



Kollaard Associates

Engineers

210 Prescott Street

P.O. Box 189

Kemptville, Ontario K0G 1J0

Civil • Geotechnical •
Structural • Environmental •
Hydrogeology •

(613) 860-0923

FAX: (613) 258-0475

REPORT ON

**HYDROGEOLOGICAL AND TERRAIN STUDY
PROPOSED LIGHT INDUSTRIAL BUILDINGS
151-159 WESCAR LANE
CITY OF OTTAWA
ONTARIO**

Submitted to:

Sunbelt Rentals Inc.
2489 Sheffield Road
Ottawa, Ontario
K1B 3V6

DATE November 13, 2023

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Sunbelt Rentals Inc.
2489 Sheffield Road
Ottawa, Ontario
K1B 3V6

RE: HYDROGEOLOGICAL AND TERRAIN STUDY
EXISTING SUPPLY WELL
PROPOSED LIGHT INDUSTRIAL BUILDINGS
151-159 WESCAR LANE
WEST CARLETON-MARCH WARD
CITY OF OTTAWA, ONTARIO

Dear Sir:

This report presents the results of an evaluation of the water quality and quantity for the well that will supply water for the above noted proposed light industrial development at 151-159 Wescar Lane in the City of Ottawa, Ontario (see Key Plan, Figure 1). It is understood that it is proposed to develop one building (Phase 1) and then eventually a second building (Phase 2) will be constructed. It is understood that each of the proposed light industrial buildings are to contain warehouse, office space and loading bays (storage space) associated with an equipment rental company. The preliminary Site Servicing Plan (prepared by DB Gray Engineering) is provided as Attachment E and outlines the locations and layout of the proposed buildings, well and septic system area, stormwater infiltration and provides hard surfaced areas.

The well in question was constructed by Saunders Well Drilling Ltd. of Braeside, Ontario on July 11, 2023. A Ministry of the Environment, Conservation and Parks (MECP) Well Record for the subject well (TW1) and a Compliance Certificate are provided as Attachment A.

A pumping test was carried out at the well, TW1, by a member of our engineering staff on July 25, 2023. The testing consisted of a 6 hour duration constant discharge rate pumping test. During the pumping test, water level measurements were made both manually and using a pressure transducer to monitor the drawdown of the water level in the well in response to pumping. Groundwater samples were collected from TW1 at about hour 3 and at hour 6 of the pumping test to characterize groundwater quality. After the pumping period, the pump was shut off and the recovery of the water level in the well was monitored for a period of time until at least 95 percent of the drawdown created during pumping had been recovered or for at least 24 hours, whichever was less.



1.0 Groundwater Supply Evaluation

1.1 Water Quantity

A. Water Demand

The water demand is calculated using the information from the sewage system daily design flow and peaking factors available in the City of Ottawa Water Distribution Guidelines, 2010. The sewage design flows are provided below, based on the sewage design information (provided by client).

Daily sewage design flow:

The daily sewage design flow is equal to a maximum daily demand for the site. The site is to be developed in two phases as follows, with the corresponding sewage design flows as provided by the sewage design consultant (DB Gray Engineering).

Phase I Building

Office: The greater of 30 employees x 75 L/day = 2,250 L/day OR
277.3 m² x 75 L/day per 9.3 m² = 2,236 L/day
Factory: 18 employees x 75 L/day = 1,350 L/day
Warehouse: 18 loading bays x 150 L/day = 2,700 L/day

Total Daily Sewage Design Flow (Phase I) = 6,300 L/day

Phase 2 Building

Office: The greater of 4 employees x 75 L/day = 300 L/day OR
45.3 m² x 75 L/day per 9.3 m² = 365 L/day
Factory: 8 employees x 75 L/day = 600 L/day
Warehouse: 9 loading bays x 150 L/day = 1,350 L/day

Total Daily Sewage Design Flow (Phase II) = 2,315 L/day

TOTAL DAILY SEWAGE DESIGN FLOW = 8,615 L/day

It is understood that the daily sewage design flow will be less than 10,000 litres per day. As such, a design flow of 8,615 litres per day is used for the purposes of this report.

Since sewage system design is based on the maximum expected daily use, it is equivalent to the Maximum Daily Demand (MDD). The MDD is based on an eight hour operation schedule (i.e. full day occurs over an eight hour period and not over 24 hours).

City of Ottawa calculates the Maximum Hour Demand (MHD) for a commercial or industrial demand to be 1.8 x MDD

MDD = 8,615 litres / day x 1 day / 8 hours x 1 hour / 60 minutes



= 18 litres / minute

MHD = 1.8 x MDD
= 1.8 x 18 litres / minute
= 32.3 litres / minute

The City of Ottawa predicated water usage for MDD and MHD of 18 L/min and 32.3 L/min, respectively, are used.

The Maximum Hourly Demand (MHD) for the site based on its proposed use is expected to be about ~32.5 litres/minute, compared to the pumping test rate which was 38 litres/minute. This indicates that the pumping rate used for the test was appropriate as the peak water demand rate was met for the test. The MDD is 8,615 L/day. The test was carried out for 6 hours at the above noted rate and some ~13,680 Litres of water were removed from the well in that time. As such, the amount of water taking in six hours exceeds the expected daily water taking for the full development.

B. Pumping Test

The well was pumped for six hours at a pumping rate of about 38 litres per minute. Over the course of the pumping test, the water level in the well dropped some 2.84 metres. At the end of the pumping test, about 12 minutes was required for 96 percent recovery of the total drawdown in the static water level created during pumping.

The pumping test drawdown and recovery data and plots for TW1 are provided as Attachment B. The drawdown and recovery data provided were measured with reference to the top of the well casing at the test well location.

The pumping test data for the test well was analyzed using the method of Cooper and Jacob (1946). Although the assumptions on which these equations are based are not strictly met, this method provides a reasonable estimate of the aquifer transmissivity.

Transmissivity was calculated using the following relationship:

$$T = \frac{2.3Q}{4\pi ds}$$

where Q is the pump rate, m³/day
ds is the change in drawdown over one time log cycle, m
T is the transmissivity, m²/day

Specific Capacity = Q / TD
= 54.6 m³/day / 2.85 m
= 19 m³/day/m

where Q = test pumping rate (m³/day)
TD = total drawdown (m)

Based on the pumping test drawdown data the transmissivity of the aquifer is estimated to be about 100 m²/day. Based on the recovery data the aquifer transmissivity is estimated to be about 8.5 m²/day. It should be noted that pumping tests should typically be carried out for a period of between 24 hours or greater to establish transmissivity for a confined aquifer in order to assess boundary



conditions. Over the course of the six hour test, some ~13,600 litres of water were pumped from the well. As the expected maximum daily water demand is about 8,615 litres per day, the well is capable of meeting the expected daily water demand.

1.2 Well Interference

During the pumping test, the drawdown at the well was 2.84 metres. That drawdown was observed during pumping at a peak water demand rate. A review of several additional well records was carried out and indicated that area wells are typically 38 metres in depth or deeper. These wells are all sufficiently deep such that well interference is not an issue, with available drawdown of greater than 15 metres or more. There are 4 wells located near the site that are of older construction and are indicated to be shallower wells of depths of some 7 metres to 20 metres. The available drawdown in these wells based on the pump depths and the static water level indicated on the well records is between 2.4 metres and 13.6 metres. It is unlikely that the well would affect water levels by more than a few centimetres as even in the pumping well, drawdown was only 2.8 metres. There is sufficient available drawdown at these wells such that the use of the well will not interfere with the well performance in other offsite wells.

1.3 Water Quality

To determine the water quality of the groundwater supply, groundwater samples were obtained from the well during the pumping test and prepared/preserved in the field using appropriate techniques and submitted to Eurofins Environmental Testing in Ottawa, Ontario for the chemical, physical and bacteriological analyses listed in the MECP guideline entitled Procedure D-5-5, Technical Guideline for Private Wells: Water Supply Assessment, August 1996. The temperature, conductivity, pH, total dissolved solids, turbidity and residual chlorine levels of the groundwater were measured at periodic intervals during the pumping test. The results of the chemical, physical and bacteriological analyses of the water samples obtained from the test well and the field water quality are provided as Attachment C and in Table I, respectively.

The water quality as determined from the results of the analyses is acceptable. The water meets all the Ontario Drinking Water Standards (ODWS) health and aesthetic parameters tested for at the test well except for aesthetic objective for hardness, Iron, Manganese, TDS, Turbidity (lab measured) and Antimony. Sodium in the raw water supply exceeds the 20 mg/L medical advisory level for those on medically restricted low sodium diets.

A. Hardness

The water is considered to be hard by water treatment standards. Water with hardness above 80 to 100 milligrams per litre as CaCO_3 is often softened for domestic use. The hardness at the well is 336 to 339 milligrams per litre. Treatment consisting of water softening by conventional sodium ion exchange is effective to reduce scale formation associated with hardness. Ion exchange water softening may introduce relatively high concentrations of sodium into the drinking water which can also contribute a significant percentage to the daily sodium intake for a consumer on a sodium restricted diet. Where ion exchange water softeners are used, a separate unsoftened water supply could be used for drinking and culinary purposes. The untreated water had sodium levels that were less than the medical advisory level of 20 mg/l.



B. Manganese

The level of manganese was 0.15 mg/l after three and six hours. The aesthetic objective for manganese is 0.05 mg/l. Manganese can stain laundry and fixtures black. For commercial usage, where domestic usages such as laundry are not anticipated, it may not be necessary to treat the water for this parameter. If desired, manganese can be effectively treated using a manganese greensand filter or some other proprietary filter for manganese removal.

C. Iron

Iron was measured at a level of 1.58 mg/l, compared to the aesthetic objective of 0.3 mg/l. Excessive iron levels may cause brown or black discolouration of laundry and fixtures, affect the taste and colour of water, and iron precipitation in pipes and hot water tank can also promote the growth of iron bacteria. Iron can be effectively removed using conventional ion exchange water softeners. However, depending on the form that iron is in (reduced or oxidized) as well as the concentration and other factors, iron filters may be more effective in removing iron from the water supply.

D. Turbidity

Turbidity was also elevated in the three hour sample and six hour sample (23.2 and 20.2 NTU). The elevated turbidity was considered to be due to the elevated iron and manganese also possibly as part of well development as the well was recently constructed. The lab result for turbidity is not considered to be representative due to the iron and manganese precipitates which developed through sampling handling, exposure to air and temperature changes between the time sampled and the lab testing.

The field reading for turbidity after three hours was 5.67 NTU and the final field reading for turbidity after six hours was 4.23 NTU. The turbidity generally declined throughout pumping and is considered to be associated with well development. Groundwater is considered to be acceptable for turbidity of up to 5 NTU, as measured at the point of consumption. There are no concerns with the noted laboratory results for turbidity.

E. Total Dissolved Solids

Total dissolved solids (TDS) were slightly elevated above the aesthetic objective of 500 mg/l, about 515 to 522 mg/l. The Ryznar Stability Index (RSI) and Langelier Saturation Index (LSI) were calculated for both water samples. The RSI values for the water samples were 6.66 and 6.60 for the three and six hour samples, respectively. The LSI values for the water samples were 0.48 and 0.51 for the three and six hour samples, respectively. RSI values less than 6 indicate that the scale potential increases and values greater than 7 indicate that a calcium carbonate formation does not lead to a protective corrosion inhibiting film. In this case, the water is mildly scale forming and not corrosive. Positive values for LSI indicate that scale can form and calcium carbonate precipitation may occur, while values close to zero indicate borderline scale potential. In this case, the LSI values are positive, indicating borderline scale potential. Combined with the RSI values, it is likely that the water is slightly scale forming and not corrosive potential. According to the Support Document for the Ontario Drinking Water Standards, Objectives and Guidelines (ODWSOG), the palatability of drinking water with a TDS level less than 500 mg/l is generally considered to be good. The effect of elevated TDS levels on drinking water depends on the individual components, which are principally chlorides, sulphates, calcium, magnesium and bicarbonates. Depending on which parameters are elevated, TDS exceedances can include hardness, taste, mineral deposition or corrosion. In this case, the water samples had high hardness and calcium and magnesium are high. Sodium and chloride are both within the aesthetic objectives and are unlikely to significantly affect the taste of the water. Hardness generally increases the mineral deposition. However, in this case, the water is



indicated to be only slightly scale forming. Based on the above noted information, it is considered that treatment to reduce hardness will reduce the potential for scale forming as it affects TDS.

F. Antimony

Antimony was measured at levels of 0.0015 and 0.0064 mg/L after three and six hours, respectively, compared to the maximum acceptable concentration of 0.006 mg/L. The noted antimony level is only marginally above the allowable limit, which was set to prevent long term chronic exposure. The standard is set to protect against increased blood cholesterol and decreased blood glucose, as well as prevention of nausea, vomiting and diarrhea upon short-term exposure. Antimony can cause nausea, vomiting and diarrhea when present at very high concentrations (>30 mg/L). The risk to human health is through ingestion only (drinking, cooking, teeth brushing). In water, antimony has no taste, smell, or colour. It can only be detected through a chemical test. On November 2, 2023, the well was sampled for antimony to confirm the previous results. The well was flushed for a period of time (~1-2 hours) until the field turbidity was recorded to be less than 5 NTU. Final turbidity reading was ~2 NTU. At that time, a water sample was obtained, field filtered using a 0.45 micron filter, then stored in a laboratory supplied bottle with the appropriate preservative and submitted for laboratory testing. A neighbouring well that services a developed property at 144 Wescar Lane was also sampled. The results of the additional testing indicate that the antimony level is <0.0005 mg/L and the level at 144 Wescar Lane was 0.0049 mg/L, which is within the allowable limit of 0.006 mg/L. The water sample from the area well at 144 Wescar Lane was not field filtered.

Based on the recent testing, the well water does not have antimony present above allowable limits. One area well has antimony present within allowable limits. It is noted that antimony could be present from plumbing materials within antimony-containing plumbing materials, rather than from the water supply.

The Provincial Groundwater Monitoring Network (PGMN) was consulted and there are no wells that are close to the site. The closest well that is in a bedrock formation is about 8 km to the south with antimony reported to be well within the limits.

A request was made from the City of Ottawa for results from geodatabase for available information about antimony levels in other nearby water wells. Once that information is received, it will be report in a revised report.

Based on what is known about the wells in the area, it is unlikely that antimony is sourced in the groundwater as the recent result indicates that antimony was not present. It is more likely that antimony was present from corrosion in plumbing materials rather than from the water. Antimony is unlikely to be naturally present in groundwater at levels that are above the guidelines.

2.0 TERRAIN STUDY

Soils information was obtained from geotechnical boreholes put down at the subject site. The field work for this investigation was carried out on May 29 and 30, 2023, at which time eleven boreholes were put down at the site, identified as BH1 to BH11. Five boreholes encountered about 1.0 to 1.5 metres of fill, consisting of sand, gravel and trace organics, overlying grey silt over silty and/or fine to medium sand followed by glacial till to depths of 6.3 to 8.3 metres. Six boreholes were drilled to 1.5 metres depth and encountered fill overlying silt. Where encountered, water was observed at about 1.3 to 3.8 metres below the ground surface.



2.1 GROUNDWATER IMPACT ASSESSMENT

The MOE D-5-4 Predictive Assessment for commercial/industrial development is designed to determine minimum lot size and maximum allowable flows. The City of Ottawa developed additional guidance on the application of the MECP D-5-4 Guidelines in a memo dated September 27, 2016, entitled *Carp Road Corridor – Nitrate Impact Assessment Recommendations*.

The City of Ottawa has modified the predictive assessment in Section (4) (a) where the nitrate assessment using maximum allowable flow for each block/lot is determined through the maximum number of users where the OSSO indicates that the use of 75 L/day per employee is suitable.

As such, the predictive flow can be based on the proposed number of employees as follows. The proposed industrial development is anticipated to have a total of 60 employees once the two phases are constructed. The predicted sewage flow can be calculated as:

$$60 \text{ employees} \times 75 \text{ L/day} = 4,500 \text{ L}$$

Additionally, the City memo in Section (5) (a-d) indicates that the consideration of nitrogen reduction technology that is certified by a third party (CAN/BQN 3680-600 or NSF 245) allows the nitrate attenuation assessment to be predicted based on the (modified) minimum concentration of nitrate, for systems that reduce nitrate (as nitrogen) by a minimum of 50%.

So, to establish the maximum sewage flow using the calculation in Section 5.6.3, the following calculations are provided (Attachment D).

Other infiltration factors that were used in the above noted calculations are provided below.

Infiltration is based on moisture surplus and incorporates factors including soils, topography, soil cover and impervious areas (infiltration reduction factors). For this calculation, the background nitrate was assumed to be 0.0 mg/L, as there is currently no development at the site.

The following provides the basis whereby the infiltration reduction factors for the site were chosen for the dilution calculations.

Topographic, soil and land cover infiltration factors were selected from *Table 2* of the MOE *Hydrological Technical Information Requirements for Land Development Applications*. The following is a discussion of each of the infiltration reduction factors chosen for the site.

The site is characterized by flat terrain, based on a topographical survey of the site and the post-development conditions indicate that slope is generally less than 6 percent. The topography factor that applies to the site is 0.30.

The type of land cover observed at the site at the time of site visits and by use of satellite imagery consists mostly of cultivated lands, with some mature trees on the southwest portion of the site. The post-development conditions provided in the Grading Plan (DB Gray Engineering C-3 of 8) show that the treed area is to remain post-construction (grades to remain as is). The land cover infiltration factor of 0.10 was selected, which corresponds to cultivated land and does not include any trees or post-development re-vegetation.

A soil infiltration factor of 0.20 was chosen as the site is indicated to be underlain by silt and silty sand soils, which consist of the soils range from coarse (greater than 50% sand content) to fine



textured silt (less than 50% coarse textured). The soil infiltration value that was used corresponds to combinations of clay and loam (glacial till), based on the expected lower permeability of the soils encountered across the site.

In order to determine water surplus estimates for the site area, Environment Canada published values for Ottawa obtained for the years 1993 to 2003 was used. The expected moisture surplus or net potential infiltration for the site area was estimated 328 millimetres, for the sand to silt type soils that are expected for the site.

Hard Surfaced Area post-development was calculated as follows. The areas of the roofs of the buildings at the site occupy an area of some 3,566 square metres and are not available for infiltration. The parking area consists of asphaltic concrete surfaced areas of about 8,398 square metres. For asphalt, the runoff coefficient is 0.9. The gravel surfaced area occupies some 13,912 square metres with a corresponding runoff coefficient of 0.6. The Net Infiltration Area for the site was calculated as 20,391.5 square metres, which includes all the expected hard surfaced areas.

The sewage system that is proposed for the development is an EcoFLO tertiary treatment system that is expected to reduce nitrates to 20 mg/L (50% denitrification).

The nitrate impact calculation, using a predicted actual sewage flow of 4,500 L/day indicates that the expected concentration of nitrate at the down gradient property boundary is some 5.8 mg/L, which is within the predicted impact of 10 mg/L. This level of sewage impact is based on a tertiary effluent quality of 20 mg/L.

Based on the above noted information, the expected impact at the down gradient property boundary of the site is expected to be within the allowable limits of the MOE, incorporating the sewage design considerations as discussed in the following section.

2.2 SEWAGE DESIGN CONSIDERATIONS

The sewage design for the site can consist of conventional secondary effluent quality level of treatment (sewage effluent at 40 mg/L N-NO₃). Based on the large lot size and the predicted sewage impact of 8.0 mg/L at the property boundary, no advanced tertiary treatment to reduce nitrogen is necessary at the site.

The size of the septic envelopes are a function of the percolation time of the native soil in the vicinity of the septic envelope and/or the fill used for construction of a septic bed and the daily effluent loading to the septic bed. It is considered that the site is sufficiently large to accommodate the sewage system.

It is the responsibility of the owner to ensure that the sewage system is maintained indefinitely as is required by the City of Ottawa and the Ottawa Septic System Office (OSSO). If a tertiary sewage system is proposed, the owner must ensure the following is carried out:

- A maintenance contract between the owner and a maintenance provider; and
- Owner to contact OSSO regarding additional fees for monitoring and reporting requirements of the treatment system.



3.0 WELLHEAD PROTECTION

During construction of the future building, the following is required to protect the integrity of the well casing:

- The well is shown to be within about 5 to 7 metres from the proposed building; and
- Well location shall be carefully marked to prevent any damage to the well casing. This could include the placement of temporary field stone/bollards and/or traffic cones; and
- During construction activities, wellhead protection measures should be in place to protect the annulus around the wellhead. This means that the excavation for the building shall be banked upwards to the well location to limit soil disturbance near the well. As the well casing is grouted to a depth of 12.5 metres, there is sufficient wellhead protection in place such that soil disturbance in the upper soils will not affect the sealing of the wellhead. Any disturbance of soils near the well must be immediately repaired and grading around the well should be regarded to ensure drainage away from the well.

After building construction, the grading around the wellhead shall be carried out as follows to comply with well siting requirements and be in accordance with the Ontario Regulation 903:

- The well casing must extend to greater than 400 millimetres above final finished grades around the well; and
- The ground surface shall be graded such that the well is the highest point on the ground surface within 3 metres radially from the exterior of the well casing and shall ensure that water does not collect or pond near the well head.

The supply well is located within the east portion of the site, close to the entrance while the location of the proposed septic system is within the west portion of the site, and is greater than 20 metres from the well location.

The well has been grouted and cased to a depth of about 12.5 metres below the existing ground surface, according to information provided on the well record (Attachment A). The well is physically separated from the driveway and parking lot by the building location. It is recommended that bollards or field stone are placed near the wellhead facing the parking lot to ensure well is physically protected from the access roadway. With these measures in place, it is considered that an adequate amount of wellhead protection is going to be in place to protect the water supply for the proposed light industrial use of the property. The well location is also appropriate for access in case of repairs and well maintenance.

Recommendations for wellhead protection include ensuring that potential contaminant sources are at least 15 metres or more from the well. Possible contaminant sources include; chemical storage, garage and related chemicals, such as antifreeze, gasoline, oils, vehicle/boat/equipment storage, sewer lines, septic systems, animal enclosures, manure or compost piles. If liquid chemicals, such as antifreeze, oil and gasoline/diesel, and their waste products, are to be stored at the site, they should be stored in containers approved for that purpose. The container(s) should be labelled with their contents. Secondary containment should be installed around all bulk liquid chemical or waste storage containers, to collect and contain leaks and spills from the tank and all connections. The sewage system and stormwater management areas must be greater than 15 metres from the well location.



Recommendations for well maintenance include; inspect wellhead annually to ensure that the casing is structurally sound, verify well cap is sealed and that surface water is not pooling around wellhead. The well is located such that it is easily accessible for maintenance/repairs. A lock on the well cap is useful to prevent vandalism.

Based on the results of this evaluation it is considered that the well in question should supply water of adequate quantity and quality for the proposed development with suitable treatment and wellhead protection as indicated above.

We trust this letter provides sufficient information for your purposes. If you have any questions concerning this letter, please do not hesitate to contact our office.

Yours truly,
Kollaard Associates Inc.



Colleen Vermeersch, P. Eng.

- | | | |
|--------------|--------------|---|
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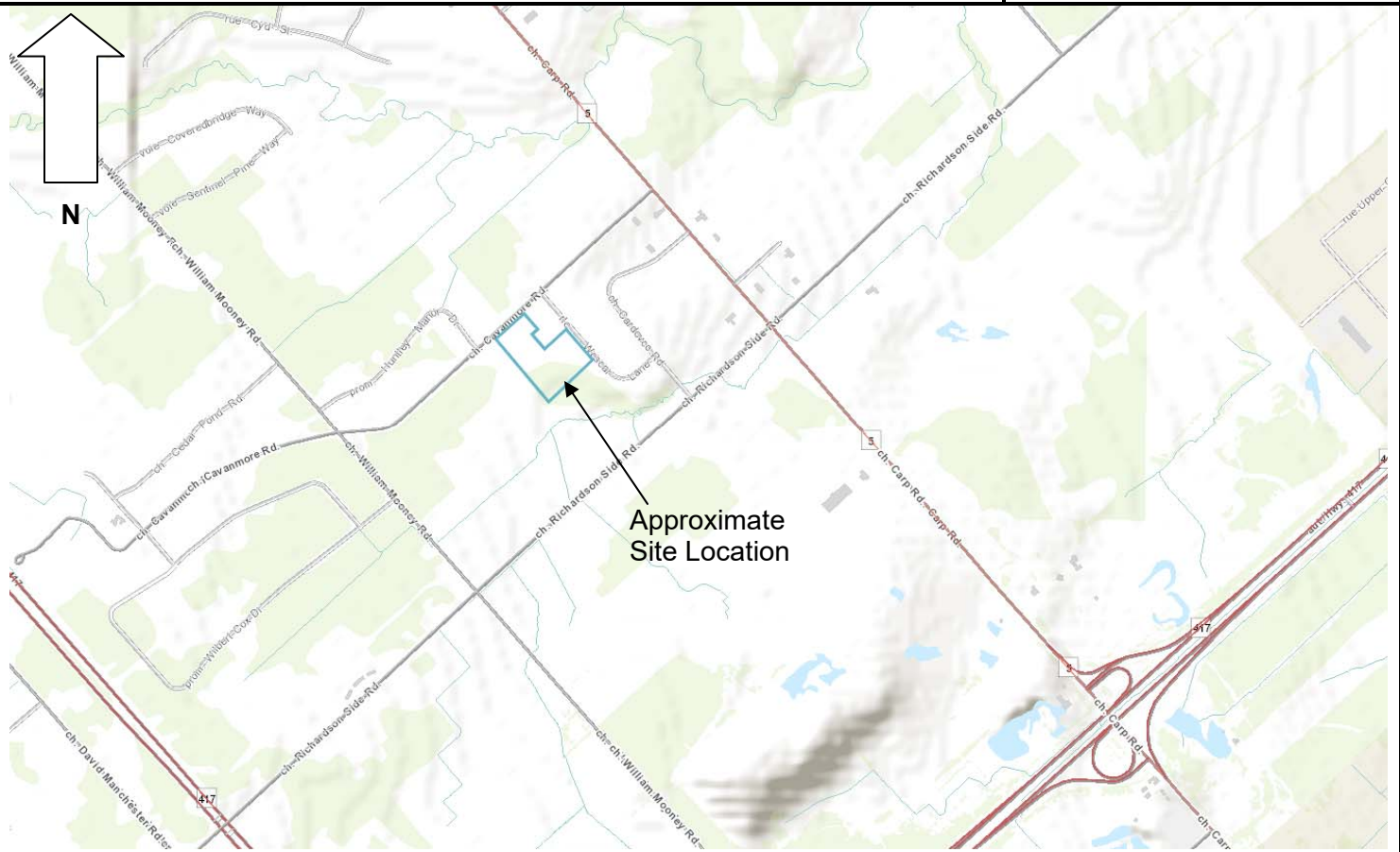
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KEY PLAN

FIGURE 1



NOT TO SCALE

TABLE I
FIELD WATER QUALITY MEASUREMENTS
FOR TEST WELL 1

Time Since Pumping Test Started (min)	Temperature (°C)	pH	Turbidity (NTU)	Total Dissolved Solids (ppm)	Conductivity (µS)	*Free Chlorine (ppm)
60	12.9	7.82	14.4	382	753	0.0 +/- 0.03
120	13.2	7.66	13.2	375	742	-
180	12.9	7.62	5.67	371	749	0.0 +/- 0.03
240	13.0	7.66	5.31	370	731	-
300	13.0	7.56	4.79	380	751	-
360	13.1	7.64	4.23	375	746	0.0 +/- 0.03

*tolerance within 3%



ATTACHMENT A

MOE WELL RECORD FOR TW1
PROVIDED BY WELL DRILLER



Certificate of Well Compliance

TROY SAUNDERS DO HEREBY CERTIFY that I am licensed to drill wells in the Province of Ontario, and that I have supervised the drilling of a well on the property of SUNBELT RENTALS (name of landowner), located at 151 WESCAR LANE (Legal description, Lot/Plan No.) in the City of Ottawa (Geographic Township of OTTAWA). Lot 6 , Concession 3 , Plan # _____ , S/L# _____

WE CERTIFY FURTHER that we are aware of the well drilling requirements, the guidelines, recommendations and regulations of the Ministry of the Environment governing well installations in the Province of Ontario, and the standards specified in any subdivision agreement and hydrogeological report applicable to the site and City Standards.

AND WE DO HEREBY CERTIFY THAT the said well has been drilled, cased, and grouted (cement or bentonite) as applicable and constructed in strict conformity with the standards required.


Signed this 25th day of JULY/23

Troy Saunders / SAUNDERS WELL DRILLING LTD
Well Driller/Company

The Engineer on behalf of the landowner set out above Certifies that he/she has inspected the well and it was constructed in accordance with the specifications in O.Reg.903, this report and the Hydrogeological Report with regards to casing length and grouting requirements.

Signed this 26th day of July, 2023

Cherrie
Engineer

 **Kollaard Associates**
Engineers
P.O. Box 189
210 Prescott Street, Unit 1
Kemptville, Ontario K0G 1J0

A366326

Measurements recorded in: Metric Imperial

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Well Owner's Information

First Name _____ Last Name/Organization **SUNBELT RENTALS OF CANADA INC.** E-mail Address _____ Well Constructed by Well Owner

Mailing Address (Street Number/Name) **2489 SHEFFIELD RD** Municipality **OTTAWA** Province **ONT.** Postal Code **K1T0A3** Telephone No. (inc. area code) _____

Well Location

Address of Well Location (Street Number/Name) **151 WESCAR LANE** Township **OTTAWA** Lot **6** Concession **3**

County/District/Municipality **OTTAWA** City/Town/Village **OTTAWA** Province **Ontario** Postal Code **K0A1L0**

UTM Coordinates Zone **8** Easting **18423131** Northing **5015885** Municipal Plan and Sublot Number _____ Other _____

Overburden and Bedrock Materials/Abandonment Sealing Record (see instructions on the back of this form)

General Colour	Most Common Material	Other Materials	General Description	Depth (m/ft)	
				From	To
BROWN	SAND	GREY CLAY, SILTY STONES		0	8
GREY	SAND	LAYERS GREY CLAY & STONES		8	34 1/2
GREY	CLAY	SAND, STONES	PACKED TILL	34 1/2	38
GREY	LIMESTONE			38	160

Annular Space

Depth Set at (m/ft)	Type of Sealant Used	Volume Placed
From To	(Material and Type)	(m³/ft³)
0 31	BENTONITE GROUT	10.53 ft³
31 41	NEAT CEMENT	3.51 ft³

Method of Construction

Cable Tool Diamond Public Commercial Not used

Rotary (Conventional) Jetting Domestic Municipal Dewatering

Rotary (Reverse) Driving Livestock Test Hole Monitoring

Boring Digging Irrigation Cooling & Air Conditioning

Air percussion Industrial Other, specify _____

Other, specify _____

Construction Record - Casing

Inside Diameter (cm/in)	Open Hole OR Material (Galvanized, Fibreglass, Concrete, Plastic, Steel)	Wall Thickness (cm/in)	Depth (m/ft)	
			From	To
6 1/4	STEEL	.188	0 ^{2 1/2}	41
6 1/8	OPEN HOLE		41	160

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 _____

Construction Record - Screen

Outside Diameter (cm/in)	Material (Plastic, Galvanized, Steel)	Slot No.	Depth (m/ft)	
			From	To

Water Details

Water found at Depth (m/ft)	Kind of Water: <input type="checkbox"/> Fresh <input checked="" type="checkbox"/> Untested	Depth (m/ft)	Diameter (cm/in)
		From To	
60-100	<input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____	0 41	9 3/8
100-160	<input type="checkbox"/> Gas <input type="checkbox"/> Other, specify _____	41 160	6 1/8

HYDROFRACTURED

Well Contractor and Well Technician Information

Business Name of Well Contractor **SAUNDERS WELL DRILLING LTD** Well Contractor's Licence No. **4 8 7 9**

Business Address (Street Number/Name) **1680 SCHEEL DR.** Municipality **BRAESIDE**

Province **ONT.** Postal Code **K0A1G0** Business E-mail Address _____

Bus. Telephone No. (inc. area code) **613 229 8716** Name of Well Technician (Last Name, First Name) **SAUNDERS TROY**

Well Technician's Licence No. **T 5 1 7** Signature of Technician and/or Contractor **Troy Saund** Date Submitted **20230810**

Results of Well Yield Testing

After test of well yield, water was: Clear and sand free Other, specify **CLEARING**

If pumping discontinued, give reason: _____

Pump intake set at (m/ft) **150**

Pumping rate (l/min / GPM) **8**

Duration of pumping **2** hrs + **0** min

Final water level end of pumping (m/ft) **18.45**

If flowing give rate (l/min/GPM) _____

Time (min)	Draw Down		Recovery	
	Water Level (m/ft)	Time (min)	Water Level (m/ft)	Time (min)
Static Level	6.60			
1	12.60	1	11.60	
2	15.20	2	9.90	
3	17.20	3	9.05	
4	18.20	4	8.5	
5	18.60	5	8.15	
10	17.45	10	7.35	
15	17.30	15	7.10	
20	17.40	20	6.90	
25	17.45	25	6.85	
30	17.50	30	6.80	
40	17.65	40	6.75	
50	17.80	50	6.70	
60	17.70	60	6.60	

Recommended pump depth (m/ft) **150**

Recommended pump rate (l/min/GPM) **10**

Well production (l/min/GPM) _____

Disinfected? Yes No

Map of Well Location

Please provide a map below following instructions on the back.

Comments: _____

Well owner's information package delivered <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Date Package Delivered 20230711	Ministry Use Only Audit No. 2399159
Date Work Completed 20230711	Received _____	



ATTACHMENT B
PUMPING TEST DATA FOR TW1

DRAWDOWN DATA TW1

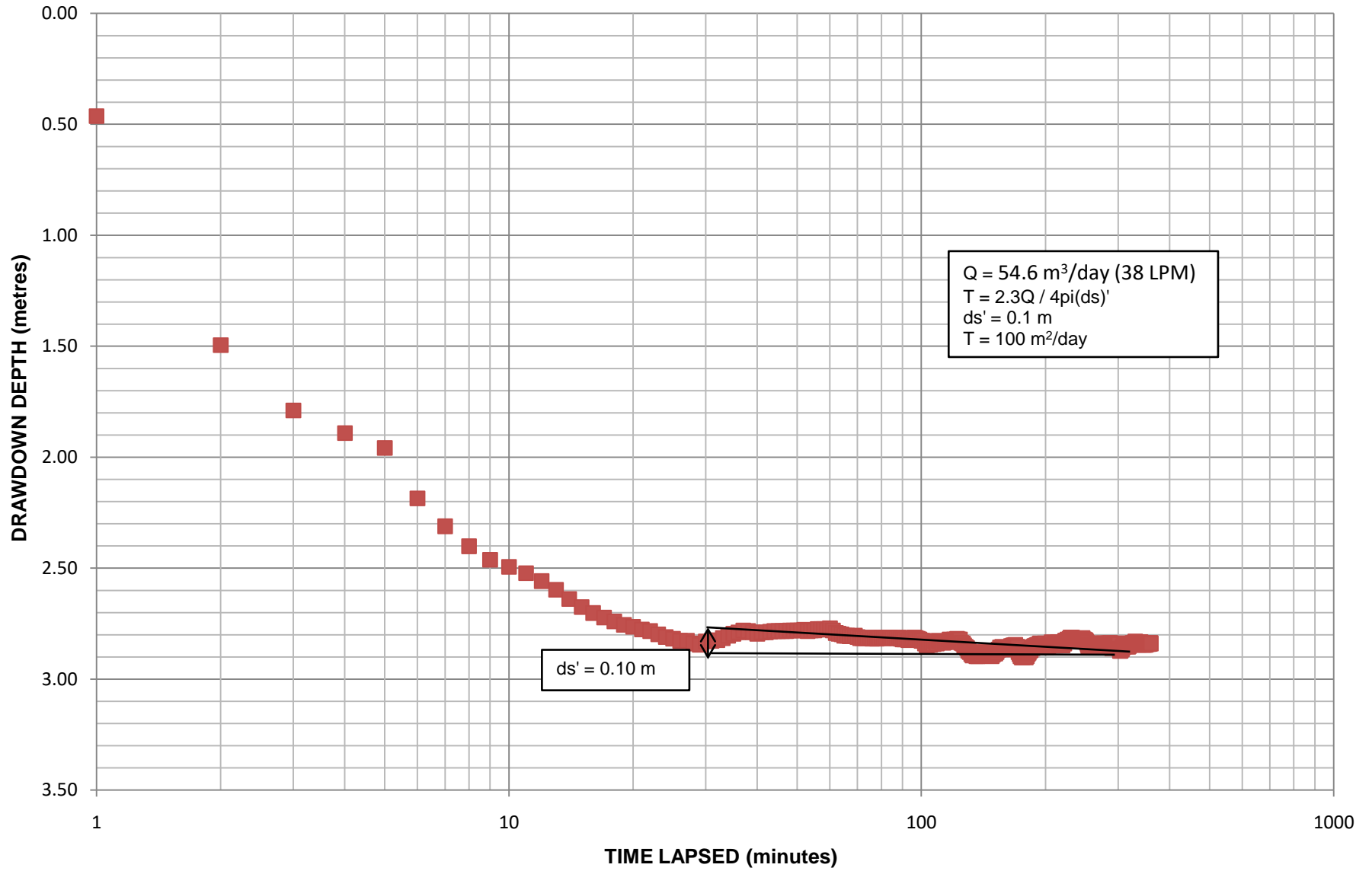
Time Lapsed (minutes)	Abs Pres (kPa)	Temp (°C)	Water Level (m)	Drawdown (m)
0	414.732	10.063	-2.5	0.00
1	410.194	9.768	-2.963	0.46
2	400.069	9.472	-3.995	1.50
3	397.186	9.275	-4.289	1.79
4	396.184	9.176	-4.391	1.89
5	395.533	9.077	-4.458	1.96
6	393.303	8.978	-4.685	2.19
7	392.068	8.879	-4.811	2.31
8	391.184	8.779	-4.901	2.40
9	390.592	8.68	-4.962	2.46
10	390.27	8.68	-4.994	2.49
11	390	8.581	-5.022	2.52
12	389.649	8.581	-5.058	2.56
13	389.269	8.581	-5.097	2.60
14	388.853	8.481	-5.139	2.64
15	388.502	8.481	-5.175	2.68
16	388.239	8.481	-5.202	2.70
17	388.035	8.481	-5.222	2.72
18	387.86	8.481	-5.24	2.74
19	387.713	8.481	-5.255	2.76
20	387.626	8.481	-5.264	2.76
21	387.509	8.481	-5.276	2.78
22	387.443	8.382	-5.283	2.78
23	387.297	8.382	-5.298	2.80
24	387.18	8.382	-5.31	2.81
25	387.093	8.382	-5.318	2.82
26	387.005	8.382	-5.327	2.83
27	387.005	8.382	-5.327	2.83
28	386.888	8.382	-5.339	2.84
29	386.83	8.382	-5.345	2.85
30	386.976	8.382	-5.33	2.83
31	387.005	8.382	-5.327	2.83
32	387.034	8.382	-5.324	2.82
33	387.122	8.382	-5.315	2.82
34	387.239	8.382	-5.304	2.80
35	387.326	8.382	-5.295	2.80
36	387.385	8.382	-5.289	2.79
37	387.472	8.382	-5.28	2.78
38	387.443	8.382	-5.283	2.78
39	387.385	8.382	-5.289	2.79
40	387.326	8.382	-5.295	2.80
41	387.385	8.382	-5.289	2.79
42	387.385	8.382	-5.289	2.79
43	387.414	8.382	-5.286	2.79
44	387.443	8.382	-5.283	2.78
45	387.443	8.382	-5.283	2.78
46	387.443	8.382	-5.283	2.78
47	387.443	8.382	-5.283	2.78
48	387.472	8.382	-5.28	2.78
49	387.472	8.382	-5.28	2.78
50	387.472	8.382	-5.28	2.78
51	387.472	8.382	-5.28	2.78
52	387.502	8.382	-5.277	2.78
53	387.443	8.382	-5.283	2.78
54	387.472	8.382	-5.28	2.78
55	387.472	8.382	-5.28	2.78
56	387.531	8.382	-5.274	2.77
57	387.531	8.382	-5.274	2.77
58	387.531	8.382	-5.274	2.77
59	387.502	8.382	-5.277	2.78
60	387.56	8.382	-5.271	2.77
61	387.472	8.382	-5.28	2.78
62	387.355	8.382	-5.292	2.79
63	387.326	8.382	-5.295	2.80
64	387.297	8.382	-5.298	2.80
65	387.239	8.382	-5.304	2.80
66	387.239	8.382	-5.304	2.80
67	387.209	8.382	-5.307	2.81
68	387.209	8.382	-5.307	2.81
69	387.239	8.382	-5.304	2.80
70	387.18	8.382	-5.31	2.81
71	387.122	8.382	-5.315	2.82
72	387.122	8.382	-5.315	2.82
73	387.122	8.382	-5.315	2.82
74	387.122	8.382	-5.315	2.82
75	387.151	8.382	-5.312	2.81
76	387.093	8.382	-5.318	2.82
77	387.122	8.382	-5.315	2.82
78	387.093	8.382	-5.318	2.82
79	387.122	8.382	-5.315	2.82
80	387.151	8.382	-5.312	2.81
81	387.122	8.382	-5.315	2.82
82	387.151	8.382	-5.312	2.81
83	387.151	8.382	-5.312	2.81
84	387.151	8.382	-5.312	2.81
85	387.122	8.382	-5.315	2.82
86	387.122	8.382	-5.315	2.82

87	387.122	8.382	-5.315	2.82
88	387.151	8.382	-5.312	2.81
89	387.093	8.382	-5.318	2.82
90	387.063	8.382	-5.321	2.82
91	387.063	8.382	-5.321	2.82
92	387.122	8.382	-5.315	2.82
93	387.034	8.382	-5.324	2.82
94	387.093	8.382	-5.318	2.82
95	387.122	8.382	-5.315	2.82
96	387.151	8.382	-5.312	2.81
97	387.122	8.382	-5.315	2.82
98	387.093	8.382	-5.318	2.82
99	387.063	8.382	-5.321	2.82
100	387.005	8.382	-5.327	2.83
101	387.005	8.382	-5.327	2.83
102	386.888	8.382	-5.339	2.84
103	386.801	8.382	-5.348	2.85
104	386.83	8.382	-5.345	2.85
105	386.83	8.382	-5.345	2.85
106	386.888	8.382	-5.339	2.84
107	386.859	8.382	-5.342	2.84
108	386.976	8.382	-5.33	2.83
109	386.888	8.382	-5.339	2.84
110	387.005	8.382	-5.327	2.83
111	386.976	8.382	-5.33	2.83
112	386.947	8.382	-5.333	2.83
113	386.917	8.382	-5.336	2.84
114	386.947	8.382	-5.333	2.83
115	386.947	8.382	-5.333	2.83
116	386.976	8.382	-5.33	2.83
117	387.063	8.382	-5.321	2.82
118	387.034	8.382	-5.324	2.82
119	387.034	8.382	-5.324	2.82
120	387.063	8.382	-5.321	2.82
121	387.034	8.382	-5.324	2.82
122	387.093	8.382	-5.318	2.82
123	387.063	8.382	-5.321	2.82
124	387.063	8.382	-5.321	2.82
125	386.917	8.382	-5.336	2.84
126	386.888	8.382	-5.339	2.84
127	386.801	8.382	-5.348	2.85
128	386.742	8.382	-5.354	2.85
129	386.684	8.382	-5.36	2.86
130	386.567	8.382	-5.372	2.87
131	386.508	8.382	-5.378	2.88
132	386.421	8.382	-5.387	2.89
133	386.362	8.382	-5.393	2.89
134	386.421	8.382	-5.387	2.89
135	386.392	8.382	-5.39	2.89
136	386.333	8.382	-5.396	2.90
137	386.333	8.382	-5.396	2.90
138	386.392	8.382	-5.39	2.89
139	386.45	8.382	-5.384	2.88
140	386.421	8.382	-5.387	2.89
141	386.508	8.382	-5.378	2.88
142	386.508	8.382	-5.378	2.88
143	386.508	8.382	-5.378	2.88
144	386.479	8.382	-5.381	2.88
145	386.45	8.382	-5.384	2.88
146	386.421	8.382	-5.387	2.89
147	386.362	8.382	-5.393	2.89
148	386.333	8.382	-5.396	2.90
149	386.392	8.382	-5.39	2.89
150	386.45	8.382	-5.384	2.88
151	386.45	8.382	-5.384	2.88
152	386.508	8.382	-5.378	2.88
153	386.596	8.382	-5.369	2.87
154	386.625	8.382	-5.366	2.87
155	386.713	8.382	-5.357	2.86
156	386.713	8.382	-5.357	2.86
157	386.742	8.382	-5.354	2.85
158	386.713	8.382	-5.357	2.86
159	386.654	8.382	-5.363	2.86
160	386.625	8.382	-5.366	2.87
161	386.625	8.382	-5.366	2.87
162	386.654	8.382	-5.363	2.86
163	386.684	8.382	-5.36	2.86
164	386.713	8.382	-5.357	2.86
165	386.771	8.382	-5.351	2.85
166	386.771	8.382	-5.351	2.85
167	386.801	8.382	-5.348	2.85
168	386.801	8.382	-5.348	2.85
169	386.83	8.382	-5.345	2.85
170	386.742	8.382	-5.354	2.85
171	386.742	8.382	-5.354	2.85
172	386.508	8.382	-5.378	2.88
173	386.421	8.382	-5.387	2.89
174	386.333	8.382	-5.396	2.90
175	386.275	8.382	-5.402	2.90
176	386.275	8.382	-5.402	2.90
177	386.304	8.382	-5.399	2.90
178	386.304	8.382	-5.399	2.90
179	386.275	8.382	-5.402	2.90

180	386.333	8.382	-5.396	2.90
181	386.421	8.382	-5.387	2.89
182	386.479	8.382	-5.381	2.88
183	386.567	8.382	-5.372	2.87
184	386.596	8.382	-5.369	2.87
185	386.713	8.382	-5.357	2.86
186	386.684	8.382	-5.36	2.86
187	386.742	8.382	-5.354	2.85
188	386.771	8.382	-5.351	2.85
189	386.771	8.382	-5.351	2.85
190	386.801	8.382	-5.348	2.85
191	386.83	8.382	-5.345	2.85
192	386.83	8.382	-5.345	2.85
193	386.859	8.382	-5.342	2.84
194	386.888	8.382	-5.339	2.84
195	386.859	8.382	-5.342	2.84
196	386.859	8.382	-5.342	2.84
197	386.83	8.382	-5.345	2.85
198	386.801	8.382	-5.348	2.85
199	386.888	8.382	-5.339	2.84
200	386.771	8.382	-5.351	2.85
201	386.713	8.382	-5.357	2.86
202	386.742	8.382	-5.354	2.85
203	386.771	8.382	-5.351	2.85
204	386.801	8.382	-5.348	2.85
205	386.83	8.382	-5.345	2.85
206	386.83	8.382	-5.345	2.85
207	386.947	8.382	-5.333	2.83
208	386.83	8.382	-5.345	2.85
209	386.801	8.382	-5.348	2.85
210	386.83	8.382	-5.345	2.85
211	386.888	8.382	-5.339	2.84
212	386.801	8.382	-5.348	2.85
213	386.917	8.382	-5.336	2.84
214	386.947	8.382	-5.333	2.83
215	386.888	8.382	-5.339	2.84
216	386.947	8.382	-5.333	2.83
217	386.859	8.382	-5.342	2.84
218	386.83	8.382	-5.345	2.85
219	386.888	8.382	-5.339	2.84
220	386.801	8.382	-5.348	2.85
221	386.947	8.382	-5.333	2.83
222	386.888	8.382	-5.339	2.84
223	387.005	8.382	-5.327	2.83
224	387.005	8.382	-5.327	2.83
225	387.005	8.382	-5.327	2.83
226	387.063	8.382	-5.321	2.82
227	387.005	8.382	-5.327	2.83
228	387.034	8.382	-5.324	2.82
229	387.093	8.382	-5.318	2.82
230	387.151	8.382	-5.312	2.81
231	387.093	8.382	-5.318	2.82
232	387.151	8.382	-5.312	2.81
233	387.034	8.382	-5.324	2.82
234	387.093	8.382	-5.318	2.82
235	387.093	8.382	-5.318	2.82
236	387.093	8.382	-5.318	2.82
237	387.063	8.382	-5.321	2.82
238	387.093	8.382	-5.318	2.82
239	387.034	8.382	-5.324	2.82
240	387.063	8.382	-5.321	2.82
241	387.093	8.382	-5.318	2.82
242	387.034	8.382	-5.324	2.82
243	387.063	8.382	-5.321	2.82
244	387.005	8.382	-5.327	2.83
245	387.034	8.382	-5.324	2.82
246	387.122	8.382	-5.315	2.82
247	387.063	8.382	-5.321	2.82
248	387.063	8.382	-5.321	2.82
249	387.034	8.382	-5.324	2.82
250	387.034	8.382	-5.324	2.82
251	386.976	8.382	-5.33	2.83
252	386.917	8.382	-5.336	2.84
253	386.83	8.382	-5.345	2.85
254	386.771	8.382	-5.351	2.85
255	386.742	8.382	-5.354	2.85
256	386.713	8.382	-5.357	2.86
257	386.713	8.382	-5.357	2.86
258	386.713	8.382	-5.357	2.86
259	386.742	8.382	-5.354	2.85
260	386.771	8.382	-5.351	2.85
261	386.771	8.382	-5.351	2.85
262	386.801	8.382	-5.348	2.85
263	386.771	8.382	-5.351	2.85
264	386.801	8.382	-5.348	2.85
265	386.859	8.382	-5.342	2.84
266	386.888	8.382	-5.339	2.84
267	386.888	8.382	-5.339	2.84
268	386.888	8.382	-5.339	2.84
269	386.888	8.382	-5.339	2.84
270	386.83	8.382	-5.345	2.85
271	386.771	8.382	-5.351	2.85
272	386.742	8.382	-5.354	2.85

273	386.742	8.382	-5.354	2.85
274	386.801	8.382	-5.348	2.85
275	386.83	8.382	-5.345	2.85
276	386.859	8.382	-5.342	2.84
277	386.888	8.382	-5.339	2.84
278	386.83	8.382	-5.345	2.85
279	386.859	8.382	-5.342	2.84
280	386.859	8.382	-5.342	2.84
281	386.83	8.382	-5.345	2.85
282	386.859	8.382	-5.342	2.84
283	386.888	8.382	-5.339	2.84
284	386.888	8.382	-5.339	2.84
285	386.859	8.382	-5.342	2.84
286	386.888	8.382	-5.339	2.84
287	386.917	8.382	-5.336	2.84
288	386.801	8.382	-5.348	2.85
289	386.83	8.382	-5.345	2.85
290	386.684	8.382	-5.36	2.86
291	386.713	8.382	-5.357	2.86
292	386.771	8.382	-5.351	2.85
293	386.83	8.382	-5.345	2.85
294	386.771	8.382	-5.351	2.85
295	386.859	8.382	-5.342	2.84
296	386.859	8.382	-5.342	2.84
297	386.859	8.382	-5.342	2.84
298	386.888	8.382	-5.339	2.84
299	386.859	8.382	-5.342	2.84
300	386.888	8.382	-5.339	2.84
301	386.859	8.382	-5.342	2.84
302	386.654	8.382	-5.363	2.86
303	386.567	8.382	-5.372	2.87
304	386.567	8.382	-5.372	2.87
305	386.625	8.382	-5.366	2.87
306	386.625	8.382	-5.366	2.87
307	386.684	8.382	-5.36	2.86
308	386.742	8.382	-5.354	2.85
309	386.742	8.382	-5.354	2.85
310	386.83	8.382	-5.345	2.85
311	386.771	8.382	-5.351	2.85
312	386.859	8.382	-5.342	2.84
313	386.771	8.382	-5.351	2.85
314	386.771	8.382	-5.351	2.85
315	386.771	8.382	-5.351	2.85
316	386.771	8.382	-5.351	2.85
317	386.742	8.382	-5.354	2.85
318	386.771	8.382	-5.351	2.85
319	386.801	8.382	-5.348	2.85
320	386.859	8.382	-5.342	2.84
321	386.859	8.382	-5.342	2.84
322	386.83	8.382	-5.345	2.85
323	386.888	8.382	-5.339	2.84
324	386.859	8.382	-5.342	2.84
325	386.917	8.382	-5.336	2.84
326	386.859	8.382	-5.342	2.84
327	386.888	8.382	-5.339	2.84
328	386.917	8.382	-5.336	2.84
329	386.917	8.382	-5.336	2.84
330	386.976	8.382	-5.33	2.83
331	386.947	8.382	-5.333	2.83
332	386.917	8.382	-5.336	2.84
333	386.947	8.382	-5.333	2.83
334	386.888	8.382	-5.339	2.84
335	386.888	8.382	-5.339	2.84
336	386.888	8.382	-5.339	2.84
337	386.83	8.382	-5.345	2.85
338	386.888	8.382	-5.339	2.84
339	386.947	8.382	-5.333	2.83
340	386.947	8.382	-5.333	2.83
341	386.917	8.382	-5.336	2.84
342	386.859	8.382	-5.342	2.84
343	386.859	8.382	-5.342	2.84
344	386.917	8.382	-5.336	2.84
345	386.83	8.382	-5.345	2.85
346	386.83	8.382	-5.345	2.85
347	386.859	8.382	-5.342	2.84
348	386.83	8.382	-5.345	2.85
349	386.83	8.382	-5.345	2.85
350	386.83	8.382	-5.345	2.85
351	386.859	8.382	-5.342	2.84
352	386.859	8.382	-5.342	2.84
353	386.859	8.382	-5.342	2.84
354	386.888	8.382	-5.339	2.84
355	386.888	8.382	-5.339	2.84
356	386.859	8.382	-5.342	2.84
357	386.888	8.382	-5.339	2.84
358	386.888	8.382	-5.339	2.84
359	386.917	8.382	-5.336	2.84
360	386.888	8.382	-5.339	2.84

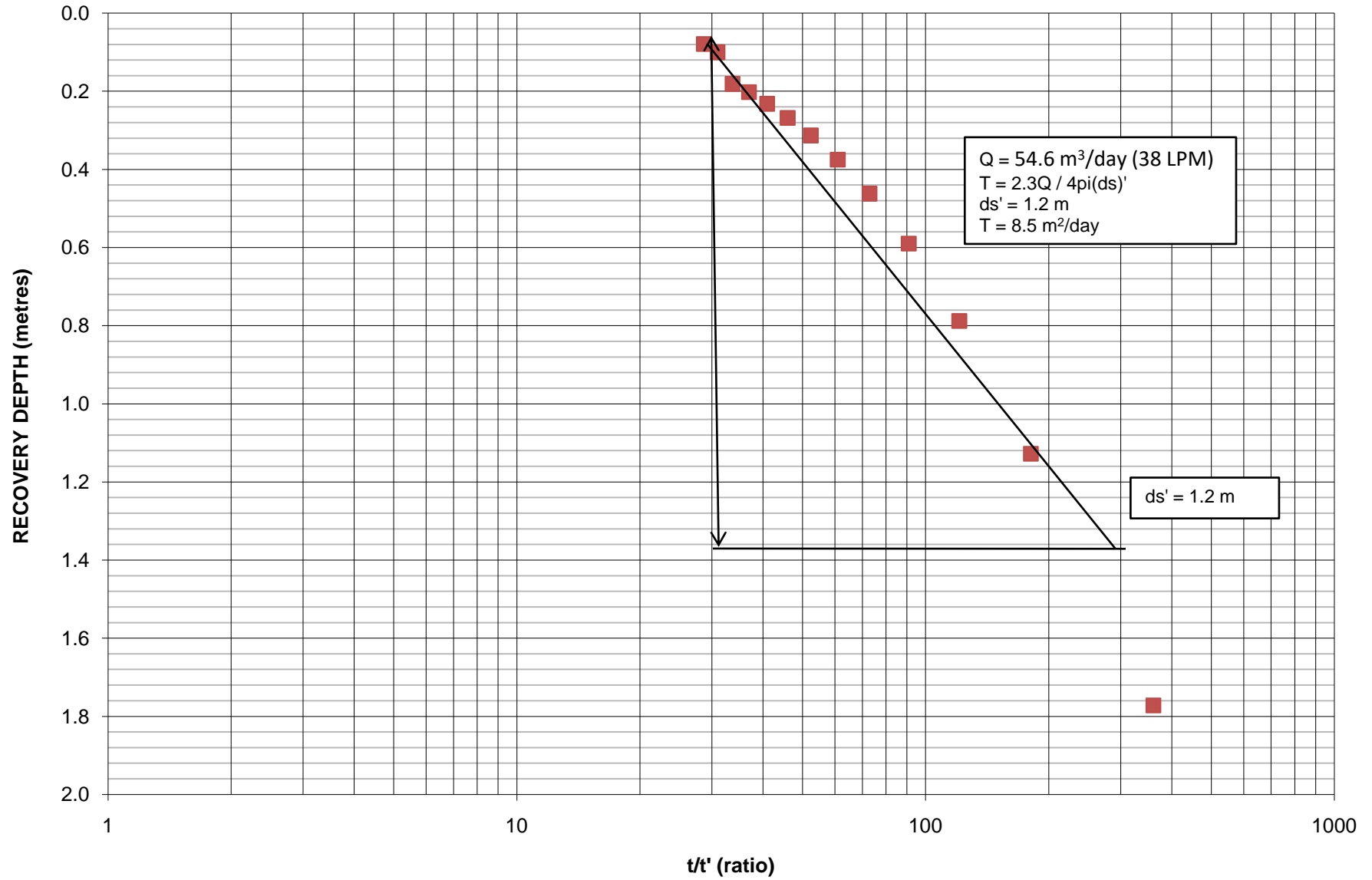
TW1-WELL DRAWDOWN VS. TIME-KOLLAARD FILE 230403



RECOVERY DATA TW-1

t'	t / t'	Abs Pres (kPa)	Temp (°C)	Water Level (m)	Drawdown (m)	Recovery (%)
1	361.0	397.351	8.382	-4.272	1.77	38%
2	181.0	403.671	8.382	-3.628	1.13	60%
3	121.0	407.009	8.382	-3.288	0.79	72%
4	91.0	408.942	8.382	-3.09	0.59	79%
5	73.0	410.201	8.382	-2.962	0.46	84%
6	61.0	411.051	8.382	-2.875	0.38	87%
7	52.4	411.666	8.382	-2.813	0.31	89%
8	46.0	412.106	8.382	-2.768	0.27	91%
9	41.0	412.457	8.382	-2.732	0.23	92%
10	37.0	412.75	8.382	-2.702	0.20	93%
11	33.7	412.955	8.382	-2.681	0.18	94%
12	31.0	413.755	8.481	-2.6	0.10	96%
13	28.7	413.96	8.481	-2.579	0.08	97%

TW1- WELL RECOVERY VS. TIME - KOLLAARD FILE 230403





ATTACHMENT C
RESULTS OF LABORATORY TESTING
OF WELL WATER SAMPLES

OFFICIAL CERTIFICATE OF ANALYSIS : 3652844

WORK REQUEST : 100231719

Report Date : 2023-08-03

Kollaard Associates Inc.
 210 Prescott St., Box 189
 Kemptville, ON
 K0G 1J0
 Attention : Colleen Vermeersch

Reception Date : 2023-07-26
 Project : 230403
 Sampler : NA
 PO Number : Not Applicable
 Temperature : 13 °C

Analysis	Quantity	External Method
Alkalinity (Water, Automated)	2	Modified from SM 2320 B
Ammonia, Total (Water, Colorimetry)	2	Modified from EPA 350.1
Chloride (Water, IC)	2	Modified from SM 4110 B and C
Colour, Apparent (Water, Spectrophotometry)	2	Modified from SM 2120 C
Colour, True (Water, Spectrophotometry)	2	Modified from SM 2120 C
Conductivity (Water, Automated)	2	Modified from SM 2510 B
DOC (Water, IR)	2	Modified from SM 5310 B
Fluoride (Water, Auto/ISE)	2	Modified from SM 4500-F A and 4500-F C
Hardness (Water, Calculation Only)	2	SM 2340 B
Ion Balance (Water, Calculation)	2	Modified from SM1030 E
Lab Filtration (Water, Sample Preparation)	2	Lab Prep
Metals Scan (Water, ICP/MS)	2	Modified from EPA 200.8
Metals Scan (Water, ICP/OES)	2	Modified from SM 3120 B
Nitrate (Water, IC)	2	Modified from SM 4110 B and C
Nitrite (Water, IC)	2	Modified from SM 4110 B and C
pH (25°C) (Water, Automated)	2	Modified from SM 4500-H+ B
Phenols (Water, Colorimetry)	2	Modified from EPA 420.2
Sulphate (Water, IC)	2	Modified from SM 4110 B and C
Sulphide (Water, Colorimetry)	2	Modified from SM 4500-S2 D
* Tannins and Lignins (Subcontract)	2	
TDS (Estimated)	2	Modified from SM 2510 A
Total Kjeldahl Nitrogen (Water, Colorimetry)	2	Modified from EPA 351.2
Turbidity (Water, Turbidimeter)	2	Modified from SM 2130 B

Criteria :

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

Sample status upon receipt :

7100668 7100669

Compliant

Certificate Comments :

7100668

S2- MRL was elevated for the samples in this BCDA report due to matrix interference, a dilution was done. CI spk not available due to high native analyte concentration for all the samples in this BCDA report.

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

OFFICIAL CERTIFICATE OF ANALYSIS - EXCEEDENCE SUMMARY

Client : Kollaard Associates Inc.
Project : 230403

Reception Date : 2023-07-26

Eurofins Sample No	Client Sample Identification	Analyte	Result	Units	Exceeded Criteria		
					A	B	C
Colour, Apparent (Water, Spectrophotometry)							
7100668	TW1-3 hrs	Colour (Apparent)	37	TCU	5		
7100669	TW1-6 hrs	Colour (Apparent)	27	TCU	5		
Hardness (Water, Calculation Only)							
7100668	TW1-3 hrs	Hardness as CaCO3 (Calculation)	336	mg/L	80-100		
7100669	TW1-6 hrs	Hardness as CaCO3 (Calculation)	339	mg/L	80-100		
Metals Scan (Water, ICP/MS)							
7100669	TW1-6 hrs	Antimony	0.0064	mg/L	0.006		
7100668	TW1-3 hrs	Iron	1.58	mg/L	0.3		
7100669	TW1-6 hrs	Iron	1.58	mg/L	0.3		
7100668	TW1-3 hrs	Manganese	0.15	mg/L	0.05		
7100669	TW1-6 hrs	Manganese	0.15	mg/L	0.05		
TDS (Estimated)							
7100668	TW1-3 hrs	TDS (Estimated)^	515	mg/L	500		
7100669	TW1-6 hrs	TDS (Estimated)^	522	mg/L	500		
Turbidity (Water, Turbidimeter)							
7100668	TW1-3 hrs	Turbidity	23.2	NTU	5		
7100669	TW1-6 hrs	Turbidity	20.2	NTU	5		

OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Kollaard Associates Inc.
Project : 230403

Reception Date: 2023-07-26

						Eurofins Sample No :		7100668	7100669		
						Matrix :		Drinking water	Drinking water		
						Sampling Date :		2023-07-25	2023-07-25		
						Client Sample Identification :		TW1-3 hrs	TW1-6 hrs		
Anions	RL	Unit	Criteria								
			A	B	C						
Chloride	0.5	mg/L	250				52.3	54.3			
Nitrate (as Nitrogen)	0.1	mg/L	10.0				<0.1	<0.1			
Nitrite (as Nitrogen)	0.1	mg/L	1.0				<0.1	<0.1			
Sulphate	1	mg/L	500				35	36			

						Eurofins Sample No :		7100668	7100669		
						Matrix :		Drinking water	Drinking water		
						Sampling Date :		2023-07-25	2023-07-25		
						Client Sample Identification :		TW1-3 hrs	TW1-6 hrs		
Calculations	RL	Unit	Criteria								
			A	B	C						
Hardness as CaCO ₃ (Calculation)	1	mg/L	80-100				336	339			
Ion Balance (Calculation)^	0.1						0.94	0.92			

						Eurofins Sample No :		7100668	7100669		
						Matrix :		Drinking water	Drinking water		
						Sampling Date :		2023-07-25	2023-07-25		
						Client Sample Identification :		TW1-3 hrs	TW1-6 hrs		
General Chemistry	RL	Unit	Criteria								
			A	B	C						
Alkalinity (as CaCO ₃)	5	mg/L	500				343	357			
Colour (Apparent)	2	TCU	5				37	27			
Colour (True)	2	TCU					3	3			
Conductivity @ 25°C	5	µS/cm					793	803			
Dissolved Organic Carbon	0.5	mg/L	5				3.3	3.7			
Fluoride	0.1	mg/L	1.5				0.38	0.38			
pH @ 25°C	1		6.5-8.5				7.61	7.62			
Sulphide (S ²⁻)	0.01	mg/L	0.05				<0.05	<0.05			
Tannins and Lignins*	0.5	mg/L					<0.5	<0.5			
Turbidity	0.1	NTU	5				23.2	20.2			

OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Kollaard Associates Inc.
Project : 230403

Reception Date: 2023-07-26

						Eurofins Sample No :		7100668	7100669			
						Matrix :		Drinking water	Drinking water			
						Sampling Date :		2023-07-25	2023-07-25			
						Client Sample Identification :		TW1-3 hrs	TW1-6 hrs			
Metals	RL	Unit	Criteria									
			A	B	C							
Metals Scan (Water, ICP/MS)												
Aluminum	0.01	mg/L	0.1					<0.01	<0.01			
Antimony	0.0005	mg/L	0.006					0.0015	0.0064			
Arsenic	0.001	mg/L	0.01					<0.001	<0.001			
Barium	0.001	mg/L	1					0.283	0.287			
Beryllium	0.0005	mg/L						<0.0005	<0.0005			
Boron	0.01	mg/L	5					0.02	0.02			
Cadmium	0.0001	mg/L	0.005					<0.0001	0.0001			
Chromium	0.001	mg/L	0.05					<0.001	<0.001			
Cobalt	0.0002	mg/L						<0.0002	<0.0002			
Copper	0.001	mg/L	1					<0.001	<0.001			
Iron	0.03	mg/L	0.3					1.58	1.58			
Lead	0.001	mg/L	0.01					<0.001	<0.001			
Manganese	0.01	mg/L	0.05					0.15	0.15			
Mercury	0.0001	mg/L	0.001					<0.0001	<0.0001			
Molybdenum	0.005	mg/L						<0.005	0.005			
Nickel	0.005	mg/L						<0.005	<0.005			
Selenium	0.001	mg/L	0.05					<0.001	<0.001			
Silver	0.0001	mg/L						<0.0001	<0.0001			
Strontium	0.001	mg/L						0.496	0.493			
Thallium	0.0001	mg/L						0.0001	0.0005			
Uranium	0.001	mg/L	0.02					<0.001	0.002			
Vanadium	0.001	mg/L						<0.001	<0.001			
Zinc	0.01	mg/L	5					<0.01	<0.01			

						Eurofins Sample No :		7100668	7100669			
						Matrix :		Drinking water	Drinking water			
						Sampling Date :		2023-07-25	2023-07-25			
						Client Sample Identification :		TW1-3 hrs	TW1-6 hrs			
Metals, Water, ICP/OES	RL	Unit	Criteria									
			A	B	C							
Metals Scan (Water, ICP/OES)												
Calcium	1	mg/L						92	93			
Magnesium	1	mg/L						25	26			
Potassium	1	mg/L						1	1			
Sodium	1	mg/L	200					41	42			

OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Kollaard Associates Inc.
Project : 230403

Reception Date: 2023-07-26

Eurofins Sample No :		7100668	7100669				
Matrix :		Drinking water	Drinking water				
Sampling Date :		2023-07-25	2023-07-25				
Client Sample Identification :		TW1-3 hrs	TW1-6 hrs				
Nutrients	RL	Unit					
Ammonia (Total, as Nitrogen)	0.02	mg/L	0.127	0.127			
Total Kjeldahl Nitrogen	0.1	mg/L	0.405	0.301			
Eurofins Sample No :		7100668	7100669				
Matrix :		Drinking water	Drinking water				
Sampling Date :		2023-07-25	2023-07-25				
Client Sample Identification :		TW1-3 hrs	TW1-6 hrs				
Phenols-4AAP	RL	Unit					
Phenols-4AAP	0.001	mg/L	<0.001	<0.001			
Eurofins Sample No :		7100668	7100669				
Matrix :		Drinking water	Drinking water				
Sampling Date :		2023-07-25	2023-07-25				
Client Sample Identification :		TW1-3 hrs	TW1-6 hrs				
Sample Preparation	RL	Unit					
Lab Filtration			<Y>	<Y>			
Eurofins Sample No :		7100668	7100669				
Matrix :		Drinking water	Drinking water				
Sampling Date :		2023-07-25	2023-07-25				
Client Sample Identification :		TW1-3 hrs	TW1-6 hrs				
Solids	RL	Unit	Criteria				
			A	B	C		
TDS (Estimated)^	5	mg/L	500			515	522

Approved by :



Raheleh Zafari,
Ottawa, Environmental Chemist, PhD

OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Kollaard Associates Inc.
Project : 230403

Reception Date: 2023-07-26

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Alkalinity (Water, Automated)									
<i>Method : Alkalinity (water, titration to pH 4.5, automated). Internal method: OTT-I-AT-WI45398.</i>									
Alkalinity (as CaCO ₃)	mg/L	5	<5	97	95-105			1	0-20
Associated Samples : 7100668, 7100669								Prep Date: 2023-07-28 Analysis Date: 2023-07-31	
Ammonia, Total (Water, Colorimetry)									
<i>Method : Ammonia (Water, Colorimetry). Internal method: OTT-I-NUT-WI46201.</i>									
Ammonia (Total, as Nitrogen)	mg/L	0.02	<0.020	103	80-120	108	80-120	-	0-20
Associated Samples : 7100668, 7100669								Prep Date: 2023-07-28 Analysis Date: 2023-07-28	
Chloride (Water, IC)									
<i>Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.</i>									
Chloride	mg/L	0.5	<0.5	96	88-112			3	0-20
Associated Samples : 7100668, 7100669								Prep Date: 2023-07-31 Analysis Date: 2023-08-01	
Colour, Apparent (Water, Spectrophotometry)									
<i>Method : Colour (Water, Spectrophotometric). Internal method: OTT-I-SPEC-WI45980.</i>									
Colour (Apparent)	TCU	2	<2	103	90-110			4	0-40
Associated Samples : 7100668, 7100669								Prep Date: 2023-07-31 Analysis Date: 2023-07-31	
Colour, True (Water, Spectrophotometry)									
<i>Method : Colour (Water, Spectrophotometric). Internal method: OTT-I-SPEC-WI45980.</i>									
Colour (True)	TCU	2	<2	103	90-110			-	0-40
Associated Samples : 7100668, 7100669								Prep Date: 2023-07-31 Analysis Date: 2023-07-31	
Conductivity (Water, Automated)									
<i>Method : Conductivity (Water, Autotitrator). Internal Method: OTT-I-AT-WI45398.</i>									
Conductivity @ 25°C	uS/cm	5	<5	100	80-120			0	0-20
Associated Samples : 7100668, 7100669								Prep Date: 2023-07-28 Analysis Date: 2023-07-31	
DOC (Water, IR)									
<i>Method : Organic carbon (water, IR, combustion). Internal method: OTT-I-DEM-WI46148.</i>									
Dissolved Organic Carbon	mg/L	0.5	<0.5	105	84-115	97	80-120	17	0-15
Associated Samples : 7100668, 7100669								Prep Date: 2023-07-27 Analysis Date: 2023-07-28	
Fluoride (Water, Auto/ISE)									
<i>Method : Fluoride by autotitrator, ion selective electrode. Internal method: OTT-I-AT-WI45398.</i>									
Fluoride	mg/L	0.1	<0.10	105	80-120			3	0-20
Associated Samples : 7100668, 7100669								Prep Date: 2023-07-28 Analysis Date: 2023-07-31	

OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Kollaard Associates Inc.
Project : 230403

Reception Date: 2023-07-26

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Metals Scan (Water, ICP/MS)									
<i>Method : Metals (Water, ICP/MS). Internal method: AMMTFQE1.</i>									
Aluminum	mg/L	0.01	<0.01	100	80-120	-	70-130	-	0-20
Antimony	mg/L	0.0005	<0.0005	87	80-120	83	70-130	-	0-20
Arsenic	mg/L	0.001	<0.001	92	80-120	102	70-130	-	0-20
Barium	mg/L	0.001	<0.001	100	80-120	104	70-130	-	0-20
Beryllium	mg/L	0.0005	<0.0005	101	80-120	107	70-130	-	0-20
Boron	mg/L	0.01	<0.01	100	80-120	106	70-130	-	0-20
Cadmium	mg/L	0.0001	<0.0001	99	80-120	107	70-130	-	0-20
Chromium	mg/L	0.001	<0.001	120	80-120	101	70-130	-	0-20
Cobalt	mg/L	0.0002	<0.0002	102	80-120	102	70-130	-	0-20
Copper	mg/L	0.001	<0.001	100	80-120	104	70-130	-	0-20
Iron	mg/L	0.03	<0.03	100	80-120	-	70-130	-	0-20
Lead	mg/L	0.001	<0.001	100	80-120	105	70-130	-	0-20
Manganese	mg/L	0.01	<0.01	100	80-120	-	70-130	-	0-20
Mercury	mg/L	0.0001	<0.0001	100	80-120	-	70-130	-	0-20
Molybdenum	mg/L	0.005	<0.005	90	80-120	92	70-130	-	0-20
Nickel	mg/L	0.005	<0.005	100	80-120	107	70-130	-	0-20
Selenium	mg/L	0.001	<0.001	94	80-120	102	70-130	-	0-20
Silver	mg/L	0.0001	<0.0001	117	80-120	93	70-130	-	0-20
Strontium	mg/L	0.001	<0.001	100	80-120	-	70-130	-	0-20
Thallium	mg/L	0.0001	<0.0001	101	80-120	104	70-130	-	0-20
Uranium	mg/L	0.001	<0.001	100	80-120	101	70-130	-	0-20
Vanadium	mg/L	0.001	<0.001	100	80-120	105	70-130	-	0-20
Zinc	mg/L	0.01	<0.01	100	80-120	109	70-130	-	0-20

Associated Samples : 7100668

Prep Date: 2023-07-31
Analysis Date: 2023-08-01

<i>Method : Metals (Water, ICP/MS). Internal method: AMMTFQE1.</i>									
Aluminum	mg/L	0.01	<0.01	100	80-120	114	70-130	-	0-20
Antimony	mg/L	0.0005	<0.0005	87	80-120	87	70-130	-	0-20
Arsenic	mg/L	0.001	<0.001	92	80-120	108	70-130	-	0-20
Barium	mg/L	0.001	<0.001	100	80-120	89	70-130	1	0-20
Beryllium	mg/L	0.0005	<0.0005	101	80-120	111	70-130	-	0-20
Boron	mg/L	0.01	<0.01	100	80-120	118	70-130	-	0-20
Cadmium	mg/L	0.0001	<0.0001	99	80-120	104	70-130	-	0-20
Chromium	mg/L	0.001	<0.001	120	80-120	103	70-130	-	0-20
Cobalt	mg/L	0.0002	<0.0002	102	80-120	99	70-130	-	0-20
Copper	mg/L	0.001	<0.001	100	80-120	92	70-130	-	0-20
Iron	mg/L	0.03	<0.03	100	80-120	107	70-130	1	0-20
Lead	mg/L	0.001	<0.001	100	80-120	97	70-130	-	0-20
Manganese	mg/L	0.01	<0.01	100	80-120	106	70-130	5	0-20
Mercury	mg/L	0.0001	<0.0001	100	80-120	78	70-130	-	0-20
Molybdenum	mg/L	0.005	<0.005	90	80-120	103	70-130	-	0-20
Nickel	mg/L	0.005	<0.005	100	80-120	99	70-130	-	0-20
Selenium	mg/L	0.001	<0.001	94	80-120	106	70-130	-	0-20
Silver	mg/L	0.0001	<0.0001	117	80-120	87	70-130	-	0-20
Strontium	mg/L	0.001	<0.001	100	80-120	107	70-130	0	0-20
Thallium	mg/L	0.0001	<0.0001	101	80-120	98	70-130	-	0-20
Uranium	mg/L	0.001	<0.001	100	80-120	102	70-130	-	0-20

OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Kollaard Associates Inc.
Project : 230403

Reception Date: 2023-07-26

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Metals Scan (Water, ICP/MS)									
<i>Method : Metals (Water, ICP/MS). Internal method: AMMTFQE1.</i>									
Vanadium	mg/L	0.001	<0.001	100	80-120	110	70-130	-	0-20
Zinc	mg/L	0.01	<0.01	100	80-120	94	70-130	-	0-20
Associated Samples : 7100669								Prep Date: 2023-07-31 Analysis Date: 2023-08-01	
Metals Scan (Water, ICP/OES)									
<i>Method : Metals (Water, ICP/OES). Internal method: OTT-I-MET-WI48491.</i>									
Calcium	mg/L	1	<1	104	86-115	101	70-130	0	0-20
Magnesium	mg/L	1	<1	105	91-109	102	70-130	0	0-20
Potassium	mg/L	1	<1	105	87-113	105	70-130	-	0-20
Sodium	mg/L	1	<1	105	85-115	102	70-130	1	0-20
Associated Samples : 7100668, 7100669								Prep Date: 2023-08-02 Analysis Date: 2023-08-02	
Nitrate (Water, IC)									
<i>Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.</i>									
Nitrate (as Nitrogen)	mg/L	0.1	<0.1	101	92-110	101	80-120	-	0-20
Associated Samples : 7100668, 7100669								Prep Date: 2023-07-31 Analysis Date: 2023-08-01	
Nitrite (Water, IC)									
<i>Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.</i>									
Nitrite (as Nitrogen)	mg/L	0.1	<0.1	98	90-110	94	80-120	-	0-20
Associated Samples : 7100668, 7100669								Prep Date: 2023-07-31 Analysis Date: 2023-08-01	
pH (25°C) (Water, Automated)									
<i>Method : pH (Water, Automated Meter). Internal method: OTT-I-AT-WI45398.</i>									
pH @ 25°C		1	5.79	100	97-103			1	0-20
Associated Samples : 7100668, 7100669								Prep Date: 2023-07-28 Analysis Date: 2023-07-31	
Phenols (Water, Colorimetry)									
<i>Method : Phenols (Water, Colorimetry). Internal method: OTT-I-4AAP-WI46150.</i>									
Phenols-4AAP	mg/L	0.001	<0.001	104	77-125	103	70-130	-	0-20
Associated Samples : 7100668, 7100669								Prep Date: 2023-07-31 Analysis Date: 2023-07-31	
Sulphate (Water, IC)									
<i>Method : Anions (Water, Ion Chromatography). Internal method: OTT-I-IC-WI45985.</i>									
Sulphate	mg/L	1	<1	90	90-110	91	80-120	0	0-20
Associated Samples : 7100668, 7100669								Prep Date: 2023-07-31 Analysis Date: 2023-08-01	
Sulphide (Water, Colorimetry)									
<i>Method : Sulphide, S2- (Water, Colorimetry). Internal method: OTT-I-SPEC-WI45931.</i>									
Sulphide (S2-)	mg/L	0.01	<0.01	93	80-120			-	0-20
Associated Samples : 7100668, 7100669								Prep Date: 2023-07-31 Analysis Date: 2023-07-31	
Total Kjeldahl Nitrogen (Water, Colorimetry)									
<i>Method : TKN (Water, colorimetry). Internal method: OTT-I-NUT-WI46201.</i>									
Total Kjeldahl Nitrogen	mg/L	0.1	<0.100	114	70-130	97	70-130	9	0-20
Associated Samples : 7100668, 7100669								Prep Date: 2023-07-28 Analysis Date: 2023-07-31	

Environment Testing

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

OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Kollaard Associates Inc.
 Project : 230403

Reception Date: 2023-07-26

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Turbidity (Water, Turbidimeter)									
<i>Method : Turbidity (Water, Turbidimeter). Internal method: OTT-I-TUR-WI46288.</i>									
Turbidity	NTU	0.1	<0.1	101	80-120			2	0-20
Associated Samples : 7100668, 7100669								Prep Date: 2023-07-27 Analysis Date: 2023-07-27	

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



Printed On : 2023-07-26 15:59:40

CLIENT INFORMATION		WATERWORKS INFORMATION	
Company: Kollaard Associates Inc.		Waterworks Name:	
Contact: Colleen Vermeersch		Waterworks #:	
Address: 210 Prescott St. Kemptville, On K0G 1J0		Contact:	
Telephone: 613-860-0923 ext230	Fax:	Address:	
Email #1:	#2:	Telephone:	Fax:
Project: 230403		Cell Phone:	
PO #:	Quote #: 170314	Email #1:	#2:

REGULATION/GUIDELINE REQUIRED		TURN-AROUND TIME (Business Days)	
<input type="checkbox"/> O. Reg 170	<input type="checkbox"/> O. Reg 170 15.1	<input checked="" type="checkbox"/> ODWSOG	<input checked="" type="checkbox"/> Private Well
<input type="checkbox"/> O. Reg 318/319	<input type="checkbox"/> O. Reg 243	<input type="checkbox"/> GCDWQ	<input type="checkbox"/> Other:
		<input type="checkbox"/> 1 Day* (100%)	<input type="checkbox"/> 2 Day** (50%)
		<input type="checkbox"/> 3-5 Days (25%)	<input checked="" type="checkbox"/> 5-7 Days (Standard)

Please contact the laboratory in advance to determine rush availability. Surcharges may apply to rush service. Note that some tests (i.e. O. Reg. 170 Schedule 24 pesticides) may take up to 3 weeks to analyze. Please see notes (on reverse) about TAT policies.

Sample ID	Date/Time Collected	Sample Details				SPL Code/Watertax	Sample Location (i.e. Kitchen, POE)	Sample Analysis Required				Field Measurements			Sample RN# (Lab Use Only)
		Sample Type Code (see below)	Resample? Y=Yes N=No	MOE/NOH Reportable? Y=Yes N=No	# of Containers			Subdivision parameters	Kollaard Subdivision bacteria	Kollaard Special Metals	true colour	Total Chlorine	Free Chlorine	Field Turbidity	
TW1-3 hrs	07-25 / 12:30	PW	N	N	9		wellhead	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-	0.00	5.7	7100668 69
TW1-6 hrs	007-25 / 15:30	PW	N	N	9		wellhead	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	-	0.00	4.2	

Sample Type Codes for Drinking Water: RW = Raw Water; TW = Treated Water at Point of Entry to distribution; TW-NT = Untreated Water at Point of Entry to distribution; DW = Distribution; RP = Residential Plumbing; NRP = Non-Residential Plumbing; S = Standing; F = Flushed; PW = Private Well

PRINT	SIGN	DATE/TIME	TEMP (°C)	COMMENTS:	
Sampled By: Joey					Sample for metals were field filtered using 0.45 micron filter
Relinquished By:					
Received By:	SM	7/26/23 12:45	13		

OFFICIAL CERTIFICATE OF ANALYSIS : 3646570

WORK REQUEST : 100231726

Report Date : 2023-07-28

Kollaard Associates Inc.
 210 Prescott St., Box 189
 Kemptville, ON
 K0G 1J0
 Attention : Colleen Vermeersch

Reception Date : 2023-07-26
 Project : 230403
 Sampler : NA
 PO Number : Not Applicable
 Temperature : 13 °C

Analysis	Quantity	External Method
E.Coli and Total Coliforms (DC Plate)	2	Modified from MECP E3407
Heterotrophic Plate Count (mHPC)	2	Modified from SM 9215 D

Criteria :

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

Sample status upon receipt :

7100695 7100697

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

OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Kollaard Associates Inc.
Project : 230403

Reception Date: 2023-07-26

				Eurofins Sample No :		7100695	7100697			
				Matrix :		Drinking water	Drinking water			
				Sampling Date :		2023-07-25	2023-07-25			
				Client Sample Identification :		TW1-3 hrs	TW1-6 hrs			
Microbiology (DC Plate)			Criteria							
RL	Unit	A	B	C						
E.Coli and Total Coliforms (DC Plate)										
Escherichia coli (DC)	0	CFU/100mL	0			0	0			
Total Coliforms (DC)	0	CFU/100mL	0			0	0			

				Eurofins Sample No :		7100695	7100697			
				Matrix :		Drinking water	Drinking water			
				Sampling Date :		2023-07-25	2023-07-25			
				Client Sample Identification :		TW1-3 hrs	TW1-6 hrs			
Microbiology (mHPC Plate)			RL	Unit						
Heterotrophic Plate Count (mHPC)	0	CFU/1 mL	31	37						

Approved by : R. Zafari
Raheleh Zafari,
Ottawa, Environmental Chemist, PhD

OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Kollaard Associates Inc.
Project : 230403

Reception Date: 2023-07-26

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
E.Coli and Total Coliforms (DC Plate)									
<i>Method : Total Coliforms and E.Coli by MF (Water, DC plate). Internal method: OTT-M-BAC-WI45296.</i>									
Escherichia coli (DC)	CFU/100mL	0	0						-
Total Coliforms (DC)	CFU/100mL	0	0						-
Associated Samples : 7100695, 7100697								Prep Date: 2023-07-26 Analysis Date: 2023-07-27	
<i>Method : Heterotrophic Plate Count by MF (mHPC Media). Internal method: OTT-M-BAC-WI45296.</i>									
Heterotrophic Plate Count (mHPC)	CFU/1 mL	0	0					0	0-30
Associated Samples : 7100695, 7100697								Prep Date: 2023-07-26 Analysis Date: 2023-07-28	

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



CERTIFICATE OF ANALYSIS (GUIDELINE EVALUATION)

<p>Work Order : WT2323228</p> <p>Client : Kollaard Associates Inc.</p> <p>Contact : Colleen Vermeersch</p> <p>Address : 210 Prescott Street Unit 1 Kemptville ON Canada K0G1J0</p> <p>Telephone : 613 860 0923</p> <p>Project : 230403</p> <p>PO : 230403</p> <p>C-O-C number : ----</p> <p>Sampler : CLIENT</p> <p>Site : ----</p> <p>Quote number : SOA 2022</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 6</p> <p>Laboratory : ALS Environmental - Waterloo</p> <p>Account Manager : Costas Farassoglou</p> <p>Address : 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8</p> <p>Telephone : 613 225 8279</p> <p>Date Samples Received : 27-Jul-2023 09:45</p> <p>Date Analysis Commenced : 31-Jul-2023</p> <p>Issue Date : 02-Aug-2023 09:50</p>
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This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Certificate of Analysis contains the following information:

- General Comments
- Analytical Results
- Guideline Comparison

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QC Interpretive report to assist with Quality Review and Sample Receipt Notification (SRN).

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Sarah Birch	VOC Section Supervisor	VOC, Waterloo, Ontario



No Breaches Found

General Comments

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Refer to the ALS Quality Control Interpretive report (QCI) for applicable references and methodology summaries. Reference methods may incorporate modifications to improve performance.

Where a reported less than (<) result is higher than the LOR, this may be due to primary sample extract/digestate dilution and/or insufficient sample for analysis.

Where the LOR of a reported result differs from standard LOR, this may be due to high moisture content, insufficient sample (reduced weight employed) or matrix interference.

Additional information pertinent to this report will be found in the following separate attachments: Quality Control Report, QA/QC Compliance Assessment to assist with Quality Review and Sample Receipt Notification.

When sampling time information is not provided by the client, sampling dates are shown without a time component. In these instances, the time component has been assumed by the laboratory for processing purposes.

Application of guidelines is provided "as is" without warranty of any kind, either expressed or implied, including, but not limited to fitness for a particular purpose, or non-infringement. ALS assumes no responsibility for errors or omissions in the information. Guidelines are not adjusted for the hardness, pH or temperature of the sample (the most conservative values are used). Measurement uncertainty is not applied to test results prior to comparison with specified criteria values.

Key : LOR: Limit of Reporting (detection limit).

<i>Unit</i>	<i>Description</i>
µg/L	micrograms per litre

>: greater than.

<: less than.

Red shading is applied where the result or the LOR is greater than the Guideline Upper Limit (or lower than the Guideline Lower Limit, if applicable).

For drinking water samples, Red shading is applied where the result for E.coli, fecal or total coliforms is greater than or equal to the Guideline Upper Limit.



Analytical Results Evaluation

Matrix: Water				Client sample ID	230403#2 151	---	---	---	---	---	---
				WESCAR LANE	---	---	---	---	---	---	---
				Sampling date/time	26-Jul-2023 14:00	---	---	---	---	---	---
				Sub-Matrix	Water	---	---	---	---	---	---
Analyte	CAS Number	Method/Lab	Unit	WT2323228-001	-----	-----	-----	-----	-----	-----	-----
Volatile Organic Compounds											
Acetone	67-64-1	E611D/WT		<20	---	---	---	---	---	---	---
Benzene	71-43-2	E611D/WT	µg/L	<0.50	---	---	---	---	---	---	---
Bromodichloromethane	75-27-4	E611D/WT		0.71	---	---	---	---	---	---	---
Bromoform	75-25-2	E611D/WT	µg/L	<0.50	---	---	---	---	---	---	---
Bromomethane	74-83-9	E611D/WT		<0.50	---	---	---	---	---	---	---
Carbon tetrachloride	56-23-5	E611D/WT	µg/L	<0.20	---	---	---	---	---	---	---
Chlorobenzene	108-90-7	E611D/WT		<0.50	---	---	---	---	---	---	---
Chloroform	67-66-3	E611D/WT	µg/L	18.0	---	---	---	---	---	---	---
Dibromochloromethane	124-48-1	E611D/WT		<0.50	---	---	---	---	---	---	---
Dibromoethane, 1,2-	106-93-4	E611D/WT	µg/L	<0.20	---	---	---	---	---	---	---
Dichlorobenzene, 1,2-	95-50-1	E611D/WT		<0.50	---	---	---	---	---	---	---
Dichlorobenzene, 1,3-	541-73-1	E611D/WT	µg/L	<0.50	---	---	---	---	---	---	---
Dichlorobenzene, 1,4-	106-46-7	E611D/WT		<0.50	---	---	---	---	---	---	---
Dichlorodifluoromethane	75-71-8	E611D/WT	µg/L	<0.50	---	---	---	---	---	---	---
Dichloroethane, 1,1-	75-34-3	E611D/WT		<0.50	---	---	---	---	---	---	---
Dichloroethane, 1,2-	107-06-2	E611D/WT	µg/L	<0.50	---	---	---	---	---	---	---
Dichloroethylene, 1,1-	75-35-4	E611D/WT		<0.50	---	---	---	---	---	---	---
Dichloroethylene, cis-1,2-	156-59-2	E611D/WT	µg/L	<0.50	---	---	---	---	---	---	---
Dichloroethylene, trans-1,2-	156-60-5	E611D/WT		<0.50	---	---	---	---	---	---	---
Dichloromethane	75-09-2	E611D/WT	µg/L	<1.0	---	---	---	---	---	---	---
Dichloropropane, 1,2-	78-87-5	E611D/WT		<0.50	---	---	---	---	---	---	---
Dichloropropylene, cis+trans-1,3-	542-75-6	E611D/WT	µg/L	<0.50	---	---	---	---	---	---	---
Dichloropropylene, cis-1,3-	10061-01-5	E611D/WT		<0.30	---	---	---	---	---	---	---
Dichloropropylene, trans-1,3-	10061-02-6	E611D/WT	µg/L	<0.30	---	---	---	---	---	---	---
Ethylbenzene	100-41-4	E611D/WT		<0.50	---	---	---	---	---	---	---
Hexane, n-	110-54-3	E611D/WT	µg/L	0.51	---	---	---	---	---	---	---
Methyl ethyl ketone [MEK]	78-93-3	E611D/WT		<20	---	---	---	---	---	---	---
Methyl isobutyl ketone [MIBK]	108-10-1	E611D/WT	µg/L	<20	---	---	---	---	---	---	---
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D/WT		<0.50	---	---	---	---	---	---	---



Analytical Results Evaluation

Matrix: Water				Client sample ID	230403#2 151	----	----	----	----	----	----
					WESCAR LANE						
				Sampling date/time	26-Jul-2023 14:00	----	----	----	----	----	----
				Sub-Matrix	Water	----	----	----	----	----	----
Analyte	CAS Number	Method/Lab	Unit	WT2323228-001	-----	-----	-----	-----	-----	-----	-----
Volatile Organic Compounds											
Styrene	100-42-5	E611D/WT	µg/L	<0.50	----	----	----	----	----	----	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D/WT		<0.50	----	----	----	----	----	----	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D/WT	µg/L	<0.50	----	----	----	----	----	----	----
Tetrachloroethylene	127-18-4	E611D/WT		<0.50	----	----	----	----	----	----	----
Toluene	108-88-3	E611D/WT	µg/L	0.65	----	----	----	----	----	----	----
Trichloroethane, 1,1,1-	71-55-6	E611D/WT		<0.50	----	----	----	----	----	----	----
Trichloroethane, 1,1,2-	79-00-5	E611D/WT	µg/L	<0.50	----	----	----	----	----	----	----
Trichloroethylene	79-01-6	E611D/WT		<0.50	----	----	----	----	----	----	----
Trichlorofluoromethane	75-69-4	E611D/WT	µg/L	<0.50	----	----	----	----	----	----	----
Vinyl chloride	75-01-4	E611D/WT		<0.50	----	----	----	----	----	----	----
Xylene, m+p-	179601-23-1	E611D/WT	µg/L	0.54	----	----	----	----	----	----	----
Xylene, o-	95-47-6	E611D/WT		<0.30	----	----	----	----	----	----	----
Xylenes, total	1330-20-7	E611D/WT	µg/L	0.54	----	----	----	----	----	----	----
BTEX, total	----	E611D/WT		1.2	----	----	----	----	----	----	----
Volatile Organic Compounds Surrogates											
Bromofluorobenzene, 4-	460-00-4	E611D/WT	%	97.6	----	----	----	----	----	----	----
Difluorobenzene, 1,4-	540-36-3	E611D/WT		100	----	----	----	----	----	----	----

Please refer to the General Comments section for an explanation of any result qualifiers detected.

Please refer to the Accreditation section for an explanation of analyte accreditations.



Summary of Guideline Limits

Analyte	CAS Number	Unit	ONDWS AO/OG	ONDWS MAC					
Volatile Organic Compounds									
Acetone	67-64-1	µg/L	--	--					
Benzene	71-43-2	µg/L	--	1 µg/L					
Bromodichloromethane	75-27-4	µg/L	--	--					
Bromoform	75-25-2	µg/L	--	--					
Bromomethane	74-83-9	µg/L	--	--					
BTEX, total	----	µg/L	--	--					
Carbon tetrachloride	56-23-5	µg/L	--	2 µg/L					
Chlorobenzene	108-90-7	µg/L	30 µg/L	80 µg/L					
Chloroform	67-66-3	µg/L	--	--					
Dibromochloromethane	124-48-1	µg/L	--	--					
Dibromoethane, 1,2-	106-93-4	µg/L	--	--					
Dichlorobenzene, 1,2-	95-50-1	µg/L	3 µg/L	200 µg/L					
Dichlorobenzene, 1,3-	541-73-1	µg/L	--	--					
Dichlorobenzene, 1,4-	106-46-7	µg/L	1 µg/L	5 µg/L					
Dichlorodifluoromethane	75-71-8	µg/L	--	--					
Dichloroethane, 1,1-	75-34-3	µg/L	--	--					
Dichloroethane, 1,2-	107-06-2	µg/L	--	5 µg/L					
Dichloroethylene, 1,1-	75-35-4	µg/L	--	14 µg/L					
Dichloroethylene, cis-1,2-	156-59-2	µg/L	--	--					
Dichloroethylene, trans-1,2-	156-60-5	µg/L	--	--					
Dichloromethane	75-09-2	µg/L	--	50 µg/L					
Dichloropropane, 1,2-	78-87-5	µg/L	--	--					
Dichloropropylene, cis+trans-1,3-	542-75-6	µg/L	--	--					
Dichloropropylene, cis-1,3-	10061-01-5	µg/L	--	--					
Dichloropropylene, trans-1,3-	10061-02-6	µg/L	--	--					
Ethylbenzene	100-41-4	µg/L	2.4 µg/L	140 µg/L					
Hexane, n-	110-54-3	µg/L	--	--					
Methyl ethyl ketone [MEK]	78-93-3	µg/L	--	--					
Methyl isobutyl ketone [MIBK]	108-10-1	µg/L	--	--					
Methyl-tert-butyl ether [MTBE]	1634-04-4	µg/L	--	15 µg/L					
Styrene	100-42-5	µg/L	--	--					
Tetrachloroethane, 1,1,1,2-	630-20-6	µg/L	--	--					
Tetrachloroethane, 1,1,2,2-	79-34-5	µg/L	--	--					
Tetrachloroethylene	127-18-4	µg/L	--	10 µg/L					
Toluene	108-88-3	µg/L	24 µg/L	60 µg/L					
Trichloroethane, 1,1,1-	71-55-6	µg/L	--	--					
Trichloroethane, 1,1,2-	79-00-5	µg/L	--	--					



Analyte	CAS Number	Unit	ONDWS AO/OG	ONDWS MAC					
Volatile Organic Compounds - Continued									
Trichloroethylene	79-01-6	µg/L	--	5 µg/L					
Trichlorofluoromethane	75-69-4	µg/L	--	--					
Vinyl chloride	75-01-4	µg/L	--	1 µg/L					
Xylene, m+p-	179601-23-1	µg/L	--	--					
Xylene, o-	95-47-6	µg/L	--	--					
Xylenes, total	1330-20-7	µg/L	300 µg/L	90 µg/L					
Volatile Organic Compounds Surrogates									
Bromofluorobenzene, 4-	460-00-4	%							
Difluorobenzene, 1,4-	540-36-3	%							

Please refer to the General Comments section for an explanation of any qualifiers detected.

Key:

ONDWS	Ontario Drinking Water Regulation (JAN, 2020)
AO/OG	Aesthetic Objective/Operational Guideline
MAC	Schedule 1 (Microbiological) and 2 (Chemical) Standards (JAN,2020)



QUALITY CONTROL INTERPRETIVE REPORT

<p>Work Order : WT2323228</p> <p>Client : Kollaard Associates Inc.</p> <p>Contact : Colleen Vermeersch</p> <p>Address : 210 Prescott Street Unit 1 Kemptville ON Canada K0G1J0</p> <p>Telephone : 613 860 0923</p> <p>Project : 230403</p> <p>PO : 230403</p> <p>C-O-C number : ----</p> <p>Sampler : CLIENT</p> <p>Site : ----</p> <p>Quote number : SOA 2022</p> <p>No. of samples received : 1</p> <p>No. of samples analysed : 1</p>	<p>Page : 1 of 5</p> <p>Laboratory : ALS Environmental - Waterloo</p> <p>Account Manager : Costas Farassoglou</p> <p>Address : 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8</p> <p>Telephone : 613 225 8279</p> <p>Date Samples Received : 27-Jul-2023 09:45</p> <p>Issue Date : 02-Aug-2023 09:50</p>
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This report is automatically generated by the ALS LIMS (Laboratory Information Management System) through evaluation of Quality Control (QC) results and other QA parameters associated with this submission, and is intended to facilitate rapid data validation by auditors or reviewers. The report highlights any exceptions and outliers to ALS Data Quality Objectives, provides holding time details and exceptions, summarizes QC sample frequencies, and lists applicable methodology references and summaries.

Key

- Anonymous: Refers to samples which are not part of this work order, but which formed part of the QC process lot.
- CAS Number: Chemical Abstracts Service number is a unique identifier assigned to discrete substances.
- DQO: Data Quality Objective.
- LOR: Limit of Reporting (detection limit).
- RPD: Relative Percent Difference.

Workorder Comments

Holding times are displayed as "----" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.

Summary of Outliers

Outliers : Quality Control Samples

- No Method Blank value outliers occur.
- No Duplicate outliers occur.
- No Laboratory Control Sample (LCS) outliers occur
- No Test sample Surrogate recovery outliers exist.

Outliers: Reference Material (RM) Samples

- No Reference Material (RM) Sample outliers occur.

Outliers : Analysis Holding Time Compliance (Breaches)

- No Analysis Holding Time Outliers exist.

Outliers : Frequency of Quality Control Samples

- Quality Control Sample Frequency Outliers occur - please see following pages for full details.



Analysis Holding Time Compliance

This report summarizes extraction / preparation and analysis times and compares each with ALS recommended holding times, which are selected to meet known provincial and /or federal requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by organizations such as CCME, US EPA, APHA Standard Methods, ASTM, or Environment Canada (where available). Dates and holding times reported below represent the first dates of extraction or analysis. If subsequent tests or dilutions exceeded holding times, qualifiers are added (refer to COA).

If samples are identified below as having been analyzed or extracted outside of recommended holding times, measurement uncertainties may be increased, and this should be taken into consideration when interpreting results.

Where actual sampling date is not provided on the chain of custody, the date of receipt with time at 00:00 is used for calculation purposes.

Where only the sample date without time is provided on the chain of custody, the sampling date at 00:00 is used for calculation purposes.

Matrix: **Water** Evaluation: ✖ = Holding time exceedance ; ✔ = Within Holding Time

Analyte Group Container / Client Sample ID(s)	Method	Sampling Date	Extraction / Preparation				Analysis			
			Preparation Date	Holding Times		Eval	Analysis Date	Holding Times		Eval
				Rec	Actual			Rec	Actual	
Volatile Organic Compounds : VOCs (Eastern Canada List) by Headspace GC-MS										
Glass vial (sodium bisulfate) 230403#2 151 WESCAR LANE	E611D	26-Jul-2023	31-Jul-2023	14 days	5 days	✔	31-Jul-2023	9 days	0 days	✔

Legend & Qualifier Definitions

Rec. HT: ALS recommended hold time (see units).



Quality Control Parameter Frequency Compliance

The following report summarizes the frequency of laboratory QC samples analyzed within the analytical batches (QC lots) in which the submitted samples were processed. The actual frequency should be greater than or equal to the expected frequency.

Matrix: **Water** Evaluation: ✖ = QC frequency outside specification; ✔ = QC frequency within specification.

Quality Control Sample Type	Method	QC Lot #	Count		Frequency (%)		
			QC	Regular	Actual	Expected	Evaluation
Analytical Methods							
Laboratory Duplicates (DUP)							
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1063174	1	19	5.2	5.0	✔
Laboratory Control Samples (LCS)							
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1063174	1	19	5.2	5.0	✔
Method Blanks (MB)							
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1063174	1	19	5.2	5.0	✔
Matrix Spikes (MS)							
VOCs (Eastern Canada List) by Headspace GC-MS	E611D	1063174	0	19	0.0	5.0	✖



Methodology References and Summaries

The analytical methods used by ALS are developed using internationally recognized reference methods (where available), such as those published by US EPA, APHA Standard Methods, ASTM, ISO, Environment Canada, BC MOE, and Ontario MOE. Reference methods may incorporate modifications to improve performance (indicated by "mod").

<i>Analytical Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
VOCs (Eastern Canada List) by Headspace GC-MS	E611D ALS Environmental - Waterloo	Water	EPA 8260D (mod)	Volatile Organic Compounds (VOCs) are analyzed by static headspace GC-MS. Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler, causing VOCs to partition between the aqueous phase and the headspace in accordance with Henry's law.
<i>Preparation Methods</i>	<i>Method / Lab</i>	<i>Matrix</i>	<i>Method Reference</i>	<i>Method Descriptions</i>
VOCs Preparation for Headspace Analysis	EP581 ALS Environmental - Waterloo	Water	EPA 5021A (mod)	Samples are prepared in headspace vials and are heated and agitated on the headspace autosampler. An aliquot of the headspace is then injected into the GC/MS-FID system.

QUALITY CONTROL REPORT

Work Order	: WT2323228	Page	: 1 of 8
Client	: Kollaard Associates Inc.	Laboratory	: ALS Environmental - Waterloo
Contact	: Colleen Vermeersch	Account Manager	: Costas Farassoglou
Address	: 210 Prescott Street Unit 1 Kemptville ON Canada K0G1J0	Address	: 60 Northland Road, Unit 1 Waterloo, Ontario Canada N2V 2B8
Telephone	:	Telephone	: 613 225 8279
Project	: 230403	Date Samples Received	: 27-Jul-2023 09:45
PO	: 230403	Date Analysis Commenced	: 31-Jul-2023
C-O-C number	: ----	Issue Date	: 02-Aug-2023 09:50
Sampler	: CLIENT 613 860 0923		
Site	: ----		
Quote number	: SOA 2022		
No. of samples received	: 1		
No. of samples analysed	: 1		

This report supersedes any previous report(s) with this reference. Results apply to the sample(s) as submitted. This document shall not be reproduced, except in full.

This Quality Control Report contains the following information:

- Laboratory Duplicate (DUP) Report; Relative Percent Difference (RPD) and Data Quality Objectives
- Method Blank (MB) Report; Recovery and Data Quality Objectives
- Laboratory Control Sample (LCS) Report; Recovery and Data Quality Objectives

Signatories

This document has been electronically signed by the authorized signatories below. Electronic signing is conducted in accordance with US FDA 21 CFR Part 11.

<i>Signatories</i>	<i>Position</i>	<i>Laboratory Department</i>
Sarah Birch	VOC Section Supervisor	Waterloo VOC, Waterloo, Ontario

Page : 2 of 8
Work Order : WT2323228
Client : Kollaard Associates Inc.
Project : 230403



General Comments

The ALS Quality Control (QC) report is optionally provided to ALS clients upon request. ALS test methods include comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against predetermined Data Quality Objectives (DQOs) to provide confidence in the accuracy of associated test results. This report contains detailed results for all QC results applicable to this sample submission. Please refer to the ALS Quality Control Interpretation report (QCI) for applicable method references and methodology summaries.

Key :

Anonymous = Refers to samples which are not part of this work order, but which formed part of the QC process lot.

CAS Number = Chemical Abstracts Service number is a unique identifier assigned to discrete substances.

DQO = Data Quality Objective.

LOR = Limit of Reporting (detection limit).

RPD = Relative Percent Difference

= Indicates a QC result that did not meet the ALS DQO.

Workorder Comments

Holding times are displayed as "---" if no guidance exists from CCME, Canadian provinces, or broadly recognized international references.



Laboratory Duplicate (DUP) Report

A Laboratory Duplicate (DUP) is a randomly selected intralaboratory replicate sample. Laboratory Duplicates provide information regarding method precision and sample heterogeneity. ALS DQOs for Laboratory Duplicates are expressed as test-specific limits for Relative Percent Difference (RPD), or as an absolute difference limit of 2 times the LOR for low concentration duplicates within ~ 4-10 times the LOR (cut-off is test-specific).

Sub-Matrix: Water					Laboratory Duplicate (DUP) Report						
Laboratory sample ID	Client sample ID	Analyte	CAS Number	Method	LOR	Unit	Original Result	Duplicate Result	RPD(%) or Difference	Duplicate Limits	Qualifier
Volatile Organic Compounds (QC Lot: 1063174)											
WT2323178-001	Anonymous	Acetone	67-64-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Benzene	71-43-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromodichloromethane	75-27-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromoform	75-25-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Bromomethane	74-83-9	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Carbon tetrachloride	56-23-5	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Chlorobenzene	108-90-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Chloroform	67-66-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromochloromethane	124-48-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dibromoethane, 1,2-	106-93-4	E611D	0.20	µg/L	<0.20	<0.20	0	Diff <2x LOR	----
		Dichlorobenzene, 1,2-	95-50-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,3-	541-73-1	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorobenzene, 1,4-	106-46-7	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichlorodifluoromethane	75-71-8	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,1-	75-34-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethane, 1,2-	107-06-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, 1,1-	75-35-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, cis-1,2-	156-59-2	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloroethylene, trans-1,2-	156-60-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloromethane	75-09-2	E611D	1.0	µg/L	<1.0	<1.0	0	Diff <2x LOR	----
		Dichloropropane, 1,2-	78-87-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----
		Ethylbenzene	100-41-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Hexane, n-	110-54-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	<20	0	Diff <2x LOR	----
		Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Styrene	100-42-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----



Sub-Matrix: **Water**

Laboratory Duplicate (DUP) Report

<i>Laboratory sample ID</i>	<i>Client sample ID</i>	<i>Analyte</i>	<i>CAS Number</i>	<i>Method</i>	<i>LOR</i>	<i>Unit</i>	<i>Original Result</i>	<i>Duplicate Result</i>	<i>RPD(%) or Difference</i>	<i>Duplicate Limits</i>	<i>Qualifier</i>
Volatile Organic Compounds (QC Lot: 1063174) - continued											
WT2323178-001	Anonymous	Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Tetrachloroethylene	127-18-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Toluene	108-88-3	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,1-	71-55-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethane, 1,1,2-	79-00-5	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichloroethylene	79-01-6	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Trichlorofluoromethane	75-69-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Vinyl chloride	75-01-4	E611D	0.50	µg/L	<0.50	<0.50	0	Diff <2x LOR	----
		Xylene, m+p-	179601-23-1	E611D	0.40	µg/L	<0.40	<0.40	0	Diff <2x LOR	----
		Xylene, o-	95-47-6	E611D	0.30	µg/L	<0.30	<0.30	0	Diff <2x LOR	----



Method Blank (MB) Report

A Method Blank is an analyte-free matrix that undergoes sample processing identical to that carried out for test samples. Method Blank results are used to monitor and control for potential contamination from the laboratory environment and reagents. For most tests, the DQO for Method Blanks is for the result to be < LOR.

Sub-Matrix: Water

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1063174)						
Acetone	67-64-1	E611D	20	µg/L	<20	---
Benzene	71-43-2	E611D	0.5	µg/L	<0.50	---
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	<0.50	---
Bromoform	75-25-2	E611D	0.5	µg/L	<0.50	---
Bromomethane	74-83-9	E611D	0.5	µg/L	<0.50	---
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	<0.20	---
Chlorobenzene	108-90-7	E611D	0.5	µg/L	<0.50	---
Chloroform	67-66-3	E611D	0.5	µg/L	<0.50	---
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	<0.50	---
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	<0.20	---
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	<0.50	---
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	<0.50	---
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	<0.50	---
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	<0.50	---
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	<0.50	---
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	<0.50	---
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	<0.50	---
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	<0.50	---
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	<0.50	---
Dichloromethane	75-09-2	E611D	1	µg/L	<1.0	---
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	<0.50	---
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	<0.30	---
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	<0.30	---
Ethylbenzene	100-41-4	E611D	0.5	µg/L	<0.50	---
Hexane, n-	110-54-3	E611D	0.5	µg/L	<0.50	---
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	<20	---
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	<20	---
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	<0.50	---
Styrene	100-42-5	E611D	0.5	µg/L	<0.50	---
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	<0.50	---
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	<0.50	---
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	<0.50	---



Sub-Matrix: **Water**

Analyte	CAS Number	Method	LOR	Unit	Result	Qualifier
Volatile Organic Compounds (QCLot: 1063174) - continued						
Toluene	108-88-3	E611D	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	<0.50	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	<0.50	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	<0.50	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	<0.50	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	<0.50	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	<0.40	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	<0.30	----



Laboratory Control Sample (LCS) Report

A Laboratory Control Sample (LCS) is an analyte-free matrix that has been fortified (spiked) with test analytes at known concentration and processed in an identical manner to test samples. LCS results are expressed as percent recovery, and are used to monitor and control test method accuracy and precision, independent of test sample matrix.

Sub-Matrix: Water

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 1063174)									
Acetone	67-64-1	E611D	20	µg/L	100 µg/L	97.9	70.0	130	----
Benzene	71-43-2	E611D	0.5	µg/L	100 µg/L	89.6	70.0	130	----
Bromodichloromethane	75-27-4	E611D	0.5	µg/L	100 µg/L	93.6	70.0	130	----
Bromoform	75-25-2	E611D	0.5	µg/L	100 µg/L	94.9	70.0	130	----
Bromomethane	74-83-9	E611D	0.5	µg/L	100 µg/L	97.7	60.0	140	----
Carbon tetrachloride	56-23-5	E611D	0.2	µg/L	100 µg/L	90.8	70.0	130	----
Chlorobenzene	108-90-7	E611D	0.5	µg/L	100 µg/L	89.6	70.0	130	----
Chloroform	67-66-3	E611D	0.5	µg/L	100 µg/L	92.3	70.0	130	----
Dibromochloromethane	124-48-1	E611D	0.5	µg/L	100 µg/L	87.7	70.0	130	----
Dibromoethane, 1,2-	106-93-4	E611D	0.2	µg/L	100 µg/L	88.2	70.0	130	----
Dichlorobenzene, 1,2-	95-50-1	E611D	0.5	µg/L	100 µg/L	89.9	70.0	130	----
Dichlorobenzene, 1,3-	541-73-1	E611D	0.5	µg/L	100 µg/L	90.4	70.0	130	----
Dichlorobenzene, 1,4-	106-46-7	E611D	0.5	µg/L	100 µg/L	88.8	70.0	130	----
Dichlorodifluoromethane	75-71-8	E611D	0.5	µg/L	100 µg/L	90.0	60.0	140	----
Dichloroethane, 1,1-	75-34-3	E611D	0.5	µg/L	100 µg/L	95.0	70.0	130	----
Dichloroethane, 1,2-	107-06-2	E611D	0.5	µg/L	100 µg/L	87.8	70.0	130	----
Dichloroethylene, 1,1-	75-35-4	E611D	0.5	µg/L	100 µg/L	99.0	70.0	130	----
Dichloroethylene, cis-1,2-	156-59-2	E611D	0.5	µg/L	100 µg/L	94.8	70.0	130	----
Dichloroethylene, trans-1,2-	156-60-5	E611D	0.5	µg/L	100 µg/L	105	70.0	130	----
Dichloromethane	75-09-2	E611D	1	µg/L	100 µg/L	92.8	70.0	130	----
Dichloropropane, 1,2-	78-87-5	E611D	0.5	µg/L	100 µg/L	93.4	70.0	130	----
Dichloropropylene, cis-1,3-	10061-01-5	E611D	0.3	µg/L	100 µg/L	82.7	70.0	130	----
Dichloropropylene, trans-1,3-	10061-02-6	E611D	0.3	µg/L	100 µg/L	84.1	70.0	130	----
Ethylbenzene	100-41-4	E611D	0.5	µg/L	100 µg/L	95.4	70.0	130	----
Hexane, n-	110-54-3	E611D	0.5	µg/L	100 µg/L	103	70.0	130	----
Methyl ethyl ketone [MEK]	78-93-3	E611D	20	µg/L	100 µg/L	81.3	70.0	130	----
Methyl isobutyl ketone [MIBK]	108-10-1	E611D	20	µg/L	100 µg/L	78.3	70.0	130	----
Methyl-tert-butyl ether [MTBE]	1634-04-4	E611D	0.5	µg/L	100 µg/L	92.0	70.0	130	----
Styrene	100-42-5	E611D	0.5	µg/L	100 µg/L	87.8	70.0	130	----
Tetrachloroethane, 1,1,1,2-	630-20-6	E611D	0.5	µg/L	100 µg/L	90.5	70.0	130	----
Tetrachloroethane, 1,1,2,2-	79-34-5	E611D	0.5	µg/L	100 µg/L	98.1	70.0	130	----
Tetrachloroethylene	127-18-4	E611D	0.5	µg/L	100 µg/L	94.4	70.0	130	----
Toluene	108-88-3	E611D	0.5	µg/L	100 µg/L	93.3	70.0	130	----



Sub-Matrix: **Water**

					Laboratory Control Sample (LCS) Report				
					Spike	Recovery (%)	Recovery Limits (%)		
Analyte	CAS Number	Method	LOR	Unit	Concentration	LCS	Low	High	Qualifier
Volatile Organic Compounds (QCLot: 1063174) - continued									
Trichloroethane, 1,1,1-	71-55-6	E611D	0.5	µg/L	100 µg/L	91.2	70.0	130	----
Trichloroethane, 1,1,2-	79-00-5	E611D	0.5	µg/L	100 µg/L	90.7	70.0	130	----
Trichloroethylene	79-01-6	E611D	0.5	µg/L	100 µg/L	98.9	70.0	130	----
Trichlorofluoromethane	75-69-4	E611D	0.5	µg/L	100 µg/L	84.6	60.0	140	----
Vinyl chloride	75-01-4	E611D	0.5	µg/L	100 µg/L	98.5	60.0	140	----
Xylene, m+p-	179601-23-1	E611D	0.4	µg/L	200 µg/L	94.5	70.0	130	----
Xylene, o-	95-47-6	E611D	0.3	µg/L	100 µg/L	94.8	70.0	130	----

VW-098

Chain of Custody (COC) / Analytical Request Form

Canada Toll Free: 1 800 668 9878


Affix ALS barcode label here (lab use only)

COC Number: 17 -

Page of



www.alsglobal.com

Report To Contact and company name below will appear on the final report Company: Kollaard Associates (27196) Contact: Colleen Vermeersch Phone: 613.860.0923, ext.230 Company address below will appear on the final report Street: 210 Prescott Street, Unit 1 P.O. Box 189 City/Province: Kemptville, Ontario Postal Code: K0G 1J0		Report Format / Distribution Select Report Format: <input checked="" type="checkbox"/> F <input checked="" type="checkbox"/> EXCEL <input type="checkbox"/> EDD (DIGITAL) Quality Control (QC) Report with Report <input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> Compare Results to Criteria on Report - provide details below if box checked Select Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: colleen@kollaard.ca Email 2 Email 3		Select Service Level Below - Contact your Environmental Division Regular [R] <input checked="" type="checkbox"/> Standard TAT if receive 4 day [P4-20%] <input type="checkbox"/> 1 But 3 day [P3-25%] <input type="checkbox"/> Same 2 day [P2-50%] <input type="checkbox"/> (Labor) Date and Time Required for all ESP TATs: For tests that can not be performed according to the service level Indicate Filtered (F), Preserved (P) or Filtered Analytically		Waterloo Work Order Reference WT2323228  Telephone: +1 519 886 6910	
ALS Account # / Quote #: Q71021 Job #: PO / AFE: 230403 Location:		Invoice Distribution: <input type="checkbox"/> EMAIL <input type="checkbox"/> MAIL <input type="checkbox"/> FAX Email 1 or Fax: admin@kollaard.ca Email 2 Oil and Gas Required Fields (client use) AFE/Cost Center: PO# Major/Minor Code: Routing Code: Requisitioner: Location:		ALS Lab Work Order # (lab use only): WT2323228 ALS Sample # (lab use only): 220403#2 151 wescar land Sample Identification and/or Coordinates (This description will appear on the report): Date: 26-Jul-23 Time: 14:00 Sample Type: Water VOCs <input checked="" type="checkbox"/>		Number of Containers SAMPLES ON HOLD Sample is hazardous (please provide details)	
Drinking Water (DW) Samples (client use) Are samples taken from a Regulated DW System? <input type="checkbox"/> Y <input checked="" type="checkbox"/> N Are samples for human consumption/ use? <input type="checkbox"/> Y <input checked="" type="checkbox"/> N		SHIPMENT RELEASE (client use) Released by: J. Fallet Date: 07/27/23 Time: 10:30		Special Instructions / Specify Criteria to add on report by clicking on the drop-down list below (electronic COC only) Ontario-Regulation 153/04 - April 15, 2014 Standards Table 6, Potable Water Standards, coarse-grained soils Water Standards		SAMPLE CONDITION AS RECEIVED (lab use only) Frozen <input type="checkbox"/> SIF Observations Yes <input type="checkbox"/> No <input type="checkbox"/> Ice Packs <input checked="" type="checkbox"/> Ice Cubes <input type="checkbox"/> Custody seal intact Yes <input type="checkbox"/> No <input type="checkbox"/> Cooling Initiated <input type="checkbox"/> INITIAL COOLER TEMPERATURES °C: 13.9 FINAL COOLER TEMPERATURES °C: 6.9	
Initial Shipment Reception (lab use only) Received by: LR Date: 07/27/23 Time: 9:45		Final Shipment Reception (lab use only) Received by: AB Date: 07/28/23 Time: 10:30		WHITE - LABORATORY COPY YELLOW - CLIENT COPY			

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY. By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.

1. If any water samples are taken from a Regulated Drinking Water (DW) System, please submit using an Authorized DW COC form.

OFFICIAL CERTIFICATE OF ANALYSIS : 3752603

WORK REQUEST : 100254385

Report Date : 2023-11-10

Kollaard Associates Inc.
 210 Prescott St., Box 189
 Kemptville, ON
 K0G 1J0
 Attention : Colleen Vermeersch

Reception Date : 2023-11-03
 Project : 230403
 Sampler : NA
 PO Number : Not Applicable
 Temperature : 8 °C

Analysis	Quantity	External Method
Metals Scan (Water, ICP/MS)	2	Modified from EPA 200.8

Criteria :

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

Sample status upon receipt :

7351862 7351863

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

OFFICIAL CERTIFICATE OF ANALYSIS - RESULTS

Client : Kollaard Associates Inc.
Project : 230403

Reception Date: 2023-11-03

			Eurofins Sample No :			7351862	7351863			
			Matrix :			Drinking water	Drinking water			
			Sampling Date :			2023-11-02	2023-11-02			
			Client Sample Identification :			151 Wescar Lane-TW1	144 Wescar Lane			
Metals	RL	Unit	Criteria							
			A	B	C					
Antimony	0.0005	mg/L	0.006			<0.0005	0.0049			

Approved by : R. Zafari
Raheleh Zafari,
Ottawa, Environmental Chemist, PhD

Environment Testing

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

OFFICIAL CERTIFICATE OF ANALYSIS - QUALITY CONTROL

Client : Kollaard Associates Inc.
Project : 230403

Reception Date: 2023-11-03

Parameter	Unit	RL	Blank	QC		Matrix Spike		Duplicate	
				Recovery %	Range %	Recovery %	Range %	RPD %	Range %
Metals Scan (Water, ICP/MS)									
<i>Method : Metals (Water, ICP/MS). Internal method: AMMTFQE1.</i>									
Antimony	mg/L	0.0005	<0.0005	94	80-120	108	70-130	-	0-20
Associated Samples : 7351862, 7351863								Prep Date: 2023-11-09 Analysis Date: 2023-11-03	

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



DRINKING WATER CHAIN-OF-CUSTODY

146 Colonnade Road, Unit #8, Ottawa, ON, K2E 7Y1 - Phone: 613-727-5692, Fax: 613-727-5222

Eurofins Workorder #:

100254385



Printed On: 2023-11-03 16:43:06

CLIENT INFORMATION		WATERWORKS' INFORM	
Company: Kollaard Associates Inc.		Waterworks Name:	
Contact: Colleen Vermeersch		Waterworks #:	
Address: 210 Prescott St, Kemptville, On K0G 1J0		Contact:	
Telephone: 613-860-0923 ext230	Fax:	Address:	
Email #1:	#2:	Telephone:	Fax:
Project: 230403		Cell Phone:	
PO #:	Quote #: 170314	Email #1:	#2:

REGULATION/GUIDELINE REQUIRED				TURN-AROUND TIME (Business Days)				
<input type="checkbox"/> O. Reg 170	<input type="checkbox"/> O. Reg 170 15.1	<input checked="" type="checkbox"/> ODWSOG	<input checked="" type="checkbox"/> Private Well	<input type="checkbox"/> None	<input type="checkbox"/> 1 Day* (100%)	<input type="checkbox"/> 2 Day** (50%)	<input type="checkbox"/> 3-5 Days (25%)	<input checked="" type="checkbox"/> 5-7 Days (Standard)
<input type="checkbox"/> O. Reg 318/319	<input type="checkbox"/> O. Reg 243	<input type="checkbox"/> GCDWQ	<input type="checkbox"/> Other:	Please contact the laboratory in advance to determine rush availability. Surcharges may apply to rush service. Note that some tests (i.e. O. Reg. 170 Schedule 24 pesticides may take up to 3 weeks to analyze). Please see notes (on reverse) about TAT policies.				

The optimal temperature conditions during transport must be less than 10°C. Sample(s) cannot be frozen. Note that for drinking water samples, all exceedances will be reported where (and how) the application legislation requires. 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 Measurements			Sample RN# (Lab Use Only)	
		Sample Type Code (see below)	Resample? Y = Yes N = No	MOE/MOH Reportable? Y = Yes N = No	# of Containers	SPL Code/Watertrak	Sample Location (i.e. Kitchen, POE)	Antimony							Total Chlorine		Free Chlorine
Sample ID	Date/Time Collected																
151 Wescar Lane-TW1	Nov 2/23 12pm	PW	N	N	1	wellhead	✓										7351862
144 Wescar Lane	Nov 2/23 12pm	PW	N	N	1	wellhead	✓										63

Sample Type Codes for Drinking Water: RW = Raw Water, TW = Treated Water at Point of Entry to distribution, TW-NT = Untreated Water at Point of Entry to distribution, DW = Distribution, RP = Residential Plumbing, NRP = Non-Residential Plumbing, S = Standing, F = Flushed, PW = Private Well

PRINT	SIGN	DATE/TIME	TEMP (°C)	COMMENTS:	
Sampled By: Connor Ibach					Sample for metals were field filtered using 0.45 micron filter
Relinquished By:					
Received By:		NOV 3/23 9:00	7.9		

Ryznar Stability Index

$$RSI = 2(pH_s) - pH$$

RSI << 6 → the scale tendency increases as the index decreases

RSI >> 7 → the calcium carbonate formation probably does not lead to a protective corrosion inhibitor film

RSI >> 8 → mild steel corrosion becomes an increasing problem

Langelier Saturation Index

$$LSI = pH - pH_s$$

If LSI is negative → no potential to scale, the water will dissolve CaCO₃

If LSI is positive → scale can form and CaCO₃ precipitation may occur

If LSI is close to zero → borderline scale potential, water quality or temperature change or evaporation could change the index

where pH measured from sample

pH_s = pH at saturation in calcite or calcium carbonate

$$pH_s = (9.3 + A + B) - (C + D)$$

$$A = \frac{\log_{10}[TDS] - 1}{10}$$

$$B = -13.12 \times \log_{10}(\text{°C} + 273) + 34.55$$

$$C = \log_{10}[Ca^{2+} \text{ as } CaCO_3] - 0.4$$

$$D = \log_{10}[\text{alkalinity as } CaCO_3]$$

	TW1-3hr	TW1-6hr
pH	7.61	7.62
hardness [mg/l as CaCO ₃]	336	339
Alkalinity [mg/l as CaCO ₃]	343	357
total dissolved solids [mg/l]	515	552
temperature (°C)	12.9	13.1
→→ RSI	6.66	6.60
→→ LSI	0.48	0.51



ATTACHMENT D
SEWAGE EFFLUENT DILUTION CALCULATIONS
AND CLIMATE DATA

ACTUAL SEPTIC EFFLUENT DILUTION CALCULATIONS (BASED ON PROPOSED USE)

Number of Lots	1
Gross Site Area	46267 m ²
Env. Can. Water Surplus (NPI-glacial till)	328 mm

Hard Surface Area (Post-Development)

Building Area	3566 m ²
Hard (asphalt) surfaced areas (C=0.9)	8397.9
gravel area (semi-pervious, C=0.6)	<u>13911.6</u>
	25875.5

Stormwater Infiltration (50% runoff infiltration) 0

Net Infiltration Area = Gross Site Area - Hard Surface Area (Post-Development)
20391.5 m²

Recharge = NIA x NPI 6688.412 m³/year
18324.416 L/day

Number of employees	60
Sewage Demand	75 L/day/employee
Total daily sewage flow	4500 L/day

Maximum allowable daily sewage flow 1,643 m³/year

Infiltration Reduction Factor:

Topography (flat)	0.30
Soil (medium combination of clay and loam)	0.20
<u>Cover (cultivated)</u>	<u>0.10</u>
Total IRF	0.60

treated effluent nitrate level 20 mg/l

Typical Expected Nitrate Concentration using Average Daily Sewage Design Flow

$$\frac{\text{Volume of Effluent Per Year} \times \text{Nitrate mg/L NO}_3}{\text{Number of Lots} \times \text{Volume Effluent Per Year} + (\text{Net Infiltration Area} \times \text{NPI} \times \text{IRF})} = 5.8 \text{ mg/L NO}_3\text{-N}$$

WATER SURPLUS DATA (1983-2002)	
Soil Type:	Glacial Till
Water Holding Capacity:	200 millimetres
Year	Surplus (mm)
1983	379.0
1984	386.7
1985	268.4
1986	473.4
1987	240.6
1988	289.3
1989	269.7
1990	381.6
1991	335.8
1992	356.6
1993	472.1
1994	335.6
1995	300.4
1996	384.0
1997	341.1
1998	240.5
1999	199.6
2000	329.3
2001	222.2
2002	353.2
Avg. Surplus (mm) (1983-2003)	328.0
Avg. Surplus (mm) (1993-2003)	317.8

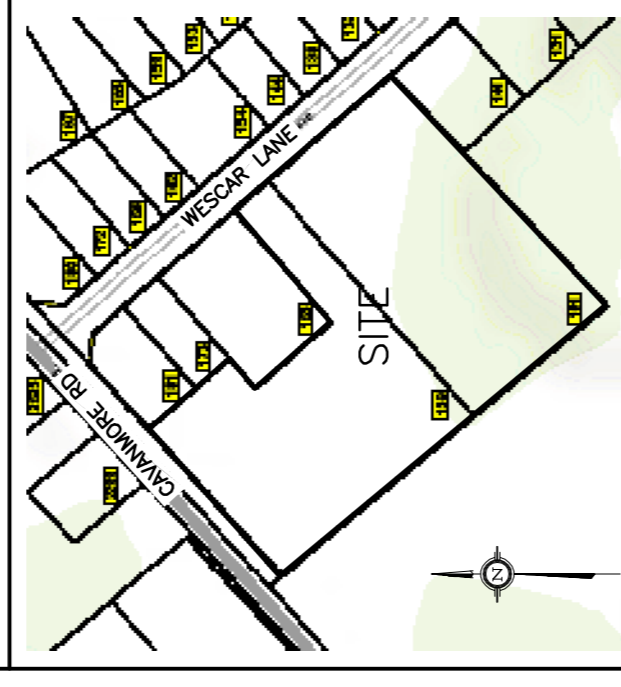


ATTACHMENT E
SITE SERVICING PLANS (DB GRAY ENGINEERING)

LEGEND

- FFL FINISHED FLOOR ELEVATION
- USF UNDERSIDE OF FOOTING
- PROPERTY LINE
- CB CATCH-BASIN
- MH STORM MANHOLE
- CB/MH CATCH-BASIN/MANHOLE
- SAN SANITARY SEWER
- SAN SANITARY FORCEMAIN
- ST STORM SEWER
- WS/MM WATER SERVICE/WATERMAIN
- SPL SPRINGLINE OF PIPE
- INV INVERT OF PIPE
- T.O.S. TOP OF SLOPE
- B.O.S. BOTTOM OF SLOPE
- CENTERLINE OF SWALE
- 150mm BARRIER CURB

KEY PLAN



No.	DATE	REVISION
2	AUG 16-23	ISSUED FOR COORDINATION
1	JUL 18-23	ISSUED FOR COORDINATION

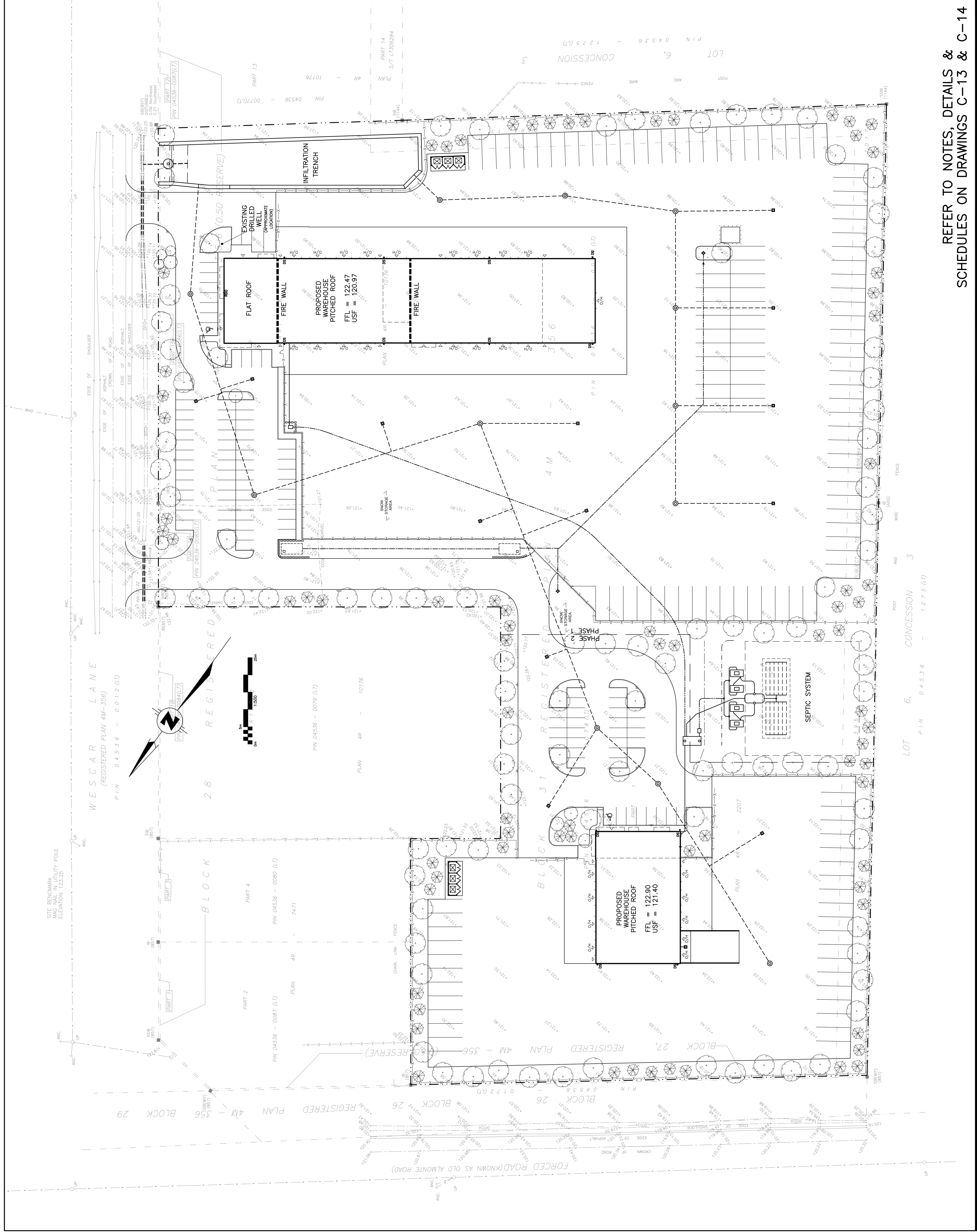
D. B. GRAY ENGINEERING INC.
 Professional Engineer
 700 Long Point Circle
 Ottawa, Ontario
 d.gray@dbgrayengineering.com

**SUNBELT RENTALS INC. -
 EQUIPMENT MAINTENANCE
 FACILITY**
 CARP, ONTARIO

SITE OVERVIEW

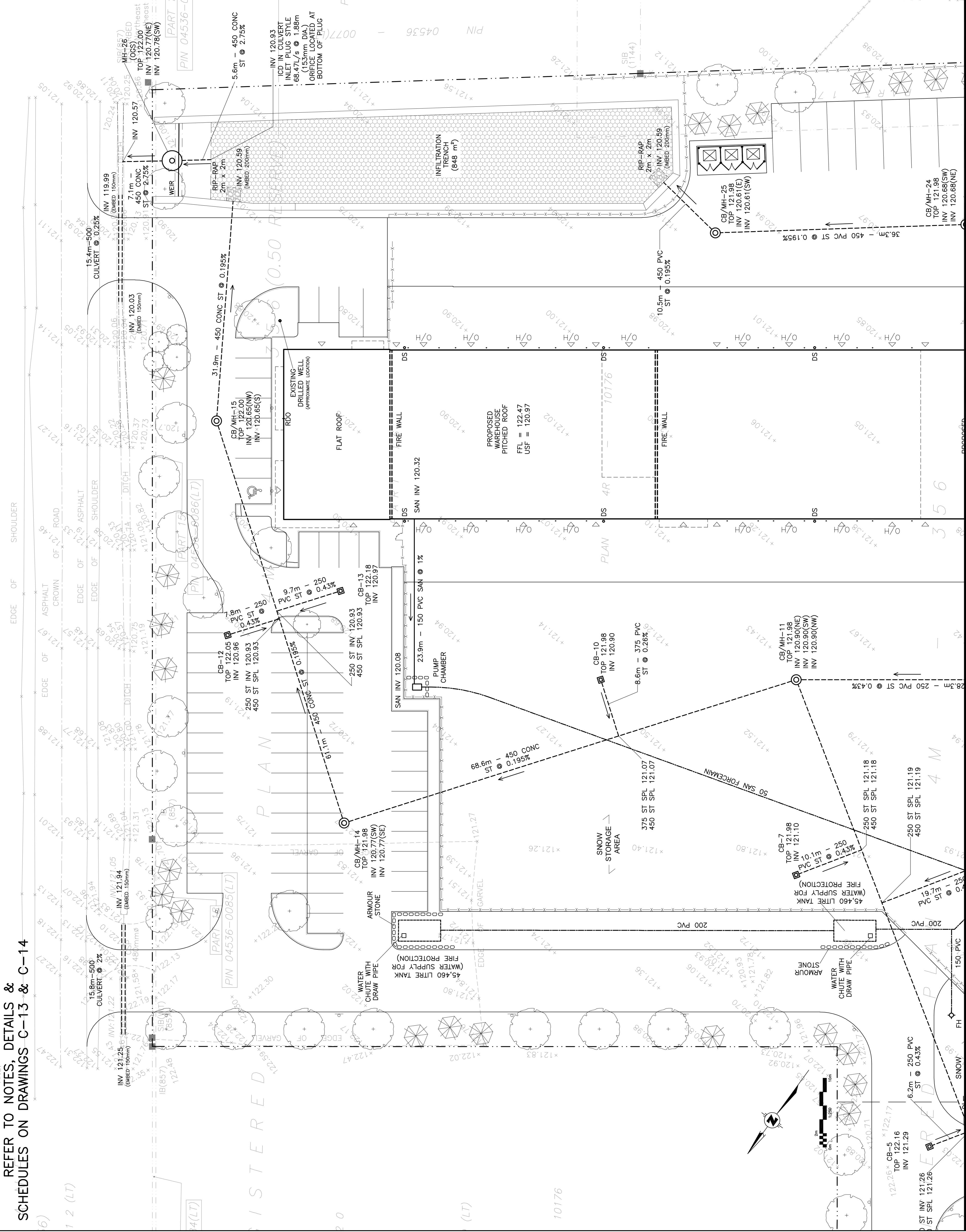
Drawn	D.B.G.
H. Scale	1:500
V. Scale	
Date	JUL 17-23
Job No.	22111

Drawing No.
C-1
 of 16



REFER TO NOTES, DETAILS &
 SCHEDULES ON DRAWINGS C-13 & C-14

REFER TO NOTES, DETAILS &
SCHEDULES ON DRAWINGS C-13 & C-14



LEGEND	
FL	FINISHED FLOOR ELEVATION
USF	UNDERSIDE OF FOOTING
---	PROPERTY LINE
CB	CATCH-BASIN
MH	STORM MANHOLE
CB/MH	CATCH-BASIN/MANHOLE
SAN	SANITARY SEWER
SAN	SANITARY FORCEMAIN
ST	STORM SEWER
WS/WM	WATER SERVICE/WATERMAIN
SPL	SPRINGLINE OF PIPE
INV	INVERT OF PIPE
T.O.S.	TOP OF SLOPE
B.O.S.	BOTTOM OF SLOPE
---	CENTERLINE OF SWALE
---	150mm BARRIER CURB

KEY PLAN

No.	DATE	REVISION
2	AUG 16-23	ISSUED FOR COORDINATION
1	JUL 18-23	ISSUED FOR COORDINATION

D.B. GRAY ENGINEERING INC.
Structural/Manager: College of Province; Owner & Material Source: Performance
 700 Long Point Circle
 Ottawa, Ontario d.gray@dbgrayengineering.com

SUNBELT RENTALS INC. - EQUIPMENT MAINTENANCE FACILITY
 CARP, ONTARIO

SITE SERVICING PLAN (EAST AREA)

Drawn: D.B.G.	H. Scale: 1:250
V. Scale: 1:250	Date: JUL 17-23
Job No.: 22111	

Drawing No. **C-2** of **16**