Bus. Telephone No. (inc. area code)	Name of Well Technician (Last Name, First Name)
6138382170	Purcell Shannon

Well Technician's Licence No.	Signature of Technician and/or Contractor	Date Submitted
2112		

Well owner's information package delivered	Date Package Delivered	Ministry Use Only
☒ Yes ☐ No	Date Work Completed: 2008/06/10	Audit No. Z 94618
		Received

0506E (12/2007)

Ministry's Copy



LEGEND:

⊕	Test Hole Location
x 100.99	Existing Ground Surface Elev. (m)
x 100.99	Existing Ground Surface Elev. (m) by Others
x 102.30	Proposed Ground Surface Elev. (m)
[99.99]	Bedrock Elev. (m)
T/C	Top of Foundation Wall
	Existing Structure
	Existing Tree
	Existing Tree to be Removed

All units are in meters unless otherwise specified.

BENCHMARK INFORMATION:

TBM: Top of MAG Nail in Asphalt in Subject Driveway (See Plan)
Approximate Geodetic Elevation = 100.17m

REFERENCE:

Base Plan and Topographic Information obtained from Plan of Survey Showing Topographic Detail Part of Lot 19 Concession 4 geographic township of Goulbourn, Now in the City of Ottawa, dated July 11, 2024, by J.D. Barnes Ltd.

DD/MM/YY	DESCRIPTION	REV.
/11/24	Issued for Septic Permit Application	1
21/10/24	Issued for Client Review	0

Consultant:

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7S9
TEL: (613) 226-7381

Client:

AIR ROCK DRILLING Co.

Project:

PROPOSED SEWAGE SYSTEM REPLACEMENT FOR AN EXISTING OFFICE
6659 FRANKTOWN ROAD
OTTAWA (RICHMOND), ONTARIO

Drawing:

SEWAGE SYSTEM LAYOUT PLAN

Scale:	Drawn by:
1:400	HV
Date:	Checked by:
11/2024	MK

Drawing No.:

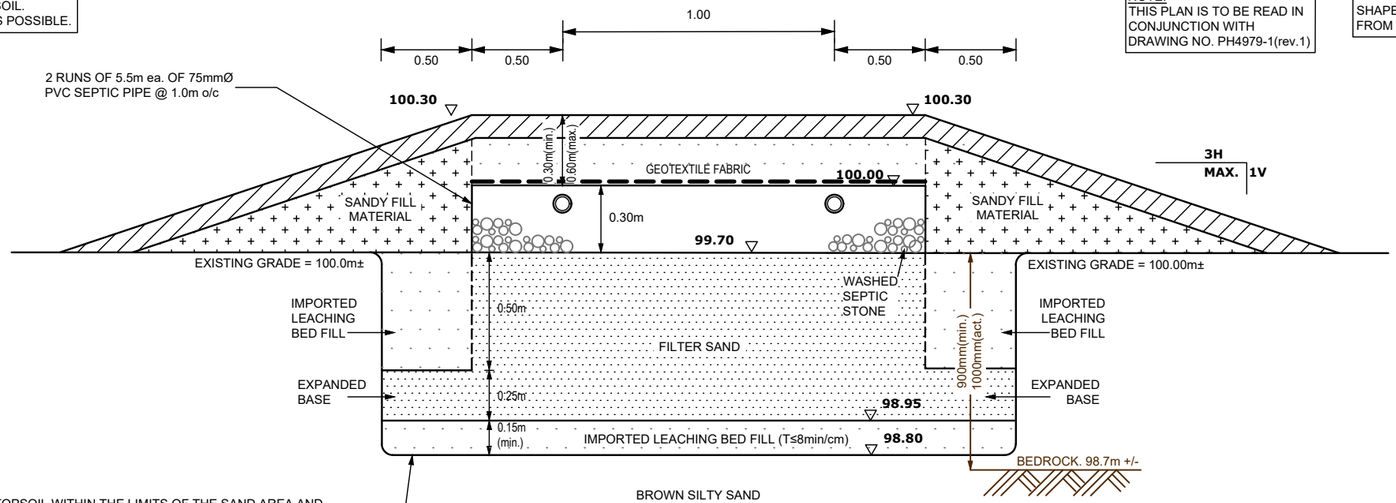
PH4979-1(rev.1)

p:\autocad drawings\hydrogeology\ph49xx\ph4979 - air rock drilling - 6659 franktown road, richmond\ph4979-1(rev.1).dwg

COVER MATERIAL TO CONSIST OF LEACHING BED FILL FOLLOWED BY APPROX. 0.10m OF SANDY TOPSOIL. LEACHING BED TO BE VEGETATED AS SOON AS POSSIBLE.

NOTE:
THIS PLAN IS TO BE READ IN CONJUNCTION WITH DRAWING NO. PH4979-1(rev.1)

FINAL GRADING SHALL BE SUITABLY SHAPED TO DIRECT SURFACE WATER AWAY FROM THE PROPOSED SEWAGE SYSTEM.



REMOVE ALL TOPSOIL WITHIN THE LIMITS OF THE SAND AREA AND SUBEXCAVATE TO AT LEAST ELEV. 98.80m. RE-ESTABLISH THE SPECIFIED CONTACT LEVEL USING ADDITIONAL LEACHING BED SAND FILL, WHERE REQUIRED.

PROFILE

N.T.S.

NOTES:

1) ESTIMATE OF DAILY SEWAGE FLOW (Q)

THE PROPOSED SEWAGE SYSTEM HAS BEEN DESIGNED TO SUPPORT COMMERCIAL USAGE CONSISTING OF OFFICE, AND WAREHOUSE. THE DAILY DESIGN SEWAGE FLOW RATE IS CALCULATED IN ACCORDANCE WITH O.B.C. TABLE 8.2.1.3.B.

OFFICE SPACE:

- (83.7 m squared / 9.3 x 75L/day = 675 L/DAY

WAREHOUSE:

- 150L/DAY x LOADING BAY DOORS = 2 X 150 = 300 L/DAY

TOTAL:

ESTIMATED SEWAGE FLOW = 975 L/DAY

2) SOIL CONDITIONS

SOILS INFORMATION GATHERED BY PATERSON GROUP INC. ON OCTOBER 1, 2024

TH 1, ELEV. 100.01m		TH 2, ELEV. 99.94m		TH 3, ELEV. 100.17m	
0-0.32	TOPSOIL with ORG.	0-0.25	TOPSOIL WITH ORG.	0-0.36	TOPSOIL WITH ORG.
0.32-1.33	BROWN SILTY SAND	0.25-1.32	BROWN SILTY SAND	0.36-1.40	BROWN SILTY SAND
-TH DRY UPON COMPLETION		- TH DRY UPON COMPLETION		- TH DRY UPON COMPLETION	

3) SEPTIC TANK

- PUMP AND INSPECT EXISTING SEPTIC TANK FOR RE-USE.
- MINIMUM WORKING CAPACITY OF PRETREATMENT TANK = 3Q OR 3,600L (min.) WHICHEVER IS GREATER = 3(975) = 2,925L, USE 3,600L (min.)
- AN OBC APPROVED EFFLUENT FILTER (I.E. POLYLOK PL-250 EFFLUENT FILTER, OR EQUIVALENT) SHALL BE INSTALLED ON THE OUTLET PIPE IN THE PRETREATMENT TANK IF ONE IS NOT PRESENT.
- THE ACCESS LIDS TO THE TANK OPENINGS SHALL BE EXTENDED TO THE GROUND SURFACE. INSTALL RISERS AND COVERS TO SUIT.
- RISER ASSEMBLY SHALL BE EQUIPPED WITH SAFETY DEVICES AS PER CSA B66-21.

4) PUMP CHAMBER

- INSTALL A 300L MIN. PUMP CHAMBER IN SERIES AND DOWNSTREAM FROM THE SEPTIC TANK.
- AN ON-DEMAND EFFLUENT PUMP (I.E. MYERS ME3F, OR SIMILAR) AND A HIGH WATER ALARM SHALL BE INSTALLED IN THE PUMP CHAMBER.
- THE OPERATIONAL FLOAT TETHER LENGTH SHALL BE SET SO THAT PUMP DUTY CYCLE DISCHARGES NO MORE THAN 92L / DOSE (75% OF PIPE VOLUME).
- A 3mmØ DRAIN HOLE SHALL BE INSTALLED IN THE UNDERSIDE OF THE FORCEMAIN IN THE PUMP CHAMBER NEAR THE WALL CONNECTION.
- RISERS WITH A COVER SHALL BE INSTALLED OVER THE PUMP CHAMBER TO PROVIDE ACCESS FROM THE GROUND SURFACE.
- DISCHARGE PIPING FOR PUMP SHALL BE CONFIGURED SUCH THAT THE PUMP IS EASILY SERVICED FROM THE GROUND SURFACE.

5) DISTRIBUTION BOX / FORCEMAIN

- A 32mmØ (NOMINAL) PVC SCH 40 FORCEMAIN SHALL BE USED TO CARRY THE EFFLUENT FROM THE PUMP CHAMBER TO A 3.0m SECTION OF 100mm PVC PIPE WITH AN ELBOW @2%(min.) SLOPE TO THE HEADER PIPE WITHIN THE LEACHING BED IN ORDER TO REDUCE THE SPEED OF THE PUMPED EFFLUENT UPON ENTERING THE BED.
- THE FORCE MAIN SHALL BE INSTALLED TO GRAVITY DRAIN TO THE PUMP CHAMBER.
- THE FORCE MAIN SHALL BE OVERLAIN WITH 50mm T x 600mm C/W RIGID INSULATION.

6) FILTER BED SIZE CRITERIA

- FILTER AREA REQUIRED = Q/75 = 975/75 = 13.0m²
- FILTER AREA PROVIDED = 2.0m x 6.5 = 13.0m²
- USE 2 RUNS OF 5.5m EACH @ 1.0 m o/c
- EXPANDED BASE REQUIRED = 975(15)/850 = 17.2m²
- TOTAL BASE AREA PROVIDED = 3.0m x 7.5m = 22.5m²

7) FILTER BED CONSTRUCTION GUIDELINES

- REMOVE ALL TOPSOIL WITHIN THE LIMITS OF THE SAND AREA AND SUBEXCAVATE TO AT LEAST ELEVATION 98.80m, WHICHEVER IS GREATER.
- A MINIMUM THICKNESS OF 0.15m OF LEACHING BED SAND FILL, HAVING A PERCOLATION RATE OF NOT GREATER THAN 8 min/cm, SHALL BE INSTALLED BELOW OVER THE EXPANDED BASE AREA.
- LEACHING BED SAND FILL SHALL CONSIST OF UNIFORM SAND WITH GRADING LIMITS SIMILAR TO 100% PASSING 13.2mm SIEVE, LESS THAN 5% PASSING 0.075mm SIEVE AND HAVING A PERCOLATION RATE OF 6 TO 8 min/cm.
- THE FILTER SAND SHALL CONFORM TO THE REQUIREMENTS OF PART 8 OF THE OBC.
- THE DISTRIBUTION PIPES (2 RUNS OF 5.5m EACH) SHALL CONSIST OF 75mmØ PERFORATED PVC SEPTIC PIPE WHICH SHALL BE EMBEDDED IN A CONTINUOUS 300mm THICK LAYER OF WASHED SEPTIC STONE.
- THE INVERT LEVEL OF THE DISTRIBUTION PIPES SHALL BE SET AT ELEVATION 99.88m AT THE HEADER AND ELEVATION 99.85m AT THE FOOTER.
- THE ENDS OF EACH RUN SHALL BE INTERCONNECTED WITH A SOLID PVC FOOTER PIPE.
- THE CLEAR STONE LAYER SHOULD BE COVERED WITH A NON-WOVEN GEOTEXTILE FABRIC.
- THE SURFACE OF THE BED SHOULD BE COVERED WITH PERMEABLE SAND FOLLOWED BY APPROXIMATELY 100mm OF SANDY TOPSOIL. THE BED AREA SHOULD BE VEGETATED.
- THE TOTAL THICKNESS OF THE COVER OVER THE CLEAR STONE SHOULD BE WITHIN A RANGE OF 0.3m TO 0.6m.
- THE SIDES OF THE BED SHOULD BE SLOPED IN THE RANGE OF 3H:1V OR SHALLOWER.

8) MINIMUM CLEARANCE DISTANCE FROM LEACHING BED

- 3.2m FROM ANY PROPERTY LINE
- 5.2m FROM ANY STRUCTURE
- 15.2m FROM ANY DRILLED WELL:
- 30.0m FROM ANY DUG OR SANDPOINT WELL.
- 5.0m FROM ANY POOL (UNLESS OTHERWISE APPROVED)
- 5.0m FROM ANY TREE (UNLESS OTHERWISE APPROVED)

9) MINIMUM CLEARANCE DISTANCE FROM TANK(S)

- 1.5m FROM ANY STRUCTURE
- 15.0m FROM ANY DRILLED WELL
- 3.0m FROM ANY PROPERTY LINE

10) GENERAL

- SNOW STORAGE SHALL NOT BE LOCATED OVER PROPOSED SEWAGE SYSTEM.
- THE SEWAGE SYSTEM HAS NOT BEEN DESIGNED TO SUPPORT TRAFFIC LOADING.
- THE BACKFILLING OF THE SEWAGE SYSTEM SHOULD MINIMIZE THE RISK OF OVER COMPACTION WITH THE USE RUBBER TRACKED EQUIPMENT AND BY AVOIDING THE CREATION OF ANY CONSTRUCTION ROUTES OR PATHWAYS OVER THE SYSTEM.
- ANY EXISTING IRRIGATION / SPRINKLER SYSTEM TO BE RELOCATED AWAY FROM PROPOSED LEACHING BED.
- CONTRACTOR SHALL BE QUALIFIED AND REGISTERED UNDER PART 8 OF THE ONTARIO BUILDING CODE.
- ALL WORK SHALL BE CARRIED OUT IN ACCORDANCE WITH THE LATEST BY-LAWS, CODES, AND REGULATIONS.
- CONTRACTOR SHALL REVIEW DRAWINGS IN DETAIL AND SHALL INFORM THIS FIRM (PATERSON GROUP INC.) OF ANY ERRORS AND/OR OMISSIONS ON DESIGN DRAWINGS IMMEDIATELY.
- CONTRACTOR SHALL BE RESPONSIBLE TO LOCATE AND PROTECT ALL EXISTING UNDERGROUND SERVICES.
- CONTRACTOR SHALL VISIT THE SITE AND REVIEW ALL DOCUMENTATION TO BECOME FAMILIAR WITH THE SITE AND SUBSURFACE SOIL CONDITIONS TO DETERMINE SUITABLE METHODS OF CONSTRUCTION.
- THE MANUFACTURER PROVIDES A LIMITED WARRANTY OF THE SYSTEM COMPONENTS. THE OWNER OF THE SYSTEM MUST SIGN A MAINTENANCE AGREEMENT WITH THE MANUFACTURER'S REPRESENTATIVE. THE HOMEOWNER IS RESPONSIBLE FOR THE ANNUAL FEES ASSOCIATED WITH THE MAINTENANCE.
- THIS FIRM HAS PROVIDED DESIGN SERVICES ONLY FOR THE SUBJECT SEWAGE SYSTEM. THE DESIGN HAS BEEN CARRIED OUT IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES AND OUR INTERPRETATION OF PART 8 OF THE ONTARIO BUILDING CODE.
- CONSTRUCTION INSPECTIONS DURING THE INSTALLATION OF THE SEWAGE SYSTEM MAY BE REQUIRED BY THE REGULATING AUTHORITY AND ARE STRONGLY RECOMMENDED BY THIS FIRM (PATERSON GROUP INC.) DUE TO THE POTENTIAL VARIABILITY IN BEDROCK ELEVATION AT THE SUBJECT SITE. IF THIS FIRM IS TO COMPLETE ANY CONSTRUCTION INSPECTION(S), ADDITIONAL FEES MAY BE APPLIED. CONFIRMATION OF PAYMENT WILL BE REQUIRED PRIOR TO THE INSPECTION.
- THE TEST HOLE INFORMATION PROVIDED IS INTENDED TO BE USED FOR DESIGN PURPOSES ONLY, AND SHOULD NOT BE RELIED UPON FOR CONSTRUCTION PURPOSES. IF DISCREPANCIES ARE FOUND DURING THE CONSTRUCTION PROCESS, IT IS THE CLIENT'S RESPONSIBILITY TO CONTACT THIS FIRM TO MAKE ANY NECESSARY COMMENTS OR REVISIONS. ADDITIONAL REVISIONS ARE NOT CONSIDERED PART OF THE DESIGN WORKS AND WILL BE CONSIDERED AS AN ADDITIONAL COST.

/11/24

/11/24	Issued for Septic Permit Application	1
21/10/24	Issued for Client Review	0
DD/MM/YY	DESCRIPTION	REV.

Consultant:

PATERSON GROUP
9 AURIGA DRIVE
OTTAWA, ON
K2E 7Z9
TEL: (613) 226-7381

Client:

AIR ROCK DRILLING Co.

Project:

PROPOSED SEWAGE SYSTEM REPLACEMENT FOR AN EXISTING OFFICE

6659 FRANKTOWN ROAD OTTAWA (RICHMOND), ONTARIO

Drawing:

SEWAGE SYSTEM DETAIL & NOTES

Scale:	Drawn by:
N.T.S.	KB
Date: 11/2024	Checked by: HV

Drawing No.:

PH4979-2(rev.1)

p:\autocad drawings\hydrogeology\ph49xx\ph4979 - air rock drilling - 6659 franktown road, richmond\ph4979-2(rev.1).dwg

Ottawa Septic System Office
Bureau des systèmes septiques d'Ottawa

Certificate of Completion

For the use and operation of an on-site sewage disposal system in accordance with the Sewage System Permit. This Certifies that the on-site sewage system conforms to the *Ontario Building Code* and Ontario Regulation 403/97 as amended by Ontario Regulation 22/98.

Sewage System Permit Number: 01-793 **Issued to:** KEN & MICHELLE DESAULNIERS

Legal Description:

Lot 18 Concession 4 Sub. Lot _____ Registered/Reference Plan 4R-14477

Municipal Address: 6659 FRANKTOWN ROAD

in the former Township/City of GOULBOURN within the City of Ottawa

Details Pertaining to System

a) Type of System: Class IV sewage system ☒ trench ☐ filter media ☐ SBT ☐ area bed ☐ other _____

b) ☒ New ☐ Existing septic tank/holding tank with a working capacity of 3600 litres constructed of ☒ concrete ☐ fibreglass ☐ plastic

c) ☒ Trench ☐ Filter Media leaching bed of total 90 metres of 75 millimetre diameter distribution pipe laid in 6 runs at 15 metres and fed by GRAVITY (gravity, siphon, pump).

d) Shallow Buried Trench _____ metres of _____ millimetre diameter distribution pipe laid in _____ runs at _____ metres

e) Area Bed: Stone _____ m^2 Sand _____ m^2 Pipe _____ metres

f) Effluent Filter: Manufacturer: POLYLOK Model: PL-124

g) Sewage Treatment Unit(s): Manufacturer: _____ Model: _____

h) Other: _____

Certificate Issued By:

Manager of Septic System Approvals: Jerry L. Davidson Date Issued AUGUST 2, 2002
Ottawa Septic System Office

Ottawa Septic System Office
Bureau des systèmes septiques d'Ottawa

Do not complete shaded areas
Permit No. 01-793
Fee Receipt No. 3962
Amount Paid 400.00
Date Received
Revision No. Dec. 13-01
Date Received

SEWAGE SYSTEM PERMIT
(Class 2 to 5)
Disponible en français

Personal information contained on this form is collected pursuant to the *Ontario Building Code Act*, 1992 as amended, and will be used for the purpose of considering your application for a Sewage System Permit. Questions regarding this collection of personal information should be directed to the Rideau Valley Conservation Authority.

1. OWNER

Name Kent + Michelle Desaulniers (Desauliniers)

Mailing Address 10 Elaine Place Brockville

K6V-1J7

Postal Code

Telephone No. 923-9768 Fax. No. 498-6279

2. BUILDER/VENDOR

Name Mike Fachin Grizzly Homes

Telephone No. 257-5309 Fax. No. 257-5309
cell 552-5309

BUILDER REGISTRATION
Are you registered under the Ontario New Home Warranties Plan Act?
☑ yes ☐ no
Registration No. 26315

3. CIVIC ADDRESS OF LOT Franktown ~~Rockwood~~ Rd.

4. DIRECTIONS TO LOT (highway no., secondary roads, signs to follow, etc.)

Franktown Rd. west of Richmond
Grizzly sign, lot on Rt. between 6663 & 6685

5. TYPE OF WORK PROPOSED
☑ new installation ☐ replacement ☐ alteration

nature of work

6. APPLICATION FOR EQUIVALENT ☐ see attached form

7. WATER SUPPLY
☐ proposed ☐ existing
TYPE OF WELL
☐ dug/bored/sandpoint well ☐ municipal
☑ drilled well ☐ other

8. APPLICABLE LAWS
☑ zoning RU ☐ site plan
☐ fill permit ☐

9. SEVERANCE — Lot Approval
☐ pending
☐ lot approved under Severance Application No.

10. PROPOSED USE(S) OF BUILDING(S) (Res.,Com.,Ind.,etc.)

Res.

11. INSTALLER INFORMATION

Name Gardiner Contracting

Mailing Address RR #1

Carleton Place, Ont.

Postal Code K7C 3P1

Telephone No. 257-1396 Fax. No. 257-1396

OBC License No. L1998-1269

Name of supervisor (O.B.C) Tom or Lee Gardiner

12. PROPERTY LOCATION

Town/Village Richmond Township/City of Ottawa (Goulbourn)

Lot No. 17 Conc. No. 4 Goulbourn

Sub Lot/Part No. 9R-14477 R. Plan No. 4R 14477

Assessment Roll No.

13. RESIDENTIAL SEWAGE DESIGN FLOW INFORMATION

Bedrooms (residential) 3 House m² (floor area) 2200 sq. ft. 204

People 2 Total Fixture Units (see Appendix F) 22.5

Residential Flow: (1600 + 125) = 1725 (L/day)

14. SEWAGE DESIGN FLOW FOR OTHER OCCUPANCIES

Design Flow (L/day)

Detailed sewage flow calculations:

15. TYPE OF SYSTEM
☐ Class 2 — Leaching Pit
☐ Class 3 — Cesspool
☑ Class 4 — Trench
  ☐ fully raised
  ☐ partially raised
  ☐ in-ground
☐ Class 4 — Filter Media
  ☐ fully raised
  ☐ partially raised
  ☐ in-ground
☐ Class 4 — Aerobic with Trench
  ☐ fully raised
  ☐ partially raised
  ☐ in-ground
☐ Class 4 — Aerobic with Filter Media
  ☐ fully raised
  ☐ partially raised
  ☐ in-ground
☐ Class 4 — Area Bed
  ☐ fully raised
  ☐ partially raised
  ☐ in-ground
☐ Class 4 — SBT
☐ Class 5 — Holding Tank

16. I agree to comply with the provisions of the building and zoning by-laws of the municipality and all amendments thereto. I further agree that neither the granting of a permit, nor the