

Appendix F1
Phase 2 Environmental Site Assessment



Phase Two Environmental Site Assessment
1132 Snow Valley Road
Township of Springwater, Ontario

Prepared for:
The Township of Springwater

Prepared by:
Azimuth Environmental
Consulting, Inc.

February 2019

AEC 18-107



Environmental Assessments & Approvals

February 7, 2019

AEC 18-107

Township of Springwater
2231 Nursery Road
Township of Springwater, ON
L0L 1Y2

Attention: Mr. Robert Brindley
Chief Administration Officer

Re: **Phase Two Environmental Site Assessment**
1132 Snow Valley Road, Township of Springwater, ON

Dear Mr. Brindley:

Azimuth Environmental Consulting, Inc. (Azimuth) is pleased to provide you with the following report documenting the Phase Two Environmental Site Assessment (ESA) conducted at 1132 Snow Valley Road, Township of Springwater, Ontario (the "Phase Two Property").

This assessment was conducted to evaluate the areas of potential environmental concern (APECs) on the Phase Two Property associated with past and present site activities, as well as adjacent land use(s) in accordance with Ontario Regulation 153/04 (as amended). This work was conducted for a potential property transfer.

The results of the Phase Two ESA indicated that environmental impacts (*i.e.*, parameter concentrations above the applicable O.Reg. 153/04 generic Table 2 Site Condition Standards [SCS]) are present at the Phase Two Property. This represents one location with a benzene exceedence within the soil profile.

The ground water sampling program also indicates that historic contaminating activities from off-site source(s) have also likely occurred at the Phase Two Property. The initial ground water sampling conducted immediately after the drilling program detected several contaminant sources at the identified "*areas of potential environmental concern* (APEC)". A subsequent ground water sampling event failed to detect these same



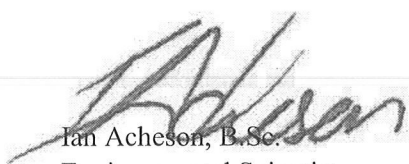
contaminant parameters likely due to the sediment settling that transpired between the two events.

Finally, trihalomethane concentrations above the Table 2 SCS were also measured; but are attributed to the use of municipal water in drilling fluids and should be discounted in the Site evaluation process. Confirmation sampling needs to verify this supposition.

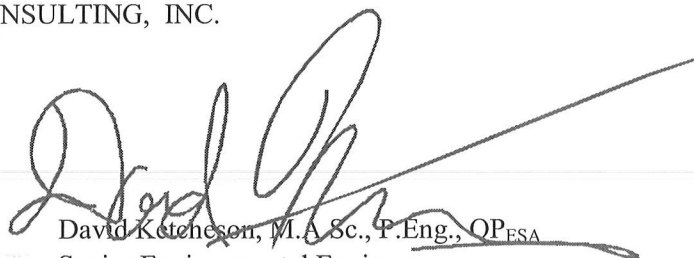
Further delineation work would be required in order to meet *Record of Site Condition* (RSC) requirements. Similarly, RSC protocols would suggest that it is premature to draw any conclusions until the Phase Two ESA is completed.

We trust this report is sufficient for your current requirements. Please do not hesitate to contact us if you have any questions.

Yours truly,
AZIMUTH ENVIRONMENTAL CONSULTING, INC.



Ian Acheson, B.Sc.
Environmental Scientist



David Ketcheson, M.A.Sc., P.Eng., QP_{ESA}
Senior Environmental Engineer

Attach:

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1.0 EXECUTIVE SUMMARY

A Phase Two *Environmental Site Investigation* (ESA) was undertaken by Azimuth Environmental Consulting, Inc. (Azimuth) for the property located at 1132 Snow Valley Road, Township of Springwater, Ontario (the “Phase Two Property” or the “Site”). The Phase Two Property is a rectangular property roughly 585 meters (m) by 355 m and approximately 21.1 hectares (ha) in size. The Site is primarily undeveloped forest (Figures 1 to 3)¹. The Phase Two Property is being proposed for re-development for institutional and recreational land use.

A summary of the “*areas of potential environmental concern* (APECs)” associated with the Phase Two Property are summarized in Table 1 of the Phase One Environmental Site Assessment Report, produced for the Township of Springwater by Azimuth (2018). The Phase One ESA was conducted over the entire Hasty Tract property (*i.e.*, 38.7 ha in size).

A decision was made to reduce the size of the investigation area at the conclusion of the Phase One ESA. Before commencing the Phase Two ESA program the defined limits of the Phase Two Property were adjusted to 40 m west of the central trail being the lands that the Township of Springwater (the “Township” or the “Client”) is interested in purchasing. The difference in the study area can be viewed in Figures 2 through 7. This revision of the study boundaries altered the program focus to solely off-Site APECs, as the two former on-Site APECs were situated within the lands no longer being considered.

An updated summary of the APECs associated with the Phase Two Property is present in Table A (overleaf). The scope of work for the revised investigation involved conducting a drilling and ground water sampling program to evaluate the presence of a known chlorinated solvent plume within the from an adjacent off-Site property on the Phase Two Property. The drilling program also assessed other potential off-Site contaminant source(s) identified in the Phase One ESA. Two ground water sampling events were executed as part of the Phase Two ESA, approximately two months apart from each other.

¹ All figures are found in Appendix A



Table A: Areas of Potential Environmental Concern¹

1132 Snow Valley Road, Township of Springwater, Ontario						
Area of Potential Environmental Concern ²		Location of Area of Potential Environmental Concern on Phase Two Property	Potentially Contaminating Activity ³	Location of PCA (on-Site or off-Site)	Contaminants of Potential Concern	Media Potentially Impacted (Groundwater, soil and/or sediment)
1	Historic chemical lagoon storage and release in the 1970s	Hasty Tract property including the Phase Two Property	58 – Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of water, other than use of biosolids as soil conditioners	Off-Site	VOCs	Ground water
2	Hazardous material storage and release at 1131 Snow Valley Road in 2003	Hasty Tract property including the Phase Two Property	58 – Waste Disposal and Waste Management, including thermal treatment, landfilling and transfer of water, other than use of biosolids as soil conditioners	Off-Site	VOCs	Ground water
3	Historic retail gasoline station at 1179 Bayfield Street North	Southeast corner of the Phase Two Property	28 – Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	TPH, metals	Shallow ground water
4	Current use of 1152 Bayfield Street for automotive repair	South border of the Phase Two Property	27 – Garages and Maintenance and Repair of Railcars, Marine Vehicles and Aviation Vehicles	Off-Site	TPH, metals, VOCs	Shallow ground water
5	Historic storage of bulk fuel within 1237 Bayfield Street North	Along east border of the Phase Two Property	28 – Gasoline and Associated Products Storage in Fixed Tanks	Off-Site	TPH, metals	Shallow ground water

Notes: 1 Refer to clause 16(2)(a), Schedule D, O.Reg. 153/04

2 Area of Potential Environmental Concern means the area on, in or under a Phase Two Property when one or more contaminants are potentially present, as determined through the Phase Two environmental site assessment, including through,
(a) identification of past or present uses on, in or under the Phase Two Property, and
(b) identification of potentially contaminating activity.

3 Potentially Contaminating Activity means a use or activity set out in Column A of Table 2 of Schedule D that is occurring or has occurred in a Phase Two study area



Based on the results of the Phase One ESA (Azimuth, 2018), Azimuth has revised APECs associated with the Phase Two Property as follows:

1. Historic chemical lagoon storage and release in the 1970s:
The 1131 Snow Valley Road parcel was reportedly developed for use in the 1970s as a hazardous waste processing and disposal facility. Information obtained through the aerial photography show the use of two lagoons for chemical storage. These lagoons reportedly failed in the late 1970s and reportedly chemical product was lost to the subsurface. Subsequently, the lagoons were then decommissioned. Based on the inferred down gradient location and the contaminant plume presence, the presence of this "*potential contaminating activities* (PCA)" contributes to an APEC;
2. Hazardous material storage and release at 1131 Snow Valley Road in 2003:
In July of 2003, a drum building fire occurred at 1131 Snow Valley Road, releasing product into the subsurface. Multiple phases of on- and off-Site monitoring and remediation have been completed since the late 1970s at this facility. The presence of the hazardous waste processing and disposal facility and the presence of documented contaminant plume migration contribute to an APEC;
3. Historic retail gasoline station at 1179 Bayfield Street North:
The 1179 Bayfield Street parcel was developed for use in the 1940s, with retail gasoline operations beginning in the 1950s. The current structure was built in the 1980s when a residence and former variety store were demolished. The structure is slab on grade and previously contained a pump island and fuel tank bunker. Information obtained as part of a review of the Ministry of the Environment, Conservation and Parks (MECP)² files for this parcel suggested that the historic "*underground fuel storage tanks* (USTs)" and pump island have been removed and significant soil and ground water sampling, and remediation had occurred. Although the documentation reviewed suggests the local ground water flow direction at this site is flowing northeast and that soil and ground water impacts have been retained within the parcel boundary, the presence of a documented and significant *petroleum hydrocarbon* (PHC)³ plume immediately adjacent to the Phase Two Property is a significant environmental concern that contributes to an APEC;

² This Ministry has had various names in past governments including the Ministry of the Environment (MOE), the Ministry of the Environment and Energy (MOEE) and the Ministry of the Environment and Climate Change (MOECC).

³ PHCs are evaluated as Total Petroleum Hydrocarbons (TPH) and these two terms are used interchangeably



4. Current use of 1152 Bayfield Street for automotive repair:
The 1152 Bayfield Street parcel was developed for use sometime between 1978 and 1989. The parcel is currently occupied by Midhurst Mechanical/ Oil Tech of Midhurst. This business is an automotive garage (PCA No.: 27). This parcel contains one structure and a works yard with cars, RVs, and miscellaneous equipment stored on the site. The west side of the parcel also contains fill piles (PCA No.: 30). Due to the age of the structure, the type of chemicals associated with a garage (PHCs, "*volatile organic compounds* [VOCs]"), and the inferred direction of ground water flow (north), this PCA contributes to an APEC;
5. Historic storage of bulk fuel within 1237 Bayfield Street North:
The environmental reports identified the historical presence of bulk gasoline at 1237 Bayfield Street North (PCA No.: 28) and contributes to an APEC;

Figures 4 and 5 identify the locations of all APECs at the Hasty Tract Lands and the Phase Two Property. Table A (above) summarizes each APEC described above and the associated potential contaminants of concern at the Phase Two Property.

Recent guidance provided by the MECP on RSC site investigations has indicated that an iterative evaluation approach to the Phase Two ESA process is recommended. At this juncture in the Phase Two ESA, the point of the field program is to confirm the presence or absence of the identified APECs. If one or more contaminant source(s) is identified then the next stage would be to accurately delineate the contaminant extent.

This Phase Two ESA program consisted of drilling a series of 13 boreholes and the installation of 11 ground water monitoring wells. The original drilling program was to focus primarily along the western property boundary (see Appendix B). The APEC being addressed along this boundary was the detection of chlorinated solvents from the Terrapure facility owing to the historic contaminant plume that was present on a portion of the Hasty Tract lands (*i.e.*, the western portion).

Two other APEC locations had been identified being: (1) the southeast corner of the Hasty Tract property where a historic fuel release had occurred; and (2) a location halfway along the eastern property boundary where another historic bulk fuel storage location had once existed.

The "*Sample and Analysis Plan* (SAP)" developed for this original Phase Two ESA program called for the first borehole to confirm the anticipated stratigraphic profile beneath these lands as formerly defined by the Ontario Geologic Survey (OGS, 2011).



The OGS (2011) research had documented a lake lain deposition and therefore a rhythmically bedded sand environment (see Appendix C). However, a unique and unforeseen fluvial channel deposit consisting of gravel and cobbles was encountered at the first drilling location. The depth of this feature at the first borehole was ~33 m deep or the entire thickness of the upper aquifer system. OGS staff attended the Site during the initial borehole drilling event and provided expert guidance on the stratigraphic interpretation.

At the recommendation of the OGS and endorsement of the project management team, the first well was drilled through the upper aquitard and into the first confined aquifer system which was ~52 m below ground surface (mbgs). A PHC signature was detected at this depth and subsequent ground water sampling has confirmed a benzene detection above the Provincial Generic Standards at this monitoring location.

The discovery of the overlying cobble zone (*i.e.*, permeable feature) changed the intended drilling program. It had been rationalized that this fluvial channel was at least a thousand-fold more permeable than the surround sand environment and therefore could preferentially convey contaminants in this feature. A second well was drilled at this location to the base of this permeable fluvial channel feature in order to assess whether a detectable contaminant signature was evident. No VOCs analysed were detected in the ground water collected at the base of this channel feature. It was speculated that the cobble feature orientation may not be sufficiently aligned with the Terrapure facility or the released product from that site might have been detected in the ground water sample. Thus, the focus of the investigation program shifted from this feature; despite its importance in the local ground water flow system. Further evaluation of the feature is recommended to confirm its orientation in the local landscape; but drilling is not the best means to accomplish this assessment.

Eventually, two pairs of nested wells were drilled along the western boundary toward the north end of the Phase Two Property. Two other well nests were attempted at the southern end; but the above noted gravel / cobble feature was encountered which terminated their construction due to cost considerations. If present at these two southern locations, then the extent of this cobble feature across the Phase Two Property could be significant.

The two pairs of nested wells along the western boundary toward the north end of the Phase Two Property were indicative of the anticipated lake lain sand environment noted by the OGS (2011) and elsewhere across the Hasty Tract property as constructed by others (*e.g.*, XCG for Terrapure). Ground water well screen depths coincided with silt /



clay seams persistent at ~20 m and ~35 mbgs. No evidence of the chlorinated solvent contamination was evident at these targeted horizons.

Early in the drilling program, a water table well was constructed at the southeast corner of the Hasty Property. This ground water monitoring well detected PHCs above the Provincial Generic Standard. The drilling program was modified to evaluate this contaminant presence at this location. Three more water table wells were constructed in vicinity of the southeast corner. Two of these ground water monitoring wells were off-set ~40 m west and north of the southeast corner and detected PHCs below the Provincial Generic Standard. A third ground water monitoring well was positioned ~200 m northwest of the corner location in the Hasty Tract and did not detect any PHCs at this location.

Finally, the ground water monitoring well installed halfway along the eastern property boundary did not detect any evidence of PHCs associated with the former bulk storage area identified in the Phase One ESA.

Based on the results of the drilling program, PHC soil / ground water contamination was detected at two locations on the Phase Two Property. The first location is at the southeast corner of the Hasty Tract; but does not appear to extend significantly into the lands, albeit above Provincial Generic Standards at the property boundary. The second location is within the first confined aquifer beneath the cobble feature (*i.e.*, MW-1). It is also suggested that further delineation of the cobble feature is warranted.

During the initial sampling program, ground water samples were collected immediately after the ground water monitors were constructed. Attempts to purge the drilling fluids from the formation followed contemporary standards (*i.e.*, a three wellbore volume); however, significant drilling waters had to be used in this permeable environment. The detection of the drilling water signature is evident in the initial sampling results (*i.e.*, trihalomethanes [THMs]⁴). These VOC detections are not attributed to the natural formation condition and a second ground water sampling event was conducted to substantiate this interpretation.

The second ground water sampling event was executed approximately two months after the completion of the drilling program and initial ground water sampling program. This subsequent ground water sampling program was initiated to confirm the presence/absence of the post-drilling results. Contemporary ground water sampling procedures

⁴ Trihalomethanes include chloroform, bromodichloromethane and dibromochloromethane



were once again followed when collecting these samples. All wells were sampled for the identified parameters of concerns for their respective APECs (*i.e.* PHCs and VOCs). The results of this analytical testing from this subsequent sampling event indicated that all parameters were within the Table 2 SCS⁵ at all sampled locations. The THMs detections, ubiquitous in municipal water system and used in drilling fluids, have mostly dissipated from the local ground water regime. The detections in the water samples are not considered significant.

Based on the results of the soil and ground water analysis, off-Site contaminants had migrated at one point of time onto the RSC Property. However, the most recent ground water sampling event would indicate that the contaminant sources are no longer evident.

The next phase of the Phase Two ESA would be to adequately delineate the soil contamination both laterally and vertically at the first borehole location. Stated differently, the orientation and extent of the cobble zone likely needs to be defined to assess the contaminant distribution present on the Site. Similarly the vertical limit of the contamination detected in the original drilled borehole must be determined. It is also reasonable to deduce that a risk assessment approach could prove cost efficient to the completion of this assessment.

⁵ O.Reg. 153/04 Table 2: Full Depth Generic Site Condition Standards (SCS) in a Potable Ground Water Condition for a coarse-textured soil environment also called Table 2 SCS.



2.0 INTRODUCTION

2.1 Site Description

Azimuth Environmental Consulting, Inc. (Azimuth) has been retained by the Township of Springwater (the "Township") to conduct a Phase Two Environmental Site Assessment (ESA) on a portion of the property located at 1132 Snow Valley Road in Springwater Township, Ontario (the "Phase Two Property" or the "Site") (Appendix A - Figure 1). The Phase Two Property resides within a larger land holding known as the "Hasty Tract" and is located within Lot 13, Concession 5, Springwater Township. The Hasty Tract is approximately 38.7 hectares (ha) in size and is bound by Bayfield Street North on the east side, Snow Valley Road on the south side, and a parcel known as the "Museum Tract" on the north and west sides. The Museum Tract is primarily undeveloped forest. There are currently no structures located on the Phase Two Property or the Hasty Tract.

The Phase Two Property represents the eastern 21.1 ha of the Hasty Tract lands. The Phase Two Property extends 335 m west of the eastern property boundary and is rectangular. If acquired from the Ministry of Natural Resources and Forestry (MNRF), then it is our understanding that this eastern segment of the Hasty Tract lands would be severed from the remaining lands.

The municipal address and legal description of the Hasty Tract lands are as follows:

Table B: Hasty Tract Property Identification and Description

Legal Description as it Appears on the Abbreviated Parcel Register	Legal Description	Property Identification Number	Municipal Address
Lot 13, Concession 5, Springwater Township	Unpatented lands		1132 Snow Valley Road, Springwater, ON

Notes: No PIN is assigned to this land parcel because it is owned by the Province

According to the Springwater Township By-Law 5000 ZBA, the Hasty Tract property is currently zoned as Open Space land.



2.2 Property Ownership

The Hasty Tract property is currently owned by the Province. The client is the Township and the contact information is provided below:

The Township of Springwater
Attn: Robert Brindley

2231 Nursery Road
Minesing, ON
L9X 1A8

| [Email: Robert.brindley@springwater.ca](mailto:Robert.brindley@springwater.ca)

2.3 Current and Proposed Future Use

The Phase Two Property is currently a forested holding owned by the Province. It is used for recreation use and includes a trail network with the adjacent County of Simcoe land. The Township has the intent to purchase a portion of the Hasty Tract lands for community uses.

2.4 Applicable Site Condition Standard

Based on the following available information, the Phase Two Property is not considered to be environmentally sensitive as defined in Sections 41 and 43.1 of the O.Reg. 153/04:

- there are no nature reserves, areas of natural or scientific interest, or provincial parks present. The Phase Two Property is located within a predominantly residential area which permits commercial land use;
- the Phase Two Property does not include all or part of a water body, the Phase Two Property is not adjacent to a water body, and the Phase Two Property does not include lands that are within 30 m of a water body. There are no surface water bodies or watercourses located on the Phase Two Property. The closest surface water body (Willow Creek) is located approximately 450 m from the east parcel corner. The Phase Two Property is part of the Willow Creek/ Nottawasaga River watershed, flowing through the Minesing Wetland complex prior to discharge into the main river channel;
- representative soil samples were collected from two locations during the past Phase Two ESA and evaluated for pH. These measurements reported typical soil pH levels;
- overburden was encountered during investigation activities up to a depth of 53 mbgs and bedrock was not encountered. The water well records for the area illustrate that



the overburden thickness is in excess of 53 m. Therefore, the Phase Two Property is not considered a shallow soil property; and

- the upper 30 m of the overburden are an interbedded sand aquifer and therefore the soils are considered to be of a coarse-grained texture.

Based on this assessment the Phase Two Property is not in an environmentally sensitive area.

The planned future land use is a community based development and thus it is proposed that the generic Table 2 SCS (MECP, 2011 [as amended]) for a parkland land use be used for this assessment. The overburden soil conditions were primarily composed of interbedded sands. As a result, the laboratory analytical data has been compared to the coarse-grained standards, where applicable. The estimated high ground water table condition is considered to be at least 9 mbgs.

All the environmental standards presented and discussed in the current report have been used for evaluation purposes.

3.0 BACKGROUND INFORMATION

3.1 Physical Setting

The Phase Two Property is located on the north side of Snow Valley Road in Springwater Township and is situated northwest of the Bayfield Street and Snow Valley Road intersection in Midhurst, Ontario (Figure 2). The Hasty Tract lands are square with the Phase Two Property being rectangular defined within these lands. The approximate dimensions of 335 m (east - west) along the southern Phase Two Property boundary and 620 m (north - south) along the Phase Two Property boundary adjacent to Bayfield Street with an area of approximately 21.1 ha.

The Phase Two Property was an undeveloped shrub or farmland lot prior to it being transferred to the MNRF in the late 1920s (Azimuth, 2018). The MNRF replanted the Phase Two Property with pine in the late 1920s and early 1930s. The lands became a tree nursery yet were not actively harvested. In 1998, the Hasty Tract lands were transferred to Crown ownership where the plot became unpatented lands. The surrounding area is comprised of a mixture of residential and commercial land use along the Snow Valley Road corridor. The Museum Tract lands are situated to the north boundary of the Hasty Tract lands. Commercial business are located to the east and west of the Hasty Tract lands, with an inactive gravel pit located approximately 750 m from the lands and directly adjacent to Anne Street North. The Phase Two Property fronts Snow Valley Road which will be referred as an east-west trending road.



Figure 1 shows the Phase Two Property and the immediately surrounding area. According to the Phase One ESA (Azimuth, 2018) there are no significantly protected wetlands or features of environmental importance within the vicinity of the Phase Two Property. However, the Phase Two Property is located within lands that are zoned as “Environmental Protection II” with “Environmental Connections/ Potential Trails” traversing the Site in a north-south direction. Natural Heritage Screening note numerous Species at Risk are known to occur within a kilometre (km) of the Phase Two Property.

The Hasty Tract lands reside near a local topographic high and are relatively flat. The lands have reported elevation of 241 meters above sea level (masl) near the northwest side of the parcel. The lands to the northwest slope into the Minesing Flats / Nottawasaga River approximately 11.0 km to the west. The lands to the southeast slope toward Little Lake at an elevation 228 masl.

The Phase Two Property is located approximately 450 m west of Willow Creek, which empties into the Nottawasaga River approximately 11.0 km to the west. The local topography displays a gradual slope west towards the west side of the Site; however the regional slope is northwest toward Nottawasaga Bay. There is currently no storm water infrastructure at the Phase Two Property or along Snow Valley Road given the permeable nature of the soils; so runoff is expected to follow the local topographic grade, if present due to ground frost conditions.

3.2 Past Investigations Update

The Phase One ESA report was completed in May 2018 (Azimuth, 2018). Site investigation works are on-going at the Terrapure facility as a result of past events when owned by others. It is our understanding that XCG has been retained since 2007 to delineate and remediate the contaminants sourced from the incidents that had occurred from the 1131 Snow Valley Road facility onto the Hasty Tract lands.

Through a cooperative; but confidential information sharing Agreement with Terrapure, Azimuth was able to review selected documentation after the Phase One ESA report had been completed. In general, a dissolved phase chlorinated solvent contaminant plume has migrated to the north. Over 50 ground water monitoring wells / nests have been used to delineate these contaminants on the Hasty Tract lands. A consistent contamination pattern is evident in the year-to-year monitoring program and substantial changes in this distribution are not anticipated to vary appreciably.



Two contaminating events are identified. In approximately 1975/1976 (APEC 1) when the site was owned and operated by Chem King and again following the 2003 fire that took place at the site (APEC 2). Terrapure has embarked on site remediation works on the Hasty Tract lands to the west of the Phase Two Property and are currently assessing the success of these endeavours.

4.0 SCOPE OF THE INVESTIGATION

4.1 Overview of the Site Investigation

The Phase Two Property investigation consisted of conducting a soil drilling and ground water sampling program at the various APECs. Thirteen exploration boreholes were advanced at the Phase Two Property, with eleven of the boreholes completed as ground water monitoring wells (Figure 6).

As noted in Section 1.0, the focus of the drilling program shifted based on the sampling results reported over the course of the month long investigation. A critical assessment of the western property boundary was particularly important, especially in light of the dissolve phase contaminant plume that existed to the west of the Phase Two Property (see Section 3.2). Half of the constructed ground water monitoring wells was allocated to this assessment.

The four of the remaining five ground water monitoring wells dealt with a residual PHC contaminant detection at the southeast corner of the Phase Two Property. The last of these exploration wells assessed a third APEC halfway along the eastern Phase Two Property boundary which proved to be inconsequential.

The soil samples were field screened, and samples with detectable presence were submitted for laboratory analysis of a range of parameters. When no detections occurred, then sampling occurred at key soil horizons immediately above lower permeable soil seams. The ground water monitoring wells were constructed to Provincial standards (O.Reg. 903/90 [as amended]).

Since a dynamic work program ensued, the following summary is provided to substantiate each of the selected drilling locations (see Table C - overleaf). Throughout the drilling program, ground water samples were collected and "rushed" for analysis as monitoring wells were constructed to assess the presence / absence of "*potential contaminants of concern* (PCOCs)" as the program progressed. The drilling program was modified based on the results of the rushed samples. Drilling water influences detected in these sampling results were ignored (*i.e.*, THM detections).



Table C: Progressive Sample Analysis Plan

Borehole/ Well Name	Location	Rationale
BH-1/ MW-1	central trail 150 m north of south gate	• initially this borehole was constructed as a stratigraphic verification borehole to 50 m depth (<i>i.e.</i>, into the underlying aquifer); • when a unique fluvial gravel / cobble feature was encountered, then the goal was to drill through the feature to provide insights about its deposition as recommended by OGS staff; • once the wellbore penetrated through the fluvial feature, the goal was to correlate the underlying soils to the regional setting; • finally, the detection of PHCs in the underlying aquifer necessitated instrumentation in this unit; • benzene contamination was detected in the rushed ground water sample collected in this underlying aquifer;
BH-2/ MW-2	central trail 150 m north of south gate	• a nested well in the cobble feature was recommended to assess whether the cobble zone was a preferential contaminant flow pathway. The well screen was set at the base of this feature to address chlorinated solvent / DNAPL¹ migration; • no detection of chlorinated solvents occurred in rushed ground water sample;
BH-3	western property boundary at Snow Valley Road (<i>i.e.</i> , 0 m north of south gate)	• construct nested pair of ground water monitoring wells immediately above continuous low permeable clay seams at ~18 m and ~33 m depth in the upper aquifer system; • encountered the presumed fluvial gravel / cobble feature and therefore the borehole was terminated in the unsaturated zone for economic reasons;



Table C: Progressive Sample Analysis Plan

Borehole/ Well Name	Location	Rationale
BH-4/ MW-4	southeast corner of property at Snow Valley Road & Bayfield Street	• evaluate potential for soil and ground water PHC impacts from two identified APECs across the water table; • the deep nested well at this location was to be drilled to assess the vertical gradients present; • the deep nested well drilling was deferred because water level monitoring at other nested locations showed little hydraulic difference; • PHC contamination detected in the rushed ground water sample;
BH-5/ MW-5 & BH-6/ MW-6	western property boundary 300 m north of south gate	• construct nested pair of ground water monitoring wells immediately above continuous low permeable clay seams at ~18 m and ~33 m depth in the upper aquifer system; • no detection of chlorinated solvents occurred in both rushed ground water samples;
BH-7/ MW-7 & BH-8/ MW-8	western property boundary 450 m north of south gate	• construct nested pair of ground water monitoring wells immediately above continuous low permeable clay seams at ~18 m and ~33 m depth in the upper aquifer system; • no detection of chlorinated solvents occurred in both rushed ground water samples;
BH-9	western property boundary 150 m north of south gate	• construct nested pair of ground water monitoring wells immediately above continuous low permeable clay seams at ~18 m and ~33 m depth in the upper aquifer system; • encountered the presumed fluvial gravel / cobble feature and therefore the borehole was terminated in the unsaturated zone for economic reasons;



Table C: Progressive Sample Analysis Plan

Borehole/ Well Name	Location	Rationale
BH-10/ MW-10	eastern property boundary 350 m north of Snow Valley Road	• evaluate potential for soil and ground water PHC impacts from identified APEC at 1237 Bayfield Street North across the water table; • the deep nested well at this location was to be drilled to assess the vertical gradients present; • the deep nested well drilling was deferred because water level monitoring at other nested locations showed little hydraulic difference; • no detection of PHCs occurred in rushed ground water sample;
BH-11/ MW-11	eastern property boundary 40 m north of Snow Valley Road	• delineate ground water PHC impacts from that found at the southeast corner (<i>i.e.</i>, MW-4); • detected PHCs were below Provincial Generic Standards in ground water sample;
BH-12/ MW-12	200 m northwest of the southeast corner	• delineate ground water PHC impacts from that found at the southeast corner (<i>i.e.</i>, MW-4); • no detection of PHCs occurred in ground water sample;
BH-13/ MW-13	southern property boundary 40 m west of Snow Valley Road	• delineate ground water PHC impacts from that found at the southeast corner (<i>i.e.</i>, MW-4); • detected PHCs were below Provincial Generic Standards in ground water sample;

Notes: ¹ - DNAPL - dense non aqueous phase liquids

Following installation of the ground water monitoring wells, each well was purged to remove at least three well volumes. Ground water samples were collected from each well and submitted for analysis of the PCOCs.

A second ground water sampling event was completed, approximately two months after the initial sampling event had concluded. Ground water samples were collected from each well and submitted for analysis of the PCOCs.



4.2 Media Investigated

Physiographic mapping describes the immediate area of the Hasty Tract lands as being in a Tunnel Valley associated with this region (OGS, 2011). Peat and muck deposits are also noted southeast of the Site. Most of the Tunnel Valleys documented in the Barrie-Oro vicinity are south trending, though westward trending valleys are noted to occur within the southern limit of this physiographic unit.

The Simcoe Uplands are comprised of mainly Newmarket Till, which generally consist of sands to silty-sands, with varying stone content. Small pockets of Kettleby Till (silt to clayey-silt) are also noted in some areas. Locally, the Upland areas can be overlain with fine- to coarse grained glaciolacustrine outwash deposits. Typical surface elevations within the valleys range from 220 to 250 masl, while elevations range from 280 to 350 masl on the Uplands.

The incised, sandy bottomed Tunnel Valleys (for which the Site is situated in) separate the Simcoe Uplands and are noted to harbour small, perennial streams within the valley bottoms. The Site itself is situated within a westward trending valley that transitions into a portion of the Simcoe Lowlands known locally as the Minesing Flats. The low-conductive soils (*i.e.*, rich in clay), within the lowlands, tend to collect surface water and are prone to flooding (*i.e.*, Minesing Wetland). Typical surface elevations range from 180 to 200 masl in the Minesing Flats.

For each drilling location, the potential for contaminant detection was based on general information collected as part of the:

- Phase I ESA report (Azimuth, 2018a);
- the above noted Terrapure data (see Section 3.2);
- the Hasty Tract Geologic Interpretation Technical Memorandum (Azimuth, 2018b); and
- the goals of the Sample and Analyses Plan (Appendix B).

Specific details outlining the borehole advancement, associated soil sampling, and monitoring well installations, with subsequent ground water sampling, at the Phase Two Property can be found in the SAP (Appendix B).

4.3 Conceptual Site Model

The *Conceptual Site Model* (CSM) presented in the Phase One ESA Report (Azimuth, 2018) is as follows:



“... the overburden profile at the Phase One Property consists of a complex of layered coarse-grained sediments interbedded with finer-grained sediments that are regionally extensive. That is, the fine-grained layers vary in thickness and are laterally continuous ... The Phase One Property is located approximately 450 m west of Willow Creek, which empties into the Nottawasaga River, approximately 11.0 km to the west, and off into Nottawasaga Bay approximately 24.0 km to the north west. The overburden thickness in the immediate vicinity of the Phase One Property is reportedly more than 100 m, overlying a limestone and shale bedrock ...”.

Information acquired as part of the Phase Two ESA was in general agreement with the Phase One ESA Conceptual Model. Lithological observations across most of the sampled locations were composed of coarse to medium, medium to fine sand, and silt layers overlain with coarse, medium and fine sand and gravel or topsoil. The notable exception being the cobble channel encountered at BH-1, BH-3 and BH-9. The observed lithology at all drilling locations are presented in field borehole logs in Appendix E.

4.4 Deviations from Sampling and Analysis Plan

The SAP for the Phase Two ESA is presented in Appendix B. However as noted in Section 4.1, the drilling program was dynamic in nature and several changes occurred over the month long investigation.

Two significant deviations from the SAP were noted during the field program. Upon the installation of the first two ground water monitors (MW-1 and MW-2), the geologic interpretation revealed a significant gravel and cobble feature present in the Hasty Tract lands. The OGS experts speculated that this feature travels in a northeast - southwest direction through the Phase Two Property.

This gravel / cobble feature posed a significant drilling challenge and could only be advanced using coring techniques. Slow advancement through the cobbles ensued because the materials move around in front of the drilling bit.

With the completion of MW-2, the challenges posed by drilling this feature were partially resolved when the ground water sample did not detect any evidence of the contaminants of concern. The technical team agreed not to drill into this feature where this feature was discovered. Incomplete boreholes BH-3 and BH-9 were advanced into the sub-surface and encountered a gravel / cobble horizon and were ultimately terminated before they had achieved the targeted depth.



Upon the advancement and sampling of MW-4, PHC fraction F_3 was reported in the collected ground water sample and exceeded the Table 2 SCS. Three additional boreholes and monitoring wells (BH-11/ MW-11, BH-12/ MW-12 & BH-13/ MW-13) were advanced to the north, northwest, and west of MW-4 to delineate this exceedance. Boreholes and monitoring wells BH-11/ MW-11 and BH-13/ MW-13 were advanced approximately 40 m to the north and west of MW-4. Borehole and monitoring well BH-12/ MW-12 was advanced along the eastern trail, approximately 200 m northwest of the southeast corner.

4.5 Impediments

Accessing the Phase Two Property posed issues at various points throughout the drilling program. As the Hasty Tract Lands serve as an un-harvested tree nursery since the late 1920s, the trees have become mature and dead-fall was present throughout the Site. The north-south trails found at the Hasty Tract lands were over grown and some bush needed to be slashed to fit the drill rig (*i.e.*, a rubber tracked CME 75). The presence of dead-fall also restricted access down the trails. The proposed placement of boreholes and monitoring wells 40 m west of the central trail as requested by the Client resulted in several cut lines having to be created in order to access drilling locations. Therefore, a professional arborist was contracted to widen the trails and create the cut lines necessary for the drill rig to access.

5.0 INVESTIGATION METHOD

5.1 General

The evaluation of the Phase Two Property was conducted through a month long drilling program and subsequent ground water sampling events. Our understanding of the CSM was improved through this field investigation program; but also supplemented through the discovery of a previously unknown cobble feature.

All of the APECs identified in Table A are from off-Site locations. Thus, the investigation program is principally interested in the lateral migration of off-Site contaminants in the saturated zone onto the Phase Two Property at boundary locations. As well, the Site assessment process should be focused along the upgradient property boundary.

The geologic nature of the Phase Two Property being a conductive media suggested that the detection of contaminant migration associated with the past and present uses of the adjacent properties of interest (*i.e.*, 1131 Snow Valley Road, 1237 Bayfield Street North,



1179 Bayfield Street North and 1152 Bayfield Street) should be possible at the selected drilling locations and targeted depths.

If the off-Site contaminant release was sufficiently large; then its dispersion and detection in the ground water should be possible using the proposed SAP (Appendix B). Ground water monitors were situated along the east, south and west Phase Two Property boundaries (*i.e.*, upgradient boundary) to assess for PHCs and VOCs associated with the off-Site losses and migration.

The *standard operating procedures* (SOPs) for the various components of the Phase Two ESA (as stipulated in O.Reg. 153/04 Schedule E, Part Two, s.3(5)) are presented in Appendix D.

5.2 Drilling

The soil and ground water drilling program was conducted from May 28 to June 27, 2018. Orbit Garant Drilling Services Inc. (Orbit) of Sharon, Ontario was retained to provide the drilling equipment. Orbit is a licenced water well contractor (Licence No.: 7626). Orbit ensured that all constructed water wells met applicable Provincial standards (*i.e.*, O.Reg. 903/00 [as amended]).

The soil boreholes at the Phase Two Property were advanced using a Mobile Model track mounted CME 75, using 106 mm split tube core barrel, and 210 mm (nominal) ID hollow stem augers, with 56 mm (nominal) OD stainless steel split spoon sampling devices for collecting soil samples when using the hollow stem augers. The soil cores obtained by the split spoon samplers were examined by field staff, logged, and field screened for volatile gases, and representative samples were collected according to the SAP (Appendix B). Figure 6 shows the soil borehole and ground water monitoring well locations.

Measures followed during the soil sampling to minimize the potential for cross-contamination included:

- washing and rinsing the split spoon sampling devices after each use;
- using new nitrile gloves during the collection of all soil samples; and
- collecting all soil samples in new, laboratory provided containers.



5.3 Soil: Sampling

For the borehole drilling, undisturbed soil cores were collected by the use of the split tube core barrel and split spoon sampling devices. Both devices serve in effect as the drilling / coring tool, this allowed for logging and collection of the soil profile in regular intervals at each borehole location. Soil samples were collected directly from the individual core barrels and split spoon samplers, according to the methods presented in the soil sampling SOP (Appendix D). Soil was collected by hand, using new nitrile gloves for each core barrel and split spoon and was immediately transferred from the split spoon into the appropriate sampling container. Samples for field screening measurements were collected in a similar fashion.

The finalized field logs, which are presented in Appendix E, provide a description of the geology encountered at each soil borehole, and indicated the soil sampling frequency.

5.4 Field Screening Measurements

Field screening consisted of a visual and olfactory inspection of the soil profile, as well as testing using a portable gas detector. The gas detector used at the Phase Two Property for all the soil sampling was a RKI Instruments Eagle *organic vapour analyzer* (OVA), in methane elimination mode. Both PHCs and VOCs will release organic vapours and hence is an effective field screening methodology for evaluating captured core samples for contaminant detection.

The technical details for the RKI Eagle, including gases detected, measuring range and accuracy of the measurements are provided in Appendix E. The OVA was calibrated with a 15% Lower Explosive Limit (LEL) using 1,650 *parts per million by volume* (ppmv) hexane standard on May 28, 2018, immediately prior to beginning the soil sampling program. The OVA was calibrated with the hexane standard mentioned above on June 15, 2018, throughout the soil and ground water sampling program.

The results of the field screening measurements were identified for use as a guide for soil sample selection and laboratory submission. Higher readings on the RKI Eagle suggest the presence of flammable organic vapours, and would indicate potential soil sampling locations. The RKI Eagle does not analyze specific parameter concentrations therefore the relative concentrations between readings formed the basis for comparison. As a rule of thumb, readings above about 50 ppmv on the RKI Eagle instrument are generally taken to be indicative of the potential presence of organic contamination. For the most part OVA readings at the Phase Two Property ranged between 0 and 1,060 ppmv (Appendix E); but tended to be below 50 ppmv. Where OVA measurements were below



50 ppmv throughout the soil column screened, soils in the vicinity of the proposed ground water screen location were targeted for submission.

5.5 Ground Water: Monitoring Well Installation

The ground water monitoring wells were installed according to the SOP presented in Appendix D, and in accordance with O.Reg. 903/00. All monitoring wells were constructed using new, 51 mm (nominal) diameter PVC pipe and screen sections. New nitrile gloves were worn by all field staff during the handling of the PVC and the well installation process. Completion details for the individual wells are presented as part of the borehole logs (Appendix E). No well development was conducted as part of the installation process. Registration of the monitoring wells as part of the MECP database was performed by Orbit. Well locations are presented in Figure 6.

5.6 Ground Water: Field Measurement of Water Quality

Field-measured parameters were collected as part of the ground water sampling process. The field parameters collected included pH, electrical conductivity (EC), temperature, redox and dissolved oxygen. Prior to collecting field-measured parameters, ground water level measurements, the presence of non-aqueous phase fluids are determined using an electronic multi-phase water level tape. Three times the well volume is purged with field-measured parameters collected during or following the process. Field-measured parameters are collected until each parameter has stabilized. Stabilization of parameters indicates new ground water is moving into the well. All field-measured parameters were collected according to the SOP provided in Appendix D.

5.7 Ground Water: Sampling

Ground water samples were collected from newly installed on-Site monitoring wells (MW-1, MW-2, MW-4 to MW-8, and MW-10 to MW-13) throughout the May and June 2018 drilling and sampling events. A second ground water sampling event was also completed at the end of August 2018 to confirm the results from the initial event. Consistent parameters were collected for analysis in order to develop a baseline of results for the Phase Two Property. Ground water samples were submitted for BTEX⁶, PHC F₁ – F₄ fractionations (F₁ – F₄), trace metals, and VOCs, during the monitoring well installation sampling events in May and June 2018, and PHCs and VOCs during the second sampling event in August 2018. All ground water samples were collected according the SOP provided in Appendix D.

⁶ BTEX - benzene, toluene, ethylbenzene and xylenes



5.8 Analytical Testing

All soil and ground water samples were submitted to AGAT Laboratories, of Mississauga, Ontario (the ‘Laboratory’) for analysis. AGAT’s Mississauga laboratory is accredited by the *Canadian Association of Laboratory Accreditation* (CALA). The laboratory analytical reports are presented in Appendix G.

5.9 Residue Management Procedures

Soil cuttings produced during the drilling program and purge water produced by the ground water sampling program were left at the Phase Two Property pending receipt of the laboratory analytical results. Management and disposal of the soil cuttings and ground water sampling purge water was the responsibility of Township.

5.10 Elevation Survey

An elevation survey was completed for the Phase Two ESA investigation on September 12, 2018 by Rudy Mak Surveying Ltd. of Barrie, Ontario, an official Ontario Land Surveyor company. The RSC process requires an elevation survey referenced and reported to the nearest centimetre relative to a geodetic or permanent and recoverable benchmark by a qualified person for all ground water monitoring wells. This elevation survey has been displayed on an aerial overlay, and is presented in Appendix H.

5.11 Quality Assurance and Quality Control Measures

Azimuth uses numerous *quality assurance/quality control* (QA/QC) procedures, some of which have been previously discussed. The SAP provides some discussion on the quality control program (Appendix B). An overview of these measures is highlighted below.

5.11.1 Field Evaluation Protocols

Standard operating procedures for aspects of the Phase Two ESA are presented in Appendix D. In brief, the intrusive Phase Two Property investigation used several quality control measures. The PCOCs included PHCs, VOCs, and metals (Table A). Some of these contaminant types are known to volatilize and therefore soil gas screening techniques were used to identify potential contaminant sampling locations.

Visual screening techniques are possible for PHCs. Soil staining is typical for PHC detection in soil profiles. PHC “smear zones” can occur at or near water table locations and provide an indicator for the detection of this feature in the subsurface. As has been mentioned, the development of the CSM was of assistance in targeting contaminant migration pathways. Among the evidence compiled during the field program was the



geologic consistency seen across the Phase Two Property. During the drilling, visual observations of the soil profile confirmed the absence of PHC smearing.

5.11.2 Sample Collection Protocols

All containers for the soil, ground water and sump samples were provided by the Laboratory, and were specific to the individual types of analysis required. Sample preservation methods (if any) were followed as specified by the Laboratory. All sample containers were labelled by field staff with the date, Azimuth project number, sampler's name, and sample name. Upon collection, each sample was placed in an ice filled cooler for temporary storage prior to delivery to the Laboratory. For the field programs, all samples were collected at the Phase Two Property, stored as indicated above, and transported to the Azimuth office in Barrie, Ontario where they were picked up the following day by courier and delivered to the Laboratory. Laboratory provided chain of custody forms were prepared which documented all the samples and sampling information and provide a record of the sample handling between collection and delivery to the Laboratory. The chain of custody form is included with the analytical testing results (see Appendix G). All equipment cleaning procedures used by Azimuth are presented in Appendix D.

5.11.3 Analytical Data Review

The purpose of this effort is to ensure the representativeness of the analytical data. For thoroughness, an evaluation of each investigation collecting analytical samples is summarized below. Quality assurance data for the Phase Two ESA is presented in Appendix G.

5.11.3.1 May/ June 2018 Program

The initial Phase Two ESA program was conducted on May 28 to June 27, 2018 when the Phase Two Property was drilled. The purpose of this investigation was to provide presence / absence evaluation of several identified APECs. Table A (above) indicates that the contaminant types of interest were PHCs, VOCs, and metals all of which were evaluated during the initial reconnaissance field program.

The quality assurance data from AGAT Laboratories has been reviewed and no issues with data quality were identified. This quality assurance data includes the measureable detection limits for all compounds analyzed, the Method Blank, the major constituent limits, and the Matrix Spike. The quality assurance laboratory analytical data is presented in Appendix G.



5.11.3.2 August 2018 Program

A second ground water sampling event was completed August 30, 2018, approximately two months after monitoring well installation. This program was employed to confirm the results from the initial ground water sampling program. Ground water samples were submitted for PHC and VOC parameters.

The quality assurance data from AGAT Laboratories has been reviewed and no issues with data quality were identified. This quality assurance data includes the measureable detection limits for all compounds analyzed, the Method Blank, the major constituent limits, and the Matrix Spike. The quality assurance laboratory analytical data is presented in Appendix G.

5.11.3.3 Quality Assurance and Quality Control Results

The *Certificates of Analysis* (CoAs) for all the samples submitted for laboratory analysis are presented in full in Appendix G. All the CoAs comply with Section 47(3) of O.Reg. 153/04. The CoAs provide a list of comments pertaining to each sample submitted for analysis, including where the laboratory qualified any of the analytical results. No qualifications are noted for any of the samples submitted as part of the programs.

As part of the field program, duplicate soil and ground water samples were submitted for each of the analyzed parameters. The *relative percent difference* (RPD) calculations for the various soil and ground water samples can be found within the AGAT raw analytical data presented in Appendix G. This data was reviewed and where soil or ground water samples were above these limits, the parameter concentrations were generally near their respective method detection limits which magnify small differences in parameter concentrations.

5.11.3.4 Quality Assurance and Quality Control Summary

Several techniques have been used in evaluating the QA/QC program for the Phase Two ESA. The replication of results over a few different sampling programs has established a level of confidence with the data.

The certainty associated with this process has provided great certainty associated with the Phase Two Property investigation. In that regard, the QA/QC program followed the design of the SAP.



6.0 REVIEW AND EVALUATION

6.1 Geology

The results of the drilling program have shown two key geologic findings. First, the Phase Two Property resides in a Tunnel Valley feature described by the OGS (2011). The overburden soils have been lake lain and appear to be laterally continuous. The drilling program targeted key lower permeability seams at specific depths and consistently encountered these units. A detailed geologic interpretation of this geologic setting can be found in the "Hasty Tract Revised Geologic Interpretation – Technical Memorandum" produced by Azimuth and issued on May 11, 2018. A copy of this Technical Memorandum can be found in Appendix C.

The other key finding was the discovery of a gravel / feature which is cut into the above noted geologic setting to the base of the upper aquifer unit which is ~30 m deep. According to the OGS experts, the geologic context to this feature cannot be definitively stated without further investigation. Speculatively, this feature is best associated with the shallow Main Algonquin Lake conditions following the Fenelon Falls uplift which inundated these lands after being drained during the Kirkfield low water phase (Mulligan *et al*, 2018). The OGS suggests that better definition of the feature's orientation would be needed to verify this depositional interpretation. Figures 8 and 9 present geological cross-sections across the Phase Two Property.

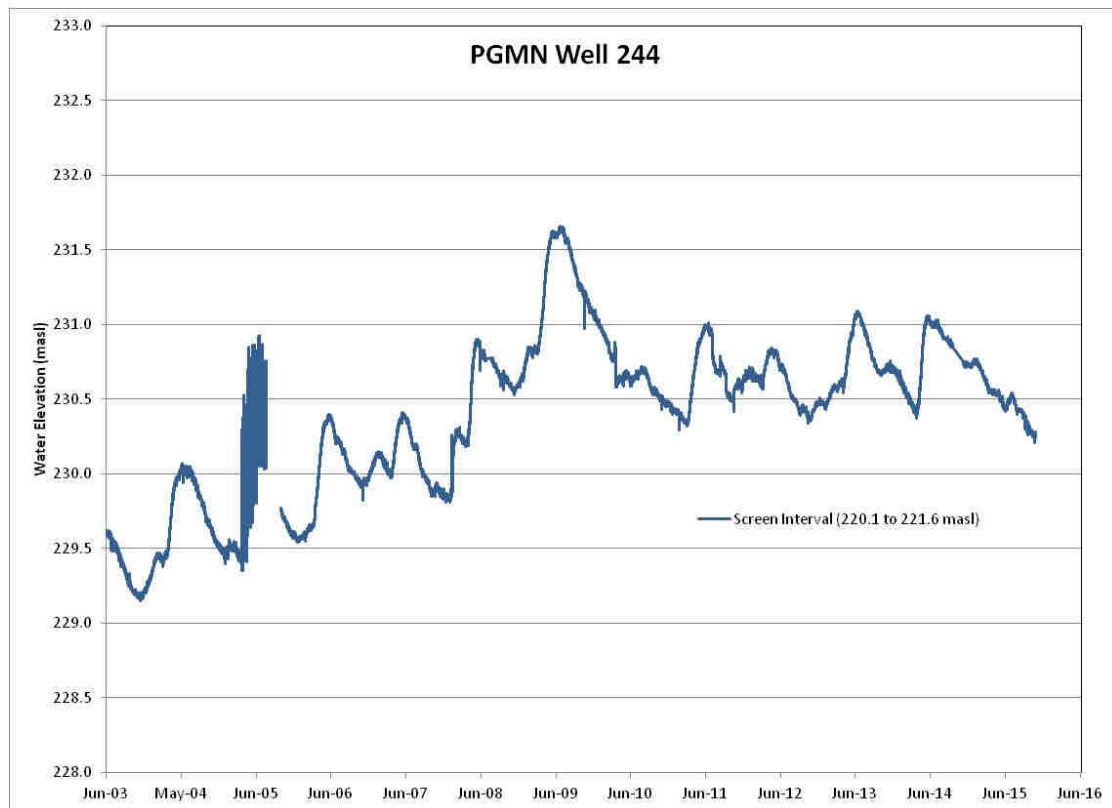
6.2 Ground Water: Elevations and Flow Direction

The primary rationale for the ground water monitoring well locations was to evaluate off-Site APECs, with the secondary purpose of evaluating ground water flow pattern across the Phase Two Property (*i.e.*, positioning the wells to allow for refinement of the ground water flow regime).

All water level measurements were collected using a Heron Instruments multi-phase electric water level tape and no free-phase light non-aqueous phase liquid (LNAPL) product was noted on the water surface at any of the monitoring wells. The depth of each monitoring well was confirmed with the electronic tape, and no evidence of free-phase dense non-aqueous phase liquid (DNAPL) was noted at any of the wells. The hydraulic information from the various monitoring wells is provided in Table 1 (Appendix F). The depth to ground water within the upper aquifer system at the Phase Two Property ranged from 7.6 to 12.3 mbgs (227.9 to 232.7 masl) based on the two sampling events. The seasonal variation between the June and August sampling at most monitoring wells was generally ~0.3 m difference, albeit significantly larger in isolated locations.



This variation range in the water level elevation is consistent with longer term monitoring trends measured in the Site vicinity (*i.e.*, PGMN data - see below)



The PGMN Well No.: W0000244 is located just west of the Hasty Tract on the north side of Snow Valley Road. An annual variation of ~0.5 m is inferred although other trends are also evident.

Figures 10a and 10b show the inferred shallow ground water flow direction based on the measured elevations from the Terrapure wells in November 2017 and the newly constructed ground water monitoring wells for this Phase Two ESA program in August 2018.

The inferred ground water table flow direction across the Phase Two Property in August 2018 was north-northeast. The inferred ground water table flow direction over the monitored portion of the western half of the Hasty Tract lands in November 2017 was northwest.



Figure 10c provides an inferred composite map of the average lateral ground water flow gradient and directions based upon the November 2017 data and August 2018 data for the entire Hasty Tract Property. This composite image depicts an inferred ground water divide. Ground water flow is northerly yet skewed in two directions. The location of this divide correlates with the location of the cobble feature. If true, it would suggest that the cobble feature is an important hydraulic feature to the local ground water flow regime. Potentially flow is channelled through this feature and it disperses outward creating flow in both directions. Further evaluation would be needed to confirm this hypothesis.

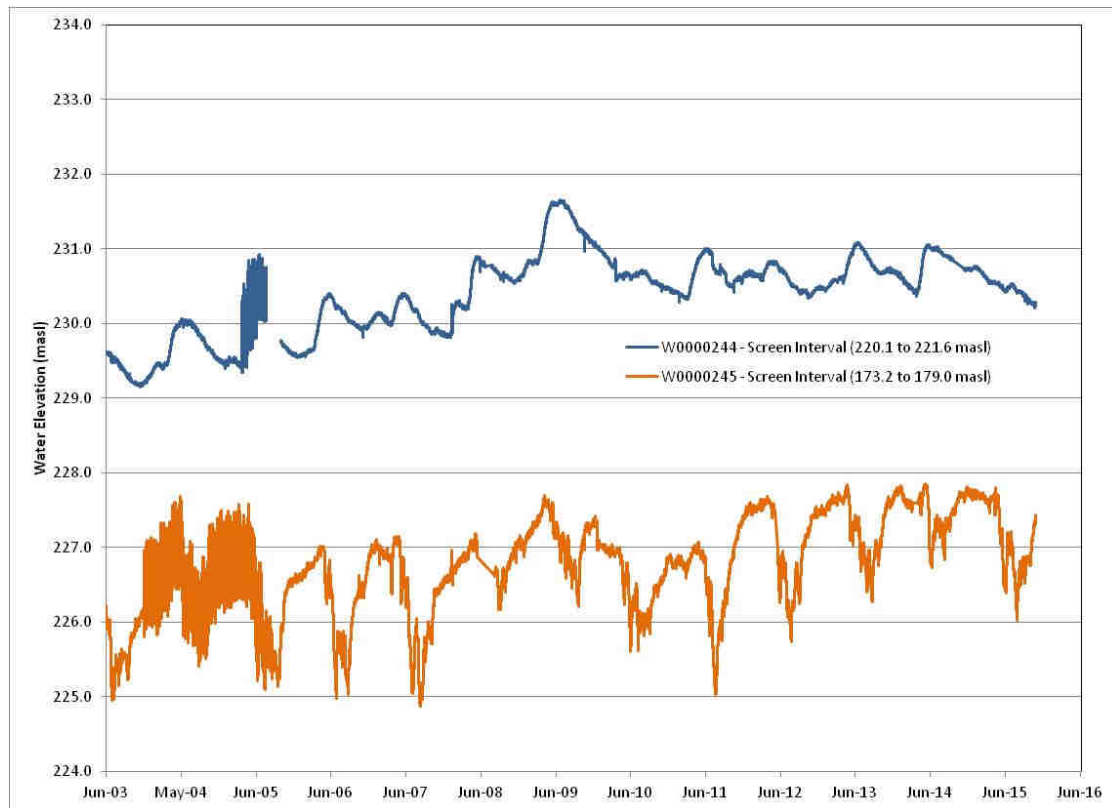
The uppermost ground water aquifer is considered to be the most influential ground water system throughout the Hasty Tract lands with respect to contaminant migration across the Phase Two Property; but it could be dominated by the cobble feature. Most of the identified APECs have the ability to migrate onto the Phase Two Property through the shallow ground water regime.

The Phase Two Property is flat at an elevation of ~238 masl near the centre of the parcel. The regional topographic slope is towards the northwest. The RSC Property is positioned within the Willow Creek subwatershed. Willow Creek is located ~450 m east from the eastern Site boundary. Willow Creek is part of the Nottawasaga River watershed, flowing through the Minesing Wetland complex prior to discharge into the main river channel.

As noted above with the PGMN Well, the ground water system exhibits a degree of seasonal variation. The longer term trends were not assessed; but might reflect meteoric variations.

The ground water flow direction of the deep aquifer could not be assessed from the single well point (*i.e.*, MW-1). However, the PGMN Monitoring Location referenced above also contains a deep well (No. W0000245) which is screened between 61.6 and 67.4 mbgs. The historical monitoring data for this well is presented below (overleaf).

This data shows a downward vertical hydraulic gradient at this nest pair of monitoring wells. The monitoring data suggested that the influence of ground water pumping was detected as early as 2004 in the deep aquifer system; but also for a short time in the upper aquifer circa 2005. A similar upward water elevation trend is detected in the deep aquifer system, albeit not as pronounced as the shallow aquifer system and over a different period of time. Furthermore, the seasonal variation presented would appear to be more pronounced in the deeper aquifer system than the shallow aquifer system.



6.3 Ground Water: Hydraulic Gradients

The measured lateral hydraulic gradient in the shallow ground water zone ranged from about 0.002 to 0.004 m/m meters per meter (m/m) using the Phase Two ESA well data. The vertical hydraulic gradient was estimated from the PGMN Well data to be on the order of 0.08 m/m.

6.4 Coarse-Grained Soil Texture

Based on the drilling results, the overburden deposits at the Phase Two Property primarily consisted of coarse-grained deposits, rhythmically inner-bedded with fine-grained material. The grain size of the soil was confirmed through analytical testing and the laboratory results are provided in Appendix G.

The influence of the geologic setting on the movement of chlorinated solvents was summarized in the "Hasty Tract Revised Geologic Interpretation – Technical Memorandum", (May, 2018 – Appendix C). As noted, the presence of continuous, low permeability seams across the Tunnel Valley lands was hypothesized to provide features



to pool and spread contaminant mass. Thus, ground water monitoring locations targeted these horizons.

6.5 Soil: Field Screening

The finalized borehole logs, presented in Appendix E, from the exploration drilling program include the field screening results for the selected soil samples. The OVA readings for the samples collected as part of the drilling program were below the rule-of-thumb value of 50 ppmv. Visual and olfactory field screening in this area was in agreement with the OVA results. As noted in Section 5.4, where OVA measurements were below 50 ppmv throughout the soil column, soil sampling in the vicinity of the well screen was targeted for submission.

Note that the field screening methods used in the current program are intended to detect potential contaminants which have a visual or olfactory component, or would produce an OVA response. Soil assessments during the monitoring well installations included visual and olfactory screening for PHC staining / VOCs associated with chlorinated solvent contaminants that would trigger an OVA response.

6.6 Soil Quality

Soil pH and grain size samples were collected during the May and June 2018 drilling program to confirm applicable site condition standards. Throughout borehole advancement, selected samples were submitted for grain size when observations were made concerning changes of soil composition. The grain size of the host soils were confirmed through laboratory testing results and are provided in Appendix G (*i.e.*, grain size analyses). Despite the occurrence of silt and silty material across the Phase Two Property, it is hypothesized that ground water movement and hence contaminant migration would occur primarily throughout the coarse-textured overburden. As a result, it has been assumed that the coarse-textured standards are applicable. The soil pH throughout the Phase Two Property was reported at ~7.9. All soil analytical data reports are included in Appendix G.

6.6.1 Off-Site Contaminant APECs

The PHC⁷ soil results for the applicable borehole samples indicated that there are no reportable PHC fractionation concentrations above the Table 2 SCS. All PHC soil results were reported to be below laboratory detection limits.

⁷ Excluding BTEX compounds



The VOC⁸ analytical results show that there were detectable concentrations found within the soils at the Phase Two Property. Borehole BH-1 had measureable detections of benzene greater than the Table 2 SCS with a measured concentration of 1.1 mg/L. Toluene was also detected at this location at background concentrations. The samples submitted for laboratory analyses at all of the other remaining borehole locations had soil VOC concentrations below the Table 2 SCS. Of particular note was that no gasoline additives were detected in these samples.

The trace metal analytical results were conducted primarily to assess the lead concentration that might have been associated with historic fuel releases. No elevated lead concentrations were detected in the heavy metal analyses.

6.7 Ground Water Quality

Field-measured parameters collected as part of the ground water sampling program included pH, electrical conductivity (EC), temperature, redox and dissolved oxygen. Table D (below) presents the field-measured parameter data collected during the sampling event in May/ June and August 2018. All raw laboratory analytical data reports are included in Appendix G.

Table D: Ground Water Field Measured Parameters¹

Well	Screening Date	pH (unit less)	EC (mS/cm)	Temperature (°C)	ORP (mV)	DO (mg/L)
MW-1	04-Jun-18	7.5	407	11.2	-37	9.7
	30-Aug-18	8.6	104	10.0	57	1.4
MW-2	08-Jun-18	7.2	286	10.6	113	11.5
	30-Aug-18	8.1	571	9.8	101	2.8
MW-4*	13-Jun-18	7.7	1,293	12.1	94	10.3
	30-Aug-18	7.6	2,078	10.8	171	6.1
MW-5	15-Jun-18	7.3	587	8.9	127	7.7
	30-Aug-18	8.1	521	10.4	116	1.8
MW-6	18-Jun-18	6.7	479	10.8	98	15.3
	30-Aug-18	8.0	501	9.7	110	5.4
MW-7	21-Jun-18	7.0	512	9.8	30	5.6
	30-Aug-18	8.1	499	9.7	117	2.8
MW-8	25-Jun-18	7.1	550	8.7	74	8.0
	30-Aug-18	8.2	493	10.6	110	3.5
MW-10*	26-Jun-18	7.5	530	9.5	81	9.1
	30-Aug-18	7.9	436	9.4	154	7.0

⁸ Including BTEX compounds



Table D: Ground Water Field Measured Parameters¹

Well	Screening Date	pH (unit less)	EC (mS/cm)	Temperature (°C)	ORP (mV)	DO (mg/L)
MW-11*	26-Jun-18	7.8	1,028	11.0	108	10.8
	30-Aug-18	7.7	963	10.3	170	5.8
MW-12*	26-Jun-18	7.4	465	11.1	112	9.5
	30-Aug-18	8.0	445	9.2	129	6.5
MW-13*	27-Jun-18	7.2	1,398	10.7	137	6.7
	30-Aug-18	7.5	1,141	10.8	167	5.2

Notes: ¹ – values rounded to presentation purposes

EC – Electrical Conductance

ORP – Oxidation-Reduction Potential

DO – Dissolved Oxygen

* - ground water monitors along the east side of the Site

The range in each of the ground water field-measured parameters was inconsequential across the Site. The elevated EC measurements in proximity to the southeast corner are attributed to road salt influences at these three monitoring locations (*i.e.*, MW-4, MW-11, and MW-13). The ground water temperatures are suspected to be influenced by the hot summer days on which they were collected. Finally, only the deep confined aquifer at MW-1 measured reduced conditions, which is not unexpected.

6.7.1 Off-Site Contaminant APECs

Two significant contaminant detections have occurred. The first detection is a benzene result above the Table 2 SCS at MW-1. The other detection was a PHC detection above the Table 2 SCS at the southeast corner of the property (*i.e.*, MW-4). Subsequent sampling at locations about 40 m to the north and west of this location (*i.e.*, MW-11 and MW-13, respectively), detected the PHCs; but at concentrations below the Table 2 SCS. MW-12 which was drilled 200 m northwest of MW-4 did not detect any PHCs in the ground water sample collected from this location.

No chlorinated solvents were measured at any ground water monitoring wells. Trace detection of BTEX compounds occurred at most monitoring wells. This trace / background detection has also been observed at other ground water sampling locations on the Hasty Tract.

Most of the ground water samples collected immediately after drilling had THM detections and in some instances these measurements were above Table 2 SCS. The detection of THM compounds is due to the use of municipal water for drilling. Significant drilling water / muds were used; especially at MW-1 / MW-2 through the cobble zone. The THM signature will dissipate over time.



The BTEX exceedences found in the first sampling event, were reported once again during the August sampling event, and yet were measured below the Table 2 SCS. The THMs detections have mostly dissipated from the local ground water regime when the second ground water sampling event occurred in August 2018. These detections in the water samples are not considered significant. Finally, the PHC exceedences detected in the first ground water sampling event were not measured above the Table 2 SCS during the August 2018 sampling event.

6.8 Phase Two Conceptual Site Model

The Phase One ESA (Azimuth, 2018) identified the following off-Site APECs at the Phase Two Property:

- automotive repair at 1152 Bayfield Street North;
- historic retail gasoline station at 1179 Bayfield Street North which had a significant PHC spill;
- historic and bulk fuel storage at 1237 Bayfield Street North; and
- hazardous waste disposal and treatment facility, with use of open lagoons, and a historical fire located at 1131 Snow Valley Road.

The Phase Two Property is located in a mixed residential/ commercial area of the Township; but is situated in an undeveloped forest plantation. Figures 8 and 9 show the simplified geological cross sections across the Phase Two Property based on the results of the Phase Two ESA drilling program. The surficial geology at the Phase Two Property has been found to primarily consist of coarse to fine grained deposits of sand with bands of lake deposit silt beds. Bedrock was not reported during the drilling program, yet is reported to be composed of nodular to black laminated limestone of the Lindsay Formation of the Simcoe Group (OGS, 2017).

The lake lain sediments in the Tunnel Valley deposition can be correlated across the Phase Two Property and beyond; by identifying the thin silt and clay seams that can be found in the soil profile. These seams were targeted as part of the drilling program and have been identified at ~20 mbgs and ~33 mbgs.

The seams were targeted since chlorinated solvent mass percolating vertically down should accumulate on top of these surfaces. The transfer of contaminant mass into the dissolved phase was speculated to be most prevalent at these seams and thus more readily detectable down gradient of these horizons. This is especially true at 33 mbgs since there is a 10 m thick aquitard layer below this horizon.



In contrast, residual PHC contamination was targeted across the water table since petroleum fuel "float" on top of the water table which makes this an ideal horizon to assess this particular contaminant of concern.

The lateral ground water flow has been estimated to be ~300 m/a. The key off-Site APECs have been present in the environment for over a decade; which means that the spread of these contaminants could have easily reached the Phase Two Property boundaries within this timeframe. In fact, it is suggested that any residual contaminant mass remaining in the environment has likely reached a steady-state condition by now. Thus, further spreading in the environment is unlikely unless the environment is significantly altered (*i.e.*, introduction of a new ground water production well or similar).

Thus, while chlorinated solvents have been detected west of the Phase Two Property on the Hasty Tract lands, they were not detected at any concentration at the monitoring locations installed along the western property boundary in the Tunnel Valley sediments.

The contaminant mass was also not evident in the ground water collected from the cobble feature. This feature is considered to be a preferential ground water flow pathway, assuming it has a significant linear length. It was speculated that it could be capable of conveying significant contaminant mass. If so; then there was an expectation that impact(s) would have been detected to some degree in the MW-2 sampling results even if at trace concentration levels. This did not occur. The absence of a detectable contaminant plume infers that a meaningful connection to the Terrapure facility is much more tenuous in nature.

The concern with this hypothesis is that MW-2 is on the flank of the cobble feature and not evaluating the full depth of the alignment. As noted by the OGS, there is insufficient information to comment of the feature's orientation at the current time. Further evaluation of this feature is recommended.

The residual PHC detection at the southeast corner of the property would appear to be an aged release since no lighter end PHC fractionation was evident. It could be reasonably rationalized that the detection is associated with the significant historic retail gasoline spill reported at 1179 Bayfield Street North. If so, then the PHC detection at the southeast corner poses little threat to the property into the future. As a degrading source from a past event there is an expectation that the concentration levels will continue to decline over time. The measured extent of this PHC influence was seen to be ~40 m in the north and west directions along the property boundaries.



Finally, a deep PHC contaminant source has been detected below a 10 m thick aquitard which is 50 mbgs. This was the only well drilled to this depth in the soil profile and thus not much can be inferred about this detection. The finding is disconcerting at this depth in the soil profile. It could be argued that it originates from a distance source; but then it would have to be associated with a significant release to have travelled such a long distance beneath the aquitard layer. Alternatively, it could be associated with a significant release closer to the Hasty Tract which facilitated vertical percolation to this depth below being conveyed laterally onto the Phase Two Property. In this case, the Terrapure facility release(s) would seem to be the most reasonable source for this scenario. However, there is insufficient information to draw any firm conclusion about either of these possibilities or potentially some other mechanism not yet realized. Further evaluation would be required to ascertain the potential source(s) of this detection and its distribution beneath the Phase Two Property. Having stated this, such an endeavour would be costly to pursue via a delineation drilling program.

The second ground water sampling event completed in August 2018 identified that each of the impacted locations from the first sampling event were measured below the Table 2 SCS during this event. It is postured that these negative results indicate that contaminants had passed through these sample locations at one point, but are no longer present to date. If a contaminant source had migrated through a porous soil environment, or along the surface of a non-porous soil complex, residual contaminants could sorb to the soil particles and hence persist within the soil profile. These sorbed contaminants will remain within the soil profile long after the contaminant source had traversed past. The act of drilling through the soil profile would agitate the soils, deconstructing their profile and likely mobilized the sorbed contaminants into the wellbore environment. Although always present within the matrix, their agitation back into the ground water regime would bias the initial ground water sample. The impacted sediments in the water sample are assumed to have biased the measured concentrations and yielded a result higher than the ambient water quality.

Drilling fluids were prepared and used a municipal water source. THM detections are ubiquitous in municipal waters and were detected in the first ground water sampling event. The THM concentrations have dissipated from the local ground water regime and will continue to do so over time. These detections in the ground water samples are not considered significant.



It is not anticipated that climatic or meteorological events or variations would have significant effect on the distribution or fate of the various contaminants noted at the Phase Two Property.

7.0 CONCLUSIONS

The Phase Two ESA identified a total of four APECs at the Phase Two Property. Each of these is summarized briefly.

1. Chlorinated solvent impacts along the western property boundary were not detected in the sand aquifer associated with the Tunnel Valley sediments;

A ground water divide potentially related to a cobble feature encountered on the Phase Two Property appears to split the ground water flow in the upper aquifer to the northeast and northwest. This divide appears to have limited the eastward migration of dissolved-phased contaminants released from the 1131 Snow Valley Road site;

2. A historic gasoline spill at 1179 Bayfield Road North is considered to be the residual PHC source detected in the southwest corner of the Phase Two Property;

The initial ground water samples are assumed to have contained entrained sediments sorbed with PHC compounds from this past event. The results reported concentrations above Table 2 SCS. However, the subsequent sampling conducted in August 2018 did not detect the PHCs above the Table 2 SCS.

It is our opinion that this remnant contamination does not pose a significant environmental concern to the Phase Two Property and is not related to the on-going operations at 1152 Bayfield Street North. Further confirmatory sampling would need to be performed in order to meet RSC standards.

3. No PHC source was detected mid-way along the eastern Phase Two Property boundary in proximity to the 1237 Bayfield Street North site. No further evaluation of this APEC is deemed to be necessary.

In addition to addressing these four identified APECs, the following additional findings are reported:

1. A unique gravel / cobble feature was encountered on the Phase Two Property;



It is speculated that this feature accounts for the ground water flow divide present at the Phase Two Property. If so then there is an active flow component to the feature that requires evaluation.

2. A new contaminant source was measured at BH-1 / MW-1 for benzene;

The drilling likely mobilized sorbed contaminants such that the initial ground water sample detected impacts above Table 2 SCS. However, the August 2018 sampling did not measure contaminants above the Table 2 SCS. Further confirmatory ground water sampling would need to be performed in order to meet RSC standards

Regardless, the detected soil impact technically requires delineation to meet RSC Standards. The presence of this contaminant mass deep within the soil profile is unlikely to pose a significant environmental concern to surface land uses; but this would need to be confirmed.

Proposed changes to the existing regulations would greatly assist if promulgated. However with the change in government last June, the realization of this legislation change is much less certain. An alternative would be to deviate from the RSC Standards.

3. THMs above Table 2 SCS were measured in the ground water samples collected immediately following drilling. The THMs measured during the first sampling event are presumed to be a product of the municipal water used for drilling and not an unidentified source;

The second sampling event verified this interpretation as concentrations have diminished. The continued presence of the THMs denote that the considerable drilling fluid losses during the drilling program are still present within the local ground water regime, but will continue to dissipate over time.

7.1 Signatures

The signature and statements required as part of O.Reg. 153/04, Schedule E, Table 1, are provided in the transmittal letter at the front of this report.



8.0 REFERENCES

- Azimuth Environmental Consulting, Inc., 2018a
Phase One Environmental Site Assessment – 1132 Snow Valley Road,
Springwater, ON
prepared for the Township of Springwater, July 2017.
- Azimuth Environmental Consulting, Inc., 2018b
Hasty Tract Revised Geologic Interpretation – Technical Memorandum.
prepared for the Township of Springwater, May 2018.
- Ministry of Northern development and Mines, 2017
OGS Earth
<http://www.mndm.gov.on.ca/en/mines-and-minerals/applications/ogsearth>.
- Ministry of the Environment, 2011a
Ontario Regulation 153/04 - Records of Site Condition – Part XV.1 of the Act
July 1, 2011 and last amended July 28, 2017
- Ministry of the Environment, 2011b
Soil, Ground water and Sediment Standards for Use Under Part XV.1 of the
Environmental Protection Act
April 15, 2011 and last amended July 28, 2016.
- XCG Consulting Limited, 2017
Status of Off-Site Groundwater Monitoring for 2016 Remedial Activities 1131
Snow Valley Road, Springwater (Barrie), Ontario
March 30, 2018
CONFIDENTIAL REPORT



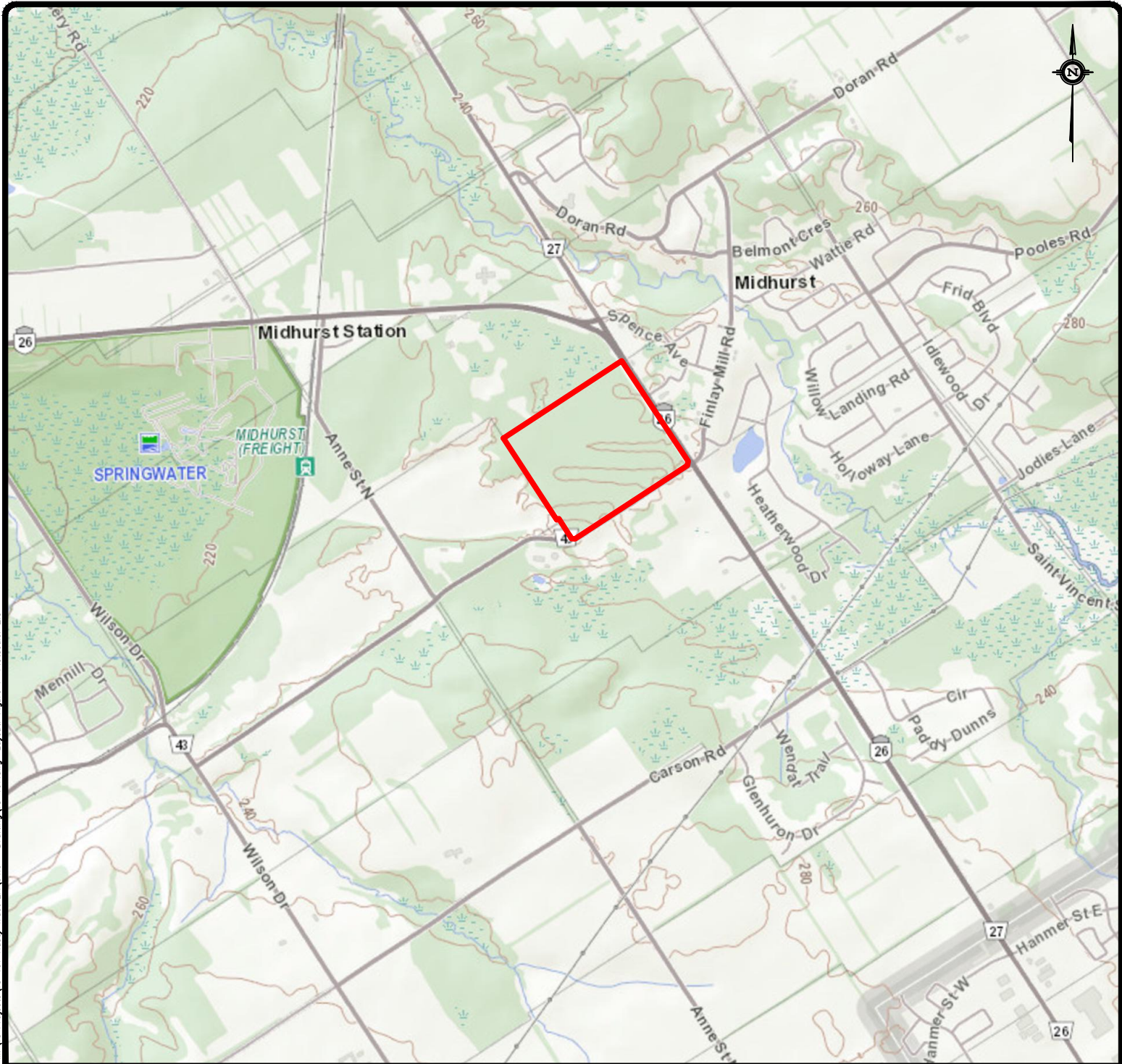
APPENDICES

Appendix A:	Figures
Appendix B:	Sampling and Analysis Plan
Appendix C:	Background Environmental Data
Appendix D:	Standard Operating Procedures
Appendix E:	Finalized Field Logs and Field Equipment Information
Appendix F:	Tables
Appendix G:	Laboratory Analytical Reports
Appendix H:	Elevation Survey



APPENDIX A

Figures



LEGEND:

— *Approx. Property Boundary*

REG MAP

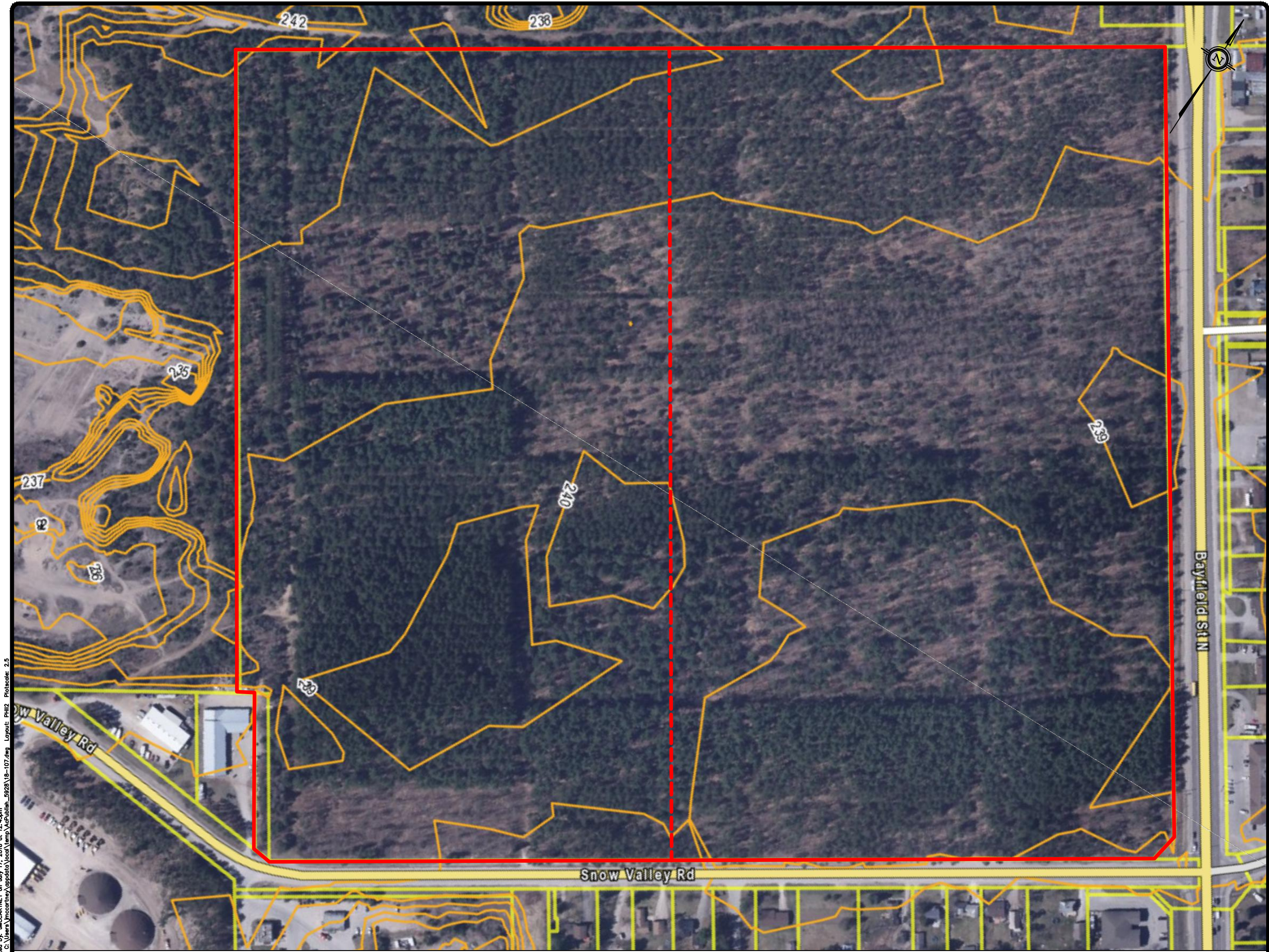
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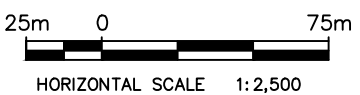
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Midhurst, ON

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PROJECT NO.: 18-107	
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- LEGEND:
- Approx. Property Boundary
 - - - Severance Limit
 - 1m FBS Contours

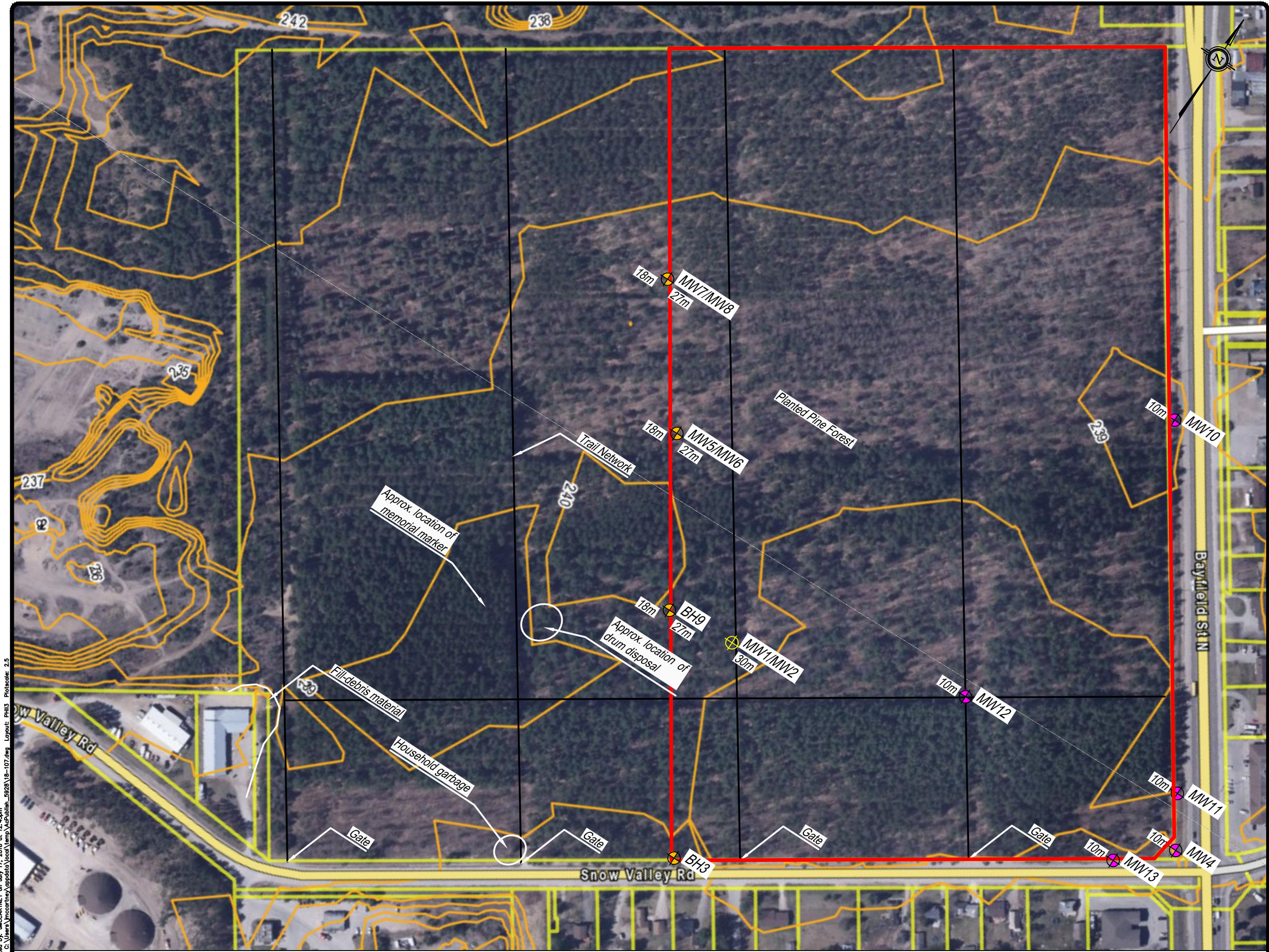


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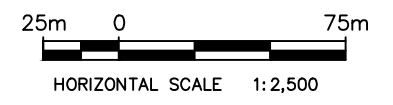
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Midhurst, ON

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REFERENCE:	Simcoe County Maps	

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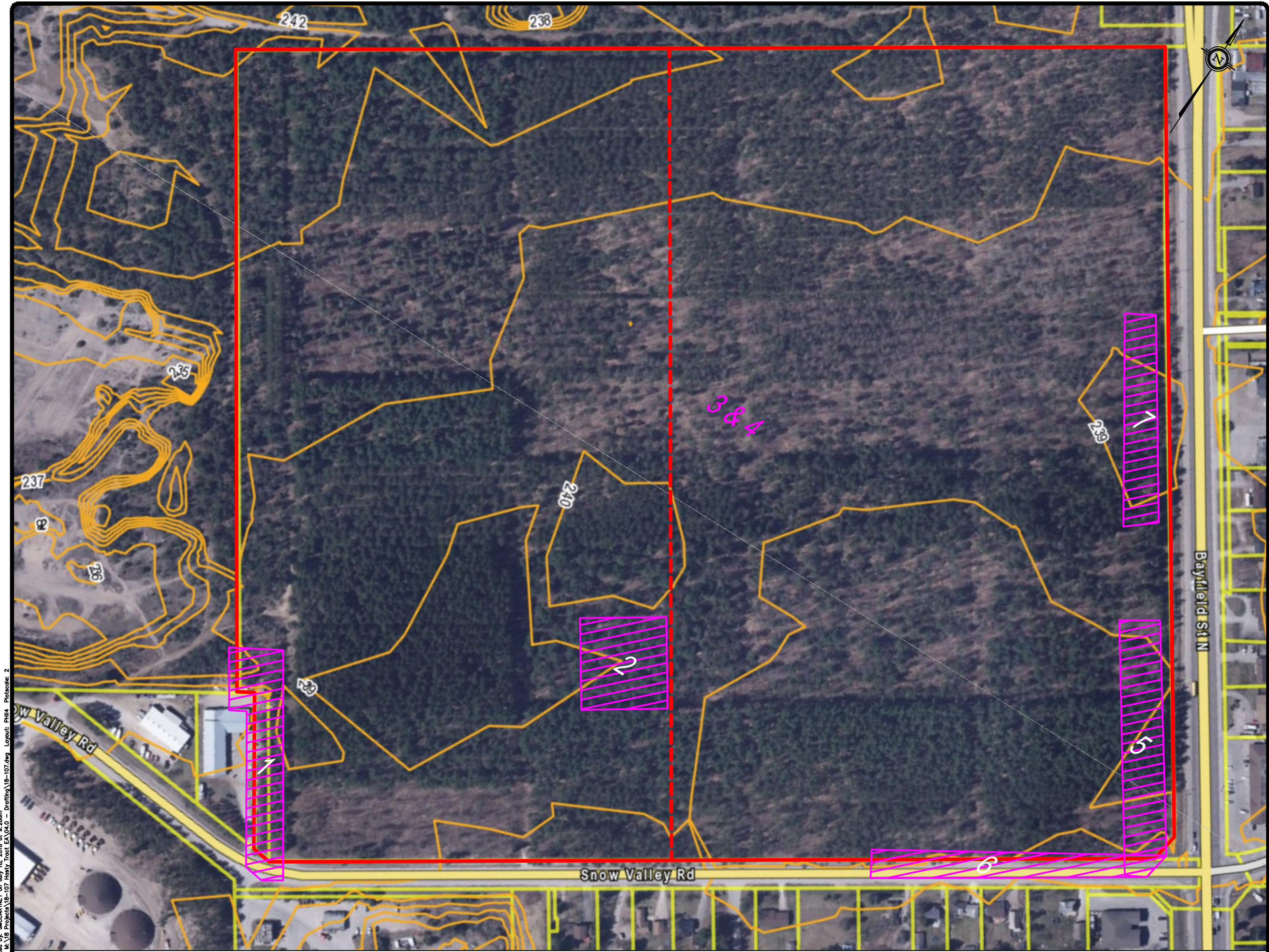
- LEGEND:**
- Approx. Phase II Property Boundary
 - 1m FBS Contours
 - ⊕ Soil Stratigraphy Borehole Locations
 - ⊕ Shallow & Deep Nested Boreholes/
Monitoring Wells
 - ⊕ Eastern APECs Shallow & Deep Boreholes/
Monitoring Wells
 - 10m 10mbgs depth of Proposed Monitoring Well
 - 18m 18mbgs depth of Proposed Monitoring Well
 - 27m 27mbgs depth of Proposed Monitoring Well
 - 30m 30mbgs depth of Proposed Borehole



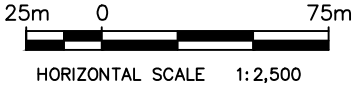
Phase II Site Location

Hasty Tract EA,
Midhurst, ON

DATE ISSUED:	April 2018	Figure No. 3
CREATED BY:	JLM	
PROJECT NO.:	18-107	
REFERENCE:	Simcoe County Maps	



- LEGEND:**
- Approx. Property Boundary
 - - - Severance Limit
 - 1m FBS Contours
 - Areas of Potential Environmental Concern
- On-Site PCAs**
- 1 Fill Encroachment from 1148 Snow Valley Rd.
 - 2 Illegal Drum Disposal
- Off-Site PCAs**
- 3 Historic Chemical lagoon storage & release at 1131 Snow Valley Rd. (entire site)
 - 4 Hazardous material storage & release at 1131 Snow Valley Rd. in 2003 (entire site)
 - 5 Historic retail gasoline station at 1179 Bayfield St. North
 - 6 Automotive repair at 1152 Bayfield St. North
 - 7 Historic storage of bulk fuel within 1237 Bayfield St. North

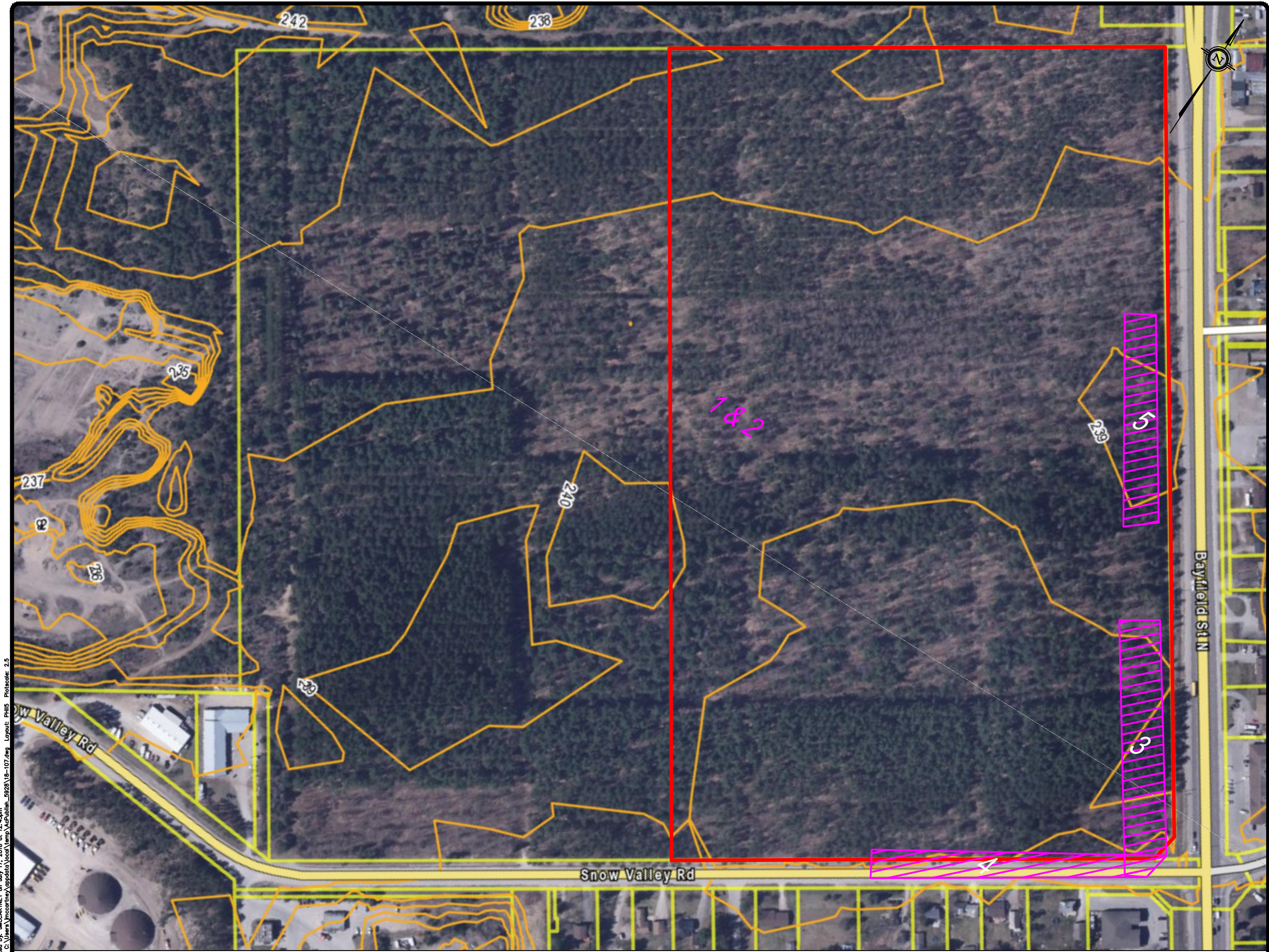


Phase I Areas of Potential Environmental Concern

Hasty Tract EA,
Midhurst, ON

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PROJECT NO.:	18-107	
REFERENCE:	Simcoe County Maps	

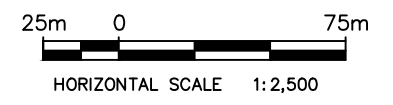
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LEGEND:

- Approx. Property Boundary
- 1m FBS Contours
- Areas of Potential Environmental Concern

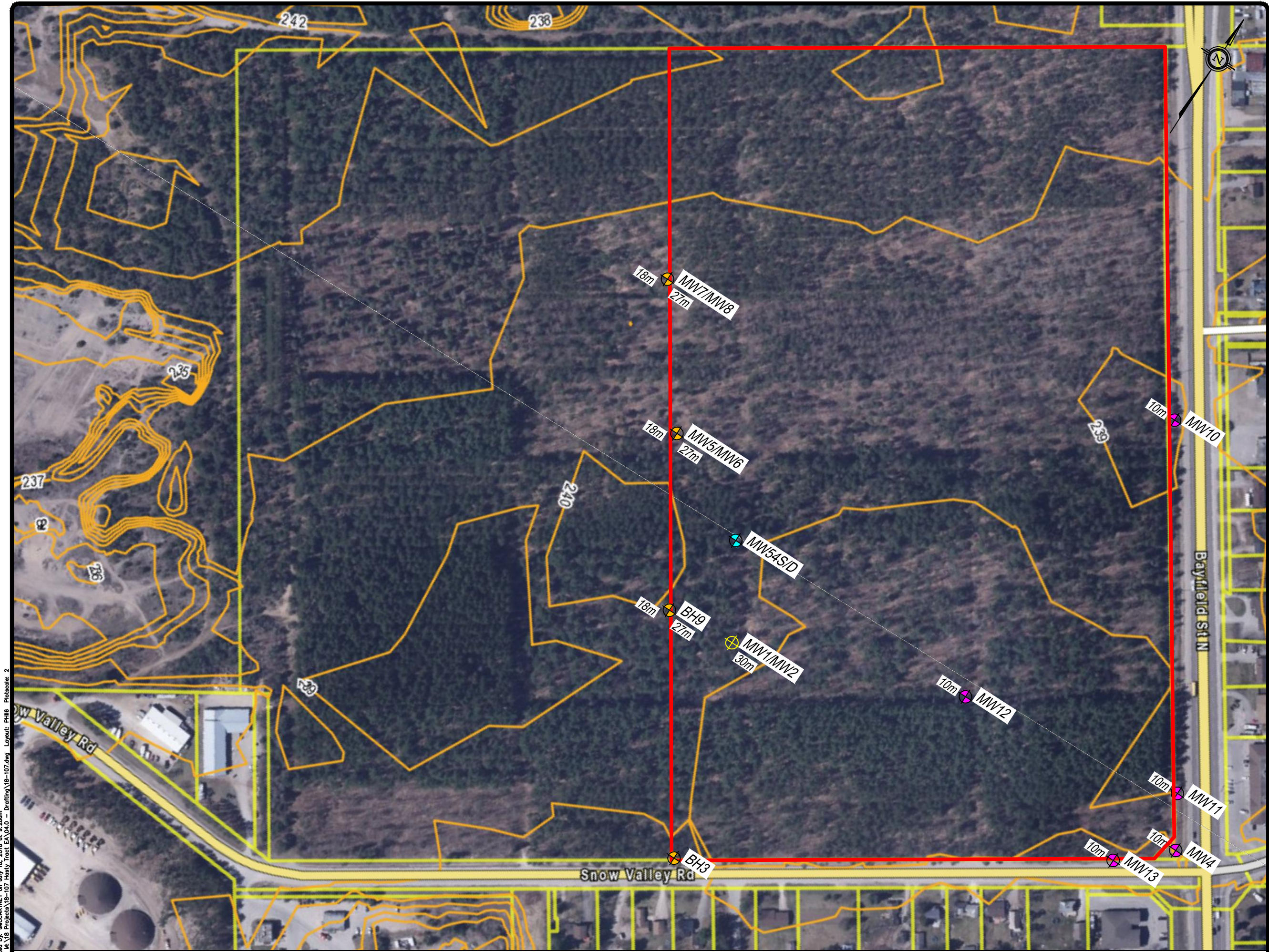
- Off-Site PCAs
- 1 Historic Chemical lagoon storage & release at 1131 Snow Valley Rd. (entire site)
 - 2 Hazardous material storage & release at 1131 Snow Valley Rd. in 2003 (entire site)
 - 3 Historic retail gasoline station at 1179 Bayfield St. North
 - 4 Automotive repair at 1152 Bayfield St. North
 - 5 Historic storage of bulk fuel within 1237 Bayfield St. North



Phase II Areas of Potential Environmental Concern

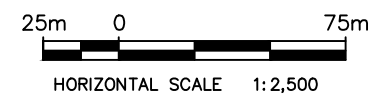
Hasty Tract EA,
Midhurst, ON

DATE ISSUED:	July 2018	Figure No. 5
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PROJECT NO.:	18-107	
REFERENCE:	Simcoe County Maps	



LEGEND:

- Approx. Property Boundary
- 1m FBS Contours
- Soil Stratigraphy Borehole Locations
- XCG Monitoring Well
- Shallow & Deep Nested Boreholes/
Monitoring Wells
- Eastern APECs Shallow & Deep Boreholes/
Monitoring Wells
- 10m 10mbgs depth of Proposed Monitoring Well
- 18m 18mbgs depth of Proposed Monitoring Well
- 27m 27mbgs depth of Proposed Monitoring Well
- 30m 30mbgs depth of Proposed Borehole



**AZIMUTH ENVIRONMENTAL CONSULTING, INC.**

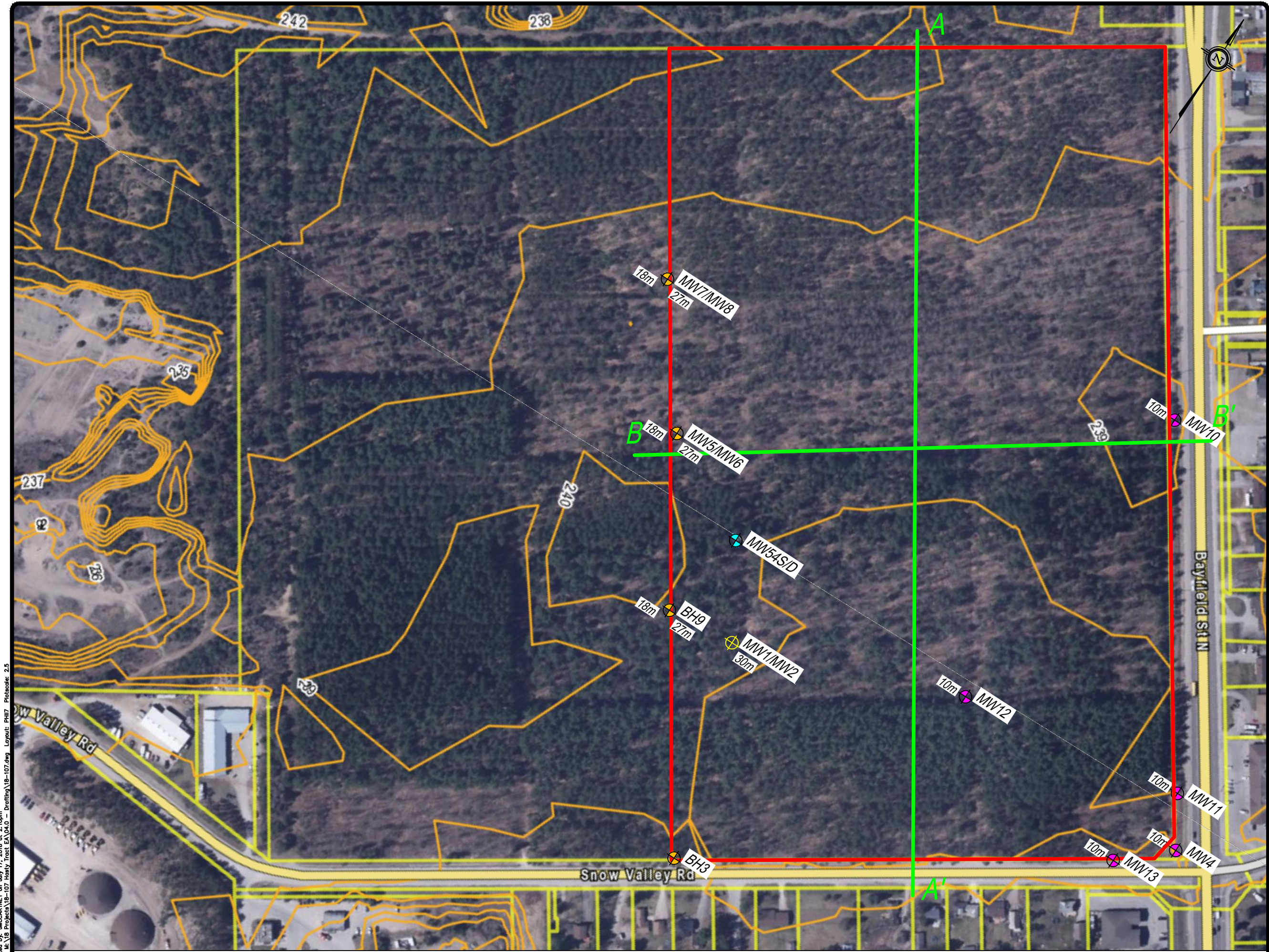
Borehole and Ground Water Monitoring
Well Locations

Hasty Tract EA,
Midhurst, ON

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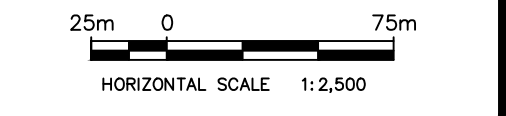
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LEGEND:

- Approx. Phase II Property Boundary
- 1m FBS Contours
- Cross Section Locations
- Soil Stratigraphy Borehole Locations
- XCG Monitoring Well
- Shallow & Deep Nested Boreholes/
Monitoring Wells
- Eastern APECs Shallow & Deep Boreholes/
Monitoring Wells

10m 10mbgs depth of Proposed Monitoring Well
18m 18mbgs depth of Proposed Monitoring Well
27m 27mbgs depth of Proposed Monitoring Well
30m 30mbgs depth of Proposed Borehole



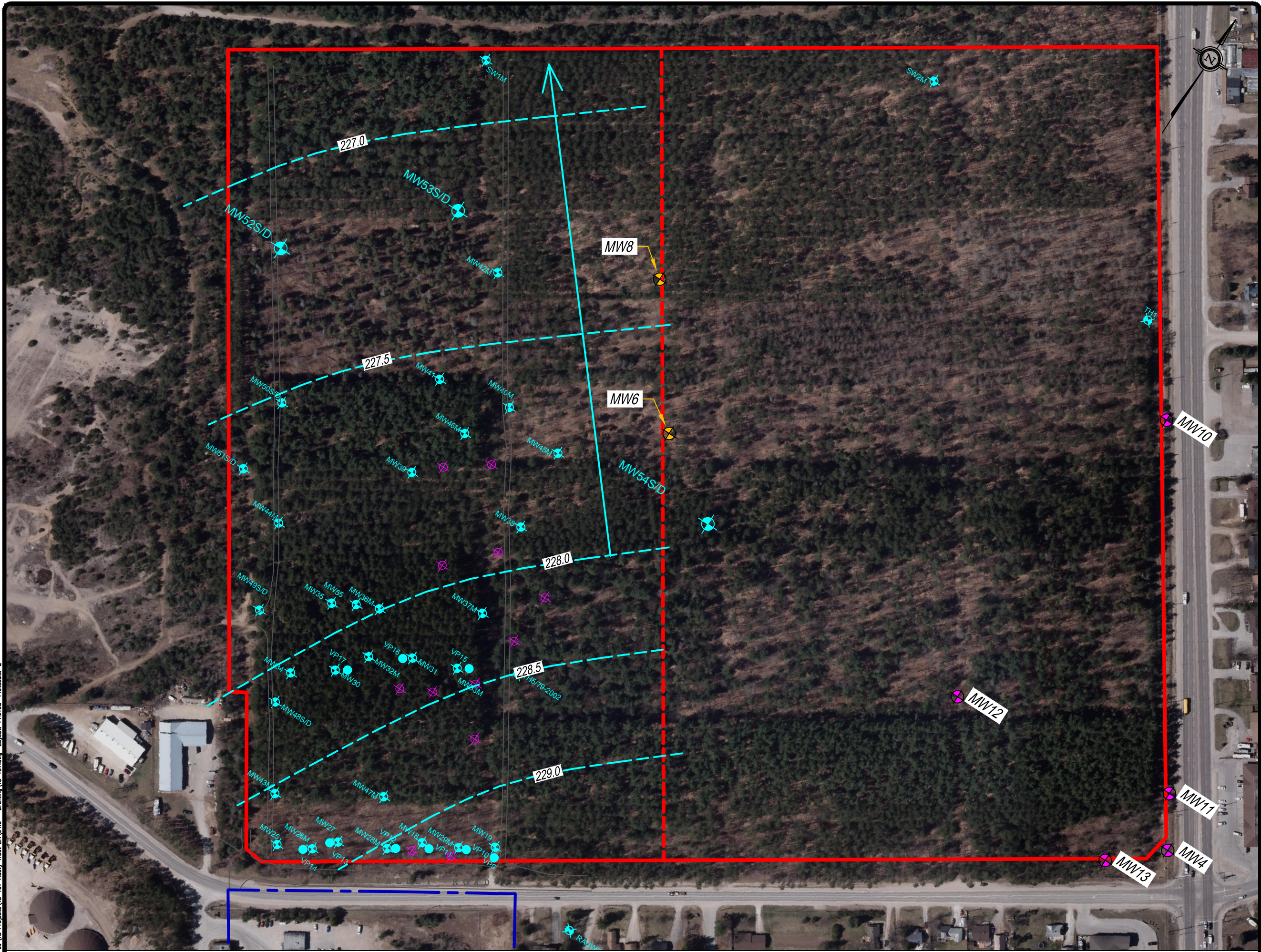
 **AZIMUTH ENVIRONMENTAL CONSULTING, INC.**

Phase II Property and
Cross Section Locations

Hasty Tract EA,
Midhurst, ON

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- LEGEND:**
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 - - - Severance Limit
 - ⊕ XCG Monitoring Well Location
 - ⊕ Monitoring Well Location (previous studies)
 - Vapour Probe Location
 - ⊕ Remedial Borehole 2016
 - ⊕ Eastern APECs Shallow & Deep Boreholes/
Monitoring Wells
 - ⊕ Shallow Nested Boreholes/Monitoring Wells
 - 2017 Western Ground Water Elevations
 - - - 0.5m Ground Water Flow Contours
 - ➔ Inferred Direction of Ground Water Flow

Notes:

1. Ground water elevations from XCG wells collected November 29 and 30, 2017.

25m 0 75m
HORIZONTAL SCALE 1:2,500

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Algonquin Aquifer
Ground Water Flow Map November 2017

Hasty Tract EA,
Midhurst, ON

DATE ISSUED:	December 2018	Figure No. 10a
CREATED BY:	JLM	
PROJECT NO.:	18-107	
REFERENCE:	Simcoe County Maps	

- LEGEND:
- Approx. Property Boundary
 - Severance Limit
 - XCG Monitoring Well Location
 - Monitoring Well Location (previous studies)
 - Vapour Probe Location
 - Remedial Borehole 2016
 - Eastern APECs Shallow & Deep Boreholes/
Monitoring Wells
 - Shallow Nested Boreholes/Monitoring Wells
 - Soil Stratigraphy Borehole Locations
 - 2018 Eastern Ground Water Elevations
 - Interpreted 0.5m Ground Water Flow
Contours
 - Inferred Direction of Ground Water Flow
 - 229.5 Ground Water Elevations (Aug. 30, 2018)

Notes:

1. Ground water elevations from Azimuth wells collected August 30, 2018.

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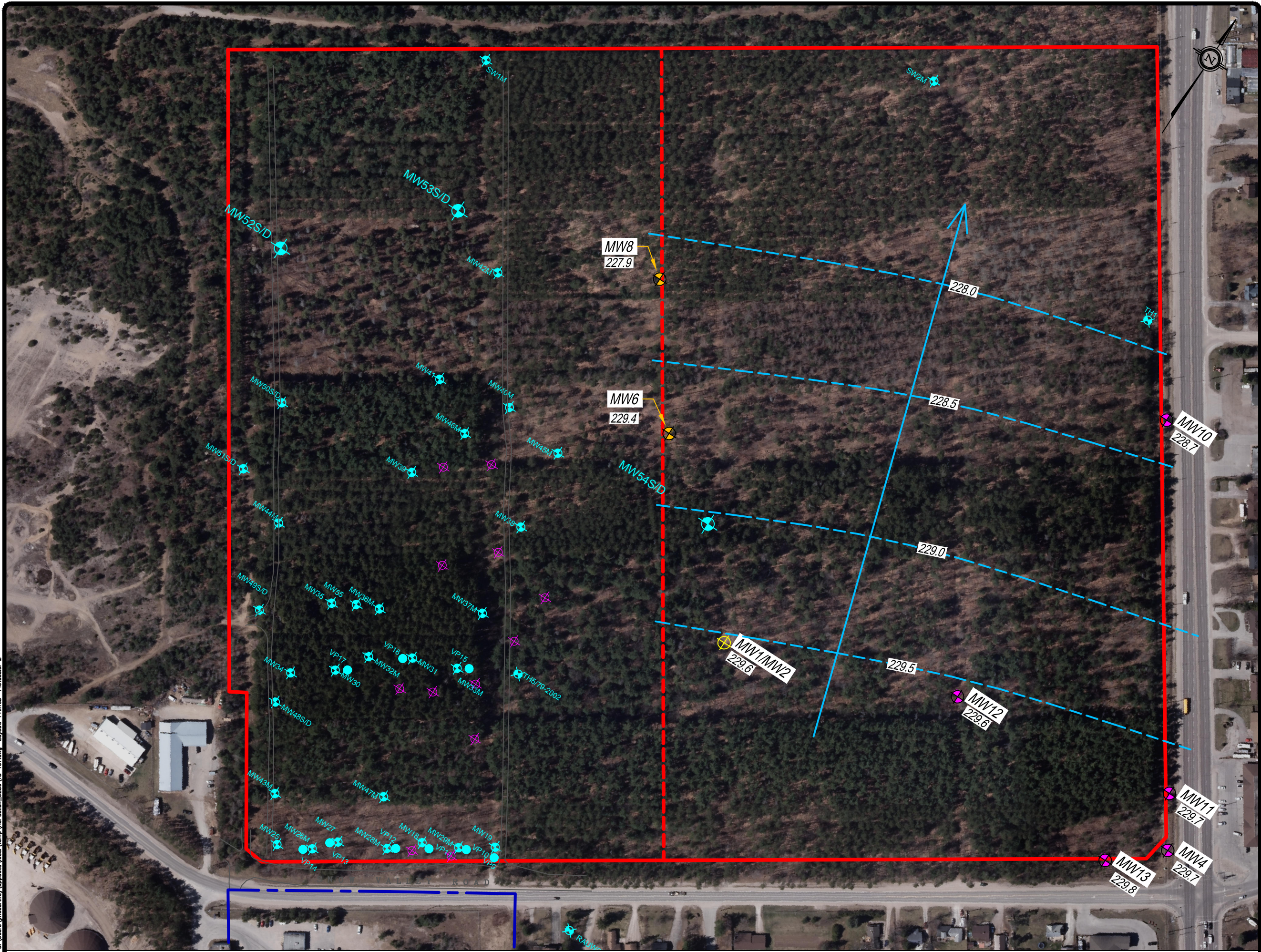
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AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Algonquin Aquifer
Ground Water Flow Map August 2018

Hasty Tract EA,
Midhurst, ON

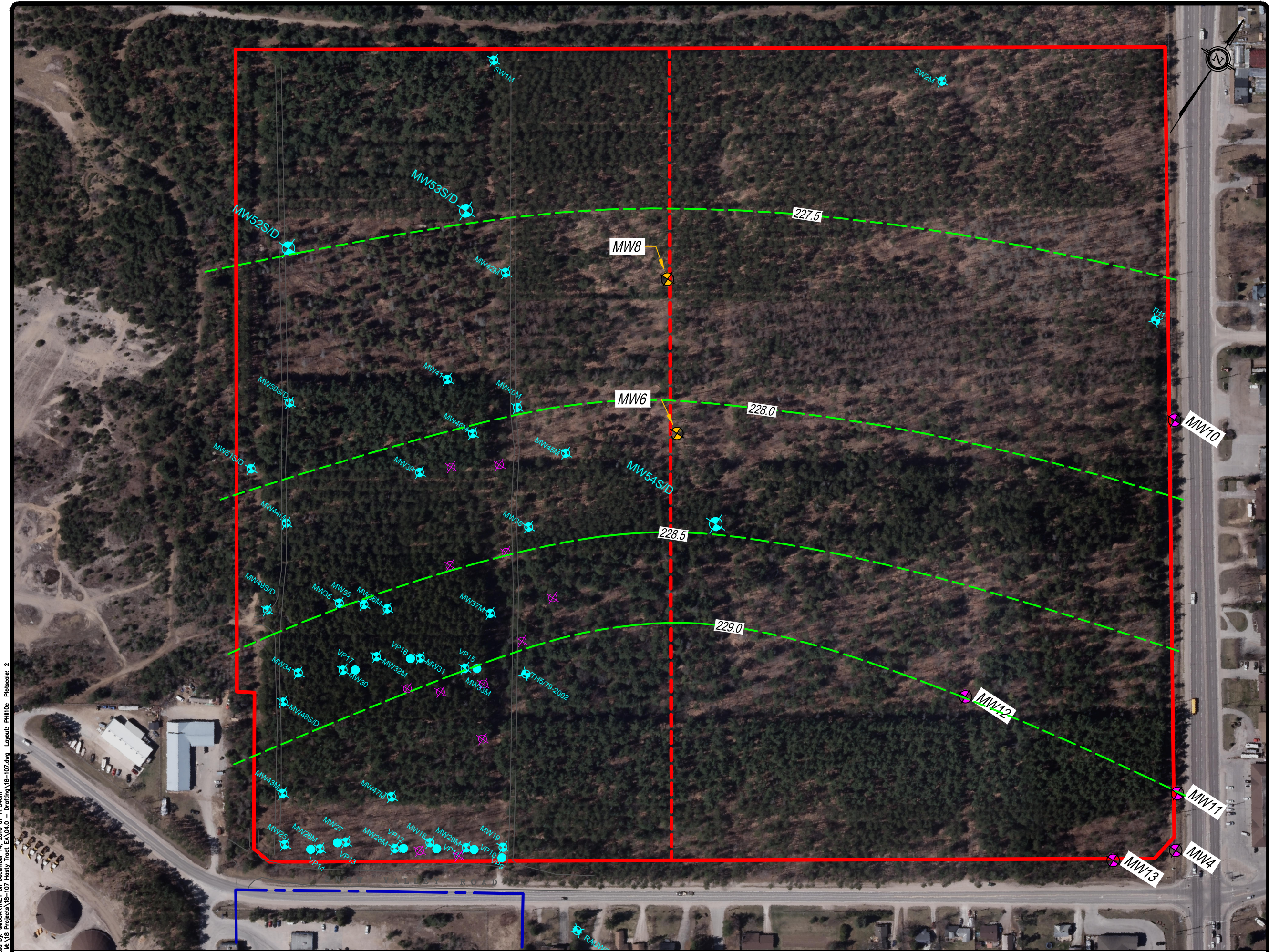
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- LEGEND:**
- Approx. Property Boundary
 - - - Severance Limit
 - XCG Monitoring Well Location
 - Monitoring Well Location (previous studies)
 - Vapour Probe Location
 - Remedial Borehole 2016
 - Eastern APECs Shallow & Deep Boreholes/
Monitoring Wells
 - Shallow Nested Boreholes/Monitoring Wells
 - - - Interpreted Ground Water Flow Contours

Notes:

1. Ground water elevations from XCG wells collected November 29 and 30, 2017.
2. Ground water elevations from Azimuth wells collected August 30, 2018.
3. Ground water elevations interpreted between XCG Nov. 2017 and Azimuth Aug. 2018.

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HORIZONTAL SCALE 1:2,500

AZIMUTH ENVIRONMENTAL CONSULTING, INC.

Algonquin Aquifer
Ground Water Flow Map

Hasty Tract EA,
Midhurst, ON

DATE ISSUED:	December 2018	Figure No. 10c
CREATED BY:	JLM	
PROJECT NO.:	18-107	
REFERENCE:	Simcoe County Maps	



APPENDIX B

Sampling and Analysis Plan



APPENDIX B1 – SAMPLING AND ANALYSIS PLAN

The Sampling and Analysis Plan (SAP) for the current investigation was developed according to the requirements of the client (Township of Springwater), and in response to the information acquired in the Phase One Environmental Site Assessment (ESA) evaluation to advance the property towards Record of Site Condition (RSC) status. This investigation is advantaged by a recently completed desktop-level investigation to assess "*areas of potential environment concern* (APECs)" that is associated with the off-Site operations. This desktop-level work identified a liquid industrial waste disposal facility, south of the RSC Property, containing a hazardous waste material lagoon with a known historic release in 1978 (XCG, 2017). This release was large enough for the dissolved phase plume to cross Snow Valley Road, and onto the Hasty Tract lands, where ~44 ground water monitoring locations have already been installed.

Following this desktop-level work, (and the formal Phase One ESA); this SAP intends to address the chemical release APEC associated with the off-Site liquid chemical disposal facility. For completeness the reader is referred to the Phase One ESA report and the subsequent technical memoranda which have been used to develop the current Site Conceptual Model (SCM).

SITE CONCEPTUAL MODEL

Two significant chemical releases occurred at the Terrapure facility in the past being the 1978 lagoon leak and the 2003 fire release. One of both events has resulted in a significant release of chlorinated solvents into the environment. The resulting dissolved phase plume has been detected as far away as 600 m being the north Hasty Tract boundary (*i.e.*, SW-1 monitoring wells).

Johnson and Kueper (1996) indicate that DNAPL will move through the environment relatively quickly (*i.e.*, in a matter of hours) down through a medium. It is suggested by researchers that within a month after the release, the DNAPL distribution into the environment would have been completed. From this point onward, the ground water flow through the impacted zone will begin to dissolve the entrapped / residual contaminant mass and over time a dissolved phase plume is developed.

Commencing in 2007, XCG has attempted to define the dissolved phase plume extent on the Hasty Tract lands and this process took about five years to complete. The Ontario Geologic Survey (OGS) undertook an extensive geologic evaluation of the Oro-Barrie Moraine and surrounding lands. Their final report was issued in 2011 and provides an in-



depth regional geologic summary of the depositional environment. The reporting suggests that the Hasty Tract lands lie within a "tunnel valley" feature seen throughout the study area. Their study suggests that the sediments within the tunnel valley features were laterally laid in glacial Lake Algonquin and consist of rhythmic deposition of layers of material which are mainly granular in nature but with seams of finer grained deposits and/ or interbedded layers.

Johnson and Kueper (1996) noted that significant lateral movement of DNAPL can occur due to subtle depositional changes in soils. DNAPL hydrogeology would suggest that a laterally dominated depositional environment has the potential to accumulate mass above low permeability horizons. If such layers are laterally continuous then these potential represent the optimum locations to assess the dissolved phase plume extent. Discussions with XCG indicated "upwelling" conditions in the soil profile below ~30 feet (10 m). The presence of upwelling conditions would support a concept of a continuous confining layer to create this "upwelling" environment.

The Phase One ESA indicates that the regional ground water flow direction would be northwest towards the Midhurst Swamp Complex. It is noted that Willow Creek lies north and east of the RSC Property and flows northwest away from Little Lake down the tunnel valley system.

SAMPLE AND ANALYSIS PLAN (SAP)

The Township is interested in determining whether the eastern 50 acre section of the Hasty Tract is impacted by the chlorinated solvents known to be present on the western half of the Hasty Tract lands.

The requested scope of work proposed for the Phase Two ESA included the following:

- advance ten soil boreholes at the RSC Property, to a depth of up to 40 m below ground surface (mbgs). Boreholes will be advanced as nested pairs, where one will be advanced to depth;

Azimuth suggests that if a consistent geologic setting can be determined; then this would be used to position monitoring wells in the vicinity of the Township's proposed western boundary for the 50 acre section of land to be acquired.

Presuming the north-south extent of the lands are roughly 600 m in length, Azimuth proposes to drill two (2) deep stratigraphic boreholes at 150 m and 450 m into the Hasty Tract lands along the central walking trail (see attached figure). If these deep



stratigraphic wells need to penetrate below the Algonquin Aquitard and into the upper tunnel valley confined aquifer then they will need to be about 50 m deep.

The hope with the two stratigraphic wells is to identify two key low permeability seams that the OGS had described at ~18 m depth and at ~27 m depth. If these are seen at both locations then these two zones would be targeted for all the remaining monitor installation efforts.

It is proposed that four transects to the western property boundary be cut 40 m west of the central trail and that nested wells at ~18 m and ~27 m would be constructed to determine whether the dissolved chlorinated solvent plume extends to these locations. A fifth well nest would be drilled at the southern property boundary along Snow Valley Road (see attached figure).

The proposed east-west lines to the western boundary are proposed at:

- 550 m from the southern boundary,
- 450 m from the southern boundary,
- 300 m from the southern boundary,
- 150 m from the southern boundary, and
- 0 m from the south boundary.

All boreholes constructed as part of this evaluation program are being completed by a licenced water well driller (*i.e.*, Orbit Garant Drilling - Licence No.: 7626). Similarly, all monitoring wells constructed as part of this evaluation program will be Ontario Regulation 903/90 compliant (*i.e.*, Well Regulations under the *Ontario Water Resources Act*). Each monitoring well will be completed with a steel protective casing and secured with a lock to prevent unwarranted access to the wells.

To the extent possible, ground water sampling would be conducted immediately following each monitor installation. This would be done because if contamination is detected at the boundary then there could be the desire to "pull" the evaluation line back to the central trail (or further depending upon the results obtained). What is suggested is that some decisioning on the exact monitoring well placement is open to discussion as the program progresses and will require the technical team to keep all parties informed of key recommendations as the program progresses.



For the nested pairs along the boundary, the deep well would be logged to identify the two targeted zones and the shallow well would be "straight" drilled based on the findings of the deep monitoring well stratigraphy.

PROGRAM DETAILS

The revised scope of work proposed for the Phase Two ESA included the following:

- all work completed as part of this project is being conducted under a Ministry of Labour permit;

An appropriate health & safety plan has been submitted and approved for the drilling program. The drilling site will be cordoned off using a snow fence perimeter with appropriate signage. Only designated staff which have been properly trained will access the work area within the fenced off area. The fencing is mobile and will be moved to each drilling location. Access to the drilling locations will be obtained through the central N-S trail and the gate will be locked each night at the conclusion of the day's drilling program. The drilling site will have a first aid kit, emergency phone and fire extinguisher on-Site. Required MOL H&S signage and notifications will be posted at the drilling site throughout the drilling program. Details are available through Azimuth Environmental Consulting, Inc.

- advance two (2) stratigraphic boreholes along the central tract at 150 m and 450 m north of the Snow Valley Road property line;

These two boreholes are intended to determine whether a consistent geologic sequence as previously described by the OGS exists beneath the Hasty Tract lands. It is proposed to continuously core one of these two of boreholes to extract a complete soil core down to 30 m depth. The second borehole would target that encountered in the first borehole to assess the vertical consistency to the layering. The second borehole would continuously log sections of the vertical profile where low permeability seams / layers were encountered with the first borehole.

If the underlying aquifer is to be encountered then it is our opinion that the borehole would need to extend to ~50 mbgs. The Algonquin Aquifer is presumed to extend to about 27 to 33 mbgs. The underlying aquitard is estimated to be ~10 m thick.



An appropriate deep monitoring well location would be selected for each of these boreholes assuming no other intervening data were detected (i.e., vapour detections higher in the soil profile)

- request permission from the MNR to cut up to four (4) east-west access lines 40 m west of the central tract in order to drill monitoring wells at the western extent of the Township's 50 acre proposed acquisition. All tree felling work would be conducted by a professional forester;

The Township would prefer to drill the monitoring wells at the proposed western property boundary and has asked that this be accommodated in the proposed drilling plan. Fortunately, the MNR has given verbal permission to permit these lines to be cut.

- To accommodate the above noted Township request, Azimuth is proposing to cut up to four (4) access lines into the forest to facilitate entry by the drilling rig. At present the four (4) access lines are proposed at:
 - o 550 m from the southern boundary,
 - o 450 m from the southern boundary,
 - o 300 m from the southern boundary, and
 - o 150 m from the southern boundary;
- o an additional well nest will be drilled at the south property boundary adjacent to Snow Valley Road (i.e., 0 m from the southern boundary);
- advance up to ten (10) soil boreholes in nested pairs at the RSC Property along the Township's proposed western property boundary (see attached figure), to a depth of ~18 and ~27 mbgs. In each case the monitoring well tip will coincide with a low-permeability horizon;

The deep borehole would be drilled first and target the base of conductive zones. The contaminant migration scenario is one where the mass moves only in the saturated profile. Thus, the upper unsaturated zone will not be logged in detail to expedite the drilling program. Similarly, the shallow monitoring well would be positioned based on the deep well drilling results and not independently logged

- at each borehole location, ground water monitors will be installed with a 0.5 m length screen;



Short screen lengths of 0.5 m have been selected based upon the studies presented by Johnson and Pankow (1992). The conceptual model is that the dissolved phase plume would migrate at or close to a confining layer and thus sampling at this point potentially yields the greatest opportunity to detect this plume. Screen lengths are kept small to avoid dilution issues in a uniform conductive zone situated above the confining layer

- monitoring wells would be sampled as soon after construction as is practical and the sampling turnaround times would be rushed to obtain the VOC data;

Detection of the chlorinated solvent dissolved phase plume would alter the drilling program and could result in the movement of monitoring wells further east. Knowledge of this as soon as possible could assist in minimizing drilling costs overall.

Decision Point

If the detection of chlorinated solvents along the proposed western boundary of the Township's 50 acre parcel; then the program would be halted and a strategy meeting held to discuss the need for further drilling or the abandonment of the program.

If the program were to proceed, then a revised drilling strategy would need to be developed with the client and would likely result in a line of monitoring wells drilled along the central trail which would be 40 m further east of the origin proposed property boundary. Such changes to the program would also be vetted through MNRF prior to proceeding.

- two (2) sets of nested monitoring wells would be constructed across the water table at the SE corner of the property and half way along the eastern property boundary;

These two monitoring wells are being constructed to evaluate the other APECs identified in the Phase One ESA. In both cases, the APECs are associated with PHCs and hence the need to straddle the water table with the monitoring well. If property access poses an issue then these wells would be drilled at the fenceline on the right-of-way.



Quality Control

- based on measurements and observations, one soil sample (at worst case or at aquitard contacts) would be collected from each of the borehole nested pairs, plus two duplicate (eighteen (18) in total);
- one ground water sample would be collected from each of the sixteen ground water monitors plus two duplicates (18 in total);
- the analytical work to address the historic chemical lagoon release will include analysis for volatile organic compounds (VOCs) parameters;
- the analytical work for the two (2) eastern monitoring wells across the water table would be PHCs, heavy metals and VOCs; and
- in addition to the above sample analysis, two representative soil samples will be submitted from the boreholes to be analyzed for pH and grain-size, where they would be collected from two different dominate soil types discovered throughout the borehole advancement.

A fraction of organic carbon analysis can also be considered if there was any concern about the need to conduct a risk assessment

The client stipulated that both the Phase One ESA and Phase Two ESA were intended to be part of a Record of Site Condition submission for the RSC Property. This SAP assumes that the ground water table is present within the ~10 m depth. Drill cuttings and ground water purge water will be temporarily stored in drums kept on site.

The Phase Two ESA is intended to be a presence/ absence field evaluation for the identified APECs and does not include any horizontal or vertical contaminant delineation as part of the current scope. Delineation work would be required if concentration levels in submitted samples exceed permissible Provincial Standards. The following includes specific information regarding the proposed soil and ground water sampling process.

Soil Sampling Plan

For all of the soil boreholes, field screening measured would be performed to evaluate the soil profile. In addition, field screening would be performed at multiple locations for each of the fill locations to evaluate this material. The field screening activities would include assessing the soil vapour profile with an organic vapour analyzer (OVA), as well as a visual and olfactory inspection. For OVA analysis soil samples were collected by



hand and stored in sealed plastic bags. The OVA was used to measure air in headspace of the bags, in order to test for the presence of volatile organic vapours.

If it was determined that the potential existed for soil impacts then soil samples would be collected in the appropriate laboratory provided containers. The sampling at each location would be based on a professional assessment of the potential contaminants of concern (CoCs). The soil sampling program will be conducted in accordance with the requirements of O.Reg. 153/04, Schedule E, Table 2.

Ground Water Sampling Plan

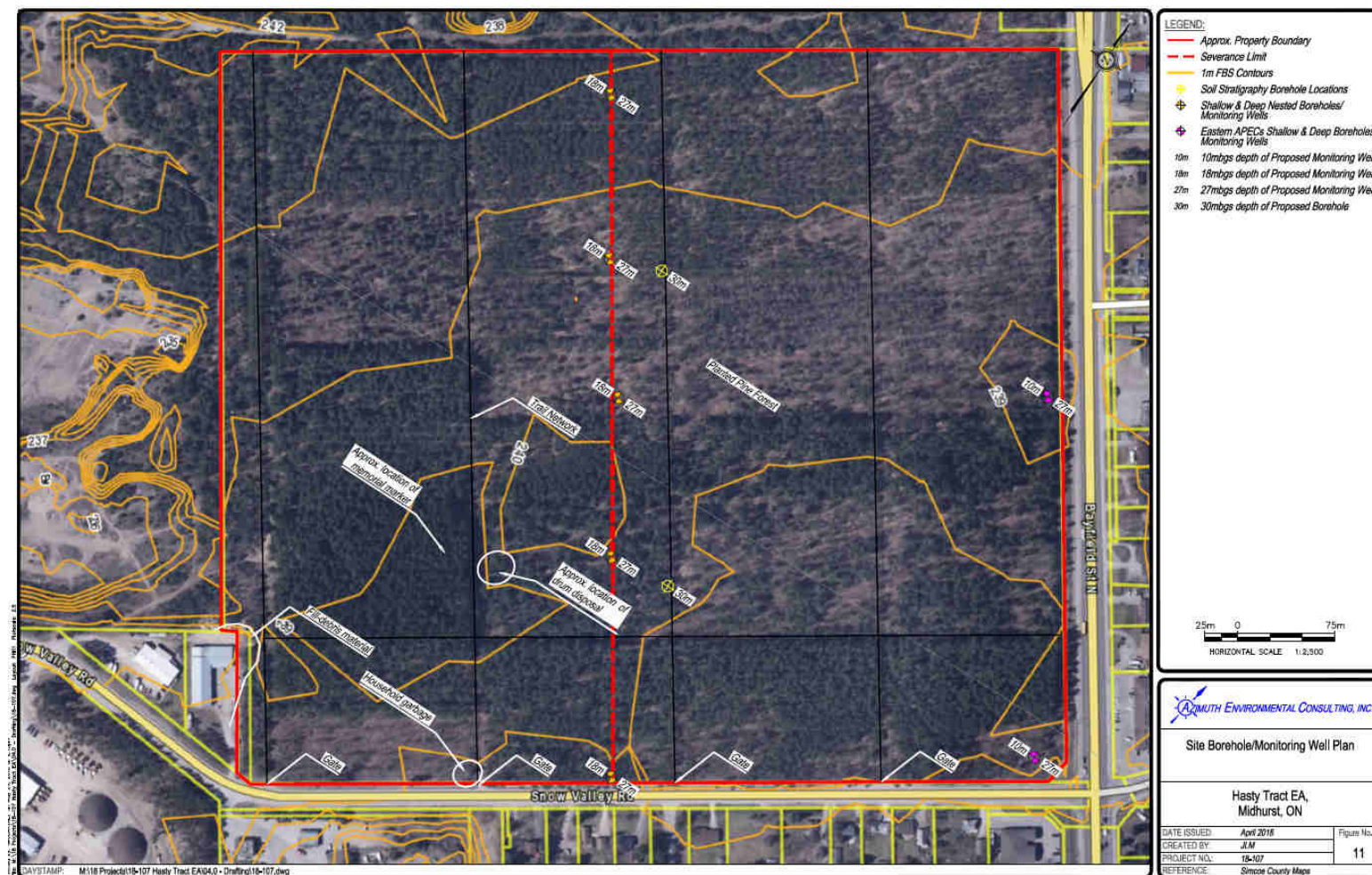
Each of the ground water monitoring wells is to be purged prior to sampling even though the drilling program does not intend to use drilling water. Ground water samples would then be collected from each of the monitoring wells according to the SOP and stored in drums for the client to dispose.

REFERENCES

- Johnson, R.L. and J.F. Pankow, 1992
Dissolution of dense chlorinated solvents in groundwater
2. Source functions for pools of solvent
Environ Sci Technol., 26, pp: 896-901



For review/discussion only





APPENDIX C

Background Environmental Data



Technical Memorandum

From: David Ketcheson, Azimuth Environmental Consulting, Inc.

To: File

**Re: Hasty Tract
Revised Geologic Interpretation**

Project: 18-107

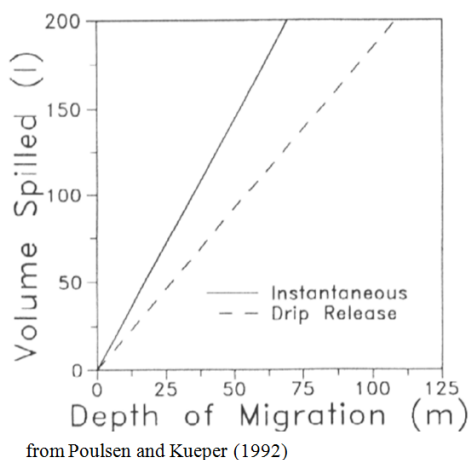
Date: May 11, 2018

A concerted effort has been undertaken to improve the current geologic understanding for the Hasty Tract lands. This effort has been considered due to the nature of the contaminants of concern. The migration of "dense non aqueous phase liquids (DNAPLs)" in the environment is greatly influenced by subtleties in the geologic deposition. According to Johnson and Kueper (1996) significant lateral movement of DNAPL can occur due to subtle depositional changes in soils. Johnson and Kueper (1996) also note that the contaminant distribution can be highly variable, with a high frequency of low concentration values in the soil profile. Finally, Feenstra and Cherry (1996) state that commonly, much of the DNAPL mass is far below the water table where it causes deep ground water contamination.

The DNAPL mass in the dissolved phase contaminant plume likely represents a small portion of the total contaminant mass released to the environment. Mackay and Cherry (1989) have shown that a chlorinated solvent source has the ability to sustain the dissolved phase contaminant plume migration for a long period of time into the future.

DISCUSSION

Chlorinated Solvent Overview

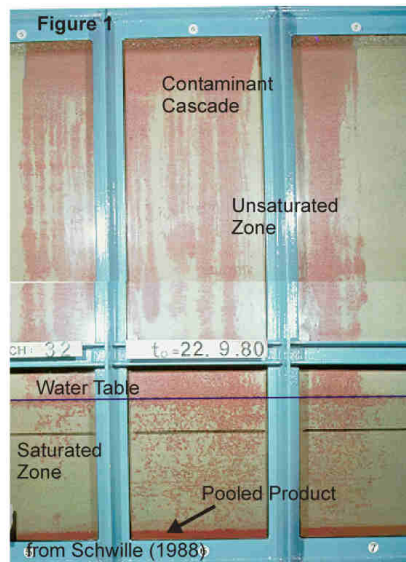


In field experiments reported by Poulsen and Kueper (1992) it was "... demonstrated that slow, dripping releases of DNAPL are likely to migrate to greater depths than sudden, single event releases ...", or spill events (Kueper *et al*, 2003). In their research, Poulsen and Kueper (1992) illustrated the depth of migration versus volume of tetrachloroethene (PCE) spilt at ground surface in a sand environment (see adjacent graphic).

The drip release has a greater penetration since the chlorinated solvent accumulates in one location and thus provides a "reservoir" of DNAPL to



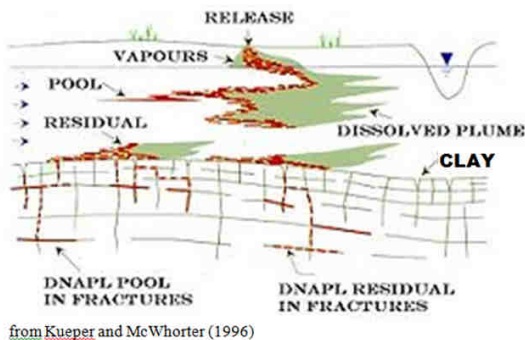
promote the vertical migration to depth along the equivalent of a single vertical tortuous pathway for the entire available volume as opposed to it being laterally dispersed over a wider area under a catastrophic release. Regardless of either release mechanism, very little volume is required to move DNAPL to depth.



At the Hasty Tract site, the water table does not come to ground surface. Thus, there exists an unsaturated zone which the chlorinated solvent will freely percolate into the underlying sediments. The graphic from Schwillie (1988) illustrates this contaminant cascades with dyed chlorinated solvents (see adjacent graphic).

The chlorinated solvent will percolate vertically down to the ground water table and then accumulate at this interface until the pooled height of the DNAPL is sufficient to overcome the capillary pressure¹ of the saturated soils.

Assuming the reservoir pool from above continues to supply the discrete pathways the chlorinated solvents move through, it can continue to move to depth until it reaches some impervious surface like that shown in the above noted graphic which denotes how the DNAPL pools. At some point the pool height can increase to a point where the DNAPL will once again overcome the "pore entry pressure"² and begin to migrate further down into the porous media as a result of this pooled height.



For clay seams / environments, it is essentially recognized that the DNAPL migrates through naturally occurring fractures that exist in the clay matrix (see adjacent graphic). Thus the physics that govern fracture flow apply to this environment (Kueper and McWhorter, 1996).

Since a fracture parting has little volume, it will quickly fill vertically. It is this vertical height which governs the ability of the DNAPL to move downward in the fracture network. Research suggests the DNAPL acts as a string-like element in a 3-D rough-

¹ water pressure opposing entry of the DNAPL into the saturated zone.

² term use to define the hydraulic pressure needed by the DNAPL fluid to invade into the next saturated void space existing between the host sediments in the porous media



walled fracture plane. This DNAPL "stringer" occurs because the chlorinated solvent pressure (*i.e.*, height of product) only needs to overcome the least resistant throat / pathway through the rough-walled fracture. Thus, it is not necessary to fill the entire fracture plane; but merely a "stringer" of fluid within the heterogeneous fracture plane element.

Even a 1 m vertical accumulation of a chlorinated solvent in a clay fracture plane "... would require the apertures to be no larger than 9 microns (μm) at the base of the accumulation in order to prevent further down ward migration. By way of comparison, a human hair is approximately 50 μm thick ...", (Kueper *et al*, 2003).

Assuming the DNAPL has the critical height to penetrate into the saturated fracture zone and:

- imbibe further down the fracture plane; and
- the fracture continues to be replenished by the overlying pooled DNAPL reservoir; then
- it is quickly realized that the continuous DNAPL "stringer" length could extend several metres to tens of metres in height.

At such a height there is virtually no minimum fracture width that can arrest continued downward movement. Thus, this interconnected DNAPL stringer has virtually no impediment to vertical movement to any depth. Furthermore, the increased DNAPL height allows invasion into "... progressively smaller aperture fractures ...", (Kueper and McWhorter, 1996).

The lateral spreading of the chlorinated solvent source occurs because of the same principles. It is also noted that "... DNAPL will migrate through those pathways which offer the least capillary resistance. These pathways will not necessarily be the same as those involved in the flow of the groundwater. Moreover, since hydraulic gradients in most nature groundwater systems are typically very low, they will have little influence on the directions of DNAPL migration ...", (Kueper and McWhorter, 1996).

For a laterally bedded environment, the pathway of least resistance is likely to be lateral along the bedding plane versus the less permeable vertical route. The net result is a "stair-stepping" type of distribution into the soil profile. Subtleties or gaps in the bedding will facilitate vertical propagation further into the soil profile. Thus, interbedded sediments facilitate this vertical progression of the contaminant mass.

Stark contrasts in the geologic profile (*i.e.*, silt / clay seams), if laterally continuous provide ideal monitoring locations to assess the contaminant migration. Preferential contaminant mass accumulation at these horizons is anticipated to enhance ground water dissolution and hence lateral dispersion downgradient from these accumulation points in



the vertical profile.

The presumed depth of penetration of the contaminant mass is as deep as it can be found at the downgradient monitoring points. However as noted above, the contaminant distribution can be highly variable, with a high frequency of low concentration values in the soil profile (Johnson and Kueper, 1996). In short, it becomes quite challenging to adequately / reliably select representative sampling points in the vertical soil profile.

Detailed Geologic Setting

Physiography

Physiographic mapping describes the immediate area of the Hasty Tract lands as being in the Oro Moraine, Simcoe Uplands and more specifically the Tunnel Valleys associated with this region. Peat and muck deposits are also noted southeast of the Site. Most of the valleys in this area are south trending (Figure 1 - overleaf), though westward trending valleys are noted to occur within the southern limit of this physiographic unit.

The Simcoe Uplands are comprised of mainly Newmarket and "Northern" till units, which are generally consist of sands to silty-sands, with varying stone content. Small pockets of Kettleby till (silt to clayey-silt) are also noted in some areas. Locally, the Upland areas can be overlain with fine- to coarse grained glaciolacustrine outwash deposits. Typical surface elevations within the valleys range from 220 to 250 m above mean sea level (masl), while elevations range from 280 to 350 masl on the uplands.

The incised, sandy bottomed tunnel valleys (for which the Site is situated in) separate the Simcoe Upland and are noted to harbour small, perennial streams within the valley bottoms. The Site itself is situated within a westward trending valley that transitions into a portion of the Simcoe Lowlands known locally as the Minesing Flats. The low-conductive soils (*i.e.*, rich in clay), within the lowlands, tend to collect surface water and are prone to flooding (*i.e.*, Minesing Wetland). Typical surface elevations range from 180 to 200 masl in the Minesing Flat.

Bedrock Geology

Bedrock beneath the Site is made up of Paleozoic Limestone. Regionally, the bedrock dips in a southwest direction. The Site appears to straddle a contact between the Bobcaygeon Formation (older), which is overlain by the Verulam Formation (younger). The Bobcaygeon Formation is made up of fine- to coarse grained limestone and is marked by its moderate amount of fossilization. Shale bedding is also noted in the upper-most portion of the unit. The Verulam Formation is comprised of medium- to coarse-grained bioclastic limestone. Similar to the Bobcaygeon Formation shale bedding is noted, though at the lower portion of the unit.



Severn Sound to the Oak Ridges Moraine (ORM); similar to the valley the Site is situated in. Younger material was then laterally re-deposited / layered within these large valley swaths of varying grain size and thickness. Regionally these valley features are not often differentiated in the published mapping, though some studies (*i.e.*, Ontario Geological Survey, Groundwater Resource Study 11, 2011) have provided more detail in recent years.

Published Surficial Geology mapping for the Site, suggests that coarse-textured glaciolacustrine deposits (sand, gravel, minor silt and clay) dominate the area. Mapping also notes that organic deposits (peat, muck, marl) occurs southwest and southeast, in addition to ice-contact deposits (sand and gravel with minor silt, clay, till) that make up southwest branches of the Oro moraine. Stone-poor till (Newmarket and Northern) is abundant north, south and east of the Site, which occur on the periphery of the tunnel valleys surrounding landscape.

BH-31-AKB-2006 (Museum Tract) Log

As determined from the borehole, the general stratigraphic deposition for Valley Tunnel sediments is as follows:

1. interbedded medium to very coarse sand, occasional silt bed (Algonquin Aquifer)
2. rhythmically bedded silt and clay with interbeds of sand (Algonquin Aquitard)
3. coarse-textured stratified deposits - sand and silty-sands with rare gravel beds (Valley Fill Sediments - Upper Aquifer)
4. fine-textured stratified deposits - silt, silty-clay, clay with rare diamicton beds (Valley Fill Sediments - Upper Aquitard)
5. coarse-textured stratified deposits - sand and silty-sands (Valley Fill Sediments - Middle Aquifer)
6. fine-textured stratified deposits - silt, silty-clay, clay with rare diamicton beds (Valley Fill Sediments - Middle Aquitard)
7. coarse-textured stratified deposits - sand & silty-sands with occasional gravel beds (Valley Fill Sediments - Lower Aquifer)

Algonquin Aquifer (0.2 to 33.3 m below ground surface [mbgs])

Based on the detailed log, the Algonquin Aquifer unit is substantially thick and comprised of bedded sands of varying textures (generally medium to coarse). Sharp contacts are noted and texture was described to "fine" upward. Additionally, interbeds of sandy-silt, silt and silty-clay are noted throughout this unit (Photo 1 - overleaf).



Photo 1: Example of Algonquin Aquifer unit with bedding planes.
Markers indicate thin (*i.e.*, 2-4 cm) sequence of silty-clay laminations (OGS, 2006).

Below are notable depths at which these low-conductive bedding planes were observed:

- brown silty-clay (17.85 to 19.65 mbgs) - approximately 2 to 4 cm thick (rarely 12 to 25 cm) (Photo 2 - below);



Photo 2: Example of Algonquin Aquifer unit with bedding planes (OGS, 2006).

- brown silty-clay (27.70 to 28.12 mbgs) - ~1 to 3 cm thick (rarely 5 cm) (Photo 3 - below);



Photo 3: Example of Algonquin Aquifer unit with bedding planes.
Marker indicates top of sequence of silty-clay laminations (OGS, 2006).



Photo 4: Example of Algonquin Aquifer unit with bedding planes (OGS, 2006)

- brown silty-clay (30 to 30.65 mbgs) - ~5 to 12 cm thick (rarely 1 to 2 cm thick) (Photo 5 - below);



Photo 5: Example of Algonquin Aquifer unit with bedding planes (OGS, 2006)

- brown to dark grey silty-clay (31.23 to 32.08 mbgs) - ~5 to 20 cm thick (Photo 6 - below); and



Photo 6: Example of Algonquin Aquifer unit with bedding planes (OGS, 2006)

- dark grey clayey-silt (33.22 to 33.3 mbgs) - mostly continuous.



It is speculated that these subtle depositional changes in the Algonquin Aquifer have the ability to laterally spread the source DNAPL. The tunnel valley progresses into the Minesing Wetland and thus is presumed to be down dip in this direction which will promote DNAPL migration in the same direction.

It is plausible that one of more of these seams might be correlated to distinctive contaminant zones within the soil profile. Thus, targeting these specific zones for monitoring may prove valuable to the assessment. It is likely that the two uppermost seams could be targeted since the bottom three seams lie in proximity to the uppermost aquitard.

Algonquin Aquitard (33.3 to 43.34 mbgs)

This regional aquitard is comprised of grey to dark-grey rhythmically bedded silt and clay that is interbedded with sand (very heterogeneous). Texturally, the media alternates from fine- to coarse-grained material (*i.e.*, clay to sands), bedding planes are distinct (as noted) and vary in thickness throughout sequence. Fine-grained sediments (*i.e.*, clays and silts) and sand bedding planes range in thickness from 2 to 40 cm and 11 to 115 cm, respectively, (Photo 2 - overleaf).

This is the first significant lower permeability layer which would substantially pool the lost DNAPL contaminant mass in the soil profile. It is an ideal horizon to evaluate for the presence / absence of the chlorinated solvents in the subsurface profile. It would be our recommendation to target this soil horizon for ground water monitoring purposes.



Photo 7: Example of transition into Algonquin Aquitard unit at 33.5 mbgs (OGS, 2006)

Upper Valley Field Sediments Aquifer (43.34 to 47.38 mbgs)

The Valley Tunnel sediments that make up the upper aquifer consist of moderate to thick beds of grey, fine- to coarse textured sand and gravels (well graded) (Photo 8 - below). A moderately thick bed of grey, stony (15 to 25%) silty-sand diamicton is noted between 45.23 and 46.10 mbgs (see Photo 9 - overleaf).



Photo 8: Example of Upper Valley Field Sediments Aquifer (OGS, 2006)

This interbedding material would have a much lower hydraulic conductivity than the overlying unit, therefore will potential restrict the vertical movement of ground water, (Photo 9 - below).



Photo 9: Example of sandy-silt diamicton bedding in the Upper Valley Filled Sediments Aquifer between 45.75 and 46 mbgs (OGS, 2006)

Upper Valley Field Sediments Aquitard (47.38 to 53.6 mbgs)

Beneath the Upper Valley Field Aquifer sediments, a grey, stony (10-25%), silty-sand diamicton unit occurs that makes up the upper aquitard unit. A single granular coarse sand seam was evident between 51.95 and 52.2 mbgs, which would increase the conductivity of the aquitard unit (*i.e.*, greater horizontal movement), (Photo 10 - overleaf).



Photo 10: Example of sand (interbed) transition back in silty-sand diamicton in the Upper Valley Filled Sediments Aquitard (OGS, 2006).

Middle Valley Field Sediments Aquifer (53.60 to 57.05 mbgs)

The middle valley field sediments that make up the middle aquifer unit generally consist of poorly defined beds of coarse- to medium textured sands with some stony, sandy-silt diamicton at the upper contact (53.6 to 54.3 mbgs). The unit becomes more sorted with depth before transitioning into a silty-sand diamicton and laminated sand and silty-clay between 54.75 and 55.8 mbgs. Below these fine texture beds is a sequence of medium to medium-fine sand with large distinct bedding planes occurring between 55.8 and 57.05 mbgs, (Photo 11 - below).



Photo 11: Example of Middle Valley Filled Sediments depicting medium textured saturated sands transition into sandy-silt diamicton at 55.75 mbgs (OGS, 2006)

Middle Valley Field Sediments Aquitard (57.05 to 64.6 mbgs)

This unit makes up a substantially thick aquitard unit with varying textures of grey/ dark grey silty-sand, silt and clayey-silt material. The majority of the unit appears to be rhythmically deposited, with occasional sandy laminations interbedded, (Photo 12 - overleaf).



Photo 12: Example of the Middle Valley Filled Sediments Aquitard depicting rhythmically bedded silt and silty-clay between 60.75 and 61 mbgs (OGS, 2006).

Lower Valley Fill Sediments Aquifer (64.6 to 69.3 mbgs)

This lower aquifer unit is dominated by a mixture of fine- to coarse-textured grey/brown sands to depth. No interbeds of fine-grained material within unit. Refusal is suspected on Paleozoic bedrock, (Photo 13 - below)

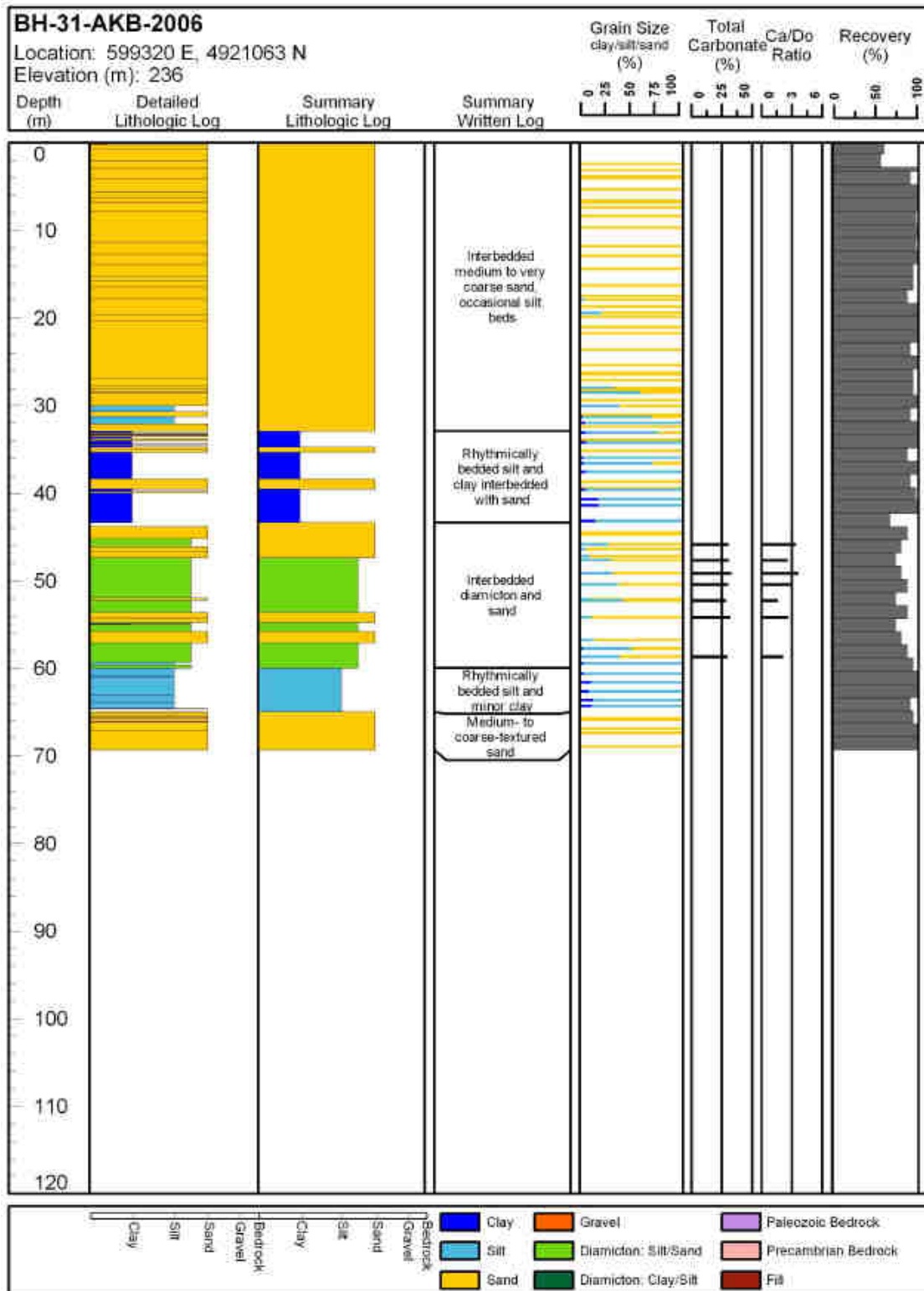


Photo 13: Example of lower aquifer sediments showing fine to medium bedded sand (OGS, 2006)

Interpretation

The OGS log for the BH-31-AKB-2006 borehole is presented below (overleaf). The log identifies that there are numerous interbedded layers in the upper aquifer unit (*i.e.*, Algonquin Aquifer). This unit makes up almost half of the stratigraphic profile. It can also be suggested that below this upper aquifer unit that the majority of the remaining log is composed of finer-grained materials.

The OGS has indicated that they have no ability to discuss local variability in the stratigraphic profile since no cluster of boreholes was conducted to evaluate this process. The geologic interpretation is that all of the Valley Tunnel sediments were likely lake lain and this accounts for the interbedded nature of the sediments.





Regardless, one focus of the proposed drilling program should be to reliability correlate the significant finer-grained seams within the soil profile, to the extent possible. To cater to this objective it is suggested that "zones" of the stratigraphic profile be continuously logged in order to reveal this layering. If possible and shown to be continuous, then ground water monitoring should exist immediately above these low permeability seams since they represent locations where DNAPL product could accumulate and therefore enhance the lateral dispersion in the dissolved phase plumes.

The other focus of the program is to assess through the progressive layering whether a definable basement for contaminant migration can be reliably established. The interpretation of the historic XCG database would be used to initially define such a depth. Any detection at a certain horizon would lead to evaluation of the next layer down. If all horizons previously evaluated have detectable concentration then drilling below the deepest layer should be considered.

Closure

The detailed geologic evaluation presented by the OGS will assist this program and should be utilized as indicated above.

DRK:

References

Ontario Geological Survey, 2011

Three-Dimensional Modelling of Surficial Deposits in the Barrie-Oro Moraine Area of Southern Ontario

Ontario Geological Survey



APPENDIX D

Standard Operating Procedures



Standard Operating Procedure Ground Water Quality Field Measurements

This standard operating procedure (SOP) outlines the procedures to be followed when collecting ground water quality field measurements. For the purposes of this SOP, ground water quality field measurements refers to parameters including electrical conductivity (EC), pH, temperature, and oxidation potential (redox).

Preparation Works

- Prior to the travel to the field site ensure ground water quality field equipment is in good working order and has been calibrated according to the manufacturer's instructions. The pH meter must be calibrated using at least a two point calibration curve (i.e. two standard solutions).
- Record the results of the calibration process in the log book along with the calibration date and staff initials.
- Review the proposed Sampling and Analyses Plan for the designated site with the project manager to ensure understanding regarding the specific requirements of the field program.

Site Works

- Prior to any operations, inspect the ground water monitor for signs of tampering and/or structural faultiness and record results in field log. Photograph any obvious signs of tampering/failure.
- Don any required personal protection equipment (e.g. gloves).
- Collect a ground water level measurement according to the requirements of the Sampling and Analysis Plan (and the ground water sampling SOP). In the event that a non-aqueous liquid phase is present in the well, either on top of the ground water surface or at the well bottom, no ground water quality field measurements are to be collected.
- Purge the monitoring well(s) as required in the sampling and analysis plan (and according to the applicable SOP). Ground water quality measurements should be collected at each well as soon as practicable during or following the purging process.
- At each individual well flush the ground water quality field measurement collection container using an aliquot of the sampled ground water, and then dispose of the flushing water a suitable distance from the monitoring well location. This water can be used to acclimatize the quality field equipment prior to measurement, if appropriate.



- Refill the collection container with a new aliquot of freshly collected ground water and submerge the measurement probes to the depth required in the manufacturer's directions.
- Allow sufficient time for each individual field measurement devices to stabilize, noting the initial readings and the rate and direction of change in readings over time. When sampling more than one monitoring well try to ensure that each meter/probe is allowed to stabilize for the generally the same amount of time at each monitoring well in order to ensure uniformity between the readings.
- Record the final readings in the field notes. Where possible, compare the final readings to historical readings from the same wells.
- Prior to further use, clean field equipment after collecting the sample an appropriate distance away from monitoring well. At a minimum, the equipment should be thoroughly rinsed with distilled water. If significant contamination is suspected is may be necessary to clean the equipment more vigorously prior to further use.

The following points apply to specific measurement devices:

- pH meter/probe: ensure that the ground water pH readings fall between the points of the calibration curve. For instance, if a two-point calibration was conducted using pH solutions with values of 7 and 10, the ground water pH readings should lie between 7 and 10. Should the readings fall outside the calibration curve, recalibrate the unit using the appropriate calibration solutions.
- Temperature meter/probe: depending on the ambient temperature, the temperature readings will likely initially drift toward the solution temperature, then begin to change as the solution temperature starts to match the ambient temperature. For this reason, the early temperature readings likely reflect the ground water temperature.
- EC meter/probe: ensure that the correct value range (e.g., mS/cm, μ S/cm) is being used to collect the EC readings, in order to ensure an appropriate number of significant digits in the reading.



Standard Operating Procedure Ground Water Quality Sampling

This standard operating procedure (SOP) outlines the steps involved in ground water quality sampling. This SOP assumes that the monitoring well(s) have been appropriately developed.

Suitable well sampling devices include check valve fitted bailers (either disposable or dedicated), inertial sampling pumps (i.e. Waterra pumps), or downhole pumps. In each case the material in contact with the well annulus and water should be composed of a suitable non-absorbant material (i.e., Teflon, polyethylene). Clean (i.e. new and unused) equipment (e.g. rope, bailers, tubing, gloves) should be used for sampling any individual well.

Preparation Works

- Arrange for the delivery of all necessary sampling containers, quality control samples and field coolers from the analytical laboratory.
- Prior to the travel to the field site ensure ground water quality sampling equipment (and all other associated field equipment) is in good working order and any necessary calibrations have been performed has been properly calibrated.
- Review the proposed Sampling and Analyses Plan for the designated site with the project manager to ensure understanding regarding the specific requirements of the field program. Ensure that the proposed analytical sampling technique to be requested is appropriate for the required work program.

Site Works

- Prior to beginning sampling inspect the monitoring well for signs of tampering and/or structural defects and record results in field log. Photograph any obvious signs of tampering and or damage.
- Don any required personal protection equipment (i.e., gloves, etc.) prior to beginning the sampling process.
- Upon opening the monitoring well, measure the depth to ground water using an electronic water level tape. Where the presence of non-aqueous phase fluids are suspected or possible a multi-phase water level tape should be used to collect ground water levels. The water level tape (multi-phase or otherwise) should also be used to confirm the total depth of the monitoring well. The water level tape should be cleaned in between use at different wells.



- Calculate the volume of water within the well annulus based on the following formula:

where

V = wellbore volume (L);
 r_p = the monitoring pipe internal radius (m); and
 h = the height of water in the monitoring well (m)
(i.e., water level minus the bottom hole depth).

- Using the sampling device remove (i.e. purge) three well volumes from the well annulus (if possible), or until dryness as dictated in the Sampling and Analyses Plan. Suitable sampling devices include inertial manual pumps (i.e. Waterra pumps), bailers, and electric pumps. In all cases, the sampling devices must be composed a material (e.g. Teflon, polycarbonate) which does not tend to absorb dissolved species, or otherwise react/interact with the water column.
- The purged ground water should be contained until it can be established that it poses no environmental hazard, at which point the water can be disposed of in manner prescribed in the “Sampling and Analysis Plan” (if applicable). In the event that discharge to the current property is acceptable, the water should be disposed of at least 10 m from the monitoring well in the down gradient direction of ground water flow.
- Record the final water level in the monitoring well once three well volumes have been removed.
- The well should be allowed to recover to approximately 80% of the pre-development water level prior to collecting ground water samples. In the event that there is a delay between the well purging and sampling events, the ground water level should be measured prior to sampling and the level recorded.
 - Prior to collecting the ground water samples at any given well location all required laboratory provided sample containers should be labeled according to the sampling and analysis plan. The sequence of bottles to be filled should be noted in the field records.
 - Remove the required ground water volumes using the dedicated sampling device, and if practicable fill the laboratory provided sampling containers directly from the sampling device. Do not allow the sampling equipment to touch the sample bottles. Follow any laboratory requirements regarding sampling container conditions or handling procedures. This may include:



- Zero headspace: for volatile compounds it is commonly required that the sample bottles be completely filled, with no headspace or air bubble between the sample and the lid. In these instances, fill the sample vial until the meniscus is above the top of the rim of the container. Gently screw on the sample container lid. Once the lid is secure, invert the vial and tap the side, checking to see if any bubbles are evident in the container. If air bubbles are noted, dispose the container and collect another sample.
- Preservatives: many analyses require preservatives, which are commonly added to the containers by the laboratory prior to shipping. When collecting samples in such containers do not overfill the containers, or rinse the containers prior to sampling. Discard any overfilled sample bottle and collect a replacement sample using a new bottle.
- Volatile compounds: when sampling volatile compounds, every precaution should be made to ensure that the sampled ground water is agitated as little as possible, and is exposed to the atmosphere for as short a time as possible. This may include (where possible) avoiding the use of peristaltic or pressure pumps, and collecting the samples using laminar flow devices (i.e. when using bailers).
- Exotic analyses: many less common analyses (e.g. hydrogen sulphide, hydrogen gas) have unusual containment or preservative requirements. All these requirements should be followed according the laboratory and/or regulatory guidelines.
- Immediately transfer filled sample bottles to a temporary storage container, which is kept at the laboratory required temperature.
- Clean field equipment a suitable distance from any monitoring well, prior to use at another location. At a minimum, the equipment should be thoroughly rinsed with distilled water to prevent cross contamination. Contaminated sites will likely require cleansing prior to the final distilled water rinse.



Standard Operating Procedure Monitoring Well Installation

This standard operating procedure (SOP) outlines the steps involved in ground water monitoring well installation, when using either hollow-stem or solid stem augers in the soil borehole/well drilling process. This SOP is intended to conform with the Ontario Water Resource Act, Ontario Regulation 903 at a minimum.

Preparation Works

- In advance of the proposed drilling program; arrange for a suitable water well contractor/drilling crew. It may also be necessary to arrange for monitor construction and / or sampling supplies (i.e., monitor tubing, monitor screens, grout, filter pack materials, key-alike locks, bailers, in-line filters, etc.).
- Review the proposed Sampling and Analyses Plan for the designated site with the project manager to ensure understanding regarding the specific requirements of the field program. At a minimum, the regional geologic profile should be reviewed so there is a sound understanding of the strategic profile to be encountered at each designated drilling location.
- It may be necessary to arrange for the temporary storage of drilling liquids and cuttings.
- Ensure all required field equipment is available and in good working order (i.e., field notes, field logs, photographic equipment, PPE, etc.).

Hollow-stem Auger Drilling

- Advance the borehole to the depth intended for the monitoring well installation, conducting soil sampling and soil profile logging as required by the Sampling and Analysis Plan. The drilling program should record the field measurements and observations required to create the subsequent borehole logs.
- Upon reaching the desired depth, remove the drill bit/central plug, and measure the total depth of the borehole.
- Record the borehole depth, and calculate the intended depth to the top of the screened interval.
- Depending on the nature of the geology, the interior of the hollow-stem augers may be full or empty:
 - If the geologic profile consists of relatively competent material (e.g. heavy clay), such that the borehole is expected to remain open upon removal of the augers, the auger annulus can be left empty.



- If the geologic profile consists of loose material (e.g. wet silt, coarse sand), the auger annulus should be filled with clean potable water (if possible) prior to moving the auger flights.
- Prior to beginning the installation process the necessary well material (PVC well casing segments, sand, bentonite, etc.) should be calculated (based on the borehole depth and completion method) and placed close to the borehole location.
- The diameter of the monitoring well pipe MUST conform to the required separation (as indicated in O.Reg. 903) between the exterior of the well pipe and wellbore diameter.
- While wearing new, clean nitrile gloves assemble the PVC well casing and gradually lower it down the borehole. The well should be constructed using new, clean PVC (both screened and blank sections), which had been stored in individually wrapped plastic sleeves. The PVC sections must be threaded with rubber o-rings around the threaded ends, with no glue or chemical adhesives used to hold the sections together. The bottom of the well should be closed using a threaded end cap (male or female) rather than a slip cap that has been cut or drilled so that the monitoring well will drain completely.
- Once the entire well assembly is in the borehole, measure the stickup and confirm the borehole/well depth. After careful measurement, cut the PVC casing to the desired final height and record the length of any pipe section cut from the top of the monitoring well. Slot the pipe at the top in at least three places to facilitate removal of the top cap.
- Gradually pour silica well sand down the auger annulus, around the PVC casing. While pouring the sand, continually check the depth of the sand using a weighted drop tape to ensure it is rising. When the level of the sand rises to the bottom of the auger bit, stop pouring and raise the augers flights by approximately half of one flight. If the sand level stops rising during the pouring process, stop pouring and check the annulus for bridging.
- Confirm the depth to the sand, and continue alternating adding sand and lifting the auger flights. Continue adding sand until the top of the sand is about 0.3 m above the top of the screened interval.
- After completing the sand pack, either bentonite grout or granular bentonite (in the case of temporary monitoring wells) is to be used to fill the remaining annular space. In the case of bentonite grout, a tremmie pipe should be used to pump the grout into the annulus. The tremmie pipe should be placed no closer than 0.5 m to the top of the sand pack, and the pump set on the lowest setting to inject the grout. Continue injecting the grout, filling from the bottom of the open annulus, until the grout returns reach the surface. In the case of bentonite chips or pellets, while pouring the bentonite continually check the depth of the material using a weighted



drop tape to ensure it is rising. If the bentonite level stops rising during the pouring process, stop pouring and check the annulus for bridging.

- Once the final auger flight is removed, bentonite should be added to the depth indicated by the intended completion method.
 - For an above ground completion, the final level of the sealant should be immediately below the ground surface.
 - For a flush mount completion, the final level of the sealant level should be just below the bottom of the flush mount casing and should be sufficient to prevent entry of surface water and other foreign materials into the well.
- For the well completion:
 - Above ground completion: install the lockable, protective steel well casing while the sealant is still below the top of the borehole annulus. Once the borehole annulus is backfilled, pour bentonite into the steel casing until it is immediately below the opening of the casing. Using a hammer, strike the outside of the steel casing to compact the bentonite chips. Add sand on top of the bentonite, ensuring that the sand level is at least about 0.1 m below the top of the opening of the PVC casing.
 - Flush mount completion: place a thin layer of sand on top of the sealant in the well annulus, and insert the flush mount casing. Cement the outside of the flush mount casing in place, ensuring that the top of the casing is slightly below ground surface (i.e. countersunk).
 - The area around the flush mount casing should be slightly raised to deflect surface run off and help prevent the accumulation of water within the casing.
 - The well tag should be affixed permanently to the outside of the casing or to a permanent structure associated with the well, at a point where the well tag will be visible and will not be obstructed by the well cap, by other components of the well or by equipment associated with the well.

Standard Operating Procedure Soil Field Screening

This standard operating procedure (SOP) outlines the procedures to be followed when conducting field screening as part of any soil sampling programs. This SOP does not address the collection of soil samples for laboratory analysis. This SOP only describes the methods for field screening for volatile (i.e. flammable) organic compounds. Methods for field screening for any other parameters (beyond visual or olfactory indicators) should be developed as part of the Sampling and Analysis Plan.

PREPARATION WORKS

- Review the proposed Sampling and Analyses Plan for the designated site with the project manager to ensure understanding regarding the specific requirements of the field program.
- Field screening for volatile organic compounds (VOCs) will involve use of some form of organic vapour analyzer (OVA). The OVA manual should be consulted prior to beginning the field program to ensure that the instrument is capable of detecting the contaminants of concern, and to determine the appropriate setup and calibration procedures, and to ensure familiarity with the appropriate field handling and measurement procedures.
- Prior to use, the OVA should be calibrated according to the manufacturer's directions, and according to the in-house calibration schedule. Any calibration data or results should be recorded in the official field notes.
- The decision of which areas to sample in the soil profile should be based on both the professional judgment of the field personnel, and the intentions of the Sampling and Analysis Plan. At a minimum, soil samples should be collected for field screening from the areas of "worst" impact.
- Soil samples intended for field screening purposes should be collected in medium to large re-sealable plastic bags, which have been labeled with the sample name, date, and project number. Air should be left in the bag as it is sealed (i.e. do not evacuate the bag as part of the sampling process). The volume of soil collected will depend on the amount available and the remaining sampling requirements, but should not be more than about one-third the volume of the bag.
- Once the soil sample is sealed in the bag, the soil should be broken up (particularly for dense or clay-rich soil) to encourage volatilization of any target compounds.

- The sealed sample bags should be left for a set period of time, which is consistent between samples and boreholes. The time period may vary depending on the requirements of the overall field program (time restraints, space limitations, etc.).
- Turn on the OVA and allow time, as specified by the manufacturer, for the equipment to reach full operational capacity. Perform any necessary pre-reading tests (e.g. zero the instrument).
- Open one corner of the seal on the plastic bag, leaving a hole only big enough to permit entry of the OVA sampling port.
- Insert the OVA sampling port/tube and position the tip in close proximity to the soil sample. Do not touch the soil with the tip of the tube, or allow moisture that may be inside the bag to enter the tube. Also ensure that the plastic bag does not seal off the tip of the sampling probe. During the analysis period the soil in the bag can be gently agitated to encourage volatilization.
- Observe the OVA readout, and track the readings. Once the values have stabilized, or begun to decline after a period of increasing values, record the highest noted value. Following removal of the OVA sampling tube, ensure that the readout returns to the zero value after a period of time.
- The soil sample can then be discarded, or kept for other purposes.



Standard Operating Procedure Soil Sampling

This standard operating procedure (SOP) outlines the procedures to be followed when collected soil samples as part of a hollow-stem borehole drilling program, which uses a split spoon (SS) sampling device to collect soil cores, or soil test pitting program. This SOP does not address the collection of soil samples as part of other types of field programs (e.g., stockpile sampling, hand sampling). Site specific operating procedures should be developed in circumstances where this SOP is not applicable.

This document presumes that the drilling or testing pitting program is being conducted under the supervision of qualified personnel, and that all necessary procedures required as part of the drilling or digging program preparation (e.g. line locating, service clearances, access permission, safety measures) are being followed.

PREPARATION WORKS

- Prior to the travel to the field site necessary field equipment is in good working order and has been properly calibrated.
- Review the proposed Sampling and Analyses Plan for the designated site with the project manager to ensure understanding regarding the specific requirements of the field program.

BOREHOLE DRILLING

- During the drilling process, a clean SS sampling device should be used to collect all soil samples. Following the sample collection, the SS should be cleaned prior to re-use.
- The SS sampler must always be advanced ahead of the hollow-stem drill bit to ensure that an undisturbed soil sample is being collected.
- The SS sampling device should be placed on a clean sampling station upon removal from the borehole. When opening the SS, care should be taken to ensure that collected soil remains within the SS device. Soil falling out of the SS should not be considered for sampling purposes.
- An assessment of the soil profile should be taken from the split spoon core and recorded in the official field notes. A clean sampling device (e.g. knife, hand tool) can be used to expose the soil for profiling.
- Upon completing the soil profile logging, soil samples should be collected from the soil core using the same sampling device. The collected soil should be



transferred directly into the appropriate sample container. Care should be taken to ensure that non-soil material or objects (e.g. the sampling device, tools) do not come into contact with the interior of the sample containers.

- Soil samples should be collected in accordance with the requirements of the sampling and analysis plan. This includes collecting samples for field screening purposes and quality assurance/quality control, if necessary.\
- Upon collection, all samples intended for laboratory analysis should be properly sealed and stored at a temperature of about 4 °C. Samples must be submitted to the laboratory for analysis with the holding times specified by the individual laboratory.



APPENDIX E

Finalized Field Logs and Field Equipment Information

Project: Hasty Tract Phase II		Project Number: 18-107		Client: Township of Springwater		Borehole ID: BH-1/ MW-1	
Project Location: 1132 Snow Valley Road, Springwater, ON				Drilling Contractor: Orbit Garant		Drilling Method: Hollow Coring	
Logged By: I. Acheson		Date: 28-May-2018		Stick-up (mags): 0.83		Well Depth (mbgs): 52.0	
UTM: (NAD 83, Zone 17T)		Ground Elevation (masl):		Water Level (mbgs): 12.41		Well Diameter (mm) 50.8	
Easting: 600481		Well Screen Type:		Riser Pipe Type:		Well Screen Length (m):	
Northing: 4921267		10-Slot PVC, schedule 40		Schedule 40 PVC		1.5	

Depth Below Ground Surface (mbgs)	Sample Type	Sample Number	'N' Value	Lithology	Monitoring Well Construction	Lithology Description
						Soil Group Name: grain size,color, density/consistency, moisture, stratification, other descriptors
						Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.
		1				Topsoil with humus: sandy loam, dark brown, loose, moist (0.0 - 0.1)
		2				Coarse sand with stones, brown, compact & dry (0.1 - 1.35)
2		3				Gravelly Coarse Sand with stones, brown, compact, dry, with thin moist silt bands observed (1.5 - 2.4)
		4				Gravelly Coarse Sand with cobbles, brown, compact, dry (2.2 - 2.75)
		5				Gravelly Coarse Sand with trace silt, brown and grey, compact, moist (3.0 - 4.55)
4		6				Medium/ fine sand, brown with black banding, compact, wet (4.75 - 5.2)
		7				Coarse/ medium sand with small stones, brown with black bands, compact, wet (5.2 - 5.75)
6		8				Alternating layers of medium/ fine sand and coarse/ medium sand approximately 0.05 - 0.20m thick, brown with black banding, compact, wet (6.15 - 7.95)
		9				Silt and fine sand, red brown, compact, wet (7.95 - 8.0)
8		10				Medium/ fine sand, brown, compact, wet (8.25 - 8.5)
		11				Coarse sand, brown and beige, compact, wet (8.8 - 8.95)
		12				Alternating layers of medium/ fine sand and coarse/ medium sand with small silt balls approximately 0.05 - 0.45m thick, brown and beige, compact, wet (8.95 - 10.1)
10		13				Stones, grey, dary grey, pink (10.2 - 10.3)
		14				Rounded and angular pea stone gravel, grey, dark grey, white, red, pink with trace medium sand (10.3 - 12.1)
12		15				Gravel, silt and medium sand, beige and light grey, compact, wet (12.3 - 13.0)



Ground Water Level Upon Well Completion (mbgs)

Seal (grout / hole plug)



Silica Sand Pack



Well Screen

Project:	Hasty Tract Phase II	Project Number:	18-107	Client:	Township of Springwater	Borehole ID:	BH-1/ MW-1
Project Location:	1132 Snow Valley Road, Springwater, ON			Drilling Contractor:	Orbit Garant	Drilling Method:	Hollow Coring
Logged By:	I. Acheson	Date:	28-May-2018	Stick-up (mags):	0.83	Well Depth (mbgs):	52.0
UTM:	(NAD 83, Zone 17T)	Ground Elevation (masl):		Water Level (mbgs):	12.41	Well Diameter (mm)	50.8
Easting:	600481	Well Screen Type:	10-Slot PVC, schedule 40	Riser Pipe Type:	Schedule 40 PVC	Well Screen Length (m):	1.5
Northing:	4921267						

Depth Below Ground Surface (mbgs)	Sample Type	Sample Number	'N' Value	Lithology	Monitoring Well Construction	Lithology Description
						Soil Group Name: grain size,color, density/consistency, moisture, stratification, other descriptors
						Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.
						BH-1 Continued
		15				Gravel, silt and medium sand, beige and light grey, compact, wet (12.3 - 13.0)
14		16				Medium/ fine sand with gravel and small stones, brown and beige, compact, wet (14.0 - 14.4)
		17				Coarse sand with small stones, brown and beige, compact, wet (14.4 - 14.6)
		18				Coarse sand with small stones, brown and beige, compact, wet (15.3 - 15.7)
16		19				Medium/ fine sand, brown, compact, wet (15.95 - 16.05)
		20				Gravel (16.6 - 16.8)
		21				Coarse sand with small silt balls and gravel, beige, compact, wet (16.8 - 17.5)
		22				
18		23				Stones and gravel (18.1 - 18.3)
		24				Medium/ fine sand with gravel and small stones, beige, compact, wet (18.3 - 19.1)
		25				Stones and gravel (19.1 - 19.3)
20		26				
		27				Large stones and cobbles (20.2 - 20.5)
		28				Medium/ fine sand, beige, compact, wet (21.1 - 21.9)
22		29				Large stones and gravel (22.6 - 22.9)
		30				Medium/ fine sand with stones and gravel, beige, compact, wet (22.9 - 23.6)
		31				Stones and gravel (23.7 - 24.0)
24		32				Medium/ fine sand with small redish silt balls, beige, compact, wet (24.0 - 24.1)



Ground Water Level Upon Well Completion (mbgs)

Seal (grout / hole plug)



Silica Sand Pack



Well Screen

Project:	Hasty Tract Phase II	Project Number:	18-107	Client:	Township of Springwater	Borehole ID:	BH-1/ MW-1
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Logged By:	I. Acheson	Date:	28-May-2018	Stick-up (mags):	0.83	Well Depth (mbgs):	52.0
UTM:	(NAD 83, Zone 17T)	Ground Elevation (masl):		Water Level (mbgs):	12.41	Well Diameter (mm)	50.8
Easting:	600481	Well Screen Type:	10-Slot PVC, schedule 40	Riser Pipe Type:	Schedule 40 PVC	Well Screen Length (m):	1.5
Northing:	4921267						

Depth Below Ground Surface (mbgs)	Sample Type	Sample Number	'N' Value	Lithology	Monitoring Well Construction	Lithology Description
						Soil Group Name: grain size,color, density/consistency, moisture, stratification, other descriptors
						Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.
		33				BH-1 Continued
		34				Medium/ fine sand with small redish silt balls, beige, compact, wet (24.0 - 24.1)
		35				Cobbles, stones and gravel (24.1 - 24.5)
26		36				Coarse sand with some gravel, beige, compact, wet (24.5 - 24.9)
		37				Cobbles, stones and gravel (24.5 - 25.1)
		38				Coarse sand with small silt balls, and cobbles and gravel, beige, compact,
		39				wet (25.1 - 25.6)
28		40				Alternating layers of coarse sand with cobbles and gravel, beige, compact, wet, and cobbles, stones and gravel (25.6 - 28.5)
						Alternating layers of medium/ fine sand with cobbles and gravel, beige, compact, wet, and cobbles, stones and gravel (28.5 - 30.1)
30		41				Fine sand with trace silt, grey, compact, wet (30.4 - 31.1)
		42				
						Fine sand with trace silt, grey, compact, wet (31.8 - 32.8)
32		43				
						Fine sand interlain with silty clay bands (~0.005 m thick), grey, compact, wet (32.7 - 34.4)
34		44				Alternating layers of fine sand, beige, compact, wet, and clayey silt, grey, soft, moist (34.4 - 35.6)
		45				Clayey silt bands becoming redish (35.4 - 35.6)
36		46				Fine sand, grey compact, wet with clayey silt bands, grey, firm, moist (36.1 - 36.6)



Ground Water Level Upon Well Completion (mbgs)

Seal (grout / hole plug)



Silica Sand Pack



Well Screen

Project: Hasty Tract Phase II	Project Number: 18-107	Client: Township of Springwater	Borehole ID: BH-1/ MW-1
Project Location: 1132 Snow Valley Road, Springwater, ON	Drilling Contractor: Orbit Garant	Drilling Method: Hollow Coring	
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UTM: (NAD 83, Zone 17T)	Ground Elevation (masl):	Water Level (mbgs): 12.41	Well Diameter (mm) 50.8
Easting: 600481	Well Screen Type:	Riser Pipe Type:	Well Screen Length (m):
Northing: 4921267	10-Slot PVC, schedule 40	Schedule 40 PVC	1.5

Depth Below Ground Surface (mbgs)	Sample Type	Sample Number	'N' Value	Lithology	Monitoring Well Construction	Lithology Description
						Soil Group Name: grain size,color, density/consistency, moisture, stratification, other descriptors
						Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.
		46				BH-1 Continued
						Fine sand, grey compact, wet with clayey silt bands, grey, firm, moist (36.1 - 36.6)
38		47				Fine sand, grey with black bands, compact, wet (36.6 - 38.0)
						Fine sand, grey with black bands, compact, wet with clayey silt bands (~0.005 m thick), grey, firm, moist (36.6 - 39.1)
		48				
40						Alternating layers of medium sand, grey, dense, moist, and silty clay, grey, stiff, moist (39.1 - 40.5)
						Trace stones observed (41.7)
		49				Alternating layers of medium sand, grey, dense, dry, and silty clay, grey, dry, moist (40.5 - 42.1)
42		50				
						Rhythmically bedded silt and clay, grey, very stiff, dry (42.1 - 46.6)
44		51				
		52				
46						
						Rhythmically bedded silt and clay, grey, firm, moist (46.6 - 48.1)
		53				
48		54				Silt and clay, grey, firm, moist interlain with silt sand diamicton, grey, compact, wet (48.1 - 48.9)



Ground Water Level Upon Well Completion (mbgs)

Seal (grout / hole plug)



Silica Sand Pack



Well Screen



Seal (grout / hole plug)



Page 5 of 5



Fill



topsoil



Clay



Silt



Sand



Silty Sand



Sandy Silt



Silty Clay



Till

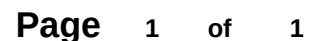


Bedrock



Top of Water

Depth Below Ground Surface (mbgs)	Sample Type	Sample Number	'N' Value	Lithology	Monitoring Well Construction	Lithology Description
						Soil Group Name: grain size,color, density/consistency, moisture, stratification, other descriptors
						Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.
						Topsoil with humus: sandy loam, dark brown, compact, moist (at surface)
						Cored continuously to 25.6 mbgs
26		1				Small stones, grey, dark grey, white, red, and pink, wet (25.6 - 26.1)
						Coarse gravelly sand, dense, beige, wet (26.1 - 26.7)
		2				Coarse gravelly sand, dense, beige, wet (27.4 - 27.85)
28						
						Cored continuously to 30.1 mbgs
30		3				Silt with fine sand banding, grey, soft, wet (30.1 - 30.25)
		4				Fine sand with trace silt, grey with black bands, dense, wet (30.25 - 30.35)
		5				Alternating silt and fine sand layers, grey, soft and dense, wet (30.35 - 30.5)
		6				Fine sand, grey with black bands, dense, wet (30.5 - 30.6)
32		7				Silt with fine sand banding, grey, soft, wet (30.6 - 30.7)
						End of BH-2 at 30.7 mbgs
34						
36						



Seal (grout / hole plug)



Page 1 of 1

 **Ground Water Level Upon Well Completion (mbgs)**

Seal (grout / hole plug) **Silica Sand Pack** **Well Screen**

Page 1 of 1

Ground Water Level Upon Well Completion (mbgs)

Seal (grout / hole plug) **Silica Sand Pack** **Well Screen**

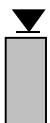
Depth Below Ground Surface (mbgs)	Sample Type	Sample Number	'N' Value	Lithology	Monitoring Well Construction	Lithology Description
						Soil Group Name: grain size,color, density/consistency, moisture, stratification, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.
						BH-5 Continued
						Augered continuously to 32.7 mbgs
32			10			
			11			Alternating fine sand, brown, dense, wet and silt with trace fine sand and clay, brown, firm, wet (32.7 - 32.85)
34			12			Alternating fine sand, grey, dense, wet and silt with trace fine sand and clay, grey, firm, wet (32.85 - 35.0)
			13			
						End of BH-5 at 35.0 mbgs
36						
38						
40						
42						



The diagram illustrates the components of a well and the groundwater level. At the top, a downward-pointing triangle indicates the **Ground Water Level Upon Well Completion (mbgs)**. Below this, the well structure is shown with three main sections: a **Seal (grout / hole plug)** at the top, a **Silica Sand Pack** in the middle, and a **Well Screen** at the bottom. The well screen is depicted as a vertical pipe with horizontal slots. The groundwater level is shown as a horizontal line with a triangle pointing down, intersecting the well structure.

Project: Hasty Tract Phase II		Project Number: 18-107		Client: Township of Springwater		Borehole ID: BH-7/ MW-7	
Project Location: 1132 Snow Valley Road, Springwater, ON				Drilling Contractor: Orbit Garant		Drilling Method: Hollow Stems with Split Spoons	
Logged By: I. Acheson		Date: 19-Jun-2018		Stick-up (mags):		Well Depth (mbgs): 35.0	
UTM: (NAD 83, Zone 17T)		Ground Elevation (masl):		Water Level (mbgs): 8.51		Well Diameter (mm) 50.8	
Easting:		Well Screen Type: 10-Slot PVC, schedule 40		Riser Pipe Type: Schedule 40 PVC		Well Screen Length (m): 3	
Northing:							

Depth Below Ground Surface (mbgs)	Sample Type	Sample Number	'N' Value	Lithology	Monitoring Well Construction	Lithology Description
						Soil Group Name: grain size,color, density/consistency, moisture, stratification, other descriptors
						Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.
16	1					Topsoil: sandy loam with humus, dark brown, loose, moist (at surface)
						Augered continuously to 16.7 mbgs
						Encountered cobbles and gravel at 2.4 - 4.0 mbgs
						Boulder encountered at 4.6 mbgs
						Medium sand, beige, dense, wet (16.7 - 18.8)
18	2					Silt band (~0.01 m thick), beige, firm, moist (17.6)
	3					Medium/ fine sand, beige with black bands, dense, wet (18.8 - 20.5)
	4					Silt band (~0.01 m thick), redish brown, firm, moist (19.3)
20	5					Silt band (~0.01 m thick), redish brown, firm, moist (19.35)
						Silt band (~0.01 m thick), redish brown, firm, moist (19.7)
						Silt band (~0.01 m thick), redish brown, firm, moist (19.9)
22						
						Augered continuously to 33.5 mbgs
24						
26						



Ground Water Level Upon Well Completion (mbgs)

Seal (grout / hole plug)



Silica Sand Pack



Well Screen

Depth Below Ground Surface (mbgs)	Sample Type	Sample Number	'N' Value	Lithology	Monitoring Well Construction	Lithology Description
						Soil Group Name: grain size,color, density/consistency, moisture, stratification, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.
						BH-7 Continued
						Augered continuously to 33.5 mbgs
32						
		6				Fine sand, grey, dense, wet interlin with silt bands, grey, stiff, wet (33.5 - 33.9)
		7				Fine sand, brown, dense, wet interlin with silt bands, brown and beige, stiff,
34		8				wet (33.9 - 34.3)
		9				Medium/ fine sand, grey and beige, dense, wet (34.3 - 34.6)
						Silt, redish brown, stiff, wet (34.6 - 34.8)
						Medium/ fine sand, grey and beige, dense, wet (34.8 - 35.0)
36						End of BH-7 at 35.0 mbgs
38						
40						
42						



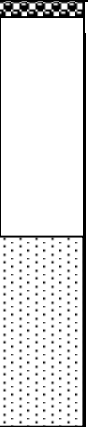
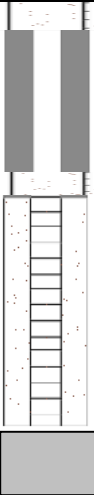
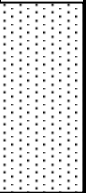
[illegible]

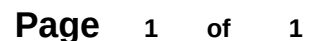


Seal (grout / hole plug)

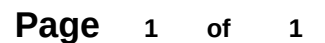


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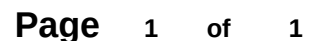
Depth Below Ground Surface (mbgs)	Sample Type	Sample Number	'N' Value	Lithology	Monitoring Well Construction	Lithology Description
8		1				Topsoil: sandy loam, dark brown, loose, dry (at surface)
						Augered continuously to 9.1 mbgs
						Encountered cobbles and gravel at 1.8 - 2.7 mbgs
10		2				Medium/ fine sand, beige with black banding, dense, dry (9.1 - 9.9)
						Medium/ fine sand, beige with black and orange banding, dense, moist (9.9 - 10.65)
						Medium/ fine sand, beige with black and orange banding, dense, wet (10.65 - 11.4)
12		3				End of BH-10 at 11.4 mbgs
14						
16						
18						



Depth Below Ground Surface (mbgs)	Sample Type	Sample Number	'N' Value	Lithology	Monitoring Well Construction	Lithology Description
						Soil Group Name: grain size,color, density/consistency, moisture, stratification, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.
8		1				Topsoil: sandy loam, dark brown, loose, dry (at surface)
						Augered continuously to 9.1 mbgs
						Encountered cobbles and gravel at 0.3 - 4.6 mbgs
10		2				Medium/ fine sand, beige with black banding, dense, moist (9.1 - 9.8)
						Medium/ fine sand, beige with black banding, dense, wet (9.8 - 10.65)
		3				Gravel and cobbles observed at 10.3 - 10.4 mbgs
12						End of BH-11 at 10.65 mbgs
14						
16						
18						



Depth Below Ground Surface (mbgs)	Sample Type	Sample Number	'N' Value	Lithology	Monitoring Well Construction	Lithology Description
						Soil Group Name: grain size,color, density/consistency, moisture, stratification, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.
8		1				Topsoil: sandy loam, dark brown, loose, dry (at surface)
		2				Augered continuously to 8.4 mbgs
		3				Encountered cobbles and gravel at 1.2 - 2.7 mbgs
10						Fine sand with trace silt, beige with black banding, dense, dry (8.4 - 9.45)
						Medium/ fine sand with trace silt, beige with black banding, dense, wet (9.45 - 9.6)
12						Cobbles and gravel at 9.6 - 9.9 mbgs
						Coarse sand with trace silt and stones, beige, dense, wet (9.9 - 10.6)
14						End of BH-12 at 10.6 mbgs
16						
18						



Project: Hasty Tract Phase II		Project Number: 18-107		Client: Township of Springwater		Borehole ID: BH-13/ MW-13	
Project Location: 1132 Snow Valley Road, Springwater, ON				Drilling Contractor: Orbit Garant		Drilling Method: Hollow Stems with Split Spoons	
Logged By: I. Acheson		Date: 26-Jun-2018		Stick-up (mags):		Well Depth (mbgs): 10.7	
UTM: (NAD 83, Zone 17T) Easting: Northing:		Ground Elevation (masl):		Water Level (mbgs): 10.00		Well Diameter (mm) 50.8	
		Well Screen Type: 10-Slot PVC, schedule 40		Riser Pipe Type: Schedule 40 PVC		Well Screen Length (m): 3	
Depth Below Ground Surface (mbgs)	Sample Type	Sample Number	'N' Value	Lithology	Monitoring Well Construction	Lithology Description	
						Soil Group Name: grain size,color, density/consistency, moisture, stratification, other descriptors Rock Description: modifier, color, hardness/degree of concentration, bedding and joint characteristics, solutions, void conditions.	
6		1 2				Topsoil: sandy loam, brown, loose, dry (at surface)	
						Augered continuously to 8.4 mbgs	
						Encountered cobbles and gravel at 0.6 - 7.3 mbgs	
8						Medium/ fine sand with trace silt, beige with black banding, dense, moist (8.4 - 9.0)	
						Medium/ fine sand with trace silt, beige with black banding, dense, wet (9.0 - 9.9)	
10						End of BH-13 at 9.9 mbgs	
12							
14							
16							



Ground Water Level Upon Well Completion (mbgs)

Seal (grout / hole plug)



Silica Sand Pack



Well Screen

Soil Borehole Organic Vapour Analyzer Measurements

PROJECT NO: 18-107

Borehole	Sample Depth (m)	OVA Reading (ppm)	Borehole	Sample Depth (m)	OVA Reading (ppm)
BH-1	51.1 - 51.9	1060	BH-2	30.1 - 30.25	5
				30.25 - 30.35	10
				30.35 - 30.5	20
				30.5 - 30.55	15
				30.55 - 30.7	85
BH-4	15.2 - 16.0	150	BH-5	51.0 - 51.75	40
				51.75 - 16.5	25
				16.5 - 17.3	55
				17.3 - 18.0	20
				18.0 - 18.8	30
				30.55 - 30.7	0
				30.7 - 31.2	25
				31.3 - 30.5	20
				31.9 - 32.7	65
				32.7 - 32.9	0
				32.9 - 33.5	25
				33.5 - 34.2	60
				34.2 - 35.0	15
BH-6	16.8 - 17.5	30	BH-7	16.7 - 17.5	100
	17.5 - 18.2	20		17.5 - 18.2	60
	18.2 - 19.05	55		18.2 - 19.0	60
				19.0 - 19.8	5
				19.8 - 20.50	5
				33.5 - 33.9	90
				33.9 - 34.3	95
				34.3 - 35.0	105
BH-8	18.3 - 19.05	45	BH-10	9.1 - 9.9	15
	19.05 - 19.8	35		9.9 - 10.65	35
	19.8 - 20.6	35		10.65 - 11.4	35
	20.6 - 21.7	30			
BH-11	9.1 - 9.9	15	BH-12	8.4 - 9.1	0
	9.9 - 10.65	5		9.1 - 9.6	5
				9.9 - 10.6	5
BH-13	8.4 - 9.1	55			
	9.1 - 9.9	95			

Gas	Measuring Range	Accuracy * Which ever is greater
Standard Confined Space Gases		
Hydrocarbons (CH ₄ , std)	0 - 100% LEL	± 5% of reading or ± 2% LEL (*)
	0 - 50,000 ppm	± 50 ppm or ± 10% of reading (*)
Oxygen (O ₂)	0 - 40% Vol.	± 0.5% O ₂
Carbon Monoxide (CO)	0 - 500 ppm	± 5% of reading or ± 5 ppm CO (*)
Hydrogen Sulfide (H ₂ S)	0 - 100 ppm	± 5% of reading or ± 2 ppm H ₂ S (*)
Super Toxics and Other Gases		
Ammonia (NH ₃)	0 - 75 ppm	± 10% of reading or ± 5% of full scale (*)
Arsine (AsH ₃)	0 - 1 ppm 0 - 200 ppb	
Chlorine (Cl ₂)	0 - 3 ppm	
Chlorine Dioxide (ClO ₂)	0 - 1 ppm	
Fluorine (F ₂)	0 - 5 ppm	
Hydrogen Fluoride (HF)	0 - 9 ppm	
Hydrogen Chloride (HCl)	0 - 15 ppm	
Hydrogen Cyanide (HCN)	0 - 30 ppm	
Hydrogen Selenide (H ₂ Se)	0 - 0.2 ppm	
Hydrogen Sulfide (H ₂ S)	0 - 1 ppm 0 - 30 ppm	
Nitrogen Dioxide (NO ₂)	0 - 15 ppm	
Ozone (O ₃)	0 - 1 ppm	
Nitric Oxide (NO)	0 - 100 ppm	
Phosphine (PH ₃)	0 - 1 ppm	
Silane (SiH ₄)	0 - 15 ppm	

Sulfur Dioxide (SO ₂)	0 - 6 ppm	
IR Sensors		
Carbon Dioxide (CO ₂) (IR Sensor)	0 - 5,000 ppm 0 - 10,000 ppm 0 - 5% Vol. 0 - 20% Vol. 0 - 60% Vol.	± 5% of reading or ± 2% of full scale (*)
Methane (CH ₄) (IR Sensor)	0 - 100% LEL 0 - 100% Vol.	
Isobutane (iC ₄ H ₁₀) (IR Sensor)	0 - 100% LEL 0 - 30% Vol.	



APPENDIX F

Tables

Table 1

Well Information and Water Level Measurements

PROJECT NO: 18-107										
Well Name	Well Depth (m btoc)	Stickup (m ags)	Well Depth (m bgs)	Screened Interval (m bgs)	Ground Elevation* (m rtd)	Casing Elevation* (m rtd)	Date (d-m-y)	Water Level (m btoc)	Water Level (m bgs)	Water Level (m rtd)
MW-1	53.37	0.83	52.54	51.0 - 52.5	239.87	240.70	04-Jun-18	12.41	11.58	228.29
							30-Aug-18	12.81	11.98	227.89
MW-2	31.90	0.92	30.98	28.9 - 31.9	239.78	240.70	08-Jun-18	10.84	9.92	229.86
							30-Aug-18	11.09	10.17	229.61
MW-4	12.81	1.05	11.76	8.8 - 12.8	239.15	240.20	13-Jun-18	10.18	9.13	230.02
							30-Aug-18	10.50	9.45	229.70
MW-5	35.85	0.91	34.94	32.8 - 35.8	240.59	241.50	15-Jun-18	10.53	9.62	230.97
							30-Aug-18	11.90	10.99	229.60
MW-6	19.92	0.96	18.96	18.4 - 19.9	240.44	241.40	18-Jun-18	11.87	10.91	229.53
							30-Aug-18	12.05	11.09	229.35
MW-7	35.58	0.89	34.69	32.5 - 35.5	240.31	241.20	21-Jun-18	8.51	7.62	232.69
							30-Aug-18	12.07	11.18	229.13
MW-8	22.57	0.98	21.59	21.1 - 22.6	240.22	241.20	25-Jun-18	12.25	11.27	228.95
							30-Aug-18	13.29	12.31	227.91
MW-10	12.10	0.87	11.23	9.1 - 12.1	239.03	239.90	26-Jun-18	10.99	10.12	228.91
							30-Aug-18	11.16	10.29	228.74
MW-11	13.03	0.95	12.08	10.0 - 13.0	239.25	240.20	26-Jun-18	10.27	9.32	229.93
							30-Aug-18	10.53	9.58	229.67
MW-12	12.29	0.92	11.37	9.3 - 12.3	239.58	240.50	26-Jun-18	10.62	9.70	229.88
							30-Aug-18	10.89	9.97	229.61
MW-13	11.39	0.93	10.46	8.4 - 11.4	239.17	240.10	27-Jun-18	10.00	9.07	230.10
							30-Aug-18	10.30	9.37	229.80

NOTES: m btoc - metres below top of casing
m bgs - metres below ground surface
m ags - metres above ground surface
- not applicable
*wells and ground surface surveyed Sept 12, 2018 by Rudy Mac Surveying Ltd.

Table 2
Soil Quality Analytical Results: Metals

PROJECT NO: 18-107

PROJECT NO: 18-107																					
Borehole Number and Sample ID	Sample Depth (mbgl)	Sampling Date (d-m-y)	Analytical Reference Number	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc
				(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)
Table 1 (O.Reg. 153/04*)				1.3	18	220	2.5	36	1.2	70	21	92	120	2	82	1.5	0.5	1	2.5	86	290
Table 2 (O.Reg. 153/04***)				7.5	18	390	4	120	1.2	160	22	140	120	6.9	100	2.4	20	1	23	86	340
BH-1-57	51.1 - 52.0	01-Jun-18	9300610			62	<0.5	<5	<0.5	7	2	6	2	<0.5	4		0.3	<0.4	<0.5	18	11
BH-4-1	15.2 - 16.0	08-Jun-18	9331800	<0.8	<1	18	<0.5	<5	<0.5	6	1	3	3	1	3	<0.4	<0.2	<0.4	<0.5	14	6
BH-10-2	9.9 -10.7	14-Jun-18	9360007	<0.8	<1	9	<0.5	<5	<0.5	4	1	3	<1	<0.5	2	<0.4	<0.2	<0.4	<0.5	10	6
BH-10-2-1	Dup	20-Jun-18	9360008	<0.8	<1	9	<0.5	<5	<0.5	4	1	3	<1	<0.5	2	<0.4	<0.2	<0.4	<0.5	10	6
BH-11-1	9.1 - 9.8	20-Jun-18	9365461	<0.8	1	8	<0.5	<5	<0.5	3	1	3	<1	<0.5	3	<0.4	<0.2	<0.4	<0.5	10	5
BH-12-3	9.5 - 9.6	21-Jun-18	9365465	<0.8	2	46	<0.5	<5	<0.5	9	4	8	2	<0.5	7	<0.4	<0.2	<0.4	<0.5	23	19
BH-13-2	9.0 - 9.9	25-Jun-18	9365492	<0.8	1	8	<0.5	<5	<0.5	3	1	2	<1	<0.5	2	<0.4	<0.2	<0.4	<0.5	9	<5

Notes:

Numbers rounded for presentation purposes

- * denotes O.Reg. 153/04 Table 1 soil standards for residential/ parkland/ institutional/ industrial/ commercial/ community property use.**
- *** denotes O.Reg. 153/04 Table 2 soil standards for coarse grained soil for resident/ parkland/ institutional property use.**

3. Green shading indicate parameters with a measurable value.

4. Yellow shading indicate parameters above the Table 1 guidelines.

5. Red shading indicate parameters above Table 2 guidelines.

Table 3

Soil Quality Analytical Results: TPH

PROJECT NO: 18-107

PROJECT NO: 18-107								
Borehole Number and Sample ID	Sample Depth (mbgl)	Sampling Date (d-m-y)	Analytical Reference Number	F ₁ (C ₆ to C ₁₀) (µg/g)	F ₁ (C ₆ to C ₁₀) minus BTEX (µg/g)	F ₂ (C ₁₀ to C ₁₆) (µg/g)	F ₃ (C ₁₆ to C ₃₄) (µg/g)	F ₄ (C ₃₄ to C ₅₀) (µg/g)
Table 1 (O.Reg. 153/04*)				25	10	240	120	
Table 2 (O.Reg. 153/04***)				55	98	300	2800	
BH-1-57	51.1 - 52.0	01-Jun-18	9300610	<5	<5	<10	<50	<50
BH-4-1	15.2 - 16.0	08-Jun-18	9331800	<5	<5	<10	<50	<50
BH-10-2	9.9 -10.7	14-Jun-18	9360007	<5	<5	<10	<50	<50
BH-10-2-1	Dup	20-Jun-18	9360008	<5	<5	<10	<50	<50
BH-11-1	9.1 - 9.8	20-Jun-18	9365461	<5	<5	<10	<50	<50
BH-12-3	9.5 - 9.6	21-Jun-18	9365465	<5	<5	<10	<50	<50
BH-13-2	9.0 - 9.9	25-Jun-18	9365492	<5	<5	<10	<50	<50

Notes:

Numbers rounded for presentation purposes

Only parameters that were detection are shown as well as chlorinated ethanes and ethenes

*1. * denotes O.Reg. 153/04 Table 1 soil standards for residential/ parkland/ institutional/ industrial/ commercial/ community property use.*

*2. *** denotes O.Reg. 153/04 Table 2 soil standards for coarse grained soil for resident/ parkland/ institutional property use.*

3. Green shading indicate parameters with a measurable value.

4. Yellow shading indicate parameters above the Table 1 guidelines.

5. Red shading indicate parameters above Table 2 guidelines.

Table 4
Soil Quality Analytical Results: VOCs

PROJECT NO: 18-107																																														
Borehole Number and Sample ID	Sample Depth (mbgl)	Sampling Date (d-m-y)	Analytical Reference Number																																											
				Dichlorodifluoromethane	Vinyl Chloride	Bromomethane	Trichlorofluoromethane	Acetone	1,1-Dichloroethene	Dichloromethane (methylene chloride)	trans-1,2-Dichloroethene	Methyl tert-Butyl Ether	1,1-Dichloroethane	Methyl Ethyl Ketone	cis-1,2-Dichloroethene	Chloroform	1,2-Dichloroethane	1,1,1-Trichloroethane	Carbon Tetrachloride	Benzene	1,2-Dichloropropane	Trichloroethene	Bromodichloromethane	Methyl Isobutyl Ketone	1,1,2-Trichloroethane	Toluene	Dibromochloromethane	Ethylene Dibromide	Tetrachloroethene	1,1,1,2-Tetrachloroethane	Chlorobenzene	Ethylbenzene	Bromoform	Styrene	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene	1,3-Dichloropropene (cis+trans)	Total Xylenes	n-Hexane					
				(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)	(µg/g)				
Table 1 (O.Reg. 153/04*)				0.05	0.02	0.05	0.25	0.5	0.05	0.05	0.05	0.05	0.05	0.5	0.05	0.05	0.05	0.05	0.05	0.05	0.02	0.05	0.05	0.05	0.5	0.05	0.2	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05		
Table 2 (O.Reg. 153/04***)				16	0.02	0.05	4	16	0.05	0.1	0.084	0.75	0.47	16	1.9	0.05	0.05	0.38	0.05	0.21	0.05	0.061	1.5	1.7	0.05	2.3	2.3	0.05	0.28	0.058	2.4	1.1	0.27	0.7	0.05	4.8	0.083	1.2	0.05	3.1	2.8					
BH-1-57	51.1 - 52.0	01-Jun-18	9300610	<0.05	<0.02	<0.05	<0.05	<0.50	<0.05	<0.05	<0.05	<0.05	<0.02	<0.50	<0.02	<0.04	<0.03	<0.05	<0.05	1.1	<0.03	<0.03	<0.05	<0.50	<0.04	0.3	<0.05	<0.04	<0.05	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04	<0.05	<0.05	<0.05			
BH-4-1	15.2 - 16.0	08-Jun-18	9331800	<0.05	<0.02	<0.05	<0.05	<0.50	<0.05	<0.05	<0.05	<0.05	<0.02	<0.50	<0.02	<0.04	<0.03	<0.05	<0.05	<0.02	<0.03	<0.03	<0.05	<0.50	<0.04	<0.05	<0.05	<0.04	<0.05	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04	<0.05	<0.05	<0.05	
BH-5-13	34.2 - 35.0	14-Jun-18	9334482	<0.05	<0.02	<0.05	<0.05	<0.50	<0.05	<0.05	<0.05	<0.05	<0.02	<0.50	<0.02	<0.04	<0.03	<0.05	<0.05	<0.02	<0.03	<0.03	<0.05	<0.50	<0.04	<0.05	<0.05	<0.04	<0.05	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04	<0.05	<0.05	<0.05
BH-7-8	34.3 - 34.7	20-Jun-18	9352280	<0.05	<0.02	<0.05	<0.05	<0.50	<0.05	<0.05	<0.05	<0.05	<0.02	<0.50	<0.02	<0.04	<0.03	<0.05	<0.05	<0.02	<0.03	<0.03	<0.05	<0.50	<0.04	<0.05	<0.05	<0.04	<0.05	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04	<0.05	<0.05	<0.05	
BH-7-8-1	Dup	20-Jun-18	9352282	<0.05	<0.02	<0.05	<0.05	<0.50	<0.05	<0.05	<0.05	<0.05	<0.02	<0.50	<0.02	<0.04	<0.03	<0.05	<0.05	<0.02	<0.03	<0.03	<0.05	<0.50	<0.04	<0.05	<0.05	<0.04	<0.05	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04	<0.05	<0.05	<0.05	
BH-8-4	20.6 - 21.3	21-Jun-18	9355903	<0.05	<0.02	<0.05	<0.05	<0.50	<0.05	<0.05	<0.05	<0.05	<0.02	<0.50	<0.02	<0.04	<0.03	<0.05	<0.05	<0.02	<0.03	<0.03	<0.05	<0.50	<0.04	<0.05	<0.05	<0.04	<0.05	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04	<0.05	<0.05	<0.05
BH-10-2	9.9 -10.7	25-Jun-18	9360007	<0.05	<0.02	<0.05	<0.05	<0.50	<0.05	<0.05	<0.05	<0.05	<0.02	<0.50	<0.02	<0.04	<0.03	<0.05	<0.05	<0.02	<0.03	<0.03	<0.05	<0.50	<0.04	<0.05	<0.05	<0.04	<0.05	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04	<0.05	<0.05	<0.05	
BH-10-2-1	Dup	25-Jun-18	9360008	<0.05	<0.02	<0.05	<0.05	<0.50	<0.05	<0.05	<0.05	<0.05	<0.02	<0.50	<0.02	<0.04	<0.03	<0.05	<0.05	<0.02	<0.03	<0.03	<0.05	<0.50	<0.04	<0.05	<0.05	<0.04	<0.05	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04	<0.05	<0.05	<0.05	
BH-11-1	9.1 - 9.8	26-Jun-18	9365461	<0.05	<0.02	<0.05	<0.05	<0.50	<0.05	<0.05	<0.05	<0.05	<0.02	<0.50	<0.02	<0.04	<0.03	<0.05	<0.05	<0.02	<0.03	<0.03	<0.05	<0.50	<0.04	<0.05	<0.05	<0.04	<0.05	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04	<0.05	<0.05	<0.05	
BH-12-3	9.5 - 9.6	26-Jun-18	9365465	<0.05	<0.02	<0.05	<0.05	<0.50	<0.05	<0.05	<0.05	<0.05	<0.02	<0.50	<0.02	<0.04	<0.03	<0.05	<0.05	<0.02	<0.03	<0.03	<0.05	<0.50	<0.04	<0.05	<0.05	<0.04	<0.05	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04	<0.05	<0.05	<0.05	
BH-13-2	9.0 - 9.9	26-Jun-18	9365492	<0.05	<0.02	<0.05	<0.05	<0.50	<0.05	<0.05	<0.05	<0.05	<0.02	<0.50	<0.02	<0.04	<0.03	<0.05	<0.05	<0.02	<0.03	<0.03	<0.05	<0.50	<0.04	<0.05	<0.05	<0.04	<0.05	<0.04	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.04	<0.05	<0.05	<0.05	

Notes:

Numbers rounded for presentation purposes

1. * denotes O.Reg. 153/04 Table 1 soil standards for residential/ parkland/ institutional/ industrial/ commercial/ community property use.

2. *** denotes O.Reg. 153/04 Table 2 soil standards for coarse grained soil for resident/ parkland/ institutional property use.

3. Green shading indicate parameters with a measurable value.

4. Yellow shading indicate parameters above the Table 1 guidelines.

5. Red shading indicate parameters above Table 2 guidelines.

Table 5
Ground Water Quality Analytical Results: Metals

PROJECT NO: 18-107

PROJECT NO: 18-107																					
Borehole Number and Sample ID	Sampling Date (d-m-y)	Analytical Reference Number	Antimony	Arsenic	Barium	Beryllium	Boron	Cadmium	Chromium	Cobalt	Copper	Lead	Molybdenum	Nickel	Selenium	Silver	Thallium	Uranium	Vanadium	Zinc	
			(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Table 1 (O.Reg. 153/04*)			1.5	13	610	0.5	1700	0.5	11	3.8	5	1.9	23	14	5	0.3	0.5	8.9	3.9	160	
Table 2 (O.Reg. 153/04***)			6	25	1000	4	5000	2.7	50	3.8	87	10	70	100	10	1.2	2	20	6.2	1100	
MW-1	04-Jun-18	9300611			44.3	<0.5	20.7	<0.2	5.4	<0.5	7.7	<0.5	0.7	<1.0		<0.2	<0.3	<0.5	1.2	8.4	
MW-4	13-Jun-18	9331805	<1.0	1.3	95.3	<0.5	25.6	<0.2	10.5	<0.5	4.3	<0.5	<0.5	<1.0	3.6	<0.2	<0.3	<0.5	2.0	5.3	
MW-10	26-Jun-18	9360010	<1.0	<1.0	43.8	<0.5	16.2	<0.2	<2.0	<0.5	4.1	<0.5	1.5	<1.0	<1.0	<0.2	<0.3	<0.5	<0.4	7.1	
MW-10-1	DUP	9360012	<1.0	<1.0	43.7	<0.5	15.4	<0.2	<2.0	<0.5	<1.0	<0.5	1.6	<1.0	<1.0	<0.2	<0.3	<0.5	<0.4	<5.0	
MW-11	26-Jun-18	9365477	<1.0	<1.0	117.0	<0.5	21.6	<0.2	2.2	<0.5	4.4	<0.5	4.7	1.1	<1.0	<0.2	<0.3	<0.5	0.9	5.6	
MW-12	26-Jun-18	9365486	<1.0	<1.0	63.5	<0.5	22.1	<0.2	<2.0	<0.5	3.7	<0.5	3.5	<1.0	<1.0	<0.2	<0.3	<0.5	0.7	7.0	
MW-13	26-Jun-18	9365495	<1.0	<1.0	147.0	<0.5	20.1	<0.2	2.4	0.8	4.5	<0.5	3.2	1.2	<1.0	<0.2	<0.3	0.5	0.5	6.4	

Notes: Numbers rounded for presentation purposes

- * denotes O.Reg. 153/04 Table 1 soil standards for residential/ parkland/ institutional/ industrial/ commercial/ community property use.
- *** denotes O.Reg. 153/04 Table 2 soil standards for coarse grained soil for resident/ parkland/ institutional property use.
- Green shading indicate parameters with a measurable value.
- Yellow shading indicate parameters above the Table 1 guidelines.
- Red shading indicate parameters above Table 2 guidelines.

Table 6

Ground Water Quality Analytical Results: TPH

PROJECT NO: 18-107							
Borehole Number and Sample ID	Sampling Date (d-m-y)	Analytical Reference Number	F ₁ (C ₆ to C ₁₀) minus BTEX				
			F ₁ (C ₆ to C ₁₀)	F ₁ (C ₆ to C ₁₀)	F ₂ (C ₁₀ to C ₁₆)	F ₃ (C ₁₆ to C ₃₄)	F ₄ (C ₃₄ to C ₅₀)
			(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)
Table 1 (O.Reg. 153/04*)			420	150	500	500	
Table 2 (O.Reg. 153/04***)			750	150	500	500	
MW-1	04-Jun-18	9300611	27	<25	<100	<100	<100
MW-4	13-Jun-18	9326094	<25	<25	<100	910	220
	30-Aug-18	9516357	<25	<25	<100	240	<100
MW-10	26-Jun-18	9360010	<25	<25	<100	<100	<100
MW-10-1	DUP	9360012	<25	<25	<100	<100	<100
	30-Aug-18	9516363	<25	<25	<100	<100	<100
MW-11	26-Jun-18	9365477	<25	<25	<100	140	<100
	30-Aug-18	9516364	<25	<25	<100	<100	<100
MW-12	26-Jun-18	9365486	<25	<25	<100	<100	<100
	30-Aug-18	9516365	<25	<25	<100	<100	<100
MW-13	26-Jun-18	9365495	<25	<25	<100	190	<100
	30-Aug-18	9516366	<25	<25	<100	<100	<100

Notes: Numbers rounded for presentation purposes

1. * denotes O.Reg. 153/04 Table 1 soil standards for residential/ parkland/ institutional/ industrial/ commercial/ community property use.

2. *** denotes O.Reg. 153/04 Table 2 soil standards for coarse grained soil for resident/ parkland/ institutional property use.

3. Green shading indicate parameters with a measurable value.

4. Yellow shading indicate parameters above the Table 1 guidelines.

5. Red shading indicate parameters above Table 2 guidelines.

Table 7
Ground Water Quality Analytical Results: VOCs

PROJECT NO: 18-107																																											
Borehole Number and Sample ID	Sampling Date	Analytical Reference Number	Dichlorodifluoromethane	Vinyl Chloride	Bromomethane	Trichlorofluoromethane	Acetone	1,1-Dichloroethene	Dichloromethane (methylene chloride)	trans-1,2-Dichloroethene	Methyl tert-Butyl Ether	1,1-Dichloroethane	Methyl Ethyl Ketone	cis-1,2-Dichloroethene	Chloroform	1,2-Dichloroethane	1,1,1-Trichloroethane	Carbon Tetrachloride	Benzene	1,2-Dichloropropane	Trichloroethene	Bromodichloromethane	Methyl Isobutyl Ketone	1,1,2-Trichloroethane	Toluene	Dibromochloromethane	Ethylene Dibromide	Tetrachloroethene	1,1,1,2-Tetrachloroethane	Chlorobenzene	Ethylbenzene	Bromoform	Styrene	1,1,2,2-Tetrachloroethane	1,3-Dichlorobenzene	1,4-Dichlorobenzene	1,2-Dichlorobenzene	1,3-Dichloropropene (cis+trans)	Total Xylenes	n-Hexane			
			(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)	(µg/L)		
Table 1 (O.Reg. 153/04*)			590	0.5	0.89	150	2700	0.5	5	1.6	15	0.5	400	1.6	2	0.5	0.5	0.2	0.5	0.5	0.5	2	640	0.5	0.8	2	0.2	0.5	1.1	0.5	0.5	5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	72	5		
Table 2 (O.Reg. 153/04***)			590	0.5	0.89	150	2700	1.6	50	1.6	15	5	1800	1.6	2.4	1.6	200	0.79	5	5	1.6	16	640	4.7	24	25	0.2	1.6	1.1	30	2.4	25	5.4	1	59	1	3	0.5	300	51			
MW-1	04-Jun-18	9300611																	11.0						3.5							0.3								0.4			
MW-1	04-Jun-18	9300609	<0.4	<0.3	<0.4	<0.8	<2.0	<0.6	<0.6	<0.4	<0.4	<0.6	<2.0	<0.4	41.0	<0.4	<0.6	<0.4	29.0	<0.4	<0.4	9.9	<2.0	<0.4	6.2	1.7	<0.2	<0.4	<0.2	<0.2	<0.2	0.4	<0.2	0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<0.6	1.2	<0.4	
MW-1	30-Aug-18	9516351	<0.2	<0.2	<0.2	<0.4	<1.0	<0.3	<0.3	<0.2	<0.2	<0.3	<1.0	<0.2	<0.2	<0.2	<0.3	<0.2	1.0	<0.2	<0.2	<0.2	<1.0	<0.2	0.7	<0.1	<0.1	<0.2	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	0.2	0.7	
MW-1-1	DUP	9516352	<0.2	<0.2	<0.2	<0.4	<1.0	<0.3	<0.3	<0.2	<0.2	<0.3	<1.0	<0.2	<0.2	<0.2	<0.3	<0.2	1.0	<0.2	<0.2	<0.2	<1.0	<0.2	0.8	<0.1	<0.1	<0.2	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	0.2	0.9	
MW-2	08-Jun-18	9313956	<0.2	<0.2	<0.2	<0.4	<1.0	<0.3	<0.3	<0.2	<0.2	<0.3	<1.0	<0.2	18.0	<0.2	<0.3	<0.2	<0.2	<0.2	<0.2	6.6	<1.0	<0.2	0.7	2.5	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2
	30-Aug-18	9516353	<0.2	<0.2	<0.2	<0.4	<1.0	<0.3	<0.3	<0.2	<0.2	<0.3	<1.0	<0.2	1.4	<0.2	<0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<1.0	<0.2	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2
MW-4	13-Jun-18	9326094	<0.2	<0.2	<0.2	<0.4	<1.0	<0.3	<0.3	<0.2	<0.2	<0.3	<1.0	<0.2	<0.2	<0.2	<0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<1.0	<0.2	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	
	30-Aug-18	9516357	<0.2	<0.2	<0.2	<0.4	<1.0	<0.3	<0.3	<0.2	<0.2	<0.3	<1.0	<0.2	<0.2	<0.2	<0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<1.0	<0.2	0.3	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	0.4	
MW-5	15-Jun-18	9334451	<0.2	<0.2	<0.2	<0.4	<1.0	<0.3	<0.3	<0.2	<0.2	<0.3	<1.0	<0.2	1.0	<0.2	<0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<1.0	<0.2	0.7	<0.1	<0.1	<0.2	<0.1	<0.1	0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	0.3	<0.2	
	30-Aug-18	9516358	<0.2	<0.2	<0.2	<0.4	<1.0	<0.3	<0.3	<0.2	<0.2	<0.3	<1.0	<0.2	1.0	<0.2	<0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<1.0	<0.2	0.6	<0.1	<0.1	<0.2	<0.1	<0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	0.7	
MW-6	18-Jun-18	9338475	<0.2	<0.2	<0.2	<0.4	<1.0	<0.3	<0.3	<0.2	<0.2	<0.3	<1.0	<0.2	3.2	<0.2	<0.3	<0.2	<0.2	<0.2	<0.2	0.9	<1.0	<0.2	0.4	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	
	30-Aug-18	9516359	<0.2	<0.2	<0.2	<0.4	<1.0	<0.3	<0.3	<0.2	<0.2	<0.3	<1.0	<0.2	<0.2	<0.2	<0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<1.0	<0.2	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2		
MW-7	21-Jun-18	9352295	<0.2	<0.2	<0.2	<0.4	<1.0	<0.3	<0.3	<0.2	<0.2	<0.3	<1.0	<0.2	1.4	<0.2	<0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<1.0	<0.2	0.4	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2	
	30-Aug-18	9516360	<0.2	<0.2	<0.2	<0.4	<1.0	<0.3	<0.3	<0.2	<0.2	<0.3	<1.0	<0.2	0.3	<0.2	<0.3	<0.2	<0.2	<0.2	<0.2	<0.2	<1.0	<0.2	0.3	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	0.4		
MW-8	25-Jun-18	9356151	<0.2	<0.2	<0.2	<0.4	<1.0	<0.3	<0.3	<0.2	<0.2	<0.3	<1.0	<0.2	1.7	<0.2	<0.3	<0.2	<0.2	<0.2	<0.2	0.6	<1.0	<0.2	0.2	0.2	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2		
	30-Aug-18	9516361	<0.2	<0.2	<0.2	<0.4	<1.0	<0.3	<0.3	<0.2	<0.2	<0.3	<1.0	<0.2	<0.2	<0.2	<0.3	<0.2	<0.2	<0.2	<0.2	<1.0	<0.2	<0.2	<0.1	<0.1	<0.2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.3	<0.2	<0.2		
MW-10	26-Jun-18	9360010	<0.4	<0.3	<0.4	<0.8	<2.0	<0.6	<0.6	<0.4	<0.4	<0.6	<2.0	<0.4	<0.4	<0.4	<0.6	<0.4	<0.4	<0.4	<0.4	<0.4	<2.0	<0.4	<0.4	<0.2	<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.6	<0.4	<0.4		
MW-10-1	DUP	9360012	<0.4	<0.3	<0.4	<0.8	<2.0	<0.6	<0.6	<0.4	<0.4	<0.6	<2.0	<0.4	<0.4	<0.4	<0.6	<0.4	<0.4	<0.4	<0.4	<0.4	<2.0	<0.4	<0.4	<0.2	<0.2	<0.4	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.6	<0.4	<0.4		
MW-10	30-Aug-18	9516363	<0.2	<0.2	<0.2	<0.4	<1.0	<0.3	<0.3	<0.2	<0.2	<																															

Notes: Numbers rounded for presentation purposes

1. * denotes O.Reg. 153/04 Table 1 soil standards for residential/ parkland/ institutional



APPENDIX G

Laboratory Analytical Reports

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
642 WELHAM ROAD
BARRIE, ON L4N9A1
(705) 721-8451

ATTENTION TO: Ian Acheson

PROJECT: 18-107

AGAT WORK ORDER: 18T346646

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

WATER ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

DATE REPORTED: Jun 13, 2018

PAGES (INCLUDING COVER): 16

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 18T346646

PROJECT: 18-107

5835 COOPERS AVENUE
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<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - Metals (Excluding Hydrides) (Soil)

DATE RECEIVED: 2018-06-05

DATE REPORTED: 2018-06-13

		SAMPLE DESCRIPTION:		BH-1-57	
		SAMPLE TYPE:		Soil	
		DATE SAMPLED:		2018-06-01	
Parameter	Unit	G / S	RDL	9300610	
Barium	µg/g	390	2	62	
Beryllium	µg/g	4	0.5	<0.5	
Boron	µg/g	120	5	<5	
Cadmium	µg/g	1.2	0.5	<0.5	
Chromium	µg/g	160	2	7	
Cobalt	µg/g	22	0.5	2.1	
Copper	µg/g	140	1	6	
Lead	µg/g	120	1	2	
Molybdenum	µg/g	6.9	0.5	<0.5	
Nickel	µg/g	100	1	4	
Silver	µg/g	20	0.2	0.3	
Thallium	µg/g	1	0.4	<0.4	
Uranium	µg/g	23	0.5	<0.5	
Vanadium	µg/g	86	1	18	
Zinc	µg/g	340	5	11	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By:

Amanjot Bhela



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T346646

PROJECT: 18-107

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

DATE RECEIVED: 2018-06-05

DATE REPORTED: 2018-06-13

		SAMPLE DESCRIPTION:		BH-1-57
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2018-06-01
Parameter	Unit	G / S	RDL	9300610
F1 (C6 to C10)	µg/g	55	5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5
F2 (C10 to C16)	µg/g	98	10	<10
F3 (C16 to C34)	µg/g	300	50	<50
F4 (C34 to C50)	µg/g	2800	50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA
Moisture Content	%		0.1	14.4
Surrogate	Unit	Acceptable Limits		
Terphenyl	%	60-140		86

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9300610 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T346646

PROJECT: 18-107

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY:

O. Reg. 153(511) - PHCs F1 - F4 (Water)

DATE RECEIVED: 2018-06-05

DATE REPORTED: 2018-06-13

		SAMPLE DESCRIPTION:		MW-1
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-06-04
Parameter	Unit	G / S	RDL	9300611
Benzene	µg/L	5.0	0.20	11
Toluene	µg/L	24	0.20	3.5
Ethylbenzene	µg/L	2.4	0.10	0.27
Xylene Mixture	µg/L	300	0.20	0.42
F1 (C6 - C10)	µg/L	750	25	27
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25
F2 (C10 to C16)	µg/L	150	100	<100
F3 (C16 to C34)	µg/L	500	100	<100
F4 (C34 to C50)	µg/L	500	100	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	NA
Surrogate	Unit	Acceptable Limits		
Terphenyl	%	60-140		82

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Potable Ground Water - All Types of Property Uses - Coarse Textured Soils

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9300611

The C6-C10 fraction is calculated using Toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50.

Total C6-C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153/04, results are considered valid without determining the PAH contribution if not requested by the client.

NA = Not Applicable

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AGAT WORK ORDER: 18T346646

PROJECT: 18-107

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2018-06-05

DATE REPORTED: 2018-06-13

		SAMPLE DESCRIPTION:		BH-1-57	
		SAMPLE TYPE:		Soil	
		DATE SAMPLED:		2018-06-01	
Parameter	Unit	G / S	RDL	9300610	
Dichlorodifluoromethane	ug/g	16	0.05	<0.05	
Vinyl Chloride	ug/g	0.02	0.02	<0.02	
Bromomethane	ug/g	0.05	0.05	<0.05	
Trichlorofluoromethane	ug/g	4	0.05	<0.05	
Acetone	ug/g	16	0.50	<0.50	
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	
Methylene Chloride	ug/g	0.1	0.05	<0.05	
Trans- 1,2-Dichloroethylene	ug/g	0.084	0.05	<0.05	
Methyl tert-butyl Ether	ug/g	0.75	0.05	<0.05	
1,1-Dichloroethane	ug/g	0.47	0.02	<0.02	
Methyl Ethyl Ketone	ug/g	16	0.50	<0.50	
Cis- 1,2-Dichloroethylene	ug/g	1.9	0.02	<0.02	
Chloroform	ug/g	0.05	0.04	<0.04	
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	
1,1,1-Trichloroethane	ug/g	0.38	0.05	<0.05	
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	
Benzene	ug/g	0.21	0.02	1.1	
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03	
Trichloroethylene	ug/g	0.061	0.03	<0.03	
Bromodichloromethane	ug/g	1.5	0.05	<0.05	
Methyl Isobutyl Ketone	ug/g	1.7	0.50	<0.50	
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	
Toluene	ug/g	2.3	0.05	0.30	
Dibromochloromethane	ug/g	2.3	0.05	<0.05	
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	
Tetrachloroethylene	ug/g	0.28	0.05	<0.05	
1,1,1,2-Tetrachloroethane	ug/g	0.058	0.04	<0.04	
Chlorobenzene	ug/g	2.4	0.05	<0.05	
Ethylbenzene	ug/g	1.1	0.05	<0.05	
m & p-Xylene	ug/g		0.05	<0.05	

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AGAT WORK ORDER: 18T346646

PROJECT: 18-107

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY:

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2018-06-05

DATE REPORTED: 2018-06-13

		SAMPLE DESCRIPTION:		BH-1-57
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2018-06-01
Parameter	Unit	G / S	RDL	9300610
Bromoform	ug/g	0.27	0.05	<0.05
Styrene	ug/g	0.7	0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05
o-Xylene	ug/g		0.05	<0.05
1,3-Dichlorobenzene	ug/g	4.8	0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.083	0.05	<0.05
1,2-Dichlorobenzene	ug/g	1.2	0.05	<0.05
Xylene Mixture	ug/g	3.1	0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04
n-Hexane	µg/g	2.8	0.05	<0.05
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		118
4-Bromofluorobenzene	% Recovery	50-140		82

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9300610 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By:

**AGAT** Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T346646

PROJECT: 18-107

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - Metals (Excluding Hydrides) (Water)

DATE RECEIVED: 2018-06-05

DATE REPORTED: 2018-06-13

		SAMPLE DESCRIPTION:		MW-1	
		SAMPLE TYPE:		Water	
		DATE SAMPLED:		2018-06-04	
Parameter	Unit	G / S	RDL	9300611	
Barium	µg/L	1000	2.0	44.3	
Beryllium	µg/L	4.0	0.5	<0.5	
Boron	µg/L	5000	10.0	20.7	
Cadmium	µg/L	2.7	0.2	<0.2	
Chromium	µg/L	50	2.0	5.4	
Cobalt	µg/L	3.8	0.5	<0.5	
Copper	µg/L	87	1.0	7.7	
Lead	µg/L	10	0.5	<0.5	
Molybdenum	µg/L	70	0.5	0.7	
Nickel	µg/L	100	1.0	<1.0	
Silver	µg/L	1.5	0.2	<0.2	
Thallium	µg/L	2	0.3	<0.3	
Uranium	µg/L	20	0.5	<0.5	
Vanadium	µg/L	6.2	0.4	1.2	
Zinc	µg/L	1100	5.0	8.4	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Potable Ground Water - All Types of Property Uses - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By:



Guideline Violation

AGAT WORK ORDER: 18T346646

PROJECT: 18-107

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Ian Acheson

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
9300610	BH-1-57	ON T2 S RPI CT	O. Reg. 153(511) - VOCs (Soil)	Benzene	ug/g	0.21	1.1
9300611	MW-1	ON T2 PGW CT	O. Reg. 153(511) - PHCs F1 - F4 (Water)	Benzene	µg/L	5.0	11

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T346646

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

Soil Analysis

RPT Date: Jun 13, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals (Excluding Hydrides) (Soil)															
Barium	9317973		64	64	0.0%	< 2	102%	70%	130%	100%	80%	120%	95%	70%	130%
Beryllium	9317973		<0.5	<0.5	NA	< 0.5	82%	70%	130%	115%	80%	120%	86%	70%	130%
Boron	9317973		<5	<5	NA	< 5	86%	70%	130%	116%	80%	120%	84%	70%	130%
Cadmium	9317973		<0.5	<0.5	NA	< 0.5	103%	70%	130%	98%	80%	120%	98%	70%	130%
Chromium	9317973		17	16	6.1%	< 2	98%	70%	130%	102%	80%	120%	94%	70%	130%
Cobalt	9317973		6.2	6.1	1.6%	< 0.5	95%	70%	130%	101%	80%	120%	96%	70%	130%
Copper	9317973		14	14	0.0%	< 1	92%	70%	130%	107%	80%	120%	96%	70%	130%
Lead	9317973		18	18	0.0%	< 1	108%	70%	130%	105%	80%	120%	110%	70%	130%
Molybdenum	9317973		<0.5	<0.5	NA	< 0.5	106%	70%	130%	105%	80%	120%	107%	70%	130%
Nickel	9317973		14	14	0.0%	< 1	97%	70%	130%	102%	80%	120%	94%	70%	130%
Silver	9317973		<0.2	<0.2	NA	< 0.2	78%	70%	130%	83%	80%	120%	76%	70%	130%
Thallium	9317973		<0.4	<0.4	NA	< 0.4	101%	70%	130%	98%	80%	120%	98%	70%	130%
Uranium	9317973		<0.5	<0.5	NA	< 0.5	108%	70%	130%	106%	80%	120%	109%	70%	130%
Vanadium	9317973		25	25	0.0%	< 1	98%	70%	130%	101%	80%	120%	96%	70%	130%
Zinc	9317973		50	48	4.1%	< 5	98%	70%	130%	105%	80%	120%	99%	70%	130%

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL

Certified By:



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T346646

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis															
RPT Date: Jun 13, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - VOCs (Soil)

Dichlorodifluoromethane	9309633		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	113%	50%	140%	77%	50%	140%
Vinyl Chloride	9309633		< 0.02	< 0.02	NA	< 0.02	80%	50%	140%	93%	50%	140%	110%	50%	140%
Bromomethane	9309633		< 0.05	< 0.05	NA	< 0.05	112%	50%	140%	103%	50%	140%	80%	50%	140%
Trichlorofluoromethane	9309633		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	78%	50%	140%	83%	50%	140%
Acetone	9309633		< 0.50	< 0.50	NA	< 0.50	102%	50%	140%	102%	50%	140%	110%	50%	140%
1,1-Dichloroethylene	9309633		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	99%	60%	130%	95%	50%	140%
Methylene Chloride	9309633		< 0.05	< 0.05	NA	< 0.05	75%	50%	140%	96%	60%	130%	91%	50%	140%
Trans- 1,2-Dichloroethylene	9309633		< 0.05	< 0.05	NA	< 0.05	91%	50%	140%	98%	60%	130%	95%	50%	140%
Methyl tert-butyl Ether	9309633		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	95%	60%	130%	90%	50%	140%
1,1-Dichloroethane	9309633		< 0.02	< 0.02	NA	< 0.02	84%	50%	140%	90%	60%	130%	89%	50%	140%
Methyl Ethyl Ketone	9309633		< 0.50	< 0.50	NA	< 0.50	98%	50%	140%	91%	50%	140%	109%	50%	140%
Cis- 1,2-Dichloroethylene	9309633		< 0.02	< 0.02	NA	< 0.02	73%	50%	140%	99%	60%	130%	102%	50%	140%
Chloroform	9309633		< 0.04	< 0.04	NA	< 0.04	73%	50%	140%	102%	60%	130%	98%	50%	140%
1,2-Dichloroethane	9309633		< 0.03	< 0.03	NA	< 0.03	91%	50%	140%	87%	60%	130%	91%	50%	140%
1,1,1-Trichloroethane	9309633		< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	91%	60%	130%	80%	50%	140%
Carbon Tetrachloride	9309633		< 0.05	< 0.05	NA	< 0.05	74%	50%	140%	102%	60%	130%	78%	50%	140%
Benzene	9309633		< 0.02	< 0.02	NA	< 0.02	81%	50%	140%	79%	60%	130%	116%	50%	140%
1,2-Dichloropropane	9309633		< 0.03	< 0.03	NA	< 0.03	102%	50%	140%	104%	60%	130%	92%	50%	140%
Trichloroethylene	9309633		< 0.03	< 0.03	NA	< 0.03	76%	50%	140%	94%	60%	130%	113%	50%	140%
Bromodichloromethane	9309633		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	100%	60%	130%	80%	50%	140%
Methyl Isobutyl Ketone	9309633		< 0.50	< 0.50	NA	< 0.50	99%	50%	140%	94%	50%	140%	86%	50%	140%
1,1,2-Trichloroethane	9309633		< 0.04	< 0.04	NA	< 0.04	90%	50%	140%	105%	60%	130%	112%	50%	140%
Toluene	9309633		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	95%	60%	130%	117%	50%	140%
Dibromochloromethane	9309633		< 0.05	< 0.05	NA	< 0.05	75%	50%	140%	104%	60%	130%	89%	50%	140%
Ethylene Dibromide	9309633		< 0.04	< 0.04	NA	< 0.04	78%	50%	140%	96%	60%	130%	85%	50%	140%
Tetrachloroethylene	9309633		< 0.05	< 0.05	NA	< 0.05	86%	50%	140%	100%	60%	130%	111%	50%	140%
1,1,1,2-Tetrachloroethane	9309633		< 0.04	< 0.04	NA	< 0.04	97%	50%	140%	101%	60%	130%	76%	50%	140%
Chlorobenzene	9309633		< 0.05	< 0.05	NA	< 0.05	73%	50%	140%	99%	60%	130%	119%	50%	140%
Ethylbenzene	9309633		< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	92%	60%	130%	94%	50%	140%
m & p-Xylene	9309633		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	97%	60%	130%	101%	50%	140%
Bromoform	9309633		< 0.05	< 0.05	NA	< 0.05	94%	50%	140%	108%	60%	130%	70%	50%	140%
Styrene	9309633		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	85%	60%	130%	112%	50%	140%
1,1,2,2-Tetrachloroethane	9309633		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	104%	60%	130%	105%	50%	140%
o-Xylene	9309633		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	98%	60%	130%	104%	50%	140%
1,3-Dichlorobenzene	9309633		< 0.05	< 0.05	NA	< 0.05	78%	50%	140%	97%	60%	130%	112%	50%	140%
1,4-Dichlorobenzene	9309633		< 0.05	< 0.05	NA	< 0.05	79%	50%	140%	99%	60%	130%	87%	50%	140%
1,2-Dichlorobenzene	9309633		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	97%	60%	130%	97%	50%	140%
1,3-Dichloropropene	9309633		< 0.04	< 0.04	NA	< 0.04	94%	50%	140%	97%	60%	130%	100%	50%	140%
n-Hexane	9309633		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	106%	60%	130%	94%	50%	140%

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T346646

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Jun 13, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE	
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper

O. Reg. 153(511) - PHCs F1 - F4 (-BTEx) (Soil)

F1 (C6 to C10)	9300446		< 5	< 5	NA	< 5	85%	60%	130%	85%	85%	115%	77%	70%	130%
F2 (C10 to C16)	9294324		< 10	< 10	NA	< 10	95%	60%	130%	98%	80%	120%	79%	70%	130%
F3 (C16 to C34)	9294324		< 50	< 50	NA	< 50	90%	60%	130%	98%	80%	120%	88%	70%	130%
F4 (C34 to C50)	9294324		< 50	< 50	NA	< 50	89%	60%	130%	85%	80%	120%	100%	70%	130%

O. Reg. 153(511) - PHCs F1 - F4 (Water)

Benzene	9269520		< 0.20	< 0.20	NA	< 0.20	80%	50%	140%	91%	60%	130%	91%	50%	140%
Toluene	9269520		< 0.20	< 0.20	NA	< 0.20	82%	50%	140%	98%	60%	130%	94%	50%	140%
Ethylbenzene	9269520		< 0.10	< 0.10	NA	< 0.10	78%	50%	140%	92%	60%	130%	92%	50%	140%
Xylene Mixture	9269520		< 0.20	< 0.20	NA	< 0.20	78%	50%	140%	92%	60%	130%	92%	50%	140%
F1 (C6 - C10)	9269520		< 25	< 25	NA	< 25	88%	60%	140%	89%	60%	140%	88%	60%	140%
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	101%	60%	140%	62%	60%	140%	65%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	99%	60%	140%	78%	60%	140%	98%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	98%	60%	140%	85%	60%	140%	90%	60%	140%

Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume.
When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T346646

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

Water Analysis															
RPT Date: Jun 13, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals (Excluding Hydrides) (Water)															
Barium	9301511		85.0	87.8	3.2%	< 2.0	98%	70%	130%	100%	80%	120%	94%	70%	130%
Beryllium	9301511		0.6	<0.5	NA	< 0.5	94%	70%	130%	99%	80%	120%	105%	70%	130%
Boron	9301511		16.1	15.4	NA	< 10.0	101%	70%	130%	102%	80%	120%	103%	70%	130%
Cadmium	9301511		<0.2	<0.2	NA	< 0.2	99%	70%	130%	97%	80%	120%	102%	70%	130%
Chromium	9301511		25.7	23.1	10.7%	< 2.0	100%	70%	130%	104%	80%	120%	112%	70%	130%
Cobalt	9301511		0.9	0.8	NA	< 0.5	101%	70%	130%	104%	80%	120%	100%	70%	130%
Copper	9301511		1.8	1.9	NA	< 1.0	102%	70%	130%	105%	80%	120%	103%	70%	130%
Lead	9301511		<0.5	<0.5	NA	< 0.5	98%	70%	130%	100%	80%	120%	95%	70%	130%
Molybdenum	9301511		0.6	0.7	NA	< 0.5	100%	70%	130%	100%	80%	120%	107%	70%	130%
Nickel	9301511		1.2	1.2	NA	< 1.0	101%	70%	130%	102%	80%	120%	98%	70%	130%
Silver	9301511		<0.2	<0.2	NA	< 0.2	103%	70%	130%	105%	80%	120%	97%	70%	130%
Thallium	9301511		<0.3	<0.3	NA	< 0.3	102%	70%	130%	109%	80%	120%	101%	70%	130%
Uranium	9301511		0.8	0.8	NA	< 0.5	102%	70%	130%	103%	80%	120%	102%	70%	130%
Vanadium	9301511		8.5	7.5	12.5%	< 0.4	93%	70%	130%	98%	80%	120%	102%	70%	130%
Zinc	9301511		7.0	7.0	NA	< 5.0	101%	70%	130%	105%	80%	120%	105%	70%	130%

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:





Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T346646

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS

Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T346646

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	Balance
Moisture Content	VOL-91-5009	CCME Tier 1 Method, SW846 5035,8015	BALANCE
Terphenyl	VOL-91-5009	CCME Tier 1 Method	GC/FID
Benzene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Toluene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Ethylbenzene	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
Xylene Mixture	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
F1 (C6 - C10)	VOL-91- 5010	MOE PHC-E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC-E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC-E3421	GC/FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC-E3421	GC/FID
F4 (C34 to C50)	VOL-91-5010	MOE PHC-E3421	GC/FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC-E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T346646

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Water Analysis			
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
642 WELHAM ROAD
BARRIE, ON L4N9A1
(705) 721-8451

ATTENTION TO: Ian Acheson

PROJECT: 18-107

AGAT WORK ORDER: 18T350281

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

WATER ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

DATE REPORTED: Jun 22, 2018

PAGES (INCLUDING COVER): 14

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 18T350281

PROJECT: 18-107

5835 COOPERS AVENUE
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<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE: Hasty Tract

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - Metals (Including Hydrides) (Soil)

DATE RECEIVED: 2018-06-13

DATE REPORTED: 2018-06-22

		SAMPLE DESCRIPTION:		BH-4-1	
		SAMPLE TYPE:		Soil	
		DATE SAMPLED:		2018-06-08	
Parameter	Unit	G / S	RDL	9331800	
Antimony	µg/g	1.3	0.8	<0.8	
Arsenic	µg/g	18	1	<1	
Barium	µg/g	220	2	18	
Beryllium	µg/g	2.5	0.5	<0.5	
Boron	µg/g	36	5	<5	
Cadmium	µg/g	1.2	0.5	<0.5	
Chromium	µg/g	70	2	6	
Cobalt	µg/g	21	0.5	1.3	
Copper	µg/g	92	1	3	
Lead	µg/g	120	1	3	
Molybdenum	µg/g	2	0.5	0.5	
Nickel	µg/g	82	1	3	
Selenium	µg/g	1.5	0.4	<0.4	
Silver	µg/g	0.5	0.2	<0.2	
Thallium	µg/g	1	0.4	<0.4	
Uranium	µg/g	2.5	0.5	<0.5	
Vanadium	µg/g	86	1	14	
Zinc	µg/g	290	5	6	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By:

Amanjot Bhela



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AGAT WORK ORDER: 18T350281

PROJECT: 18-107

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE: Hasty Tract

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

DATE RECEIVED: 2018-06-13

DATE REPORTED: 2018-06-22

		SAMPLE DESCRIPTION:		BH-4-1
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2018-06-08
Parameter	Unit	G / S	RDL	9331800
F1 (C6 to C10)	µg/g	25	5	<5
F1 (C6 to C10) minus BTEX	µg/g	25	5	<5
F2 (C10 to C16)	µg/g	10	10	<10
F3 (C16 to C34)	µg/g	240	50	<50
F4 (C34 to C50)	µg/g	120	50	<50
Gravimetric Heavy Hydrocarbons	µg/g	120	50	NA
Moisture Content	%		0.1	15.8
Surrogate	Unit	Acceptable Limits		
Terphenyl	%	60-140		83

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9331800 Results are based on sample dry weight.
The C6-C10 fraction is calculated using toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6 - C50 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 + nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Certified By:



Certificate of Analysis

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE: Hasty Tract

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2018-06-13

DATE REPORTED: 2018-06-22

		SAMPLE DESCRIPTION:		BH-4-1
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2018-06-08
Parameter	Unit	G / S	RDL	9331800
Dichlorodifluoromethane	ug/g	0.05	0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05
Trichlorofluoromethane	ug/g	0.25	0.05	<0.05
Acetone	ug/g	0.5	0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methylene Chloride	ug/g	0.05	0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.05	0.05	<0.05
1,1-Dichloroethane	ug/g	0.05	0.02	<0.02
Methyl Ethyl Ketone	ug/g	0.5	0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	0.05	0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.05	0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05
Benzene	ug/g	0.02	0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03
Trichloroethylene	ug/g	0.05	0.03	<0.03
Bromodichloromethane	ug/g	0.05	0.05	<0.05
Methyl Isobutyl Ketone	ug/g	0.5	0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04
Toluene	ug/g	0.2	0.05	<0.05
Dibromochloromethane	ug/g	0.05	0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04
Tetrachloroethylene	ug/g	0.05	0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.05	0.04	<0.04
Chlorobenzene	ug/g	0.05	0.05	<0.05
Ethylbenzene	ug/g	0.05	0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05

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PROJECT: 18-107

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE: Hasty Tract

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2018-06-13

DATE REPORTED: 2018-06-22

		SAMPLE DESCRIPTION:		BH-4-1
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2018-06-08
Parameter	Unit	G / S	RDL	9331800
Bromoform	ug/g	0.05	0.05	<0.05
Styrene	ug/g	0.05	0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05
o-Xylene	ug/g		0.05	<0.05
1,3-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.05	0.05	<0.05
1,2-Dichlorobenzene	ug/g	0.05	0.05	<0.05
Xylene Mixture	ug/g	0.05	0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04
n-Hexane	µg/g	0.05	0.05	<0.05
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		100
4-Bromofluorobenzene	% Recovery	50-140		88

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Soil - Residential/Parkland/Institutional/Industrial/Commercial/Community Property Use

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9331800 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By:

N Popmukolof



AGAT Laboratories

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AGAT WORK ORDER: 18T350281

PROJECT: 18-107

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE: Hasty Tract

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - Metals (Including Hydrides) (Water)

DATE RECEIVED: 2018-06-13

DATE REPORTED: 2018-06-22

		SAMPLE DESCRIPTION:		MW-4	
		SAMPLE TYPE:		Water	
		DATE SAMPLED:		2018-06-13	
Parameter	Unit	G / S	RDL	9331805	
Antimony	µg/L	1.5	1.0	<1.0	
Arsenic	µg/L	13	1.0	1.3	
Barium	µg/L	610	2.0	95.3	
Beryllium	µg/L	0.5	0.5	<0.5	
Boron	µg/L	1700	10.0	25.6	
Cadmium	µg/L	0.5	0.2	<0.2	
Chromium	µg/L	11	2.0	10.5	
Cobalt	µg/L	3.8	0.5	<0.5	
Copper	µg/L	5	1.0	4.3	
Lead	µg/L	1.9	0.5	<0.5	
Molybdenum	µg/L	23	0.5	<0.5	
Nickel	µg/L	14	1.0	<1.0	
Selenium	µg/L	5	1.0	3.6	
Silver	µg/L	0.3	0.2	<0.2	
Thallium	µg/L	0.5	0.3	<0.3	
Uranium	µg/L	8.9	0.5	<0.5	
Vanadium	µg/L	3.9	0.4	2.0	
Zinc	µg/L	160	5.0	5.3	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Ground Water - All Types of Property Uses
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By:

Amanjot Bhela

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

PROJECT: 18-107

SAMPLING SITE: Hasty Tract

AGAT WORK ORDER: 18T350281

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

Soil Analysis

RPT Date: Jun 22, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals (Including Hydrides) (Soil)															
Antimony	9338501		<0.8	<0.8	NA	< 0.8	128%	70%	130%	96%	80%	120%	90%	70%	130%
Arsenic	9338501		4	4	NA	< 1	110%	70%	130%	103%	80%	120%	101%	70%	130%
Barium	9338501		103	105	1.9%	< 2	96%	70%	130%	94%	80%	120%	86%	70%	130%
Beryllium	9338501		0.7	0.8	NA	< 0.5	73%	70%	130%	104%	80%	120%	85%	70%	130%
Boron	9338501		5	5	NA	< 5	78%	70%	130%	113%	80%	120%	73%	70%	130%
Cadmium	9338501		<0.5	<0.5	NA	< 0.5	105%	70%	130%	101%	80%	120%	102%	70%	130%
Chromium	9338501		25	26	3.9%	< 2	83%	70%	130%	102%	80%	120%	97%	70%	130%
Cobalt	9338501		11.6	12.3	5.9%	< 0.5	93%	70%	130%	100%	80%	120%	98%	70%	130%
Copper	9338501		22	24	8.7%	< 1	92%	70%	130%	108%	80%	120%	103%	70%	130%
Lead	9338501		16	17	6.1%	< 1	101%	70%	130%	103%	80%	120%	99%	70%	130%
Molybdenum	9338501		<0.5	<0.5	NA	< 0.5	95%	70%	130%	104%	80%	120%	98%	70%	130%
Nickel	9338501		23	24	4.3%	< 1	96%	70%	130%	101%	80%	120%	98%	70%	130%
Selenium	9338501		0.6	0.6	NA	< 0.4	96%	70%	130%	101%	80%	120%	98%	70%	130%
Silver	9338501		<0.2	<0.2	NA	< 0.2	83%	70%	130%	90%	80%	120%	88%	70%	130%
Thallium	9338501		<0.4	<0.4	NA	< 0.4	89%	70%	130%	101%	80%	120%	97%	70%	130%
Uranium	9338501		0.9	1.0	NA	< 0.5	100%	70%	130%	101%	80%	120%	101%	70%	130%
Vanadium	9338501		36	36	0.0%	< 1	88%	70%	130%	100%	80%	120%	94%	70%	130%
Zinc	9338501		74	75	1.3%	< 5	99%	70%	130%	107%	80%	120%	106%	70%	130%

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T350281

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE: Hasty Tract

SAMPLED BY: I. Acheson

Trace Organics Analysis															
RPT Date: Jun 22, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

F1 (C6 to C10)	9329941	< 5	< 5	NA	< 5	84%	60%	130%	91%	85%	115%	83%	70%	130%
F2 (C10 to C16)	9312513	< 10	< 10	NA	< 10	95%	60%	130%	98%	80%	120%	79%	70%	130%
F3 (C16 to C34)	9312513	< 50	< 50	NA	< 50	90%	60%	130%	98%	80%	120%	88%	70%	130%
F4 (C34 to C50)	9312513	< 50	< 50	NA	< 50	89%	60%	130%	85%	80%	120%	100%	70%	130%

O. Reg. 153(511) - VOCs (Soil)

Dichlorodifluoromethane	9330451	< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	98%	50%	140%	98%	50%	140%
Vinyl Chloride	9330451	< 0.02	< 0.02	NA	< 0.02	112%	50%	140%	97%	50%	140%	89%	50%	140%
Bromomethane	9330451	< 0.05	< 0.05	NA	< 0.05	108%	50%	140%	91%	50%	140%	108%	50%	140%
Trichlorofluoromethane	9330451	< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	83%	50%	140%	86%	50%	140%
Acetone	9330451	< 0.50	< 0.50	NA	< 0.50	116%	50%	140%	107%	50%	140%	111%	50%	140%
1,1-Dichloroethylene	9330451	< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	80%	60%	130%	82%	50%	140%
Methylene Chloride	9330451	< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	99%	60%	130%	104%	50%	140%
Trans- 1,2-Dichloroethylene	9330451	< 0.05	< 0.05	NA	< 0.05	78%	50%	140%	77%	60%	130%	80%	50%	140%
Methyl tert-butyl Ether	9330451	< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	106%	60%	130%	93%	50%	140%
1,1-Dichloroethane	9330451	< 0.02	< 0.02	NA	< 0.02	71%	50%	140%	93%	60%	130%	90%	50%	140%
Methyl Ethyl Ketone	9330451	< 0.50	< 0.50	NA	< 0.50	101%	50%	140%	94%	50%	140%	72%	50%	140%
Cis- 1,2-Dichloroethylene	9330451	< 0.02	< 0.02	NA	< 0.02	83%	50%	140%	72%	60%	130%	84%	50%	140%
Chloroform	9330451	< 0.04	< 0.04	NA	< 0.04	82%	50%	140%	81%	60%	130%	79%	50%	140%
1,2-Dichloroethane	9330451	< 0.03	< 0.03	NA	< 0.03	80%	50%	140%	88%	60%	130%	109%	50%	140%
1,1,1-Trichloroethane	9330451	< 0.05	< 0.05	NA	< 0.05	115%	50%	140%	109%	60%	130%	80%	50%	140%
Carbon Tetrachloride	9330451	< 0.05	< 0.05	NA	< 0.05	74%	50%	140%	95%	60%	130%	93%	50%	140%
Benzene	9330451	< 0.02	< 0.02	NA	< 0.02	78%	50%	140%	89%	60%	130%	98%	50%	140%
1,2-Dichloropropane	9330451	< 0.03	< 0.03	NA	< 0.03	96%	50%	140%	113%	60%	130%	77%	50%	140%
Trichloroethylene	9330451	< 0.03	< 0.03	NA	< 0.03	76%	50%	140%	92%	60%	130%	102%	50%	140%
Bromodichloromethane	9330451	< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	99%	60%	130%	90%	50%	140%
Methyl Isobutyl Ketone	9330451	< 0.50	< 0.50	NA	< 0.50	101%	50%	140%	105%	50%	140%	83%	50%	140%
1,1,2-Trichloroethane	9330451	< 0.04	< 0.04	NA	< 0.04	99%	50%	140%	98%	60%	130%	86%	50%	140%
Toluene	9330451	< 0.05	< 0.05	NA	< 0.05	77%	50%	140%	98%	60%	130%	81%	50%	140%
Dibromochloromethane	9330451	< 0.05	< 0.05	NA	< 0.05	84%	50%	140%	115%	60%	130%	73%	50%	140%
Ethylene Dibromide	9330451	< 0.04	< 0.04	NA	< 0.04	90%	50%	140%	116%	60%	130%	81%	50%	140%
Tetrachloroethylene	9330451	< 0.05	< 0.05	NA	< 0.05	77%	50%	140%	99%	60%	130%	93%	50%	140%
1,1,1,2-Tetrachloroethane	9330451	< 0.04	< 0.04	NA	< 0.04	85%	50%	140%	112%	60%	130%	91%	50%	140%
Chlorobenzene	9330451	< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	104%	60%	130%	92%	50%	140%
Ethylbenzene	9330451	< 0.05	< 0.05	NA	< 0.05	86%	50%	140%	92%	60%	130%	77%	50%	140%
m & p-Xylene	9330451	< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	97%	60%	130%	84%	50%	140%
Bromoform	9330451	< 0.05	< 0.05	NA	< 0.05	111%	50%	140%	75%	60%	130%	82%	50%	140%
Styrene	9330451	< 0.05	< 0.05	NA	< 0.05	73%	50%	140%	97%	60%	130%	85%	50%	140%
1,1,2,2-Tetrachloroethane	9330451	< 0.05	< 0.05	NA	< 0.05	101%	50%	140%	109%	60%	130%	81%	50%	140%
o-Xylene	9330451	< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	102%	60%	130%	89%	50%	140%



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T350281

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE: Hasty Tract

SAMPLED BY: I. Acheson

Trace Organics Analysis (Continued)

RPT Date: Jun 22, 2018			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
1,3-Dichlorobenzene	9330451		< 0.05	< 0.05	NA	< 0.05	86%	50%	140%	111%	60%	130%	90%	50%	140%
1,4-Dichlorobenzene	9330451		< 0.05	< 0.05	NA	< 0.05	92%	50%	140%	112%	60%	130%	98%	50%	140%
1,2-Dichlorobenzene	9330451		< 0.05	< 0.05	NA	< 0.05	97%	50%	140%	116%	60%	130%	98%	50%	140%
1,3-Dichloropropene	9330451		< 0.04	< 0.04	NA	< 0.04	100%	50%	140%	103%	60%	130%	91%	50%	140%
n-Hexane	9330451		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	79%	60%	130%	81%	50%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

N Popmukohof

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T350281

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE: Hasty Tract

SAMPLED BY: I. Acheson

Water Analysis															
RPT Date: Jun 22, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals (Including Hydrides) (Water)															
Antimony	9329102		<1.0	<1.0	NA	< 1.0	95%	70%	130%	104%	80%	120%	100%	70%	130%
Arsenic	9329102		<1.0	<1.0	NA	< 1.0	95%	70%	130%	99%	80%	120%	105%	70%	130%
Barium	9329102		41.4	39.8	3.9%	< 2.0	98%	70%	130%	101%	80%	120%	94%	70%	130%
Beryllium	9329102		<0.5	<0.5	NA	< 0.5	95%	70%	130%	99%	80%	120%	104%	70%	130%
Boron	9329102		31.1	28.8	NA	< 10.0	100%	70%	130%	102%	80%	120%	105%	70%	130%
Cadmium	9329102		<0.2	<0.2	NA	< 0.2	95%	70%	130%	104%	80%	120%	117%	70%	130%
Chromium	9329102		2.6	2.3	NA	< 2.0	97%	70%	130%	104%	80%	120%	107%	70%	130%
Cobalt	9329102		<0.5	<0.5	NA	< 0.5	98%	70%	130%	103%	80%	120%	107%	70%	130%
Copper	9329102		1.1	1.0	NA	< 1.0	97%	70%	130%	104%	80%	120%	94%	70%	130%
Lead	9329102		<0.5	<0.5	NA	< 0.5	96%	70%	130%	103%	80%	120%	96%	70%	130%
Molybdenum	9329102		0.6	0.5	NA	< 0.5	96%	70%	130%	99%	80%	120%	98%	70%	130%
Nickel	9329102		<1.0	<1.0	NA	< 1.0	101%	70%	130%	107%	80%	120%	103%	70%	130%
Selenium	9329102		<1.0	<1.0	NA	< 1.0	95%	70%	130%	101%	80%	120%	111%	70%	130%
Silver	9329102		<0.2	<0.2	NA	< 0.2	92%	70%	130%	106%	80%	120%	103%	70%	130%
Thallium	9329102		<0.3	<0.3	NA	< 0.3	100%	70%	130%	106%	80%	120%	95%	70%	130%
Uranium	9329102		<0.5	<0.5	NA	< 0.5	95%	70%	130%	97%	80%	120%	95%	70%	130%
Vanadium	9329102		<0.4	<0.4	NA	< 0.4	95%	70%	130%	104%	80%	120%	105%	70%	130%
Zinc	9329102		6.6	6.3	NA	< 5.0	95%	70%	130%	106%	80%	120%	103%	70%	130%

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL

Certified By:



Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T350281

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:Hasty Tract

SAMPLED BY:I.Acheson

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS

Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T350281

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:Hasty Tract

SAMPLED BY:I.Acheson

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	Balance
Moisture Content	VOL-91-5009	CCME Tier 1 Method, SW846 5035,8015	BALANCE
Terphenyl	VOL-91-5009	CCME Tier 1 Method	GC/FID
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS



Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T350281

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:Hasty Tract

SAMPLED BY:I.Acheson

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Water Analysis			
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS

Page 14 of 14

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
642 WELHAM ROAD
BARRIE, ON L4N9A1
(705) 721-8451

ATTENTION TO: Ian Acheson

PROJECT: 18-107

AGAT WORK ORDER: 18T351286

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

TRACE ORGANICS REVIEWED BY: Inga Kuzmina, Trace Organics Lab Manager

DATE REPORTED: Jun 25, 2018

PAGES (INCLUDING COVER): 10

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T351286

PROJECT: 18-107

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY:

O. Reg. 153(511) - ORPs (Soil)				
DATE RECEIVED: 2018-06-15			DATE REPORTED: 2018-06-21	
		SAMPLE DESCRIPTION:		BH-5-7
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2018-06-13
Parameter	Unit	G / S	RDL	
pH, 2:1 CaCl2 Extraction	pH Units		NA	7.97

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard
9334483 pH was determined on the 0.01M CaCl₂ extract obtained from 2:1 leaching procedure (2 parts extraction fluid:1 part wet soil).

Certified By:

Amanjot Bhela



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T351286

PROJECT: 18-107

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MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY:

Particle Size by Sieve (Wet)

DATE RECEIVED: 2018-06-15

DATE REPORTED: 2018-06-20

SAMPLE DESCRIPTION: BH-5-7
SAMPLE TYPE: Soil
DATE SAMPLED: 2018-06-13
G / S RDL 9334483

Parameter	Unit	G / S	RDL	
Sieve Analysis - 75 µm (retained)	%		NA	91.82
Sieve Analysis - 75 µm (passing)	%		NA	8.18
Soil Texture (Toronto)				Coarse

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

9334483 Value reported is the amount of sample passing through or retained on sieve after wash with water and represents proportion by weight particles smaller or larger than indicated sieve size.

Certified By:

Amanjot Bhela



Certificate of Analysis

AGAT WORK ORDER: 18T351286

PROJECT: 18-107

5835 COOPERS AVENUE
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TEL (905)712-5100
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<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2018-06-15

DATE REPORTED: 2018-06-22

		SAMPLE DESCRIPTION:		BH-5-13
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2018-06-14
Parameter	Unit	G / S	RDL	9334482
Dichlorodifluoromethane	µg/g	16	0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05
Trichlorofluoromethane	ug/g	4	0.05	<0.05
Acetone	ug/g	16	0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methylene Chloride	ug/g	0.1	0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.084	0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.75	0.05	<0.05
1,1-Dichloroethane	ug/g	0.47	0.02	<0.02
Methyl Ethyl Ketone	ug/g	16	0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	1.9	0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.38	0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05
Benzene	ug/g	0.21	0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03
Trichloroethylene	ug/g	0.061	0.03	<0.03
Bromodichloromethane	ug/g	1.5	0.05	<0.05
Methyl Isobutyl Ketone	ug/g	1.7	0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04
Toluene	ug/g	2.3	0.05	<0.05
Dibromochloromethane	ug/g	2.3	0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04
Tetrachloroethylene	ug/g	0.28	0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.058	0.04	<0.04
Chlorobenzene	ug/g	2.4	0.05	<0.05
Ethylbenzene	ug/g	1.1	0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T351286

PROJECT: 18-107

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY:

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2018-06-15

DATE REPORTED: 2018-06-22

		SAMPLE DESCRIPTION:		BH-5-13
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2018-06-14
Parameter	Unit	G / S	RDL	9334482
Bromoform	ug/g	0.27	0.05	<0.05
Styrene	ug/g	0.7	0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05
o-Xylene	ug/g		0.05	<0.05
1,3-Dichlorobenzene	ug/g	4.8	0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.083	0.05	<0.05
1,2-Dichlorobenzene	ug/g	1.2	0.05	<0.05
Xylene Mixture	ug/g	3.1	0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04
n-Hexane	µg/g	2.8	0.05	<0.05
Moisture Content	%		0.1	17.3
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		95
4-Bromofluorobenzene	% Recovery	50-140		92

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9334482 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By:



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T351286

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

Soil Analysis

RPT Date:			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - ORPs (Soil)

pH, 2:1 CaCl ₂ Extraction	9334910		7.51	7.55	0.5%	NA	NA	90%	110%	NA			NA		
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Particle Size by Sieve (Wet)

Sieve Analysis - 75 µm (retained)	9334483	9334483	91.82	92.24	0.5%	NA	99%	70%	130%
Sieve Analysis - 75 µm (passing)	9334483	9334483	8.18	7.76	5.3%	NA		70%	130%

Comments: NA signifies Not Applicable.

Certified By:

Amanjot Bhela



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T351286

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis															
RPT Date:			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - VOCs (Soil)

Dichlorodifluoromethane	9341603		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	80%	50%	140%	75%	50%	140%
Vinyl Chloride	9341603		< 0.02	< 0.02	NA	< 0.02	80%	50%	140%	106%	50%	140%	82%	50%	140%
Bromomethane	9341603		< 0.05	< 0.05	NA	< 0.05	88%	50%	140%	89%	50%	140%	80%	50%	140%
Trichlorofluoromethane	9341603		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	85%	50%	140%	94%	50%	140%
Acetone	9341603		< 0.50	< 0.50	NA	< 0.50	92%	50%	140%	88%	50%	140%	82%	50%	140%
1,1-Dichloroethylene	9341603		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	84%	60%	130%	80%	50%	140%
Methylene Chloride	9341603		< 0.05	< 0.05	NA	< 0.05	104%	50%	140%	113%	60%	130%	111%	50%	140%
Trans- 1,2-Dichloroethylene	9341603		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	84%	60%	130%	93%	50%	140%
Methyl tert-butyl Ether	9341603		< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	114%	60%	130%	113%	50%	140%
1,1-Dichloroethane	9341603		< 0.02	< 0.02	NA	< 0.02	82%	50%	140%	80%	60%	130%	80%	50%	140%
Methyl Ethyl Ketone	9341603		< 0.50	< 0.50	NA	< 0.50	104%	50%	140%	79%	50%	140%	79%	50%	140%
Cis- 1,2-Dichloroethylene	9341603		< 0.02	< 0.02	NA	< 0.02	83%	50%	140%	87%	60%	130%	90%	50%	140%
Chloroform	9341603		< 0.04	< 0.04	NA	< 0.04	89%	50%	140%	83%	60%	130%	83%	50%	140%
1,2-Dichloroethane	9341603		< 0.03	< 0.03	NA	< 0.03	76%	50%	140%	77%	60%	130%	79%	50%	140%
1,1,1-Trichloroethane	9341603		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	80%	60%	130%	83%	50%	140%
Carbon Tetrachloride	9341603		< 0.05	< 0.05	NA	< 0.05	100%	50%	140%	85%	60%	130%	88%	50%	140%
Benzene	9341603		< 0.02	< 0.02	NA	< 0.02	79%	50%	140%	79%	60%	130%	79%	50%	140%
1,2-Dichloropropane	9341603		< 0.03	< 0.03	NA	< 0.03	74%	50%	140%	83%	60%	130%	80%	50%	140%
Trichloroethylene	9341603		< 0.03	< 0.03	NA	< 0.03	72%	50%	140%	78%	60%	130%	86%	50%	140%
Bromodichloromethane	9341603		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	84%	60%	130%	90%	50%	140%
Methyl Isobutyl Ketone	9341603		< 0.50	< 0.50	NA	< 0.50	98%	50%	140%	89%	50%	140%	91%	50%	140%
1,1,2-Trichloroethane	9341603		< 0.04	< 0.04	NA	< 0.04	78%	50%	140%	89%	60%	130%	85%	50%	140%
Toluene	9341603		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	112%	60%	130%	79%	50%	140%
Dibromochloromethane	9341603		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	84%	60%	130%	79%	50%	140%
Ethylene Dibromide	9341603		< 0.04	< 0.04	NA	< 0.04	73%	50%	140%	84%	60%	130%	82%	50%	140%
Tetrachloroethylene	9341603		< 0.05	< 0.05	NA	< 0.05	79%	50%	140%	85%	60%	130%	90%	50%	140%
1,1,1,2-Tetrachloroethane	9341603		< 0.04	< 0.04	NA	< 0.04	89%	50%	140%	81%	60%	130%	77%	50%	140%
Chlorobenzene	9341603		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	73%	60%	130%	103%	50%	140%
Ethylbenzene	9341603		< 0.05	< 0.05	NA	< 0.05	72%	50%	140%	82%	60%	130%	103%	50%	140%
m & p-Xylene	9341603		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	90%	60%	130%	86%	50%	140%
Bromoform	9341603		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	91%	60%	130%	81%	50%	140%
Styrene	9341603		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	80%	60%	130%	87%	50%	140%
1,1,2,2-Tetrachloroethane	9341603		< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	83%	60%	130%	78%	50%	140%
o-Xylene	9341603		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	84%	60%	130%	83%	50%	140%
1,3-Dichlorobenzene	9341603		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	77%	60%	130%	79%	50%	140%
1,4-Dichlorobenzene	9341603		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	74%	60%	130%	83%	50%	140%
1,2-Dichlorobenzene	9341603		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	73%	60%	130%	90%	50%	140%
1,3-Dichloropropene	9341603		< 0.04	< 0.04	NA	< 0.04	95%	50%	140%	86%	60%	130%	86%	50%	140%
n-Hexane	9341603		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	83%	60%	130%	101%	50%	140%



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T351286

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date:			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By: _____

Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T351286

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	pH METER
Sieve Analysis - 75 µm (retained)		KROETSCH 2007; SHEPPARD 2007	SIEVE
Sieve Analysis - 75 µm (passing)		KROETSCH 2007; SHEPPARD 2007	SIEVE
Trace Organics Analysis			
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d ₈	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Moisture Content	VOL-91-5002	MOE E3139	BALANCE

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
642 WELHAM ROAD
BARRIE, ON L4N9A1
(705) 721-8451

ATTENTION TO: Ian Acheson

PROJECT: 18-107

AGAT WORK ORDER: 18T353923

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

DATE REPORTED: Jun 28, 2018

PAGES (INCLUDING COVER): 7

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 18T353923

PROJECT: 18-107

5835 COOPERS AVENUE
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CANADA L4Z 1Y2
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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY:

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2018-06-22

DATE REPORTED: 2018-06-28

		SAMPLE DESCRIPTION:		BH-7-8	BH-7-8-1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-06-20	2018-06-20
Parameter	Unit	G / S	RDL	9352280	9352282
Dichlorodifluoromethane	µg/g	16	0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	4	0.05	<0.05	<0.05
Acetone	ug/g	16	0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.1	0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.084	0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.75	0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	0.47	0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	16	0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	1.9	0.02	<0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.38	0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	<0.05
Benzene	ug/g	0.21	0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.061	0.03	<0.03	<0.03
Bromodichloromethane	ug/g	1.5	0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	1.7	0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04
Toluene	ug/g	2.3	0.05	<0.05	<0.05
Dibromochloromethane	ug/g	2.3	0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	0.28	0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.058	0.04	<0.04	<0.04
Chlorobenzene	ug/g	2.4	0.05	<0.05	<0.05
Ethylbenzene	ug/g	1.1	0.05	<0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05	<0.05

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T353923

PROJECT: 18-107

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2018-06-22

DATE REPORTED: 2018-06-28

		SAMPLE DESCRIPTION:		BH-7-8	BH-7-8-1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-06-20	2018-06-20
Parameter	Unit	G / S	RDL	9352280	9352282
Bromoform	ug/g	0.27	0.05	<0.05	<0.05
Styrene	ug/g	0.7	0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	4.8	0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.083	0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	1.2	0.05	<0.05	<0.05
Xylene Mixture	ug/g	3.1	0.05	<0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04	<0.04
n-Hexane	µg/g	2.8	0.05	<0.05	<0.05
Moisture Content	%		0.1	13.8	13.6
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		91	92
4-Bromofluorobenzene	% Recovery	50-140		100	96

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9352280-9352282 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By:

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T353923

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Jun 28, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - VOCs (Soil)

Dichlorodifluoromethane	9355543		< 0.05	< 0.05	NA	< 0.05	77%	50%	140%	76%	50%	140%	87%	50%	140%
Vinyl Chloride	9355543		< 0.02	< 0.02	NA	< 0.02	76%	50%	140%	71%	50%	140%	85%	50%	140%
Bromomethane	9355543		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	86%	50%	140%	76%	50%	140%
Trichlorofluoromethane	9355543		< 0.05	< 0.05	NA	< 0.05	75%	50%	140%	76%	50%	140%	90%	50%	140%
Acetone	9355543		< 0.50	< 0.50	NA	< 0.50	110%	50%	140%	115%	50%	140%	91%	50%	140%
1,1-Dichloroethylene	9355543		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	93%	60%	130%	93%	50%	140%
Methylene Chloride	9355543		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	96%	60%	130%	74%	50%	140%
Trans- 1,2-Dichloroethylene	9355543		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	93%	60%	130%	76%	50%	140%
Methyl tert-butyl Ether	9355543		< 0.05	< 0.05	NA	< 0.05	99%	50%	140%	112%	60%	130%	94%	50%	140%
1,1-Dichloroethane	9355543		< 0.02	< 0.02	NA	< 0.02	83%	50%	140%	93%	60%	130%	90%	50%	140%
Methyl Ethyl Ketone	9355543		< 0.50	< 0.50	NA	< 0.50	99%	50%	140%	92%	50%	140%	91%	50%	140%
Cis- 1,2-Dichloroethylene	9355543		< 0.02	< 0.02	NA	< 0.02	84%	50%	140%	73%	60%	130%	73%	50%	140%
Chloroform	9355543		< 0.04	< 0.04	NA	< 0.04	70%	50%	140%	79%	60%	130%	102%	50%	140%
1,2-Dichloroethane	9355543		< 0.03	< 0.03	NA	< 0.03	83%	50%	140%	91%	60%	130%	99%	50%	140%
1,1,1-Trichloroethane	9355543		< 0.05	< 0.05	NA	< 0.05	73%	50%	140%	93%	60%	130%	93%	50%	140%
Carbon Tetrachloride	9355543		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	73%	60%	130%	89%	50%	140%
Benzene	9355543		< 0.02	< 0.02	NA	< 0.02	82%	50%	140%	102%	60%	130%	80%	50%	140%
1,2-Dichloropropane	9355543		< 0.03	< 0.03	NA	< 0.03	85%	50%	140%	93%	60%	130%	77%	50%	140%
Trichloroethylene	9355543		< 0.03	< 0.03	NA	< 0.03	102%	50%	140%	105%	60%	130%	92%	50%	140%
Bromodichloromethane	9355543		< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	77%	60%	130%	83%	50%	140%
Methyl Isobutyl Ketone	9355543		< 0.50	< 0.50	NA	< 0.50	95%	50%	140%	91%	50%	140%	99%	50%	140%
1,1,2-Trichloroethane	9355543		< 0.04	< 0.04	NA	< 0.04	89%	50%	140%	93%	60%	130%	74%	50%	140%
Toluene	9355543		< 0.05	< 0.05	NA	< 0.05	77%	50%	140%	86%	60%	130%	72%	50%	140%
Dibromochloromethane	9355543		< 0.05	< 0.05	NA	< 0.05	73%	50%	140%	83%	60%	130%	100%	50%	140%
Ethylene Dibromide	9355543		< 0.04	< 0.04	NA	< 0.04	83%	50%	140%	92%	60%	130%	71%	50%	140%
Tetrachloroethylene	9355543		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	90%	60%	130%	102%	50%	140%
1,1,1,2-Tetrachloroethane	9355543		< 0.04	< 0.04	NA	< 0.04	83%	50%	140%	85%	60%	130%	74%	50%	140%
Chlorobenzene	9355543		< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	97%	60%	130%	78%	50%	140%
Ethylbenzene	9355543		< 0.05	< 0.05	NA	< 0.05	76%	50%	140%	86%	60%	130%	86%	50%	140%
m & p-Xylene	9355543		< 0.05	< 0.05	NA	< 0.05	77%	50%	140%	88%	60%	130%	93%	50%	140%
Bromoform	9355543		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	85%	60%	130%	91%	50%	140%
Styrene	9355543		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	79%	60%	130%	97%	50%	140%
1,1,2,2-Tetrachloroethane	9355543		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	100%	60%	130%	110%	50%	140%
o-Xylene	9355543		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	92%	60%	130%	71%	50%	140%
1,3-Dichlorobenzene	9355543		< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	92%	60%	130%	73%	50%	140%
1,4-Dichlorobenzene	9355543		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	101%	60%	130%	77%	50%	140%
1,2-Dichlorobenzene	9355543		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	95%	60%	130%	74%	50%	140%
1,3-Dichloropropene	9355543		< 0.04	< 0.04	NA	< 0.04	91%	50%	140%	77%	60%	130%	106%	50%	140%
n-Hexane	9355543		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	79%	60%	130%	93%	50%	140%

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T353923

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Jun 28, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:



Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T353923

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Moisture Content	VOL-91-5002	MOE E3139	BALANCE

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
642 WELHAM ROAD
BARRIE, ON L4N9A1
(705) 721-8451

ATTENTION TO: Ian Acheson

PROJECT: 18-107

AGAT WORK ORDER: 18T354487

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Jun 29, 2018

PAGES (INCLUDING COVER): 7

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 18T354487

PROJECT: 18-107

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY:

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2018-06-22

DATE REPORTED: 2018-06-29

SAMPLE DESCRIPTION: BH-8-4
SAMPLE TYPE: Soil
DATE SAMPLED: 2018-06-21
15:45
9355903

Parameter	Unit	G / S	RDL	
Dichlorodifluoromethane	µg/g	16	0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05
Trichlorofluoromethane	ug/g	4	0.05	<0.05
Acetone	ug/g	16	0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05
Methylene Chloride	ug/g	0.1	0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.084	0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.75	0.05	<0.05
1,1-Dichloroethane	ug/g	0.47	0.02	<0.02
Methyl Ethyl Ketone	ug/g	16	0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	1.9	0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.38	0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05
Benzene	ug/g	0.21	0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03
Trichloroethylene	ug/g	0.061	0.03	<0.03
Bromodichloromethane	ug/g	1.5	0.05	<0.05
Methyl Isobutyl Ketone	ug/g	1.7	0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04
Toluene	ug/g	2.3	0.05	<0.05
Dibromochloromethane	ug/g	2.3	0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04
Tetrachloroethylene	ug/g	0.28	0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.058	0.04	<0.04
Chlorobenzene	ug/g	2.4	0.05	<0.05
Ethylbenzene	ug/g	1.1	0.05	<0.05

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T354487

PROJECT: 18-107

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY:

O. Reg. 153(511) - VOCs (Soil)				
DATE RECEIVED: 2018-06-22			DATE REPORTED: 2018-06-29	
		SAMPLE DESCRIPTION:		BH-8-4
		SAMPLE TYPE:		Soil
		DATE SAMPLED:		2018-06-21 15:45
Parameter	Unit	G / S	RDL	9355903
m & p-Xylene	ug/g		0.05	<0.05
Bromoform	ug/g	0.27	0.05	<0.05
Styrene	ug/g	0.7	0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05
o-Xylene	ug/g		0.05	<0.05
1,3-Dichlorobenzene	ug/g	4.8	0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.083	0.05	<0.05
1,2-Dichlorobenzene	ug/g	1.2	0.05	<0.05
Xylene Mixture	ug/g	3.1	0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04
n-Hexane	µg/g	2.8	0.05	<0.05
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		91
4-Bromofluorobenzene	% Recovery	50-140		97

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Soil -

Residential/Parkland/Institutional Property Use - Coarse Textured Soils

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9355903 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

Certified By:

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T354487

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Jun 29, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - VOCs (Soil)

Dichlorodifluoromethane	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	77%	50%	140%	76%	50%	140%	87%	50%	140%
Vinyl Chloride	9355903	9355903	< 0.02	< 0.02	NA	< 0.02	76%	50%	140%	71%	50%	140%	85%	50%	140%
Bromomethane	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	86%	50%	140%	76%	50%	140%
Trichlorofluoromethane	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	75%	50%	140%	76%	50%	140%	90%	50%	140%
Acetone	9355903	9355903	< 0.50	< 0.50	NA	< 0.50	110%	50%	140%	115%	50%	140%	91%	50%	140%
1,1-Dichloroethylene	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	93%	60%	130%	93%	50%	140%
Methylene Chloride	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	96%	60%	130%	74%	50%	140%
Trans- 1,2-Dichloroethylene	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	93%	60%	130%	76%	50%	140%
Methyl tert-butyl Ether	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	99%	50%	140%	112%	60%	130%	94%	50%	140%
1,1-Dichloroethane	9355903	9355903	< 0.02	< 0.02	NA	< 0.02	83%	50%	140%	93%	60%	130%	90%	50%	140%
Methyl Ethyl Ketone	9355903	9355903	< 0.50	< 0.50	NA	< 0.50	99%	50%	140%	92%	50%	140%	91%	50%	140%
Cis- 1,2-Dichloroethylene	9355903	9355903	< 0.02	< 0.02	NA	< 0.02	84%	50%	140%	73%	60%	130%	73%	50%	140%
Chloroform	9355903	9355903	< 0.04	< 0.04	NA	< 0.04	70%	50%	140%	79%	60%	130%	102%	50%	140%
1,2-Dichloroethane	9355903	9355903	< 0.03	< 0.03	NA	< 0.03	83%	50%	140%	91%	60%	130%	99%	50%	140%
1,1,1-Trichloroethane	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	73%	50%	140%	93%	60%	130%	93%	50%	140%
Carbon Tetrachloride	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	73%	60%	130%	89%	50%	140%
Benzene	9355903	9355903	< 0.02	< 0.02	NA	< 0.02	82%	50%	140%	102%	60%	130%	80%	50%	140%
1,2-Dichloropropane	9355903	9355903	< 0.03	< 0.03	NA	< 0.03	85%	50%	140%	93%	60%	130%	77%	50%	140%
Trichloroethylene	9355903	9355903	< 0.03	< 0.03	NA	< 0.03	102%	50%	140%	105%	60%	130%	92%	50%	140%
Bromodichloromethane	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	77%	60%	130%	83%	50%	140%
Methyl Isobutyl Ketone	9355903	9355903	< 0.50	< 0.50	NA	< 0.50	95%	50%	140%	91%	50%	140%	99%	50%	140%
1,1,2-Trichloroethane	9355903	9355903	< 0.04	< 0.04	NA	< 0.04	89%	50%	140%	93%	60%	130%	74%	50%	140%
Toluene	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	77%	50%	140%	86%	60%	130%	72%	50%	140%
Dibromochloromethane	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	73%	50%	140%	83%	60%	130%	100%	50%	140%
Ethylene Dibromide	9355903	9355903	< 0.04	< 0.04	NA	< 0.04	83%	50%	140%	92%	60%	130%	71%	50%	140%
Tetrachloroethylene	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	90%	60%	130%	102%	50%	140%
1,1,1,2-Tetrachloroethane	9355903	9355903	< 0.04	< 0.04	NA	< 0.04	83%	50%	140%	85%	60%	130%	74%	50%	140%
Chlorobenzene	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	97%	60%	130%	78%	50%	140%
Ethylbenzene	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	76%	50%	140%	86%	60%	130%	86%	50%	140%
m & p-Xylene	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	77%	50%	140%	88%	60%	130%	93%	50%	140%
Bromoform	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	85%	60%	130%	91%	50%	140%
Styrene	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	79%	60%	130%	97%	50%	140%
1,1,2,2-Tetrachloroethane	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	100%	60%	130%	110%	50%	140%
o-Xylene	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	92%	60%	130%	71%	50%	140%
1,3-Dichlorobenzene	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	92%	60%	130%	73%	50%	140%
1,4-Dichlorobenzene	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	101%	60%	130%	77%	50%	140%
1,2-Dichlorobenzene	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	95%	60%	130%	74%	50%	140%
1,3-Dichloropropene	9355903	9355903	< 0.04	< 0.04	NA	< 0.04	91%	50%	140%	77%	60%	130%	106%	50%	140%
n-Hexane	9355903	9355903	< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	79%	60%	130%	93%	50%	140%



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T354487

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Jun 29, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T354487

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
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BARRIE, ON L4N9A1
(705) 721-8451

ATTENTION TO: Ian Acheson

PROJECT: 18-107

AGAT WORK ORDER: 18T355092

SOIL ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

WATER ANALYSIS REVIEWED BY: Amanjot Bhela, Inorganic Coordinator

DATE REPORTED: Jul 06, 2018

PAGES (INCLUDING COVER): 21

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



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AGAT WORK ORDER: 18T355092

PROJECT: 18-107

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - Metals (Including Hydrides) (Soil)

DATE RECEIVED: 2018-06-26

DATE REPORTED: 2018-07-03

Parameter	Unit	SAMPLE DESCRIPTION:		BH-10-2	BH-10-2-1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-06-25	2018-06-25
		G / S	RDL	9360007	9360008
Antimony	µg/g	7.5	0.8	<0.8	<0.8
Arsenic	µg/g	18	1	<1	<1
Barium	µg/g	390	2	9	9
Beryllium	µg/g	4	0.5	<0.5	<0.5
Boron	µg/g	120	5	<5	<5
Cadmium	µg/g	1.2	0.5	<0.5	<0.5
Chromium	µg/g	160	2	4	4
Cobalt	µg/g	22	0.5	1.2	1.2
Copper	µg/g	140	1	3	3
Lead	µg/g	120	1	<1	<1
Molybdenum	µg/g	6.9	0.5	<0.5	<0.5
Nickel	µg/g	100	1	2	2
Selenium	µg/g	2.4	0.4	<0.4	<0.4
Silver	µg/g	20	0.2	<0.2	<0.2
Thallium	µg/g	1	0.4	<0.4	<0.4
Uranium	µg/g	23	0.5	<0.5	<0.5
Vanadium	µg/g	86	1	10	10
Zinc	µg/g	340	5	6	6

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By:

Amanjot Bhela



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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - ORPs (Soil)

DATE RECEIVED: 2018-06-26

DATE REPORTED: 2018-06-30

SAMPLE DESCRIPTION: BH-10-3

SAMPLE TYPE: Soil

DATE SAMPLED: 2018-06-25

Parameter	Unit	G / S	RDL	9360009
pH, 2:1 CaCl ₂ Extraction	pH Units	NA	7.94	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

9360009 pH was determined on the 0.01M CaCl₂ extract obtained from 2:1 leaching procedure (2 parts extraction fluid:1 part wet soil).

Certified By:

Amanjot Bhela



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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

Particle Size by Sieve (Wet)

DATE RECEIVED: 2018-06-26

DATE REPORTED: 2018-07-03

SAMPLE DESCRIPTION: BH-10-3

SAMPLE TYPE: Soil

DATE SAMPLED: 2018-06-25

Parameter	Unit	G / S	RDL	9360009
Sieve Analysis - 75 µm (retained)	%		NA	93.52
Sieve Analysis - 75 µm (passing)	%		NA	6.48
Soil Texture (Toronto)				Coarse

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

9360009 Value reported is the amount of sample passing through or retained on sieve after wash with water and represents proportion by weight particles smaller or larger than indicated sieve size.

Certified By:

Amanjot Bhela



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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

DATE RECEIVED: 2018-06-26

DATE REPORTED: 2018-06-29

		SAMPLE DESCRIPTION:		BH-10-2	BH-10-2-1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-06-25	2018-06-25
Parameter	Unit	G / S	RDL	9360007	9360008
F1 (C6 to C10)	µg/g	55	5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g	55	5	<5	<5
F2 (C10 to C16)	µg/g	98	10	<10	<10
F3 (C16 to C34)	µg/g	300	50	<50	<50
F4 (C34 to C50)	µg/g	2800	50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g	2800	50	NA	NA
Moisture Content	%		0.1	12.6	14.0
Surrogate	Unit	Acceptable Limits			
Terphenyl	%	60-140		122	102

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Soil -

Residential/Parkland/Institutional Property Use - Coarse Textured Soils

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9360007-9360008 Results are based on sample dry weight.

The C6-C10 fraction is calculated using toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50.

Total C6 - C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 + nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

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AGAT WORK ORDER: 18T355092

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

DATE RECEIVED: 2018-06-26

DATE REPORTED: 2018-06-29

		SAMPLE DESCRIPTION:		MW-10	MW-10-1
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2018-06-26	2018-06-26
Parameter	Unit	G / S	RDL	9360010	9360012
F1 (C6 - C10)	µg/L	750	25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L	750	25	<25	<25
F2 (C10 to C16)	µg/L	150	100	<100	<100
F3 (C16 to C34)	µg/L	500	100	<100	<100
F4 (C34 to C50)	µg/L	500	100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L	500	500	NA	NA
Surrogate	Unit	Acceptable Limits			
Terphenyl	%	60-140		92	84

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Potable Ground Water - All Types of Property Uses - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9360010-9360012 The C6-C10 fraction is calculated using Toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2018-06-26

DATE REPORTED: 2018-06-30

		SAMPLE DESCRIPTION:		BH-10-2	BH-10-2-1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-06-25	2018-06-25
Parameter	Unit	G / S	RDL	9360007	9360008
Dichlorodifluoromethane	µg/g	16	0.05	<0.05	<0.05
Vinyl Chloride	ug/g	0.02	0.02	<0.02	<0.02
Bromomethane	ug/g	0.05	0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g	4	0.05	<0.05	<0.05
Acetone	ug/g	16	0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g	0.05	0.05	<0.05	<0.05
Methylene Chloride	ug/g	0.1	0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g	0.084	0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g	0.75	0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g	0.47	0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g	16	0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g	1.9	0.02	<0.02	<0.02
Chloroform	ug/g	0.05	0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g	0.05	0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g	0.38	0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g	0.05	0.05	<0.05	<0.05
Benzene	ug/g	0.21	0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g	0.05	0.03	<0.03	<0.03
Trichloroethylene	ug/g	0.061	0.03	<0.03	<0.03
Bromodichloromethane	ug/g	1.5	0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g	1.7	0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g	0.05	0.04	<0.04	<0.04
Toluene	ug/g	2.3	0.05	<0.05	<0.05
Dibromochloromethane	ug/g	2.3	0.05	<0.05	<0.05
Ethylene Dibromide	ug/g	0.05	0.04	<0.04	<0.04
Tetrachloroethylene	ug/g	0.28	0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g	0.058	0.04	<0.04	<0.04
Chlorobenzene	ug/g	2.4	0.05	<0.05	<0.05
Ethylbenzene	ug/g	1.1	0.05	<0.05	<0.05
m & p-Xylene	ug/g		0.05	<0.05	<0.05

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AGAT WORK ORDER: 18T355092

PROJECT: 18-107

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - VOCs (Soil)					
DATE RECEIVED: 2018-06-26			DATE REPORTED: 2018-06-30		
		SAMPLE DESCRIPTION:		BH-10-2	BH-10-2-1
		SAMPLE TYPE:		Soil	Soil
		DATE SAMPLED:		2018-06-25	2018-06-25
Parameter	Unit	G / S	RDL	9360007	9360008
Bromoform	ug/g	0.27	0.05	<0.05	<0.05
Styrene	ug/g	0.7	0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g	0.05	0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g	4.8	0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g	0.083	0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g	1.2	0.05	<0.05	<0.05
Xylene Mixture	ug/g	3.1	0.05	<0.05	<0.05
1,3-Dichloropropene	µg/g	0.05	0.04	<0.04	<0.04
n-Hexane	µg/g	2.8	0.05	<0.05	<0.05
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		85	85
4-Bromofluorobenzene	% Recovery	50-140		87	87

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Soil - Residential/Parkland/Institutional Property Use - Coarse Textured Soils

Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9360007-9360008 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-26

DATE REPORTED: 2018-07-04

Parameter	Unit	SAMPLE DESCRIPTION:		MW-10	MW-10-1
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2018-06-26	2018-06-26
		G / S	RDL	9360010	9360012
Dichlorodifluoromethane	µg/L	590	0.40	<0.40	<0.40
Vinyl Chloride	µg/L	0.5	0.34	<0.34	<0.34
Bromomethane	µg/L	0.89	0.40	<0.40	<0.40
Trichlorofluoromethane	µg/L	150	0.80	<0.80	<0.80
Acetone	µg/L	2700	2.0	<2.0	<2.0
1,1-Dichloroethylene	µg/L	1.6	0.60	<0.60	<0.60
Methylene Chloride	µg/L	50	0.60	<0.60	<0.60
trans- 1,2-Dichloroethylene	µg/L	1.6	0.40	<0.40	<0.40
Methyl tert-butyl ether	µg/L	15	0.40	<0.40	<0.40
1,1-Dichloroethane	µg/L	5	0.60	<0.60	<0.60
Methyl Ethyl Ketone	µg/L	1800	2.0	<2.0	<2.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.40	<0.40	<0.40
Chloroform	µg/L	2.4	0.40	<0.40	<0.40
1,2-Dichloroethane	µg/L	1.6	0.40	<0.40	<0.40
1,1,1-Trichloroethane	µg/L	200	0.60	<0.60	<0.60
Carbon Tetrachloride	µg/L	0.79	0.40	<0.40	<0.40
Benzene	µg/L	5.0	0.40	<0.40	<0.40
1,2-Dichloropropane	µg/L	5	0.40	<0.40	<0.40
Trichloroethylene	µg/L	1.6	0.40	<0.40	<0.40
Bromodichloromethane	µg/L	16	0.40	<0.40	<0.40
Methyl Isobutyl Ketone	µg/L	640	2.0	<2.0	<2.0
1,1,2-Trichloroethane	µg/L	4.7	0.40	<0.40	<0.40
Toluene	µg/L	24	0.40	<0.40	<0.40
Dibromochloromethane	µg/L	25	0.20	<0.20	<0.20
Ethylene Dibromide	µg/L	0.2	0.20	<0.20	<0.20
Tetrachloroethylene	µg/L	1.6	0.40	<0.40	<0.40
1,1,1,2-Tetrachloroethane	µg/L	1.1	0.20	<0.20	<0.20
Chlorobenzene	µg/L	30	0.20	<0.20	<0.20
Ethylbenzene	µg/L	2.4	0.20	<0.20	<0.20
m & p-Xylene	µg/L		0.40	<0.40	<0.40

Certified By:

N Popmukolof



Certificate of Analysis

AGAT WORK ORDER: 18T355092

PROJECT: 18-107

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-26

DATE REPORTED: 2018-07-04

		SAMPLE DESCRIPTION:		MW-10	MW-10-1
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2018-06-26	2018-06-26
Parameter	Unit	G / S	RDL	9360010	9360012
Bromoform	µg/L	25	0.20	<0.20	<0.20
Styrene	µg/L	5.4	0.20	<0.20	<0.20
1,1,2,2-Tetrachloroethane	µg/L	1	0.20	<0.20	<0.20
o-Xylene	µg/L		0.20	<0.20	<0.20
1,3-Dichlorobenzene	µg/L	59	0.20	<0.20	<0.20
1,4-Dichlorobenzene	µg/L	1	0.20	<0.20	<0.20
1,2-Dichlorobenzene	µg/L	3	0.20	<0.20	<0.20
1,3-Dichloropropene	µg/L	0.5	0.60	<0.60	<0.60
Xylene Mixture	µg/L	300	0.40	<0.40	<0.40
n-Hexane	µg/L	51	0.40	<0.40	<0.40
Surrogate	Unit	Acceptable Limits			
Toluene-d8	% Recovery	50-140		100	101
4-Bromofluorobenzene	% Recovery	50-140		88	94

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Potable Ground Water - All Types of Property Uses - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9360010 Dilution factor=2
The sample was diluted because it was foamy. The reporting detection limit has been corrected for the dilution factor used

9360012 Dilution factor=2
The sample was diluted because it was foamy. The reporting detection limit has been corrected for the dilution factor used

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T355092

PROJECT: 18-107

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - Metals (Including Hydrides) (Water)

DATE RECEIVED: 2018-06-26

DATE REPORTED: 2018-06-30

Parameter	Unit	SAMPLE DESCRIPTION:		MW-10	MW-10-1
		SAMPLE TYPE:		Water	Water
		DATE SAMPLED:		2018-06-26	2018-06-26
		G / S	RDL	9360010	9360012
Antimony	µg/L	6	1.0	<1.0	<1.0
Arsenic	µg/L	25	1.0	<1.0	<1.0
Barium	µg/L	1000	2.0	43.8	43.7
Beryllium	µg/L	4.0	0.5	<0.5	<0.5
Boron	µg/L	5000	10.0	16.2	15.4
Cadmium	µg/L	2.7	0.2	<0.2	<0.2
Chromium	µg/L	50	2.0	<2.0	<2.0
Cobalt	µg/L	3.8	0.5	<0.5	<0.5
Copper	µg/L	87	1.0	4.1	<1.0
Lead	µg/L	10	0.5	<0.5	<0.5
Molybdenum	µg/L	70	0.5	1.5	1.6
Nickel	µg/L	100	1.0	<1.0	<1.0
Selenium	µg/L	10	1.0	<1.0	<1.0
Silver	µg/L	1.5	0.2	<0.2	<0.2
Thallium	µg/L	2	0.3	<0.3	<0.3
Uranium	µg/L	20	0.5	<0.5	<0.5
Vanadium	µg/L	6.2	0.4	<0.4	<0.4
Zinc	µg/L	1100	5.0	7.1	<5.0

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Potable Ground Water - All Types of Property Uses - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By:

Amanjot Bhela

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T355092

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY: I. Acheson

Soil Analysis															
RPT Date:			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
Particle Size by Sieve (Wet)															
Sieve Analysis - 75 µm (retained)	9360009	9360009	93.52	93.26	0.3%	NA	99%	70%	130%						
Sieve Analysis - 75 µm (passing)	9360009	9360009	6.48	6.74	3.9%	NA	NA	70%	130%						
O. Reg. 153(511) - ORPs (Soil)															
pH, 2:1 CaCl2 Extraction	9360009	9360009	7.94	8.09	1.9%	NA	101%	90%	110%	NA				NA	
O. Reg. 153(511) - Metals (Including Hydrides) (Soil)															
Antimony	9360007	9360007	<0.8	<0.8	NA	< 0.8	119%	70%	130%	110%	80%	120%	95%	70%	130%
Arsenic	9360007	9360007	<1	<1	NA	< 1	110%	70%	130%	99%	80%	120%	87%	70%	130%
Barium	9360007	9360007	9	9	NA	< 2	93%	70%	130%	97%	80%	120%	85%	70%	130%
Beryllium	9360007	9360007	<0.5	<0.5	NA	< 0.5	91%	70%	130%	104%	80%	120%	86%	70%	130%
Boron	9360007	9360007	<5	<5	NA	< 5	81%	70%	130%	95%	80%	120%	72%	70%	130%
Cadmium	9360007	9360007	<0.5	<0.5	NA	< 0.5	102%	70%	130%	103%	80%	120%	91%	70%	130%
Chromium	9360007	9360007	4	4	NA	< 2	93%	70%	130%	95%	80%	120%	98%	70%	130%
Cobalt	9360007	9360007	1.2	1.2	NA	< 0.5	101%	70%	130%	94%	80%	120%	94%	70%	130%
Copper	9360007	9360007	3	3	NA	< 1	93%	70%	130%	100%	80%	120%	85%	70%	130%
Lead	9360007	9360007	<1	<1	NA	< 1	105%	70%	130%	102%	80%	120%	95%	70%	130%
Molybdenum	9360007	9360007	<0.5	<0.5	NA	< 0.5	101%	70%	130%	105%	80%	120%	99%	70%	130%
Nickel	9360007	9360007	2	2	NA	< 1	102%	70%	130%	98%	80%	120%	93%	70%	130%
Selenium	9360007	9360007	<0.4	<0.4	NA	< 0.4	124%	70%	130%	102%	80%	120%	81%	70%	130%
Silver	9360007	9360007	<0.2	<0.2	NA	< 0.2	102%	70%	130%	104%	80%	120%	87%	70%	130%
Thallium	9360007	9360007	<0.4	<0.4	NA	< 0.4	102%	70%	130%	104%	80%	120%	100%	70%	130%
Uranium	9360007	9360007	<0.5	<0.5	NA	< 0.5	110%	70%	130%	112%	80%	120%	106%	70%	130%
Vanadium	9360007	9360007	10	9	10.5%	< 1	107%	70%	130%	100%	80%	120%	100%	70%	130%
Zinc	9360007	9360007	6	6	NA	< 5	102%	70%	130%	100%	80%	120%	99%	70%	130%

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL

Certified By:





Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T355092

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY: I.Acheson

Trace Organics Analysis

RPT Date:			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - VOCs (Soil)

Dichlorodifluoromethane	9355543		< 0.05	< 0.05	NA	< 0.05	77%	50%	140%	76%	50%	140%	87%	50%	140%
Vinyl Chloride	9355543		< 0.02	< 0.02	NA	< 0.02	76%	50%	140%	71%	50%	140%	85%	50%	140%
Bromomethane	9355543		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	86%	50%	140%	76%	50%	140%
Trichlorofluoromethane	9355543		< 0.05	< 0.05	NA	< 0.05	75%	50%	140%	76%	50%	140%	90%	50%	140%
Acetone	9355543		< 0.50	< 0.50	NA	< 0.50	110%	50%	140%	115%	50%	140%	91%	50%	140%
1,1-Dichloroethylene	9355543		< 0.05	< 0.05	NA	< 0.05	90%	50%	140%	93%	60%	130%	93%	50%	140%
Methylene Chloride	9355543		< 0.05	< 0.05	NA	< 0.05	95%	50%	140%	96%	60%	130%	74%	50%	140%
Trans- 1,2-Dichloroethylene	9355543		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	93%	60%	130%	76%	50%	140%
Methyl tert-butyl Ether	9355543		< 0.05	< 0.05	NA	< 0.05	99%	50%	140%	112%	60%	130%	94%	50%	140%
1,1-Dichloroethane	9355543		< 0.02	< 0.02	NA	< 0.02	83%	50%	140%	93%	60%	130%	90%	50%	140%
Methyl Ethyl Ketone	9355543		< 0.50	< 0.50	NA	< 0.50	99%	50%	140%	92%	50%	140%	91%	50%	140%
Cis- 1,2-Dichloroethylene	9355543		< 0.02	< 0.02	NA	< 0.02	84%	50%	140%	73%	60%	130%	73%	50%	140%
Chloroform	9355543		< 0.04	< 0.04	NA	< 0.04	70%	50%	140%	79%	60%	130%	102%	50%	140%
1,2-Dichloroethane	9355543		< 0.03	< 0.03	NA	< 0.03	83%	50%	140%	91%	60%	130%	99%	50%	140%
1,1,1-Trichloroethane	9355543		< 0.05	< 0.05	NA	< 0.05	73%	50%	140%	93%	60%	130%	93%	50%	140%
Carbon Tetrachloride	9355543		< 0.05	< 0.05	NA	< 0.05	102%	50%	140%	73%	60%	130%	89%	50%	140%
Benzene	9355543		< 0.02	< 0.02	NA	< 0.02	82%	50%	140%	102%	60%	130%	80%	50%	140%
1,2-Dichloropropane	9355543		< 0.03	< 0.03	NA	< 0.03	85%	50%	140%	93%	60%	130%	77%	50%	140%
Trichloroethylene	9355543		< 0.03	< 0.03	NA	< 0.03	102%	50%	140%	105%	60%	130%	92%	50%	140%
Bromodichloromethane	9355543		< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	77%	60%	130%	83%	50%	140%
Methyl Isobutyl Ketone	9355543		< 0.50	< 0.50	NA	< 0.50	95%	50%	140%	91%	50%	140%	99%	50%	140%
1,1,2-Trichloroethane	9355543		< 0.04	< 0.04	NA	< 0.04	89%	50%	140%	93%	60%	130%	74%	50%	140%
Toluene	9355543		< 0.05	< 0.05	NA	< 0.05	77%	50%	140%	86%	60%	130%	72%	50%	140%
Dibromochloromethane	9355543		< 0.05	< 0.05	NA	< 0.05	73%	50%	140%	83%	60%	130%	100%	50%	140%
Ethylene Dibromide	9355543		< 0.04	< 0.04	NA	< 0.04	83%	50%	140%	92%	60%	130%	71%	50%	140%
Tetrachloroethylene	9355543		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	90%	60%	130%	102%	50%	140%
1,1,1,2-Tetrachloroethane	9355543		< 0.04	< 0.04	NA	< 0.04	83%	50%	140%	85%	60%	130%	74%	50%	140%
Chlorobenzene	9355543		< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	97%	60%	130%	78%	50%	140%
Ethylbenzene	9355543		< 0.05	< 0.05	NA	< 0.05	76%	50%	140%	86%	60%	130%	86%	50%	140%
m & p-Xylene	9355543		< 0.05	< 0.05	NA	< 0.05	77%	50%	140%	88%	60%	130%	93%	50%	140%
Bromoform	9355543		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	85%	60%	130%	91%	50%	140%
Styrene	9355543		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	79%	60%	130%	97%	50%	140%
1,1,2,2-Tetrachloroethane	9355543		< 0.05	< 0.05	NA	< 0.05	98%	50%	140%	100%	60%	130%	110%	50%	140%
o-Xylene	9355543		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	92%	60%	130%	71%	50%	140%
1,3-Dichlorobenzene	9355543		< 0.05	< 0.05	NA	< 0.05	87%	50%	140%	92%	60%	130%	73%	50%	140%
1,4-Dichlorobenzene	9355543		< 0.05	< 0.05	NA	< 0.05	96%	50%	140%	101%	60%	130%	77%	50%	140%
1,2-Dichlorobenzene	9355543		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	95%	60%	130%	74%	50%	140%
1,3-Dichloropropene	9355543		< 0.04	< 0.04	NA	< 0.04	91%	50%	140%	77%	60%	130%	106%	50%	140%
n-Hexane	9355543		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	79%	60%	130%	93%	50%	140%

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T355092

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY: I.Acheson

Trace Organics Analysis (Continued)

RPT Date:			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - VOCs (Water)

Dichlorodifluoromethane	9353750		< 0.20	< 0.20	NA	< 0.20	70%	50%	140%	81%	50%	140%	75%	50%	140%
Vinyl Chloride	9353750		< 0.17	< 0.17	NA	< 0.17	77%	50%	140%	76%	50%	140%	76%	50%	140%
Bromomethane	9353750		< 0.20	< 0.20	NA	< 0.20	73%	50%	140%	74%	50%	140%	78%	50%	140%
Trichlorofluoromethane	9353750		< 0.40	< 0.40	NA	< 0.40	85%	50%	140%	119%	50%	140%	93%	50%	140%
Acetone	9353750		< 1.0	< 1.0	NA	< 1.0	114%	50%	140%	102%	50%	140%	105%	50%	140%
1,1-Dichloroethylene	9353750		< 0.30	< 0.30	NA	< 0.30	109%	50%	140%	70%	60%	130%	70%	50%	140%
Methylene Chloride	9353750		< 0.30	< 0.30	NA	< 0.30	85%	50%	140%	85%	60%	130%	82%	50%	140%
trans- 1,2-Dichloroethylene	9353750		< 0.20	< 0.20	NA	< 0.20	81%	50%	140%	82%	60%	130%	81%	50%	140%
Methyl tert-butyl ether	9353750		< 0.20	< 0.20	NA	< 0.20	90%	50%	140%	93%	60%	130%	101%	50%	140%
1,1-Dichloroethane	9353750		< 0.30	< 0.30	NA	< 0.30	96%	50%	140%	72%	60%	130%	72%	50%	140%
Methyl Ethyl Ketone	9353750		< 1.0	< 1.0	NA	< 1.0	84%	50%	140%	79%	50%	140%	70%	50%	140%
cis- 1,2-Dichloroethylene	9353750		< 0.20	< 0.20	NA	< 0.20	96%	50%	140%	89%	60%	130%	70%	50%	140%
Chloroform	9353750		< 0.20	< 0.20	NA	< 0.20	81%	50%	140%	77%	60%	130%	78%	50%	140%
1,2-Dichloroethane	9353750		< 0.20	< 0.20	NA	< 0.20	86%	50%	140%	75%	60%	130%	77%	50%	140%
1,1,1-Trichloroethane	9353750		< 0.30	< 0.30	NA	< 0.30	90%	50%	140%	83%	60%	130%	81%	50%	140%
Carbon Tetrachloride	9353750		< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	80%	60%	130%	81%	50%	140%
Benzene	9353750		< 0.20	< 0.20	NA	< 0.20	86%	50%	140%	87%	60%	130%	89%	50%	140%
1,2-Dichloropropane	9353750		< 0.20	< 0.20	NA	< 0.20	77%	50%	140%	91%	60%	130%	92%	50%	140%
Trichloroethylene	9353750		< 0.20	< 0.20	NA	< 0.20	96%	50%	140%	94%	60%	130%	94%	50%	140%
Bromodichloromethane	9353750		< 0.20	< 0.20	NA	< 0.20	84%	50%	140%	75%	60%	130%	79%	50%	140%
Methyl Isobutyl Ketone	9353750		< 1.0	< 1.0	NA	< 1.0	75%	50%	140%	74%	50%	140%	83%	50%	140%
1,1,2-Trichloroethane	9353750		< 0.20	< 0.20	NA	< 0.20	78%	50%	140%	88%	60%	130%	96%	50%	140%
Toluene	9353750		< 0.20	< 0.20	NA	< 0.20	77%	50%	140%	106%	60%	130%	106%	50%	140%
Dibromochloromethane	9353750		< 0.10	< 0.10	NA	< 0.10	87%	50%	140%	82%	60%	130%	93%	50%	140%
Ethylene Dibromide	9353750		< 0.10	< 0.10	NA	< 0.10	75%	50%	140%	81%	60%	130%	92%	50%	140%
Tetrachloroethylene	9353750		< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	110%	60%	130%	108%	50%	140%
1,1,1,2-Tetrachloroethane	9353750		< 0.10	< 0.10	NA	< 0.10	92%	50%	140%	95%	60%	130%	101%	50%	140%
Chlorobenzene	9353750		< 0.10	< 0.10	NA	< 0.10	77%	50%	140%	103%	60%	130%	106%	50%	140%
Ethylbenzene	9353750		< 0.10	< 0.10	NA	< 0.10	85%	50%	140%	99%	60%	130%	99%	50%	140%
m & p-Xylene	9353750		< 0.20	< 0.20	NA	< 0.20	114%	50%	140%	96%	60%	130%	98%	50%	140%
Bromoform	9353750		< 0.10	< 0.10	NA	< 0.10	73%	50%	140%	82%	60%	130%	94%	50%	140%
Styrene	9353750		< 0.10	< 0.10	NA	< 0.10	85%	50%	140%	91%	60%	130%	94%	50%	140%
1,1,2,2-Tetrachloroethane	9353750		< 0.10	< 0.10	NA	< 0.10	74%	50%	140%	81%	60%	130%	95%	50%	140%
o-Xylene	9353750		< 0.10	< 0.10	NA	< 0.10	72%	50%	140%	98%	60%	130%	100%	50%	140%
1,3-Dichlorobenzene	9353750		< 0.10	< 0.10	NA	< 0.10	72%	50%	140%	89%	60%	130%	104%	50%	140%
1,4-Dichlorobenzene	9353750		< 0.10	< 0.10	NA	< 0.10	83%	50%	140%	103%	60%	130%	118%	50%	140%
1,2-Dichlorobenzene	9353750		< 0.10	< 0.10	NA	< 0.10	76%	50%	140%	86%	60%	130%	102%	50%	140%
1,3-Dichloropropene	9353750		< 0.30	< 0.30	NA	< 0.30	82%	50%	140%	82%	60%	130%	79%	50%	140%

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T355092

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY: I.Acheson

Trace Organics Analysis (Continued)

RPT Date:			DUPLICATE				REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD	Method Blank	Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

n-Hexane	9353750		< 0.20	< 0.20	NA	< 0.20	93%	50%	140%	116%	60%	130%	76%	50%	140%
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O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

F1 (C6 to C10)	9368479		< 5	< 5	NA	< 5	80%	60%	130%	87%	85%	115%	105%	70%	130%
F2 (C10 to C16)	9345937		< 10	< 10	NA	< 10	91%	60%	130%	101%	80%	120%	102%	70%	130%
F3 (C16 to C34)	9345937		< 50	< 50	NA	< 50	97%	60%	130%	92%	80%	120%	92%	70%	130%
F4 (C34 to C50)	9345937		< 50	< 50	NA	< 50	96%	60%	130%	85%	80%	120%	101%	70%	130%

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

F1 (C6 - C10)	9360012	9360012	< 25	< 25	NA	< 25	90%	60%	140%	94%	60%	140%	86%	60%	140%
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	104%	60%	140%	65%	60%	140%	70%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	104%	60%	140%	85%	60%	140%	90%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	98%	60%	140%	92%	60%	140%	95%	60%	140%

Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume.

When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T355092

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY: I.Acheson

Water Analysis															
RPT Date:			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals (Including Hydrides) (Water)															
Antimony	9367569		<1.0	<1.0	NA	< 1.0	99%	70%	130%	104%	80%	120%	108%	70%	130%
Arsenic	9367569		<1.0	<1.0	NA	< 1.0	100%	70%	130%	100%	80%	120%	103%	70%	130%
Barium	9367569		12.0	11.6	3.4%	< 2.0	100%	70%	130%	103%	80%	120%	96%	70%	130%
Beryllium	9367569		<0.5	<0.5	NA	< 0.5	101%	70%	130%	97%	80%	120%	111%	70%	130%
Boron	9367569		<10.0	<10.0	NA	< 10.0	101%	70%	130%	101%	80%	120%	95%	70%	130%
Cadmium	9367569		<0.2	<0.2	NA	< 0.2	99%	70%	130%	103%	80%	120%	105%	70%	130%
Chromium	9367569		<2.0	<2.0	NA	< 2.0	104%	70%	130%	102%	80%	120%	103%	70%	130%
Cobalt	9367569		<0.5	<0.5	NA	< 0.5	95%	70%	130%	93%	80%	120%	94%	70%	130%
Copper	9367569		27.4	28.5	3.9%	< 1.0	93%	70%	130%	93%	80%	120%	89%	70%	130%
Lead	9367569		0.8	0.8	NA	< 0.5	98%	70%	130%	99%	80%	120%	97%	70%	130%
Molybdenum	9367569		<0.5	<0.5	NA	< 0.5	97%	70%	130%	97%	80%	120%	97%	70%	130%
Nickel	9367569		1.6	1.6	NA	< 1.0	99%	70%	130%	95%	80%	120%	95%	70%	130%
Selenium	9367569		<1.0	<1.0	NA	< 1.0	98%	70%	130%	100%	80%	120%	101%	70%	130%
Silver	9367569		<0.2	<0.2	NA	< 0.2	100%	70%	130%	108%	80%	120%	107%	70%	130%
Thallium	9367569		<0.3	<0.3	NA	< 0.3	96%	70%	130%	97%	80%	120%	93%	70%	130%
Uranium	9367569		<0.5	<0.5	NA	< 0.5	101%	70%	130%	100%	80%	120%	102%	70%	130%
Vanadium	9367569		<0.4	<0.4	NA	< 0.4	94%	70%	130%	93%	80%	120%	92%	70%	130%
Zinc	9367569		59.7	59.8	0.2%	< 5.0	100%	70%	130%	105%	80%	120%	105%	70%	130%

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:



Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T355092

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY: I. Acheson

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
pH, 2:1 CaCl ₂ Extraction	INOR-93-6031	MSA part 3 & SM 4500-H+ B	pH METER
Sieve Analysis - 75 µm (retained)		KROETSCH 2007; SHEPPARD 2007	SIEVE
Sieve Analysis - 75 µm (passing)		KROETSCH 2007; SHEPPARD 2007	SIEVE

Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T355092

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY: I.Acheson

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	Balance
Moisture Content	VOL-91-5009	CCME Tier 1 Method, SW846 5035,8015	BALANCE
Terphenyl	VOL-91-5009	CCME Tier 1 Method	GC/FID
F1 (C6 - C10)	VOL-91- 5010	MOE PHC E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC / FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC / FID
F4 (C34 to C50)	VOL-91-5010	MOE PHC E3421	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS



Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T355092

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY: I.Acheson

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T355092

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY: I. Acheson

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Water Analysis			
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS



Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: Azimuth Environmental Consulting Inc.
Contact: Ian Acheson
Address: 642 Wolham Rd
Barrie, ON
Phone: _____ Fax: _____
Reports to be sent to: ia.acheson@azimuthenvironmental.com
1. Email: ia.acheson@azimuthenvironmental.com
2. Email: david@azimuthenvironmental.com

Project Information:

Project: 18-107
Site Location: Hasty Tract
Sampled By: I. Acheson
AGAT Quote #: _____ PO: _____
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company: _____
Contact: _____
Address: _____
Email: _____

Regulatory Requirements:

(Please check all applicable boxes)

☒ Regulation 153/04 ☐ No Regulatory Requirement
Table 2 ☐ Sewer Use ☐ Regulation 558
Indicate One
☐ Ind/Com ☐ Sanitary ☐ CCME
☒ Res/Park ☐ Storm ☐ Prov. Water Quality Objectives (PWQO)
☐ Agriculture ☐ Other
Soil Texture (Check One) Region _____
☒ Coarse ☐ MISA ☐ Fine ☐ Indicate One

Is this submission for a Record of Site Condition?

☒ Yes ☐ No

Report Guideline on Certificate of Analysis

☒ Yes ☐ No

Sample Matrix Legend

B Biota
GW Ground Water
O Oil
P Paint
S Soil
SD Sediment
SW Surface Water

Field Filtered - Metals, Hg, CrVI

O. Reg 153

Metals and Inorganics

☐ All Metals ☐ 153 Metals (excl. Hydrides)
☐ Hydride Metals ☐ 153 Metals (incl. Hydrides)

ORPs: ☐ B-HWS ☐ Cl ☐ CN
☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ Hg
☒ pH ☐ SAR

Full Metals Scan

Regulation/Custom Metals

Nutrients: ☐ TP ☐ NH₃ ☐ TKN
☐ NO₃ ☐ NO₂ ☐ NO₃+NO₂

Volatiles: ☒ VOC ☐ BTEX ☐ THM

CCME Fractions 1 to 4

ABNs

PAHs

PCBs: ☐ Total ☐ Aroclors

Organochlorine Pesticides

TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs

Sewer Use

0.754 Grams

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y / N	Metals and Inorganics	ORPs	Full Metals Scan	Regulation/Custom Metals	Nutrients	Volatiles	CCME Fractions 1 to 4	ABNs	PAHs	PCBs	Organochlorine Pesticides	TCLP	Sewer Use
BH-10-2	25 June 18	11:35	4	S		-			X			X	X						
BH-10-2-1	25 June 18	11:35	4	S		-			X			X	X						
BH-10-3	25 June 18	11:50	2	S		-		X											X
MW-10	26 June 18	07:30	8	GW		Y			X			X	X						
MW-10-1	26 June 18	07:30	8	GW		Y			X			X	X						

Samples Relinquished By (Print Name and Sign): <u>Ian Acheson</u>	Date: <u>26 June 18</u>	Time: <u>08:30</u>	Samples Received By (Print Name and Sign): <u>Rouel</u>	Date: <u>2018/6/20</u>	Time: <u>9:55</u>
Samples Relinquished By (Print Name and Sign): <u>Rouel</u>	Date: <u>2018/6/20</u>	Time: <u>3:34</u>	Samples Received By (Print Name and Sign): <u>Rouel</u>	Date: _____	Time: _____
Samples Relinquished By (Print Name and Sign): _____	Date: _____	Time: _____	Samples Received By (Print Name and Sign): _____	Date: _____	Time: _____

Page 1 of 1

No: **T 050972**

Laboratory Use Only

Work Order #: 18T355092

Cooler Quantity: 1

Arrival Temperatures: 32 | 3.6 | 3.4
32 | 8 | 28

Custody Seal Intact: ☐ Yes ☐ No ☐ N/A

Notes: _____

Turnaround Time (TAT) Required:

Regular TAT

☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply): _____

Please provide prior notification for rush TAT
*TAT is exclusive of weekends and statutory holidays

For 'Same Day' analysis, please contact your AGAT CPM

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
642 WELHAM ROAD
BARRIE, ON L4N9A1
(705) 721-8451

ATTENTION TO: Ian Acheson

PROJECT: 18-107

AGAT WORK ORDER: 18T346804

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Jun 07, 2018

PAGES (INCLUDING COVER): 8

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 18T346804

PROJECT: 18-107

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE: 1132 Snow Valley Rd.

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-05

DATE REPORTED: 2018-06-07

		SAMPLE DESCRIPTION:		MW-1
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-06-04
Parameter	Unit	G / S	RDL	9300609
Dichlorodifluoromethane	µg/L	590	0.40	<0.40
Vinyl Chloride	µg/L	0.5	0.34	<0.34
Bromomethane	µg/L	0.89	0.40	<0.40
Trichlorofluoromethane	µg/L	150	0.80	<0.80
Acetone	µg/L	2700	2.0	<2.0
1,1-Dichloroethylene	µg/L	1.6	0.60	<0.60
Methylene Chloride	µg/L	50	0.60	<0.60
trans- 1,2-Dichloroethylene	µg/L	1.6	0.40	<0.40
Methyl tert-butyl ether	µg/L	15	0.40	<0.40
1,1-Dichloroethane	µg/L	5	0.60	<0.60
Methyl Ethyl Ketone	µg/L	1800	2.0	<2.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.40	<0.40
Chloroform	µg/L	2.4	0.40	41
1,2-Dichloroethane	µg/L	1.6	0.40	<0.40
1,1,1-Trichloroethane	µg/L	200	0.60	<0.60
Carbon Tetrachloride	µg/L	0.79	0.40	<0.40
Benzene	µg/L	5.0	0.40	29
1,2-Dichloropropane	µg/L	5	0.40	<0.40
Trichloroethylene	µg/L	1.6	0.40	<0.40
Bromodichloromethane	µg/L	16	0.40	9.9
Methyl Isobutyl Ketone	µg/L	640	2.0	<2.0
1,1,2-Trichloroethane	µg/L	4.7	0.40	<0.40
Toluene	µg/L	24	0.40	6.2
Dibromochloromethane	µg/L	25	0.20	1.7
Ethylene Dibromide	µg/L	0.2	0.20	<0.20
Tetrachloroethylene	µg/L	1.6	0.40	<0.40
1,1,1,2-Tetrachloroethane	µg/L	1.1	0.20	<0.20
Chlorobenzene	µg/L	30	0.20	<0.20
Ethylbenzene	µg/L	2.4	0.20	0.35
m & p-Xylene	µg/L		0.40	0.78

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T346804

PROJECT: 18-107

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
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TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE: 1132 Snow Valley Rd.

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-05

DATE REPORTED: 2018-06-07

		SAMPLE DESCRIPTION:		MW-1
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-06-04
Parameter	Unit	G / S	RDL	9300609
Bromoform	µg/L	25	0.20	<0.20
Styrene	µg/L	5.4	0.20	0.29
1,1,2,2-Tetrachloroethane	µg/L	1	0.20	<0.20
o-Xylene	µg/L		0.20	0.38
1,3-Dichlorobenzene	µg/L	59	0.20	<0.20
1,4-Dichlorobenzene	µg/L	1	0.20	<0.20
1,2-Dichlorobenzene	µg/L	3	0.20	<0.20
1,3-Dichloropropene	µg/L	0.5	0.60	<0.60
Xylene Mixture	µg/L	300	0.40	1.2
n-Hexane	µg/L	51	0.40	<0.40
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		96
4-Bromofluorobenzene	% Recovery	50-140		97

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Potable Ground Water - All Types of Property Uses - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.
9300609 Dilution factor=2
The sample was diluted because it was foamy. The reporting detection limit has been corrected for the dilution factor used.

Certified By:



AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 18T346804

PROJECT: 18-107

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CANADA L4Z 1Y2
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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Ian Acheson

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
9300609	MW-1	ON T2 PGW CT	O. Reg. 153(511) - VOCs (Water)	Benzene	µg/L	5.0	29
9300609	MW-1	ON T2 PGW CT	O. Reg. 153(511) - VOCs (Water)	Chloroform	µg/L	2.4	41

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T346804

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE: 1132 Snow Valley Rd.

SAMPLED BY: I. Acheson

Trace Organics Analysis

RPT Date: Jun 07, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Water)															
Dichlorodifluoromethane	9294277		< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	126%	50%	140%	119%	50%	140%
Vinyl Chloride	9294277		< 0.17	< 0.17	NA	< 0.17	116%	50%	140%	127%	50%	140%	112%	50%	140%
Bromomethane	9294277		< 0.20	< 0.20	NA	< 0.20	83%	50%	140%	117%	50%	140%	109%	50%	140%
Trichlorofluoromethane	9294277		< 0.40	< 0.40	NA	< 0.40	95%	50%	140%	129%	50%	140%	85%	50%	140%
Acetone	9294277		< 1.0	< 1.0	NA	< 1.0	85%	50%	140%	106%	50%	140%	87%	50%	140%
1,1-Dichloroethylene	9294277		< 0.30	< 0.30	NA	< 0.30	111%	50%	140%	75%	60%	130%	87%	50%	140%
Methylene Chloride	9294277		< 0.30	< 0.30	NA	< 0.30	113%	50%	140%	96%	60%	130%	111%	50%	140%
trans- 1,2-Dichloroethylene	9294277		< 0.20	< 0.20	NA	< 0.20	119%	50%	140%	112%	60%	130%	91%	50%	140%
Methyl tert-butyl ether	9294277		< 0.20	< 0.20	NA	< 0.20	70%	50%	140%	78%	60%	130%	86%	50%	140%
1,1-Dichloroethane	9294277		< 0.30	< 0.30	NA	< 0.30	116%	50%	140%	87%	60%	130%	110%	50%	140%
Methyl Ethyl Ketone	9294277		< 1.0	< 1.0	NA	< 1.0	81%	50%	140%	114%	50%	140%	101%	50%	140%
cis- 1,2-Dichloroethylene	9294277		< 0.20	< 0.20	NA	< 0.20	83%	50%	140%	101%	60%	130%	90%	50%	140%
Chloroform	9294277		< 0.20	< 0.20	NA	< 0.20	114%	50%	140%	103%	60%	130%	85%	50%	140%
1,2-Dichloroethane	9294277		< 0.20	< 0.20	NA	< 0.20	111%	50%	140%	107%	60%	130%	117%	50%	140%
1,1,1-Trichloroethane	9294277		< 0.30	< 0.30	NA	< 0.30	77%	50%	140%	80%	60%	130%	90%	50%	140%
Carbon Tetrachloride	9294277		< 0.20	< 0.20	NA	< 0.20	110%	50%	140%	71%	60%	130%	103%	50%	140%
Benzene	9294277		< 0.20	< 0.20	NA	< 0.20	101%	50%	140%	107%	60%	130%	105%	50%	140%
1,2-Dichloropropane	9294277		< 0.20	< 0.20	NA	< 0.20	106%	50%	140%	87%	60%	130%	107%	50%	140%
Trichloroethylene	9294277		< 0.20	< 0.20	NA	< 0.20	112%	50%	140%	112%	60%	130%	100%	50%	140%
Bromodichloromethane	9294277		< 0.20	< 0.20	NA	< 0.20	100%	50%	140%	94%	60%	130%	98%	50%	140%
Methyl Isobutyl Ketone	9294277		< 1.0	< 1.0	NA	< 1.0	97%	50%	140%	113%	50%	140%	105%	50%	140%
1,1,2-Trichloroethane	9294277		< 0.20	< 0.20	NA	< 0.20	119%	50%	140%	110%	60%	130%	79%	50%	140%
Toluene	9294277		< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	108%	60%	130%	101%	50%	140%
Dibromochloromethane	9294277		< 0.10	< 0.10	NA	< 0.10	85%	50%	140%	108%	60%	130%	113%	50%	140%
Ethylene Dibromide	9294277		< 0.10	< 0.10	NA	< 0.10	103%	50%	140%	108%	60%	130%	117%	50%	140%
Tetrachloroethylene	9294277		< 0.20	< 0.20	NA	< 0.20	108%	50%	140%	109%	60%	130%	104%	50%	140%
1,1,1,2-Tetrachloroethane	9294277		< 0.10	< 0.10	NA	< 0.10	96%	50%	140%	101%	60%	130%	93%	50%	140%
Chlorobenzene	9294277		< 0.10	< 0.10	NA	< 0.10	118%	50%	140%	117%	60%	130%	92%	50%	140%
Ethylbenzene	9294277		< 0.10	< 0.10	NA	< 0.10	117%	50%	140%	108%	60%	130%	108%	50%	140%
m & p-Xylene	9294277		< 0.20	< 0.20	NA	< 0.20	120%	50%	140%	114%	60%	130%	127%	50%	140%
Bromoform	9294277		< 0.10	< 0.10	NA	< 0.10	72%	50%	140%	102%	60%	130%	82%	50%	140%
Styrene	9294277		< 0.10	< 0.10	NA	< 0.10	109%	50%	140%	96%	60%	130%	109%	50%	140%
1,1,2,2-Tetrachloroethane	9294277		< 0.10	< 0.10	NA	< 0.10	105%	50%	140%	106%	60%	130%	87%	50%	140%
o-Xylene	9294277		< 0.10	< 0.10	NA	< 0.10	100%	50%	140%	108%	60%	130%	111%	50%	140%
1,3-Dichlorobenzene	9294277		< 0.10	< 0.10	NA	< 0.10	92%	50%	140%	89%	60%	130%	118%	50%	140%
1,4-Dichlorobenzene	9294277		< 0.10	< 0.10	NA	< 0.10	98%	50%	140%	93%	60%	130%	101%	50%	140%
1,2-Dichlorobenzene	9294277		< 0.10	< 0.10	NA	< 0.10	91%	50%	140%	110%	60%	130%	79%	50%	140%
1,3-Dichloropropene	9294277		< 0.30	< 0.30	NA	< 0.30	87%	50%	140%	91%	60%	130%	77%	50%	140%
n-Hexane	9294277		< 0.20	< 0.20	NA	< 0.20	120%	50%	140%	94%	60%	130%	119%	50%	140%



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T346804

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE: 1132 Snow Valley Rd.

SAMPLED BY: I. Acheson

Trace Organics Analysis (Continued)

RPT Date: Jun 07, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE	
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:



Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T346804

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE: 1132 Snow Valley Rd.

SAMPLED BY: I. Acheson

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS



5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Company: Azimuth Environmental Consulting, Inc.
Contact: Ian Acheson
Address: 642 Welham Rd
Barrie, ON L4N 9A1
(705) 721-8451 Fax: (705) 721-8926
Phone:
Reports to be sent to:
1. Email: i.acheson@azimuthenvironmental.com
2. Email: david@azimuthenvironmental.com

Project: 18-107
Site Location: 1132 Snow Valley Rd
Sampled By: E. Robinson
AGAT Quote #: 2024325R PO: _____

Bill To Same: Yes ☒ No ☐

Company: _____
Contact: _____
Address: _____
Email: _____

☐ No Regulatory Requirement

(Please check all applicable boxes)

☐ Regulation 558

Indicate One

Report Guideline on Certificate of Analysis

☒ Yes ☐ No

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

Field Filtered - Metals, Hg, CrVI

U. Reg 153

☐ All Metals ☒ 153 Metals (excl. Hydrides)
☐ Hydride Metals ☐ 153 Metals (incl. Hydrides)

ORPs: ☐ B-HWS ☐ Cl⁻ ☐ CN
☐ Cl⁻⁶⁺ ☐ EC ☐ FOC ☐ Hg

Full Metals Scan

Regulation/Custom Metals

Nutrients: ☐ TP ☐ NH₃ ☐ TKM
☐ NO₃ ☐ NO₂ ☐ NO₂+NO₃

Volatiles: ☒ VOC ☐ BTEX ☐ THM

PHCs F1 - F4

ABNS

PAHS

PCBs: ☐ Total ☐ Aroclors

Organochlorine Pesticides

TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs

Sewer Use

[illegible]

Time

Time

Time

Nº: **T 070955**

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
642 WELHAM ROAD
BARRIE, ON L4N9A1
(705) 721-8451

ATTENTION TO: Ian Acheson

PROJECT: 18-107

AGAT WORK ORDER: 18T348538

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

DATE REPORTED: Jun 12, 2018

PAGES (INCLUDING COVER): 8

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 18T348538

PROJECT: 18-107

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
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<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-08

DATE REPORTED: 2018-08-12

		SAMPLE DESCRIPTION:		MW-2
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-06-08
Parameter	Unit	G / S	RDL	9313956
Dichlorodifluoromethane	µg/L	590	0.20	<0.20
Vinyl Chloride	µg/L	0.5	0.17	<0.17
Bromomethane	µg/L	0.89	0.20	<0.20
Trichlorofluoromethane	µg/L	150	0.40	<0.40
Acetone	µg/L	2700	1.0	<1.0
1,1-Dichloroethylene	µg/L	0.5	0.30	<0.30
Methylene Chloride	µg/L	5	0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Methyl tert-butyl ether	µg/L	15	0.20	<0.20
1,1-Dichloroethane	µg/L	0.5	0.30	<0.30
Methyl Ethyl Ketone	µg/L	400	1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Chloroform	µg/L	2	0.20	18
1,2-Dichloroethane	µg/L	0.5	0.20	<0.20
1,1,1-Trichloroethane	µg/L	0.5	0.30	<0.30
Carbon Tetrachloride	µg/L	0.2	0.20	<0.20
Benzene	µg/L	0.5	0.20	<0.20
1,2-Dichloropropane	µg/L	0.5	0.20	<0.20
Trichloroethylene	µg/L	0.5	0.20	<0.20
Bromodichloromethane	µg/L	2	0.20	6.6
Methyl Isobutyl Ketone	µg/L	640	1.0	<1.0
1,1,2-Trichloroethane	µg/L	0.5	0.20	<0.20
Toluene	µg/L	0.8	0.20	0.66
Dibromochloromethane	µg/L	2	0.10	2.5
Ethylene Dibromide	µg/L	0.2	0.10	<0.10
Tetrachloroethylene	µg/L	0.5	0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L	1.1	0.10	<0.10
Chlorobenzene	µg/L	0.5	0.10	<0.10
Ethylbenzene	µg/L	0.5	0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T348538

PROJECT: 18-107

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<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-08

DATE REPORTED: 2018-08-12

		SAMPLE DESCRIPTION:		MW-2
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-06-08
Parameter	Unit	G / S	RDL	9313956
Bromoform	µg/L	5	0.10	<0.10
Styrene	µg/L	0.5	0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	0.5	0.10	<0.10
o-Xylene	µg/L		0.10	<0.10
1,3-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,4-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,2-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,3-Dichloropropene	µg/L	0.5	0.30	<0.30
Xylene Mixture	µg/L	72	0.20	<0.20
n-Hexane	µg/L	5	0.20	<0.20
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		91
4-Bromofluorobenzene	% Recovery	50-140		95

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Ground Water - All Types of Property Uses
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By:



Guideline Violation

AGAT WORK ORDER: 18T348538

PROJECT: 18-107

5835 COOPERS AVENUE
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CANADA L4Z 1Y2
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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Ian Acheson

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
9313956	MW-2	ON T1 GW	O. Reg. 153(511) - VOCs (Water)	Bromodichloromethane	µg/L	2	6.6
9313956	MW-2	ON T1 GW	O. Reg. 153(511) - VOCs (Water)	Chloroform	µg/L	2	18
9313956	MW-2	ON T1 GW	O. Reg. 153(511) - VOCs (Water)	Dibromochloromethane	µg/L	2	2.5

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T348538

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis															
RPT Date:			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - VOCs (Water)

Dichlorodifluoromethane	9300476		< 0.20	< 0.20	NA	< 0.20	103%	50%	140%	88%	50%	140%	78%	50%	140%
Vinyl Chloride	9300476		< 0.17	< 0.17	NA	< 0.17	97%	50%	140%	77%	50%	140%	108%	50%	140%
Bromomethane	9300476		< 0.20	< 0.20	NA	< 0.20	117%	50%	140%	74%	50%	140%	89%	50%	140%
Trichlorofluoromethane	9300476		< 0.40	< 0.40	NA	< 0.40	116%	50%	140%	77%	50%	140%	91%	50%	140%
Acetone	9300476		< 1.0	< 1.0	NA	< 1.0	105%	50%	140%	117%	50%	140%	111%	50%	140%
1,1-Dichloroethylene	9300476		< 0.30	< 0.30	NA	< 0.30	104%	50%	140%	72%	60%	130%	104%	50%	140%
Methylene Chloride	9300476		< 0.30	< 0.30	NA	< 0.30	101%	50%	140%	86%	60%	130%	107%	50%	140%
trans- 1,2-Dichloroethylene	9300476		< 0.20	< 0.20	NA	< 0.20	94%	50%	140%	75%	60%	130%	73%	50%	140%
Methyl tert-butyl ether	9300476		< 0.20	< 0.20	NA	< 0.20	109%	50%	140%	117%	60%	130%	89%	50%	140%
1,1-Dichloroethane	9300476		< 0.30	< 0.30	NA	< 0.30	112%	50%	140%	100%	60%	130%	112%	50%	140%
Methyl Ethyl Ketone	9300476		< 1.0	< 1.0	NA	< 1.0	100%	50%	140%	82%	50%	140%	91%	50%	140%
cis- 1,2-Dichloroethylene	9300476		< 0.20	< 0.20	NA	< 0.20	98%	50%	140%	81%	60%	130%	99%	50%	140%
Chloroform	9300476		< 0.20	< 0.20	NA	< 0.20	97%	50%	140%	82%	60%	130%	101%	50%	140%
1,2-Dichloroethane	9300476		< 0.20	< 0.20	NA	< 0.20	94%	50%	140%	85%	60%	130%	101%	50%	140%
1,1,1-Trichloroethane	9300476		< 0.30	< 0.30	NA	< 0.30	101%	50%	140%	74%	60%	130%	87%	50%	140%
Carbon Tetrachloride	9300476		< 0.20	< 0.20	NA	< 0.20	109%	50%	140%	91%	60%	130%	119%	50%	140%
Benzene	9300476		< 0.20	< 0.20	NA	< 0.20	96%	50%	140%	83%	60%	130%	97%	50%	140%
1,2-Dichloropropane	9300476		< 0.20	< 0.20	NA	< 0.20	96%	50%	140%	85%	60%	130%	93%	50%	140%
Trichloroethylene	9300476		< 0.20	< 0.20	NA	< 0.20	97%	50%	140%	79%	60%	130%	96%	50%	140%
Bromodichloromethane	9300476		< 0.20	< 0.20	NA	< 0.20	97%	50%	140%	84%	60%	130%	97%	50%	140%
Methyl Isobutyl Ketone	9300476		< 1.0	< 1.0	NA	< 1.0	101%	50%	140%	102%	50%	140%	107%	50%	140%
1,1,2-Trichloroethane	9300476		< 0.20	< 0.20	NA	< 0.20	111%	50%	140%	103%	60%	130%	111%	50%	140%
Toluene	9300476		< 0.20	< 0.20	NA	< 0.20	116%	50%	140%	90%	60%	130%	109%	50%	140%
Dibromochloromethane	9300476		< 0.10	< 0.10	NA	< 0.10	116%	50%	140%	97%	60%	130%	107%	50%	140%
Ethylene Dibromide	9300476		< 0.10	< 0.10	NA	< 0.10	111%	50%	140%	96%	60%	130%	108%	50%	140%
Tetrachloroethylene	9300476		< 0.20	< 0.20	NA	< 0.20	118%	50%	140%	83%	60%	130%	107%	50%	140%
1,1,1,2-Tetrachloroethane	9300476		< 0.10	< 0.10	NA	< 0.10	113%	50%	140%	116%	60%	130%	102%	50%	140%
Chlorobenzene	9300476		< 0.10	< 0.10	NA	< 0.10	116%	50%	140%	94%	60%	130%	110%	50%	140%
Ethylbenzene	9300476		< 0.10	< 0.10	NA	< 0.10	112%	50%	140%	86%	60%	130%	103%	50%	140%
m & p-Xylene	9300476		< 0.20	< 0.20	NA	< 0.20	118%	50%	140%	92%	60%	130%	110%	50%	140%
Bromoform	9300476		< 0.10	< 0.10	NA	< 0.10	111%	50%	140%	105%	60%	130%	103%	50%	140%
Styrene	9300476		< 0.10	< 0.10	NA	< 0.10	104%	50%	140%	82%	60%	130%	92%	50%	140%
1,1,2,2-Tetrachloroethane	9300476		< 0.10	< 0.10	NA	< 0.10	113%	50%	140%	110%	60%	130%	119%	50%	140%
o-Xylene	9300476		< 0.10	< 0.10	NA	< 0.10	118%	50%	140%	97%	60%	130%	111%	50%	140%
1,3-Dichlorobenzene	9300476		< 0.10	< 0.10	NA	< 0.10	111%	50%	140%	92%	60%	130%	102%	50%	140%
1,4-Dichlorobenzene	9300476		< 0.10	< 0.10	NA	< 0.10	119%	50%	140%	100%	60%	130%	113%	50%	140%
1,2-Dichlorobenzene	9300476		< 0.10	< 0.10	NA	< 0.10	107%	50%	140%	96%	60%	130%	104%	50%	140%
1,3-Dichloropropene	9300476		< 0.30	< 0.30	NA	< 0.30	101%	50%	140%	95%	60%	130%		50%	140%
n-Hexane	9300476		< 0.20	< 0.20	NA	< 0.20		50%	140%		60%	130%		50%	140%



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T348538

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date:			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By: _____

Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T348538

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
642 WELHAM ROAD
BARRIE, ON L4N9A1
(705) 721-8451

ATTENTION TO: Ian Acheson

PROJECT: 18-107

AGAT WORK ORDER: 18T350279

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

DATE REPORTED: Jun 15, 2018

PAGES (INCLUDING COVER): 9

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 18T350279

PROJECT: 18-107

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE: HastyTract

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

DATE RECEIVED: 2018-06-13

DATE REPORTED: 2018-06-15

		SAMPLE DESCRIPTION:		MW-4
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-06-13
Parameter	Unit	G / S	RDL	9326094
F1 (C6 - C10)	µg/L	420	25	<25
F1 (C6 to C10) minus BTEX	µg/L	420	25	<25
F2 (C10 to C16)	µg/L	150	100	<100
F3 (C16 to C34)	µg/L	500	100	910
F4 (C34 to C50)	µg/L	500	100	220
Gravimetric Heavy Hydrocarbons	µg/L	500	500	NA
Surrogate	Unit	Acceptable Limits		
Terphenyl	%	60-140	66	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Ground Water - All Types of Property Uses
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

9326094 The C6-C10 fraction is calculated using Toluene response factor.
The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.
Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.
The chromatogram has returned to baseline by the retention time of nC50.
Total C6-C50 results are corrected for BTEX contributions.
This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.
nC6 and nC10 response factors are within 30% of Toluene response factor.
nC10, nC16 and nC34 response factors are within 10% of their average.
C50 response factor is within 70% of nC10 + nC16 nC34 average.
Linearity is within 15%.
Extraction and holding times were met for this sample.
Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T350279

PROJECT: 18-107

5835 COOPERS AVENUE
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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE: HastyTract

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-13

DATE REPORTED: 2018-06-15

		SAMPLE DESCRIPTION:		MW-4
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-06-13
Parameter	Unit	G / S	RDL	9326094
Dichlorodifluoromethane	µg/L	590	0.20	<0.20
Vinyl Chloride	µg/L	0.5	0.17	<0.17
Bromomethane	µg/L	0.89	0.20	<0.20
Trichlorofluoromethane	µg/L	150	0.40	<0.40
Acetone	µg/L	2700	1.0	<1.0
1,1-Dichloroethylene	µg/L	0.5	0.30	<0.30
Methylene Chloride	µg/L	5	0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Methyl tert-butyl ether	µg/L	15	0.20	<0.20
1,1-Dichloroethane	µg/L	0.5	0.30	<0.30
Methyl Ethyl Ketone	µg/L	400	1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Chloroform	µg/L	2	0.20	<0.20
1,2-Dichloroethane	µg/L	0.5	0.20	<0.20
1,1,1-Trichloroethane	µg/L	0.5	0.30	<0.30
Carbon Tetrachloride	µg/L	0.2	0.20	<0.20
Benzene	µg/L	0.5	0.20	<0.20
1,2-Dichloropropane	µg/L	0.5	0.20	<0.20
Trichloroethylene	µg/L	0.5	0.20	<0.20
Bromodichloromethane	µg/L	2	0.20	<0.20
Methyl Isobutyl Ketone	µg/L	640	1.0	<1.0
1,1,2-Trichloroethane	µg/L	0.5	0.20	<0.20
Toluene	µg/L	0.8	0.20	<0.20
Dibromochloromethane	µg/L	2	0.10	<0.10
Ethylene Dibromide	µg/L	0.2	0.10	<0.10
Tetrachloroethylene	µg/L	0.5	0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L	1.1	0.10	<0.10
Chlorobenzene	µg/L	0.5	0.10	<0.10
Ethylbenzene	µg/L	0.5	0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T350279

PROJECT: 18-107

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE: HastyTract

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-13

DATE REPORTED: 2018-06-15

		SAMPLE DESCRIPTION:		MW-4
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-06-13
Parameter	Unit	G / S	RDL	9326094
Bromoform	µg/L	5	0.10	<0.10
Styrene	µg/L	0.5	0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	0.5	0.10	<0.10
o-Xylene	µg/L		0.10	<0.10
1,3-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,4-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,2-Dichlorobenzene	µg/L	0.5	0.10	<0.10
1,3-Dichloropropene	µg/L	0.5	0.30	<0.30
Xylene Mixture	µg/L	72	0.20	<0.20
n-Hexane	µg/L	5	0.20	<0.20
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		90
4-Bromofluorobenzene	% Recovery	50-140		81

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 1: Full Depth Background Site Condition Standards - Ground Water - All Types of Property Uses
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By:



AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 18T350279

PROJECT: 18-107

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
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<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Ian Acheson

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
9326094	MW-4	ON T1 GW	O. Reg. 153(511) - PHCs F1 - F4 (-BTEx) (Water)	F3 (C16 to C34)	µg/L	500	910

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T350279

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE: HastyTract

SAMPLED BY: I.Acheson

Trace Organics Analysis															
RPT Date: Jun 15, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

F1 (C6 - C10)	9320582		< 25	< 25	NA	< 25	99%	60%	140%	88%	60%	140%	87%	60%	140%
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	112%	60%	140%	64%	60%	140%	65%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	112%	60%	140%	84%	60%	140%	85%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	89%	60%	140%	81%	60%	140%	90%	60%	140%

O. Reg. 153(511) - VOCs (Water)

Dichlorodifluoromethane	9314146		< 0.20	< 0.20	NA	< 0.20	78%	50%	140%	103%	50%	140%	119%	50%	140%
Vinyl Chloride	9314146		< 0.17	< 0.17	NA	< 0.17	85%	50%	140%	116%	50%	140%	117%	50%	140%
Bromomethane	9314146		< 0.20	< 0.20	NA	< 0.20	78%	50%	140%	113%	50%	140%	101%	50%	140%
Trichlorofluoromethane	9314146		< 0.40	< 0.40	NA	< 0.40	71%	50%	140%	116%	50%	140%	116%	50%	140%
Acetone	9314146		< 1.0	< 1.0	NA	< 1.0	79%	50%	140%	96%	50%	140%	97%	50%	140%
1,1-Dichloroethylene	9314146		< 0.30	< 0.30	NA	< 0.30	89%	50%	140%	118%	60%	130%	88%	50%	140%
Methylene Chloride	9314146		< 0.30	< 0.30	NA	< 0.30	100%	50%	140%	116%	60%	130%	103%	50%	140%
trans- 1,2-Dichloroethylene	9314146		< 0.20	< 0.20	NA	< 0.20	106%	50%	140%	104%	60%	130%	106%	50%	140%
Methyl tert-butyl ether	9314146		< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	108%	60%	130%	116%	50%	140%
1,1-Dichloroethane	9314146		< 0.30	< 0.30	NA	< 0.30	114%	50%	140%	103%	60%	130%	87%	50%	140%
Methyl Ethyl Ketone	9314146		< 1.0	< 1.0	NA	< 1.0	102%	50%	140%	96%	50%	140%	84%	50%	140%
cis- 1,2-Dichloroethylene	9314146		< 0.20	< 0.20	NA	< 0.20	103%	50%	140%	110%	60%	130%	91%	50%	140%
Chloroform	9314146		< 0.20	< 0.20	NA	< 0.20	98%	50%	140%	91%	60%	130%	76%	50%	140%
1,2-Dichloroethane	9314146		< 0.20	< 0.20	NA	< 0.20	103%	50%	140%	89%	60%	130%	80%	50%	140%
1,1,1-Trichloroethane	9314146		< 0.30	< 0.30	NA	< 0.30	98%	50%	140%	80%	60%	130%	94%	50%	140%
Carbon Tetrachloride	9314146		< 0.20	< 0.20	NA	< 0.20	98%	50%	140%	79%	60%	130%	94%	50%	140%
Benzene	9314146		< 0.20	< 0.20	NA	< 0.20	113%	50%	140%	106%	60%	130%	105%	50%	140%
1,2-Dichloropropane	9314146		< 0.20	< 0.20	NA	< 0.20	107%	50%	140%	105%	60%	130%	94%	50%	140%
Trichloroethylene	9314146		< 0.20	< 0.20	NA	< 0.20	86%	50%	140%	111%	60%	130%	87%	50%	140%
Bromodichloromethane	9314146		< 0.20	< 0.20	NA	< 0.20	100%	50%	140%	105%	60%	130%	99%	50%	140%
Methyl Isobutyl Ketone	9314146		< 1.0	< 1.0	NA	< 1.0	75%	50%	140%	106%	50%	140%	104%	50%	140%
1,1,2-Trichloroethane	9314146		< 0.20	< 0.20	NA	< 0.20	109%	50%	140%	114%	60%	130%	107%	50%	140%
Toluene	9314146		< 0.20	< 0.20	NA	< 0.20	103%	50%	140%	112%	60%	130%	111%	50%	140%
Dibromochloromethane	9314146		< 0.10	< 0.10	NA	< 0.10	105%	50%	140%	103%	60%	130%	118%	50%	140%
Ethylene Dibromide	9314146		< 0.10	< 0.10	NA	< 0.10	117%	50%	140%	117%	60%	130%	117%	50%	140%
Tetrachloroethylene	9314146		< 0.20	< 0.20	NA	< 0.20	118%	50%	140%	112%	60%	130%	92%	50%	140%
1,1,1,2-Tetrachloroethane	9314146		< 0.10	< 0.10	NA	< 0.10	107%	50%	140%	105%	60%	130%	111%	50%	140%
Chlorobenzene	9314146		< 0.10	< 0.10	NA	< 0.10	118%	50%	140%	106%	60%	130%	106%	50%	140%
Ethylbenzene	9314146		< 0.10	< 0.10	NA	< 0.10	119%	50%	140%	107%	60%	130%	98%	50%	140%
m & p-Xylene	9314146		< 0.20	< 0.20	NA	< 0.20	73%	50%	140%	98%	60%	130%	79%	50%	140%
Bromoform	9314146		< 0.10	< 0.10	NA	< 0.10	116%	50%	140%	116%	60%	130%	112%	50%	140%
Styrene	9314146		< 0.10	< 0.10	NA	< 0.10	114%	50%	140%	112%	60%	130%	87%	50%	140%
1,1,2,2-Tetrachloroethane	9314146		< 0.10	< 0.10	NA	< 0.10	101%	50%	140%	105%	60%	130%	112%	50%	140%
o-Xylene	9314146		< 0.10	< 0.10	NA	< 0.10	104%	50%	140%	103%	60%	130%	114%	50%	140%



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T350279

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE: HastyTract

SAMPLED BY: I. Acheson

Trace Organics Analysis (Continued)

RPT Date: Jun 15, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
1,3-Dichlorobenzene	9314146		< 0.10	< 0.10	NA	< 0.10	104%	50%	140%	103%	60%	130%	98%	50%	140%
1,4-Dichlorobenzene	9314146		< 0.10	< 0.10	NA	< 0.10	115%	50%	140%	104%	60%	130%	111%	50%	140%
1,2-Dichlorobenzene	9314146		< 0.10	< 0.10	NA	< 0.10	109%	50%	140%	103%	60%	130%	118%	50%	140%
1,3-Dichloropropene	9314146		< 0.30	< 0.30	NA	< 0.30	107%	50%	140%	108%	60%	130%	91%	50%	140%
n-Hexane	9314146		< 0.20	< 0.20	NA	< 0.20	109%	50%	140%	107%	60%	130%	85%	50%	140%

Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume.

When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By: _____

Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T350279

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:HastyTract

SAMPLED BY:I.Acheson

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
F1 (C6 - C10)	VOL-91- 5010	MOE PHC E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC / FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC / FID
F4 (C34 to C50)	VOL-91-5010	MOE PHC E3421	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
642 WELHAM ROAD
BARRIE, ON L4N9A1
(705) 721-8451

ATTENTION TO: Ian Acheson

PROJECT: 18-107

AGAT WORK ORDER: 18T351285

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Jun 19, 2018

PAGES (INCLUDING COVER): 7

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (780) 402-2050

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 18T351285

PROJECT: 18-107

10203B 123 STREET
GRANDE PRAIRIE, ALBERTA
CANADA T8V 8B7
TEL (780)402-2050
FAX (780)402-2078
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE: 1132 Snow Valley Rd.

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-15

DATE REPORTED: 2018-06-19

		SAMPLE DESCRIPTION:		MW-5
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-06-15
Parameter	Unit	G / S	RDL	9334451
Dichlorodifluoromethane	µg/L	590	0.20	<0.20
Vinyl Chloride	µg/L	0.5	0.17	<0.17
Bromomethane	µg/L	0.89	0.20	<0.20
Trichlorofluoromethane	µg/L	150	0.40	<0.40
Acetone	µg/L	2700	1.0	<1.0
1,1-Dichloroethylene	µg/L	1.6	0.30	<0.30
Methylene Chloride	µg/L	50	0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Methyl tert-butyl ether	µg/L	15	0.20	<0.20
1,1-Dichloroethane	µg/L	5	0.30	<0.30
Methyl Ethyl Ketone	µg/L	1800	1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Chloroform	µg/L	2.4	0.20	1.0
1,2-Dichloroethane	µg/L	1.6	0.20	<0.20
1,1,1-Trichloroethane	µg/L	200	0.30	<0.30
Carbon Tetrachloride	µg/L	0.79	0.20	<0.20
Benzene	µg/L	5.0	0.20	<0.20
1,2-Dichloropropane	µg/L	5	0.20	<0.20
Trichloroethylene	µg/L	1.6	0.20	<0.20
Bromodichloromethane	µg/L	16	0.20	<0.20
Methyl Isobutyl Ketone	µg/L	640	1.0	<1.0
1,1,2-Trichloroethane	µg/L	4.7	0.20	<0.20
Toluene	µg/L	24	0.20	0.69
Dibromochloromethane	µg/L	25	0.10	<0.10
Ethylene Dibromide	µg/L	0.2	0.10	<0.10
Tetrachloroethylene	µg/L	1.6	0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L	1.1	0.10	<0.10
Chlorobenzene	µg/L	30	0.10	<0.10
Ethylbenzene	µg/L	2.4	0.10	0.16
m & p-Xylene	µg/L		0.20	0.25

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T351285

PROJECT: 18-107

10203B 123 STREET
GRANDE PRAIRIE, ALBERTA
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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE: 1132 Snow Valley Rd.

ATTENTION TO: Ian Acheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-15

DATE REPORTED: 2018-06-19

		SAMPLE DESCRIPTION:		MW-5
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-06-15
Parameter	Unit	G / S	RDL	9334451
Bromoform	µg/L	25	0.10	<0.10
Styrene	µg/L	5.4	0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	1	0.10	<0.10
o-Xylene	µg/L		0.10	<0.10
1,3-Dichlorobenzene	µg/L	59	0.10	<0.10
1,4-Dichlorobenzene	µg/L	1	0.10	<0.10
1,2-Dichlorobenzene	µg/L	3	0.10	<0.10
1,3-Dichloropropene	µg/L	0.5	0.30	<0.30
Xylene Mixture	µg/L	300	0.20	0.25
n-Hexane	µg/L	51	0.20	<0.20
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		97
4-Bromofluorobenzene	% Recovery	50-140		96

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Potable Ground Water - All Types of Property Uses - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By:

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T351285

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE: 1132 Snow Valley Rd.

SAMPLED BY: I. Acheson

Trace Organics Analysis

RPT Date: Jun 19, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - VOCs (Water)

Dichlorodifluoromethane	9325863		< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	87%	50%	140%	84%	50%	140%
Vinyl Chloride	9325863		< 0.17	< 0.17	NA	< 0.17	87%	50%	140%	105%	50%	140%	89%	50%	140%
Bromomethane	9325863		< 0.20	< 0.20	NA	< 0.20	90%	50%	140%	93%	50%	140%	84%	50%	140%
Trichlorofluoromethane	9325863		< 0.40	< 0.40	NA	< 0.40	96%	50%	140%	112%	50%	140%	71%	50%	140%
Acetone	9325863		< 1.0	< 1.0	NA	< 1.0	101%	50%	140%	106%	50%	140%	116%	50%	140%
1,1-Dichloroethylene	9325863		< 0.30	< 0.30	NA	< 0.30	109%	50%	140%	105%	60%	130%	118%	50%	140%
Methylene Chloride	9325863		< 0.30	< 0.30	NA	< 0.30	118%	50%	140%	118%	60%	130%	112%	50%	140%
trans- 1,2-Dichloroethylene	9325863		< 0.20	< 0.20	NA	< 0.20	109%	50%	140%	117%	60%	130%	105%	50%	140%
Methyl tert-butyl ether	9325863		< 0.20	< 0.20	NA	< 0.20	105%	50%	140%	106%	60%	130%	109%	50%	140%
1,1-Dichloroethane	9325863		< 0.30	< 0.30	NA	< 0.30	116%	50%	140%	104%	60%	130%	112%	50%	140%
Methyl Ethyl Ketone	9325863		< 1.0	< 1.0	NA	< 1.0	102%	50%	140%	104%	50%	140%	114%	50%	140%
cis- 1,2-Dichloroethylene	9325863		< 0.20	< 0.20	NA	< 0.20	104%	50%	140%	104%	60%	130%	118%	50%	140%
Chloroform	9325863		< 0.20	< 0.20	NA	< 0.20	116%	50%	140%	104%	60%	130%	111%	50%	140%
1,2-Dichloroethane	9325863		< 0.20	< 0.20	NA	< 0.20	105%	50%	140%	119%	60%	130%	110%	50%	140%
1,1,1-Trichloroethane	9325863		< 0.30	< 0.30	NA	< 0.30	103%	50%	140%	118%	60%	130%	98%	50%	140%
Carbon Tetrachloride	9325863		< 0.20	< 0.20	NA	< 0.20	107%	50%	140%	118%	60%	130%	85%	50%	140%
Benzene	9325863		< 0.20	< 0.20	NA	< 0.20	107%	50%	140%	109%	60%	130%	78%	50%	140%
1,2-Dichloropropane	9325863		< 0.20	< 0.20	NA	< 0.20	107%	50%	140%	103%	60%	130%	89%	50%	140%
Trichloroethylene	9325863		< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	90%	60%	130%	85%	50%	140%
Bromodichloromethane	9325863		< 0.20	< 0.20	NA	< 0.20	112%	50%	140%	109%	60%	130%	74%	50%	140%
Methyl Isobutyl Ketone	9325863		< 1.0	< 1.0	NA	< 1.0	74%	50%	140%	113%	50%	140%	86%	50%	140%
1,1,2-Trichloroethane	9325863		< 0.20	< 0.20	NA	< 0.20	111%	50%	140%	105%	60%	130%	76%	50%	140%
Toluene	9325863		< 0.20	< 0.20	NA	< 0.20	96%	50%	140%	118%	60%	130%	79%	50%	140%
Dibromochloromethane	9325863		< 0.10	< 0.10	NA	< 0.10	83%	50%	140%	100%	60%	130%	78%	50%	140%
Ethylene Dibromide	9325863		< 0.10	< 0.10	NA	< 0.10	103%	50%	140%	110%	60%	130%	87%	50%	140%
Tetrachloroethylene	9325863		< 0.20	< 0.20	NA	< 0.20	95%	50%	140%	109%	60%	130%	84%	50%	140%
1,1,1,2-Tetrachloroethane	9325863		< 0.10	< 0.10	NA	< 0.10	113%	50%	140%	106%	60%	130%	85%	50%	140%
Chlorobenzene	9325863		< 0.10	< 0.10	NA	< 0.10	101%	50%	140%	110%	60%	130%	80%	50%	140%
Ethylbenzene	9325863		< 0.10	< 0.10	NA	< 0.10	97%	50%	140%	105%	60%	130%	81%	50%	140%
m & p-Xylene	9325863		< 0.20	< 0.20	NA	< 0.20	90%	50%	140%	81%	60%	130%	82%	50%	140%
Bromoform	9325863		< 0.10	< 0.10	NA	< 0.10	115%	50%	140%	102%	60%	130%	89%	50%	140%
Styrene	9325863		< 0.10	< 0.10	NA	< 0.10	93%	50%	140%	108%	60%	130%	96%	50%	140%
1,1,2,2-Tetrachloroethane	9325863		< 0.10	< 0.10	NA	< 0.10	119%	50%	140%	117%	60%	130%	92%	50%	140%
o-Xylene	9325863		< 0.10	< 0.10	NA	< 0.10	109%	50%	140%	104%	60%	130%	91%	50%	140%
1,3-Dichlorobenzene	9325863		< 0.10	< 0.10	NA	< 0.10	105%	50%	140%	106%	60%	130%	90%	50%	140%
1,4-Dichlorobenzene	9325863		< 0.10	< 0.10	NA	< 0.10	103%	50%	140%	119%	60%	130%	94%	50%	140%
1,2-Dichlorobenzene	9325863		< 0.10	< 0.10	NA	< 0.10	117%	50%	140%	112%	60%	130%	95%	50%	140%
1,3-Dichloropropene	9325863		< 0.30	< 0.30	NA	< 0.30	113%	50%	140%	110%	60%	130%	90%	50%	140%
n-Hexane	9325863		< 0.20	< 0.20	NA	< 0.20	117%	50%	140%	118%	60%	130%	89%	50%	140%



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T351285

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE: 1132 Snow Valley Rd.

SAMPLED BY: I. Acheson

Trace Organics Analysis (Continued)

RPT Date: Jun 19, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

PROJECT: 18-107

SAMPLING SITE:1132 Snow Valley Rd.

AGAT WORK ORDER: 18T351285

ATTENTION TO: Ian Acheson

SAMPLED BY:I.Acheson

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
642 WELHAM ROAD
BARRIE, ON L4N9A1
(705) 721-8451

ATTENTION TO: David Dillon

PROJECT: 13-107

AGAT WORK ORDER: 18T351805

TRACE ORGANICS REVIEWED BY: Oksana Gushyla, Trace Organics Lab Supervisor

DATE REPORTED: Jun 20, 2018

PAGES (INCLUDING COVER): 8

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 18T351805

PROJECT: 13-107

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: David Dillon

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-18

DATE REPORTED: 2018-06-20

		SAMPLE DESCRIPTION:		MW-6
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-06-18
Parameter	Unit	G / S	RDL	9338475
Dichlorodifluoromethane	µg/L	590	0.20	<0.20
Vinyl Chloride	µg/L	0.5	0.17	<0.17
Bromomethane	µg/L	0.89	0.20	<0.20
Trichlorofluoromethane	µg/L	150	0.40	<0.40
Acetone	µg/L	2700	1.0	<1.0
1,1-Dichloroethylene	µg/L	1.6	0.30	<0.30
Methylene Chloride	µg/L	50	0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Methyl tert-butyl ether	µg/L	15	0.20	<0.20
1,1-Dichloroethane	µg/L	5	0.30	<0.30
Methyl Ethyl Ketone	µg/L	1800	1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Chloroform	µg/L	2.4	0.20	3.2
1,2-Dichloroethane	µg/L	1.6	0.20	<0.20
1,1,1-Trichloroethane	µg/L	200	0.30	<0.30
Carbon Tetrachloride	µg/L	0.79	0.20	<0.20
Benzene	µg/L	5.0	0.20	<0.20
1,2-Dichloropropane	µg/L	5	0.20	<0.20
Trichloroethylene	µg/L	1.6	0.20	<0.20
Bromodichloromethane	µg/L	16	0.20	0.91
Methyl Isobutyl Ketone	µg/L	640	1.0	<1.0
1,1,2-Trichloroethane	µg/L	4.7	0.20	<0.20
Toluene	µg/L	24	0.20	0.43
Dibromochloromethane	µg/L	25	0.10	<0.10
Ethylene Dibromide	µg/L	0.2	0.10	<0.10
Tetrachloroethylene	µg/L	1.6	0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L	1.1	0.10	<0.10
Chlorobenzene	µg/L	30	0.10	<0.10
Ethylbenzene	µg/L	2.4	0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T351805

PROJECT: 13-107

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
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FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: David Dillon

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-18

DATE REPORTED: 2018-06-20

		SAMPLE DESCRIPTION:		MW-6
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-06-18
Parameter	Unit	G / S	RDL	9338475
Bromoform	µg/L	25	0.10	<0.10
Styrene	µg/L	5.4	0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	1	0.10	<0.10
o-Xylene	µg/L		0.10	<0.10
1,3-Dichlorobenzene	µg/L	59	0.10	<0.10
1,4-Dichlorobenzene	µg/L	1	0.10	<0.10
1,2-Dichlorobenzene	µg/L	3	0.10	<0.10
1,3-Dichloropropene	µg/L	0.5	0.30	<0.30
Xylene Mixture	µg/L	300	0.20	<0.20
n-Hexane	µg/L	51	0.20	<0.20
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		91
4-Bromofluorobenzene	% Recovery	50-140		95

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Potable Ground Water - All Types of Property Uses - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By:



AGAT Laboratories

Guideline Violation

AGAT WORK ORDER: 18T351805

PROJECT: 13-107

5835 COOPERS AVENUE
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FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: David Dillon

SAMPLEID	SAMPLE TITLE	GUIDELINE	ANALYSIS PACKAGE	PARAMETER	UNIT	GUIDEVALUE	RESULT
9338475	MW-6	ON T2 PGW CT	O. Reg. 153(511) - VOCs (Water)	Chloroform	µg/L	2.4	3.2

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T351805

PROJECT: 13-107

ATTENTION TO: David Dillon

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Jun 20, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - VOCs (Water)

Dichlorodifluoromethane	9325863		< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	87%	50%	140%	84%	50%	140%
Vinyl Chloride	9325863		< 0.17	< 0.17	NA	< 0.17	87%	50%	140%	105%	50%	140%	89%	50%	140%
Bromomethane	9325863		< 0.20	< 0.20	NA	< 0.20	90%	50%	140%	93%	50%	140%	84%	50%	140%
Trichlorofluoromethane	9325863		< 0.40	< 0.40	NA	< 0.40	96%	50%	140%	112%	50%	140%	71%	50%	140%
Acetone	9325863		< 1.0	< 1.0	NA	< 1.0	101%	50%	140%	106%	50%	140%	116%	50%	140%
1,1-Dichloroethylene	9325863		< 0.30	< 0.30	NA	< 0.30	109%	50%	140%	105%	60%	130%	118%	50%	140%
Methylene Chloride	9325863		< 0.30	< 0.30	NA	< 0.30	118%	50%	140%	118%	60%	130%	112%	50%	140%
trans- 1,2-Dichloroethylene	9325863		< 0.20	< 0.20	NA	< 0.20	109%	50%	140%	117%	60%	130%	105%	50%	140%
Methyl tert-butyl ether	9325863		< 0.20	< 0.20	NA	< 0.20	105%	50%	140%	106%	60%	130%	109%	50%	140%
1,1-Dichloroethane	9325863		< 0.30	< 0.30	NA	< 0.30	116%	50%	140%	104%	60%	130%	112%	50%	140%
Methyl Ethyl Ketone	9325863		< 1.0	< 1.0	NA	< 1.0	102%	50%	140%	104%	50%	140%	114%	50%	140%
cis- 1,2-Dichloroethylene	9325863		< 0.20	< 0.20	NA	< 0.20	104%	50%	140%	104%	60%	130%	118%	50%	140%
Chloroform	9325863		< 0.20	< 0.20	NA	< 0.20	116%	50%	140%	104%	60%	130%	111%	50%	140%
1,2-Dichloroethane	9325863		< 0.20	< 0.20	NA	< 0.20	105%	50%	140%	119%	60%	130%	110%	50%	140%
1,1,1-Trichloroethane	9325863		< 0.30	< 0.30	NA	< 0.30	103%	50%	140%	118%	60%	130%	98%	50%	140%
Carbon Tetrachloride	9325863		< 0.20	< 0.20	NA	< 0.20	107%	50%	140%	118%	60%	130%	85%	50%	140%
Benzene	9325863		< 0.20	< 0.20	NA	< 0.20	107%	50%	140%	109%	60%	130%	78%	50%	140%
1,2-Dichloropropane	9325863		< 0.20	< 0.20	NA	< 0.20	107%	50%	140%	103%	60%	130%	89%	50%	140%
Trichloroethylene	9325863		< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	90%	60%	130%	85%	50%	140%
Bromodichloromethane	9325863		< 0.20	< 0.20	NA	< 0.20	112%	50%	140%	109%	60%	130%	74%	50%	140%
Methyl Isobutyl Ketone	9325863		< 1.0	< 1.0	NA	< 1.0	74%	50%	140%	113%	50%	140%	86%	50%	140%
1,1,2-Trichloroethane	9325863		< 0.20	< 0.20	NA	< 0.20	111%	50%	140%	105%	60%	130%	76%	50%	140%
Toluene	9325863		< 0.20	< 0.20	NA	< 0.20	96%	50%	140%	118%	60%	130%	79%	50%	140%
Dibromochloromethane	9325863		< 0.10	< 0.10	NA	< 0.10	83%	50%	140%	100%	60%	130%	78%	50%	140%
Ethylene Dibromide	9325863		< 0.10	< 0.10	NA	< 0.10	103%	50%	140%	110%	60%	130%	87%	50%	140%
Tetrachloroethylene	9325863		< 0.20	< 0.20	NA	< 0.20	95%	50%	140%	109%	60%	130%	84%	50%	140%
1,1,1,2-Tetrachloroethane	9325863		< 0.10	< 0.10	NA	< 0.10	113%	50%	140%	106%	60%	130%	85%	50%	140%
Chlorobenzene	9325863		< 0.10	< 0.10	NA	< 0.10	101%	50%	140%	110%	60%	130%	80%	50%	140%
Ethylbenzene	9325863		< 0.10	< 0.10	NA	< 0.10	97%	50%	140%	105%	60%	130%	81%	50%	140%
m & p-Xylene	9325863		< 0.20	< 0.20	NA	< 0.20	90%	50%	140%	81%	60%	130%	82%	50%	140%
Bromoform	9325863		< 0.10	< 0.10	NA	< 0.10	115%	50%	140%	102%	60%	130%	89%	50%	140%
Styrene	9325863		< 0.10	< 0.10	NA	< 0.10	93%	50%	140%	108%	60%	130%	96%	50%	140%
1,1,2,2-Tetrachloroethane	9325863		< 0.10	< 0.10	NA	< 0.10	119%	50%	140%	117%	60%	130%	92%	50%	140%
o-Xylene	9325863		< 0.10	< 0.10	NA	< 0.10	109%	50%	140%	104%	60%	130%	91%	50%	140%
1,3-Dichlorobenzene	9325863		< 0.10	< 0.10	NA	< 0.10	105%	50%	140%	106%	60%	130%	90%	50%	140%
1,4-Dichlorobenzene	9325863		< 0.10	< 0.10	NA	< 0.10	103%	50%	140%	119%	60%	130%	94%	50%	140%
1,2-Dichlorobenzene	9325863		< 0.10	< 0.10	NA	< 0.10	117%	50%	140%	112%	60%	130%	95%	50%	140%
1,3-Dichloropropene	9325863		< 0.30	< 0.30	NA	< 0.30	113%	50%	140%	110%	60%	130%	90%	50%	140%
n-Hexane	9325863		< 0.20	< 0.20	NA	< 0.20	117%	50%	140%	118%	60%	130%	89%	50%	140%

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T351805

PROJECT: 13-107

ATTENTION TO: David Dillon

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Jun 20, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:



Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T351805

PROJECT: 13-107

ATTENTION TO: David Dillon

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
642 WELHAM ROAD
BARRIE, ON L4N9A1
(705) 721-8451

ATTENTION TO: Ian Acheson

PROJECT: 18-107

AGAT WORK ORDER: 18T353928

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Jun 28, 2018

PAGES (INCLUDING COVER): 7

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T353928

PROJECT: 18-107

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-22

DATE REPORTED: 2018-06-26

		SAMPLE DESCRIPTION:		MW-7
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-06-21
Parameter	Unit	G / S	RDL	9352295
Dichlorodifluoromethane	µg/L	590	0.20	<0.20
Vinyl Chloride	µg/L	0.5	0.17	<0.17
Bromomethane	µg/L	0.89	0.20	<0.20
Trichlorofluoromethane	µg/L	150	0.40	<0.40
Acetone	µg/L	2700	1.0	<1.0
1,1-Dichloroethylene	µg/L	1.6	0.30	<0.30
Methylene Chloride	µg/L	50	0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Methyl tert-butyl ether	µg/L	15	0.20	<0.20
1,1-Dichloroethane	µg/L	5	0.30	<0.30
Methyl Ethyl Ketone	µg/L	1800	1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	1.6	0.20	<0.20
Chloroform	µg/L	2.4	0.20	1.4
1,2-Dichloroethane	µg/L	1.6	0.20	<0.20
1,1,1-Trichloroethane	µg/L	200	0.30	<0.30
Carbon Tetrachloride	µg/L	0.79	0.20	<0.20
Benzene	µg/L	5.0	0.20	<0.20
1,2-Dichloropropane	µg/L	5	0.20	<0.20
Trichloroethylene	µg/L	1.6	0.20	<0.20
Bromodichloromethane	µg/L	16	0.20	<0.20
Methyl Isobutyl Ketone	µg/L	640	1.0	<1.0
1,1,2-Trichloroethane	µg/L	4.7	0.20	<0.20
Toluene	µg/L	24	0.20	0.39
Dibromochloromethane	µg/L	25	0.10	<0.10
Ethylene Dibromide	µg/L	0.2	0.10	<0.10
Tetrachloroethylene	µg/L	1.6	0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L	1.1	0.10	<0.10
Chlorobenzene	µg/L	30	0.10	<0.10
Ethylbenzene	µg/L	2.4	0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T353928

PROJECT: 18-107

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-22

DATE REPORTED: 2018-06-26

		SAMPLE DESCRIPTION:		MW-7
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-06-21
Parameter	Unit	G / S	RDL	9352295
Bromoform	µg/L	25	0.10	<0.10
Styrene	µg/L	5.4	0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	1	0.10	<0.10
o-Xylene	µg/L		0.10	<0.10
1,3-Dichlorobenzene	µg/L	59	0.10	<0.10
1,4-Dichlorobenzene	µg/L	1	0.10	<0.10
1,2-Dichlorobenzene	µg/L	3	0.10	<0.10
1,3-Dichloropropene	µg/L	0.5	0.30	<0.30
Xylene Mixture	µg/L	300	0.20	<0.20
n-Hexane	µg/L	51	0.20	<0.20
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		72
4-Bromofluorobenzene	% Recovery	50-140		111

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard: Refers to Table 2: Full Depth Generic Site Condition Standards in a Potable Ground Water Condition - Potable Ground Water - All Types of Property Uses - Coarse Textured Soils
Guideline values are for general reference only. The guidelines provided may or may not be relevant for the intended use. Refer directly to the applicable standard for regulatory interpretation.

Certified By:



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T353928

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis															
RPT Date:			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - VOCs (Water)

Dichlorodifluoromethane	9347908		< 0.20	< 0.20	NA	< 0.20	87%	50%	140%	84%	50%	140%	75%	50%	140%
Vinyl Chloride	9347908		< 0.17	< 0.17	NA	< 0.17	84%	50%	140%	112%	50%	140%	71%	50%	140%
Bromomethane	9347908		< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	108%	50%	140%	73%	50%	140%
Trichlorofluoromethane	9347908		< 0.40	< 0.40	NA	< 0.40	113%	50%	140%	112%	50%	140%	94%	50%	140%
Acetone	9347908		< 1.0	< 1.0	NA	< 1.0	98%	50%	140%	70%	50%	140%	78%	50%	140%
1,1-Dichloroethylene	9347908		< 0.30	< 0.30	NA	< 0.30	85%	50%	140%	86%	60%	130%	78%	50%	140%
Methylene Chloride	9347908		< 0.30	< 0.30	NA	< 0.30	85%	50%	140%	89%	60%	130%	108%	50%	140%
trans- 1,2-Dichloroethylene	9347908		< 0.20	< 0.20	NA	< 0.20	90%	50%	140%	81%	60%	130%	72%	50%	140%
Methyl tert-butyl ether	9347908		< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	88%	60%	130%	96%	50%	140%
1,1-Dichloroethane	9347908		< 0.30	< 0.30	NA	< 0.30	110%	50%	140%	91%	60%	130%	79%	50%	140%
Methyl Ethyl Ketone	9347908		< 1.0	< 1.0	NA	< 1.0	112%	50%	140%	92%	50%	140%	83%	50%	140%
cis- 1,2-Dichloroethylene	9347908		< 0.20	< 0.20	NA	< 0.20	105%	50%	140%	86%	60%	130%	79%	50%	140%
Chloroform	9347908		< 0.20	< 0.20	NA	< 0.20	106%	50%	140%	88%	60%	130%	85%	50%	140%
1,2-Dichloroethane	9347908		< 0.20	< 0.20	NA	< 0.20	97%	50%	140%	77%	60%	130%	84%	50%	140%
1,1,1-Trichloroethane	9347908		< 0.30	< 0.30	NA	< 0.30	111%	50%	140%	97%	60%	130%	86%	50%	140%
Carbon Tetrachloride	9347908		< 0.20	< 0.20	NA	< 0.20	108%	50%	140%	94%	60%	130%	81%	50%	140%
Benzene	9347908		< 0.20	< 0.20	NA	< 0.20	100%	50%	140%	106%	60%	130%	91%	50%	140%
1,2-Dichloropropane	9347908		< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	103%	60%	130%	88%	50%	140%
Trichloroethylene	9347908		< 0.20	< 0.20	NA	< 0.20	115%	50%	140%	107%	60%	130%	95%	50%	140%
Bromodichloromethane	9347908		< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	87%	60%	130%	80%	50%	140%
Methyl Isobutyl Ketone	9347908		< 1.0	< 1.0	NA	< 1.0	101%	50%	140%	79%	50%	140%	82%	50%	140%
1,1,2-Trichloroethane	9347908		< 0.20	< 0.20	NA	< 0.20	105%	50%	140%	105%	60%	130%	101%	50%	140%
Toluene	9347908		< 0.20	< 0.20	NA	< 0.20	104%	50%	140%	109%	60%	130%	104%	50%	140%
Dibromochloromethane	9347908		< 0.10	< 0.10	NA	< 0.10	94%	50%	140%	103%	60%	130%	78%	50%	140%
Ethylene Dibromide	9347908		< 0.10	< 0.10	NA	< 0.10	95%	50%	140%	93%	60%	130%	90%	50%	140%
Tetrachloroethylene	9347908		< 0.20	< 0.20	NA	< 0.20	107%	50%	140%	105%	60%	130%	112%	50%	140%
1,1,1,2-Tetrachloroethane	9347908		< 0.10	< 0.10	NA	< 0.10	107%	50%	140%	116%	60%	130%	98%	50%	140%
Chlorobenzene	9347908		< 0.10	< 0.10	NA	< 0.10	118%	50%	140%	107%	60%	130%	104%	50%	140%
Ethylbenzene	9347908		< 0.10	< 0.10	NA	< 0.10	116%	50%	140%	105%	60%	130%	98%	50%	140%
m & p-Xylene	9347908		< 0.20	< 0.20	NA	< 0.20	106%	50%	140%	115%	60%	130%	98%	50%	140%
Bromoform	9347908		< 0.10	< 0.10	NA	< 0.10	99%	50%	140%	97%	60%	130%	94%	50%	140%
Styrene	9347908		< 0.10	< 0.10	NA	< 0.10	103%	50%	140%	110%	60%	130%	93%	50%	140%
1,1,2,2-Tetrachloroethane	9347908		< 0.10	< 0.10	NA	< 0.10	95%	50%	140%	103%	60%	130%	89%	50%	140%
o-Xylene	9347908		< 0.10	< 0.10	NA	< 0.10	116%	50%	140%	93%	60%	130%	98%	50%	140%
1,3-Dichlorobenzene	9347908		< 0.10	< 0.10	NA	< 0.10	102%	50%	140%	116%	60%	130%	94%	50%	140%
1,4-Dichlorobenzene	9347908		< 0.10	< 0.10	NA	< 0.10	118%	50%	140%	87%	60%	130%	108%	50%	140%
1,2-Dichlorobenzene	9347908		< 0.10	< 0.10	NA	< 0.10	111%	50%	140%	105%	60%	130%	95%	50%	140%
1,3-Dichloropropene	9347908		< 0.30	< 0.30	NA	< 0.30	109%	50%	140%	96%	60%	130%	83%	50%	140%
n-Hexane	9347908		< 0.20	< 0.20	NA	< 0.20	111%	50%	140%	104%	60%	130%	105%	50%	140%



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T353928

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date:			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T353928

PROJECT: 18-107

ATTENTION TO: Ian Acheson

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS



5835 Coopers Avenue
Mississauga, Ontario L4Z 1Y2
Ph: 905.712.5100 Fax: 905.712.5122
webearth.agatlabs.com

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Company: Azimuth Environmental Consulting, Inc.
Contact: Ian Adeson
Address: 642 Welham Rd
Barnie, ON L4N 9A1
(705) 721-8451 Fax: (705) 721-8926
Phone:
Reports to be sent to:
1. Email: iadeson@azimuthenvironmental.com
2. Email: david@azimuthenvironmental.com

Project: 18-107
Site Location: 1132 Snow Valley Rd.
Sampled By: T. Adams
AGAT Quote #: 2024325R PO: _____
Please note: If quotation number is not provided, client will be billed full price for analysis.

Bill To Same: Yes ☒ No ☐

Company: _____
Contact: _____
Address: _____
Email: _____

Regulatory Requirements: ☐ No Regulatory Requirement
(Please check all applicable boxes)

☒ Regulation 153/04	☐ Sewer Use	☐ Regulation 558
Table <u>2</u>		
<i>Indicate One</i>		
☐ Ind/Com	☐ Sanitary	☐ CCME
☒ Res/Park	☐ Storm	☐ Prov. Water Quality Objectives (PWQO)
☐ Agriculture		☐ Other
Soil Texture (Check One)	Region <u> </u>	
☒ Coarse	<i>Indicate One</i>	
☐ Fine	☐ MISA	
		<i>Indicate One</i>

☒ Yes ☐ No

☒ Yes ☐ No

B	Biota
GW	Ground Water
O	Oil
P	Paint
S	Soil
SD	Sediment
SW	Surface Water

[illegible]

Samples Relinquished By (Print Name and Sign):
Sam Adeson *B. Adeson*
 Samples Relinquished By (Print Name and Sign):
 Samples Relinquished By (Print Name and Sign):

Date	Time
21 June 18	09:00
Date	Time
Date	Time

Samples Received By (Print Name and Sign): Neil Rammagun

Date	Time	
11:04 AM	June 22/18	
Date	Time	Pa
Date	Time	

Page 1 of 1

Nº: **T 07098**

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
642 WELHAM ROAD
BARRIE, ON L4N9A1
(705) 721-8451

ATTENTION TO: Ian Achesen

PROJECT: 18-107

AGAT WORK ORDER: 18T354592

TRACE ORGANICS REVIEWED BY: Inga Kuzmina, Trace Organics Lab Manager

DATE REPORTED: Jun 28, 2018

PAGES (INCLUDING COVER): 7

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 18T354592

PROJECT: 18-107

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

ATTENTION TO: Ian Achesen

SAMPLING SITE:

SAMPLED BY:

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-25

DATE REPORTED: 2018-06-28

		SAMPLE DESCRIPTION:		MW-8
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-06-25
Parameter	Unit	G / S	RDL	9356151
Dichlorodifluoromethane	µg/L		0.20	<0.20
Vinyl Chloride	µg/L		0.17	<0.17
Bromomethane	µg/L		0.20	<0.20
Trichlorofluoromethane	µg/L		0.40	<0.40
Acetone	µg/L		1.0	<1.0
1,1-Dichloroethylene	µg/L		0.30	<0.30
Methylene Chloride	µg/L		0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L		0.20	<0.20
Methyl tert-butyl ether	µg/L		0.20	<0.20
1,1-Dichloroethane	µg/L		0.30	<0.30
Methyl Ethyl Ketone	µg/L		1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L		0.20	<0.20
Chloroform	µg/L		0.20	1.7
1,2-Dichloroethane	µg/L		0.20	<0.20
1,1,1-Trichloroethane	µg/L		0.30	<0.30
Carbon Tetrachloride	µg/L		0.20	<0.20
Benzene	µg/L		0.20	<0.20
1,2-Dichloropropane	µg/L		0.20	<0.20
Trichloroethylene	µg/L		0.20	<0.20
Bromodichloromethane	µg/L		0.20	0.55
Methyl Isobutyl Ketone	µg/L		1.0	<1.0
1,1,2-Trichloroethane	µg/L		0.20	<0.20
Toluene	µg/L		0.20	0.24
Dibromochloromethane	µg/L		0.10	0.16
Ethylene Dibromide	µg/L		0.10	<0.10
Tetrachloroethylene	µg/L		0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L		0.10	<0.10
Chlorobenzene	µg/L		0.10	<0.10
Ethylbenzene	µg/L		0.10	<0.10
m & p-Xylene	µg/L		0.20	<0.20

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T354592

PROJECT: 18-107

5835 COOPERS AVENUE
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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:

ATTENTION TO: Ian Achesen

SAMPLED BY:

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-25

DATE REPORTED: 2018-06-28

		SAMPLE DESCRIPTION:		MW-8
		SAMPLE TYPE:		Water
		DATE SAMPLED:		2018-06-25
Parameter	Unit	G / S	RDL	9356151
Bromoform	µg/L		0.10	<0.10
Styrene	µg/L		0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L		0.10	<0.10
o-Xylene	µg/L		0.10	<0.10
1,3-Dichlorobenzene	µg/L		0.10	<0.10
1,4-Dichlorobenzene	µg/L		0.10	<0.10
1,2-Dichlorobenzene	µg/L		0.10	<0.10
1,3-Dichloropropene	µg/L		0.30	<0.30
Xylene Mixture	µg/L		0.20	<0.20
n-Hexane	µg/L		0.20	<0.20
Surrogate	Unit	Acceptable Limits		
Toluene-d8	% Recovery	50-140		97
4-Bromofluorobenzene	% Recovery	50-140		86

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T354592

PROJECT: 18-107

ATTENTION TO: Ian Achesen

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis

RPT Date: Jun 28, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - VOCs (Water)

Dichlorodifluoromethane	9347908		< 0.20	< 0.20	NA	< 0.20	87%	50%	140%	84%	50%	140%	75%	50%	140%
Vinyl Chloride	9347908		< 0.17	< 0.17	NA	< 0.17	84%	50%	140%	112%	50%	140%	71%	50%	140%
Bromomethane	9347908		< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	108%	50%	140%	73%	50%	140%
Trichlorofluoromethane	9347908		< 0.40	< 0.40	NA	< 0.40	113%	50%	140%	112%	50%	140%	94%	50%	140%
Acetone	9347908		< 1.0	< 1.0	NA	< 1.0	98%	50%	140%	70%	50%	140%	78%	50%	140%
1,1-Dichloroethylene	9347908		< 0.30	< 0.30	NA	< 0.30	85%	50%	140%	86%	60%	130%	78%	50%	140%
Methylene Chloride	9347908		< 0.30	< 0.30	NA	< 0.30	85%	50%	140%	89%	60%	130%	108%	50%	140%
trans- 1,2-Dichloroethylene	9347908		< 0.20	< 0.20	NA	< 0.20	90%	50%	140%	81%	60%	130%	72%	50%	140%
Methyl tert-butyl ether	9347908		< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	88%	60%	130%	96%	50%	140%
1,1-Dichloroethane	9347908		< 0.30	< 0.30	NA	< 0.30	110%	50%	140%	91%	60%	130%	79%	50%	140%
Methyl Ethyl Ketone	9347908		< 1.0	< 1.0	NA	< 1.0	112%	50%	140%	92%	50%	140%	83%	50%	140%
cis- 1,2-Dichloroethylene	9347908		< 0.20	< 0.20	NA	< 0.20	105%	50%	140%	86%	60%	130%	79%	50%	140%
Chloroform	9347908		< 0.20	< 0.20	NA	< 0.20	106%	50%	140%	88%	60%	130%	85%	50%	140%
1,2-Dichloroethane	9347908		< 0.20	< 0.20	NA	< 0.20	97%	50%	140%	77%	60%	130%	84%	50%	140%
1,1,1-Trichloroethane	9347908		< 0.30	< 0.30	NA	< 0.30	111%	50%	140%	97%	60%	130%	86%	50%	140%
Carbon Tetrachloride	9347908		< 0.20	< 0.20	NA	< 0.20	108%	50%	140%	94%	60%	130%	81%	50%	140%
Benzene	9347908		< 0.20	< 0.20	NA	< 0.20	100%	50%	140%	106%	60%	130%	91%	50%	140%
1,2-Dichloropropane	9347908		< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	103%	60%	130%	88%	50%	140%
Trichloroethylene	9347908		< 0.20	< 0.20	NA	< 0.20	115%	50%	140%	107%	60%	130%	95%	50%	140%
Bromodichloromethane	9347908		< 0.20	< 0.20	NA	< 0.20	102%	50%	140%	87%	60%	130%	80%	50%	140%
Methyl Isobutyl Ketone	9347908		< 1.0	< 1.0	NA	< 1.0	101%	50%	140%	79%	50%	140%	82%	50%	140%
1,1,2-Trichloroethane	9347908		< 0.20	< 0.20	NA	< 0.20	105%	50%	140%	105%	60%	130%	101%	50%	140%
Toluene	9347908		< 0.20	< 0.20	NA	< 0.20	104%	50%	140%	109%	60%	130%	104%	50%	140%
Dibromochloromethane	9347908		< 0.10	< 0.10	NA	< 0.10	94%	50%	140%	103%	60%	130%	78%	50%	140%
Ethylene Dibromide	9347908		< 0.10	< 0.10	NA	< 0.10	95%	50%	140%	93%	60%	130%	90%	50%	140%
Tetrachloroethylene	9347908		< 0.20	< 0.20	NA	< 0.20	107%	50%	140%	105%	60%	130%	112%	50%	140%
1,1,1,2-Tetrachloroethane	9347908		< 0.10	< 0.10	NA	< 0.10	107%	50%	140%	116%	60%	130%	98%	50%	140%
Chlorobenzene	9347908		< 0.10	< 0.10	NA	< 0.10	118%	50%	140%	107%	60%	130%	104%	50%	140%
Ethylbenzene	9347908		< 0.10	< 0.10	NA	< 0.10	116%	50%	140%	105%	60%	130%	98%	50%	140%
m & p-Xylene	9347908		< 0.20	< 0.20	NA	< 0.20	106%	50%	140%	115%	60%	130%	98%	50%	140%
Bromoform	9347908		< 0.10	< 0.10	NA	< 0.10	99%	50%	140%	97%	60%	130%	94%	50%	140%
Styrene	9347908		< 0.10	< 0.10	NA	< 0.10	103%	50%	140%	110%	60%	130%	93%	50%	140%
1,1,2,2-Tetrachloroethane	9347908		< 0.10	< 0.10	NA	< 0.10	95%	50%	140%	103%	60%	130%	89%	50%	140%
o-Xylene	9347908		< 0.10	< 0.10	NA	< 0.10	116%	50%	140%	93%	60%	130%	98%	50%	140%
1,3-Dichlorobenzene	9347908		< 0.10	< 0.10	NA	< 0.10	102%	50%	140%	116%	60%	130%	94%	50%	140%
1,4-Dichlorobenzene	9347908		< 0.10	< 0.10	NA	< 0.10	118%	50%	140%	87%	60%	130%	108%	50%	140%
1,2-Dichlorobenzene	9347908		< 0.10	< 0.10	NA	< 0.10	111%	50%	140%	105%	60%	130%	95%	50%	140%
1,3-Dichloropropene	9347908		< 0.30	< 0.30	NA	< 0.30	109%	50%	140%	96%	60%	130%	83%	50%	140%
n-Hexane	9347908		< 0.20	< 0.20	NA	< 0.20	111%	50%	140%	104%	60%	130%	105%	50%	140%



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T354592

PROJECT: 18-107

ATTENTION TO: Ian Achesen

SAMPLING SITE:

SAMPLED BY:

Trace Organics Analysis (Continued)

RPT Date: Jun 28, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE	
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By: _____

Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T354592

PROJECT: 18-107

ATTENTION TO: Ian Achesen

SAMPLING SITE:

SAMPLED BY:

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
642 WELHAM ROAD
BARRIE, ON L4N9A1
(705) 721-8451

ATTENTION TO: Dave Ketcheson

PROJECT: 18-107

AGAT WORK ORDER: 18T355895

SOIL ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

WATER ANALYSIS REVIEWED BY: Nivine Basily, Inorganics Report Writer

DATE REPORTED: Jul 05, 2018

PAGES (INCLUDING COVER): 19

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T355895

PROJECT: 18-107

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE: Hasty Tract

ATTENTION TO: Dave Ketcheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - Metals (Including Hydrides) (Soil)

DATE RECEIVED: 2018-06-27

DATE REPORTED: 2018-07-05

		SAMPLE DESCRIPTION:		BH-11-1	BH-12-3	BH-13-2
		SAMPLE TYPE:		Soil	Soil	Soil
		DATE SAMPLED:		2018-06-26 08:20	2018-06-26 11:50	2018-06-26 14:45
Parameter	Unit	G / S	RDL	9365461	9365465	9365492
Antimony	µg/g		0.8	<0.8	<0.8	<0.8
Arsenic	µg/g		1	1	2	1
Barium	µg/g		2	8	46	8
Beryllium	µg/g		0.5	<0.5	<0.5	<0.5
Boron	µg/g		5	<5	<5	<5
Cadmium	µg/g		0.5	<0.5	<0.5	<0.5
Chromium	µg/g		2	3	9	3
Cobalt	µg/g		0.5	1.2	3.9	1.0
Copper	µg/g		1	3	8	2
Lead	µg/g		1	<1	2	<1
Molybdenum	µg/g		0.5	<0.5	<0.5	<0.5
Nickel	µg/g		1	3	7	2
Selenium	µg/g		0.4	<0.4	<0.4	<0.4
Silver	µg/g		0.2	<0.2	<0.2	<0.2
Thallium	µg/g		0.4	<0.4	<0.4	<0.4
Uranium	µg/g		0.5	<0.5	<0.5	<0.5
Vanadium	µg/g		1	10	23	9
Zinc	µg/g		5	5	19	<5

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

Divine Basily



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T355895

PROJECT: 18-107

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE: Hasty Tract

ATTENTION TO: Dave Ketcheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

DATE RECEIVED: 2018-06-27

DATE REPORTED: 2018-07-05

		SAMPLE DESCRIPTION:		BH-11-1	BH-12-3	BH-13-2
		SAMPLE TYPE:		Soil	Soil	Soil
		DATE SAMPLED:		2018-06-26 08:20	2018-06-26 11:50	2018-06-26 14:45
Parameter	Unit	G / S	RDL	9365461	9365465	9365492
F1 (C6 to C10)	µg/g		5	<5	<5	<5
F1 (C6 to C10) minus BTEX	µg/g		5	<5	<5	<5
F2 (C10 to C16)	µg/g		10	<10	<10	<10
F3 (C16 to C34)	µg/g		50	<50	<50	<50
F4 (C34 to C50)	µg/g		50	<50	<50	<50
Gravimetric Heavy Hydrocarbons	µg/g		50	NA	NA	NA
Moisture Content	%		0.1	12.6	6.5	15.4
Surrogate	Unit	Acceptable Limits				
Terphenyl	%	60-140		72	72	131

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

9365461-9365492 Results are based on sample dry weight.

The C6-C10 fraction is calculated using toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16-C50 and are only determined if the chromatogram of the C34 - C50 hydrocarbons indicates that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50.

Total C6 - C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 + nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified without the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T355895

PROJECT: 18-107

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE: Hasty Tract

ATTENTION TO: Dave Ketcheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

DATE RECEIVED: 2018-06-27

DATE REPORTED: 2018-07-05

SAMPLE DESCRIPTION:				MW-11	MW-12	MW-13
SAMPLE TYPE:				Water	Water	Water
DATE SAMPLED:				2018-06-26 13:50	2018-06-26 15:15	2018-06-26 07:40
Parameter	Unit	G / S	RDL	9365477	9365486	9365495
F1 (C6 - C10)	µg/L		25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L		25	<25	<25	<25
F2 (C10 to C16)	µg/L		100	<100	<100	<100
F3 (C16 to C34)	µg/L		100	140	<100	190
F4 (C34 to C50)	µg/L		100	<100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L		500	NA	NA	NA
Surrogate	Unit	Acceptable Limits				
Terphenyl	%	60-140		76	60	85

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

9365477-9365495 The C6-C10 fraction is calculated using Toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50.

Total C6-C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Certified By:



Certificate of Analysis

AGAT WORK ORDER: 18T355895

PROJECT: 18-107

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
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<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE: Hasty Tract

ATTENTION TO: Dave Ketcheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - VOCs (Soil)

DATE RECEIVED: 2018-06-27

DATE REPORTED: 2018-07-05

SAMPLE DESCRIPTION:				BH-11-1	BH-12-3	BH-13-2
SAMPLE TYPE:				Soil	Soil	Soil
DATE SAMPLED:				2018-06-26 08:20	2018-06-26 11:50	2018-06-26 14:45
Parameter	Unit	G / S	RDL	9365461	9365465	9365492
Dichlorodifluoromethane	µg/g		0.05	<0.05	<0.05	<0.05
Vinyl Chloride	ug/g		0.02	<0.02	<0.02	<0.02
Bromomethane	ug/g		0.05	<0.05	<0.05	<0.05
Trichlorofluoromethane	ug/g		0.05	<0.05	<0.05	<0.05
Acetone	ug/g		0.50	<0.50	<0.50	<0.50
1,1-Dichloroethylene	ug/g		0.05	<0.05	<0.05	<0.05
Methylene Chloride	ug/g		0.05	<0.05	<0.05	<0.05
Trans- 1,2-Dichloroethylene	ug/g		0.05	<0.05	<0.05	<0.05
Methyl tert-butyl Ether	ug/g		0.05	<0.05	<0.05	<0.05
1,1-Dichloroethane	ug/g		0.02	<0.02	<0.02	<0.02
Methyl Ethyl Ketone	ug/g		0.50	<0.50	<0.50	<0.50
Cis- 1,2-Dichloroethylene	ug/g		0.02	<0.02	<0.02	<0.02
Chloroform	ug/g		0.04	<0.04	<0.04	<0.04
1,2-Dichloroethane	ug/g		0.03	<0.03	<0.03	<0.03
1,1,1-Trichloroethane	ug/g		0.05	<0.05	<0.05	<0.05
Carbon Tetrachloride	ug/g		0.05	<0.05	<0.05	<0.05
Benzene	ug/g		0.02	<0.02	<0.02	<0.02
1,2-Dichloropropane	ug/g		0.03	<0.03	<0.03	<0.03
Trichloroethylene	ug/g		0.03	<0.03	<0.03	<0.03
Bromodichloromethane	ug/g		0.05	<0.05	<0.05	<0.05
Methyl Isobutyl Ketone	ug/g		0.50	<0.50	<0.50	<0.50
1,1,2-Trichloroethane	ug/g		0.04	<0.04	<0.04	<0.04
Toluene	ug/g		0.05	<0.05	<0.05	<0.05
Dibromochloromethane	ug/g		0.05	<0.05	<0.05	<0.05
Ethylene Dibromide	ug/g		0.04	<0.04	<0.04	<0.04
Tetrachloroethylene	ug/g		0.05	<0.05	<0.05	<0.05
1,1,1,2-Tetrachloroethane	ug/g		0.04	<0.04	<0.04	<0.04
Chlorobenzene	ug/g		0.05	<0.05	<0.05	<0.05
Ethylbenzene	ug/g		0.05	<0.05	<0.05	<0.05

Certified By:

N Popmukolof



AGAT Laboratories

Certificate of Analysis

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PROJECT: 18-107

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SAMPLING SITE: Hasty Tract

ATTENTION TO: Dave Ketcheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - VOCs (Soil)						
DATE RECEIVED: 2018-06-27				DATE REPORTED: 2018-07-05		
		SAMPLE DESCRIPTION:		BH-11-1	BH-12-3	BH-13-2
		SAMPLE TYPE:		Soil	Soil	Soil
		DATE SAMPLED:		2018-06-26 08:20	2018-06-26 11:50	2018-06-26 14:45
Parameter	Unit	G / S	RDL	9365461	9365465	9365492
m & p-Xylene	ug/g		0.05	<0.05	<0.05	<0.05
Bromoform	ug/g		0.05	<0.05	<0.05	<0.05
Styrene	ug/g		0.05	<0.05	<0.05	<0.05
1,1,2,2-Tetrachloroethane	ug/g		0.05	<0.05	<0.05	<0.05
o-Xylene	ug/g		0.05	<0.05	<0.05	<0.05
1,3-Dichlorobenzene	ug/g		0.05	<0.05	<0.05	<0.05
1,4-Dichlorobenzene	ug/g		0.05	<0.05	<0.05	<0.05
1,2-Dichlorobenzene	ug/g		0.05	<0.05	<0.05	<0.05
Xylene Mixture	ug/g		0.05	<0.05	<0.05	<0.05
1,3-Dichloropropene	µg/g		0.04	<0.04	<0.04	<0.04
n-Hexane	µg/g		0.05	<0.05	<0.05	<0.05
Surrogate	Unit	Acceptable Limits				
Toluene-d8	% Recovery	50-140	89	87	87	
4-Bromofluorobenzene	% Recovery	50-140	101	100	98	

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

9365461-9365492 The sample was analysed using the high level technique. The sample was extracted using methanol, a small amount of the methanol extract was diluted in water and the purge & trap GC/MS analysis was performed. Results are based on the dry weight of the soil.

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SAMPLING SITE: Hasty Tract

ATTENTION TO: Dave Ketcheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-27

DATE REPORTED: 2018-07-05

SAMPLE DESCRIPTION:				MW-11	MW-12	MW-13
SAMPLE TYPE:				Water	Water	Water
DATE SAMPLED:				2018-06-26 13:50	2018-06-26 15:15	2018-06-26 07:40
Parameter	Unit	G / S	RDL	9365477	9365486	9365495
Dichlorodifluoromethane	µg/L		0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L		0.17	<0.17	<0.17	<0.17
Bromomethane	µg/L		0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	µg/L		0.40	<0.40	<0.40	<0.40
Acetone	µg/L		1.0	18	25	15
1,1-Dichloroethylene	µg/L		0.30	<0.30	<0.30	<0.30
Methylene Chloride	µg/L		0.30	<0.30	<0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L		0.20	<0.20	<0.20	<0.20
Methyl tert-butyl ether	µg/L		0.20	<0.20	<0.20	<0.20
1,1-Dichloroethane	µg/L		0.30	<0.30	<0.30	<0.30
Methyl Ethyl Ketone	µg/L		1.0	<1.0	<1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L		0.20	<0.20	<0.20	<0.20
Chloroform	µg/L		0.20	8.4	11	2.4
1,2-Dichloroethane	µg/L		0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	µg/L		0.30	<0.30	<0.30	<0.30
Carbon Tetrachloride	µg/L		0.20	<0.20	<0.20	<0.20
Benzene	µg/L		0.20	<0.20	0.27	<0.20
1,2-Dichloropropane	µg/L		0.20	<0.20	<0.20	<0.20
Trichloroethylene	µg/L		0.20	<0.20	<0.20	<0.20
Bromodichloromethane	µg/L		0.20	2.4	3.2	0.37
Methyl Isobutyl Ketone	µg/L		1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	µg/L		0.20	<0.20	<0.20	<0.20
Toluene	µg/L		0.20	0.81	1.1	0.64
Dibromochloromethane	µg/L		0.10	0.79	1.0	<0.10
Ethylene Dibromide	µg/L		0.10	<0.10	<0.10	<0.10
Tetrachloroethylene	µg/L		0.20	<0.20	<0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L		0.10	<0.10	<0.10	<0.10
Chlorobenzene	µg/L		0.10	<0.10	<0.10	<0.10
Ethylbenzene	µg/L		0.10	0.18	0.29	0.16

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SAMPLING SITE: Hasty Tract

ATTENTION TO: Dave Ketcheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-06-27

DATE REPORTED: 2018-07-05

SAMPLE DESCRIPTION:				MW-11	MW-12	MW-13
SAMPLE TYPE:				Water	Water	Water
DATE SAMPLED:				2018-06-26 13:50	2018-06-26 15:15	2018-06-26 07:40
Parameter	Unit	G / S	RDL	9365477	9365486	9365495
m & p-Xylene	µg/L		0.20	0.50	0.53	0.27
Bromoform	µg/L		0.10	<0.10	<0.10	<0.10
Styrene	µg/L		0.10	<0.10	<0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L		0.10	<0.10	<0.10	<0.10
o-Xylene	µg/L		0.10	0.20	0.21	0.10
1,3-Dichlorobenzene	µg/L		0.10	<0.10	<0.10	<0.10
1,4-Dichlorobenzene	µg/L		0.10	<0.10	<0.10	<0.10
1,2-Dichlorobenzene	µg/L		0.10	<0.10	<0.10	<0.10
1,3-Dichloropropene	µg/L		0.30	<0.30	<0.30	<0.30
Xylene Mixture	µg/L		0.20	0.70	0.74	0.37
n-Hexane	µg/L		0.20	<0.20	0.68	<0.20
Surrogate	Unit	Acceptable Limits				
Toluene-d8	% Recovery	50-140		100	99	101
4-Bromofluorobenzene	% Recovery	50-140		106	105	102

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

N Popmukolof



Certificate of Analysis

AGAT WORK ORDER: 18T355895

PROJECT: 18-107

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SAMPLING SITE: Hasty Tract

ATTENTION TO: Dave Ketcheson

SAMPLED BY: I. Acheson

O. Reg. 153(511) - Metals (Including Hydrides) (Water)

DATE RECEIVED: 2018-06-27

DATE REPORTED: 2018-07-05

		SAMPLE DESCRIPTION:		MW-11	MW-12	MW-13
		SAMPLE TYPE:		Water	Water	Water
		DATE SAMPLED:		2018-06-26 13:50	2018-06-26 15:15	2018-06-26 07:40
Parameter	Unit	G / S	RDL	9365477	9365486	9365495
Antimony	µg/L		1.0	<1.0	<1.0	<1.0
Arsenic	µg/L		1.0	<1.0	<1.0	<1.0
Barium	µg/L		2.0	117	63.5	147
Beryllium	µg/L		0.5	<0.5	<0.5	<0.5
Boron	µg/L		10.0	21.6	22.1	20.1
Cadmium	µg/L		0.2	<0.2	<0.2	<0.2
Chromium	µg/L		2.0	2.2	<2.0	2.4
Cobalt	µg/L		0.5	<0.5	<0.5	0.8
Copper	µg/L		1.0	4.4	3.7	4.5
Lead	µg/L		0.5	<0.5	<0.5	<0.5
Molybdenum	µg/L		0.5	4.7	3.5	3.2
Nickel	µg/L		1.0	1.1	<1.0	1.2
Selenium	µg/L		1.0	<1.0	<1.0	<1.0
Silver	µg/L		0.2	<0.2	<0.2	<0.2
Thallium	µg/L		0.3	<0.3	<0.3	<0.3
Uranium	µg/L		0.5	<0.5	<0.5	0.5
Vanadium	µg/L		0.4	0.9	0.7	0.5
Zinc	µg/L		5.0	5.6	7.0	6.4

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

PROJECT: 18-107

SAMPLING SITE: Hasty Tract

AGAT WORK ORDER: 18T355895

ATTENTION TO: Dave Ketcheson

SAMPLED BY: I. Acheson

Soil Analysis

RPT Date: Jul 05, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals (Including Hydrides) (Soil)															
Antimony	9365461	9365461	<0.8	<0.8	NA	< 0.8	115%	70%	130%	89%	80%	120%	87%	70%	130%
Arsenic	9365461	9365461	1	1	NA	< 1	109%	70%	130%	99%	80%	120%	103%	70%	130%
Barium	9365461	9365461	8	8	NA	< 2	97%	70%	130%	92%	80%	120%	94%	70%	130%
Beryllium	9365461	9365461	<0.5	<0.5	NA	< 0.5	94%	70%	130%	104%	80%	120%	86%	70%	130%
Boron	9365461	9365461	<5	<5	NA	< 5	77%	70%	130%	107%	80%	120%	73%	70%	130%
Cadmium	9365461	9365461	<0.5	<0.5	NA	< 0.5	93%	70%	130%	92%	80%	120%	95%	70%	130%
Chromium	9365461	9365461	3	3	NA	< 2	94%	70%	130%	99%	80%	120%	89%	70%	130%
Cobalt	9365461	9365461	1.2	1.1	NA	< 0.5	102%	70%	130%	105%	80%	120%	98%	70%	130%
Copper	9365461	9365461	3	2	NA	< 1	91%	70%	130%	97%	80%	120%	89%	70%	130%
Lead	9365461	9365461	<1	<1	NA	< 1	111%	70%	130%	93%	80%	120%	98%	70%	130%
Molybdenum	9365461	9365461	<0.5	<0.5	NA	< 0.5	95%	70%	130%	97%	80%	120%	96%	70%	130%
Nickel	9365461	9365461	3	2	NA	< 1	104%	70%	130%	107%	80%	120%	98%	70%	130%
Selenium	9365461	9365461	<0.4	<0.4	NA	< 0.4	117%	70%	130%	93%	80%	120%	97%	70%	130%
Silver	9365461	9365461	<0.2	<0.2	NA	< 0.2	107%	70%	130%	84%	80%	120%	90%	70%	130%
Thallium	9365461	9365461	<0.4	<0.4	NA	< 0.4	98%	70%	130%	101%	80%	120%	107%	70%	130%
Uranium	9365461	9365461	<0.5	<0.5	NA	< 0.5	97%	70%	130%	89%	80%	120%	93%	70%	130%
Vanadium	9365461	9365461	10	10	7.2%	< 1	102%	70%	130%	107%	80%	120%	92%	70%	130%
Zinc	9365461	9365461	5	<5	NA	< 5	98%	70%	130%	104%	80%	120%	111%	70%	130%

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:

divine Basily



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

PROJECT: 18-107

SAMPLING SITE: Hasty Tract

AGAT WORK ORDER: 18T355895

ATTENTION TO: Dave Ketcheson

SAMPLED BY: I. Acheson

Trace Organics Analysis

RPT Date: Jul 05, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - VOCs (Soil)

Dichlorodifluoromethane	9368498		< 0.05	< 0.05	NA	< 0.05	86%	50%	140%	76%	50%	140%	84%	50%	140%
Vinyl Chloride	9368498		< 0.02	< 0.02	NA	< 0.02	85%	50%	140%	77%	50%	140%	84%	50%	140%
Bromomethane	9368498		< 0.05	< 0.05	NA	< 0.05	76%	50%	140%	76%	50%	140%	75%	50%	140%
Trichlorofluoromethane	9368498		< 0.05	< 0.05	NA	< 0.05	79%	50%	140%	76%	50%	140%	77%	50%	140%
Acetone	9368498		< 0.50	< 0.50	NA	< 0.50	96%	50%	140%	119%	50%	140%	119%	50%	140%
1,1-Dichloroethylene	9368498		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	87%	60%	130%	84%	50%	140%
Methylene Chloride	9368498		< 0.05	< 0.05	NA	< 0.05	77%	50%	140%	85%	60%	130%	103%	50%	140%
Trans- 1,2-Dichloroethylene	9368498		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	77%	60%	130%	91%	50%	140%
Methyl tert-butyl Ether	9368498		< 0.05	< 0.05	NA	< 0.05	91%	50%	140%	83%	60%	130%	117%	50%	140%
1,1-Dichloroethane	9368498		< 0.02	< 0.02	NA	< 0.02	89%	50%	140%	114%	60%	130%	108%	50%	140%
Methyl Ethyl Ketone	9368498		< 0.50	< 0.50	NA	< 0.50	86%	50%	140%	106%	50%	140%	117%	50%	140%
Cis- 1,2-Dichloroethylene	9368498		< 0.02	< 0.02	NA	< 0.02	96%	50%	140%	83%	60%	130%	75%	50%	140%
Chloroform	9368498		< 0.04	< 0.04	NA	< 0.04	83%	50%	140%	78%	60%	130%	88%	50%	140%
1,2-Dichloroethane	9368498		< 0.03	< 0.03	NA	< 0.03	83%	50%	140%	77%	60%	130%	90%	50%	140%
1,1,1-Trichloroethane	9368498		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	71%	60%	130%	114%	50%	140%
Carbon Tetrachloride	9368498		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	87%	60%	130%	88%	50%	140%
Benzene	9368498		< 0.02	< 0.02	NA	< 0.02	74%	50%	140%	80%	60%	130%	76%	50%	140%
1,2-Dichloropropane	9368498		< 0.03	< 0.03	NA	< 0.03	74%	50%	140%	90%	60%	130%	86%	50%	140%
Trichloroethylene	9368498		< 0.03	< 0.03	NA	< 0.03	89%	50%	140%	75%	60%	130%	99%	50%	140%
Bromodichloromethane	9368498		< 0.05	< 0.05	NA	< 0.05	113%	50%	140%	82%	60%	130%	105%	50%	140%
Methyl Isobutyl Ketone	9368498		< 0.50	< 0.50	NA	< 0.50	82%	50%	140%	94%	50%	140%	84%	50%	140%
1,1,2-Trichloroethane	9368498		< 0.04	< 0.04	NA	< 0.04	80%	50%	140%	113%	60%	130%	90%	50%	140%
Toluene	9368498		< 0.05	< 0.05	NA	< 0.05	93%	50%	140%	87%	60%	130%	86%	50%	140%
Dibromochloromethane	9368498		< 0.05	< 0.05	NA	< 0.05	71%	50%	140%	99%	60%	130%	82%	50%	140%
Ethylene Dibromide	9368498		< 0.04	< 0.04	NA	< 0.04	78%	50%	140%	109%	60%	130%	87%	50%	140%
Tetrachloroethylene	9368498		< 0.05	< 0.05	NA	< 0.05	73%	50%	140%	95%	60%	130%	72%	50%	140%
1,1,1,2-Tetrachloroethane	9368498		< 0.04	< 0.04	NA	< 0.04	109%	50%	140%	108%	60%	130%	86%	50%	140%
Chlorobenzene	9368498		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	107%	60%	130%	88%	50%	140%
Ethylbenzene	9368498		< 0.05	< 0.05	NA	< 0.05	78%	50%	140%	92%	60%	130%	71%	50%	140%
m & p-Xylene	9368498		< 0.05	< 0.05	NA	< 0.05	103%	50%	140%	94%	60%	130%	77%	50%	140%
Bromoform	9368498		< 0.05	< 0.05	NA	< 0.05	82%	50%	140%	111%	60%	130%	97%	50%	140%
Styrene	9368498		< 0.05	< 0.05	NA	< 0.05	79%	50%	140%	91%	60%	130%	72%	50%	140%
1,1,2,2-Tetrachloroethane	9368498		< 0.05	< 0.05	NA	< 0.05	74%	50%	140%	87%	60%	130%	100%	50%	140%
o-Xylene	9368498		< 0.05	< 0.05	NA	< 0.05	85%	50%	140%	101%	60%	130%	83%	50%	140%
1,3-Dichlorobenzene	9368498		< 0.05	< 0.05	NA	< 0.05	73%	50%	140%	111%	60%	130%	93%	50%	140%
1,4-Dichlorobenzene	9368498		< 0.05	< 0.05	NA	< 0.05	81%	50%	140%	118%	60%	130%	105%	50%	140%
1,2-Dichlorobenzene	9368498		< 0.05	< 0.05	NA	< 0.05	80%	50%	140%	119%	60%	130%	105%	50%	140%
1,3-Dichloropropene	9368498		< 0.04	< 0.04	NA	< 0.04	92%	50%	140%	81%	60%	130%	94%	50%	140%
n-Hexane	9368498		< 0.05	< 0.05	NA	< 0.05	83%	50%	140%	95%	60%	130%	94%	50%	140%

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T355895

PROJECT: 18-107

ATTENTION TO: Dave Ketcheson

SAMPLING SITE: Hasty Tract

SAMPLED BY: I. Acheson

Trace Organics Analysis (Continued)

RPT Date: Jul 05, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - VOCs (Water)

Dichlorodifluoromethane	9357596		< 0.20	< 0.20	NA	< 0.20	113%	50%	140%	80%	50%	140%	73%	50%	140%
Vinyl Chloride	9357596		< 0.17	< 0.17	NA	< 0.17	85%	50%	140%	77%	50%	140%	82%	50%	140%
Bromomethane	9357596		< 0.20	< 0.20	NA	< 0.20	111%	50%	140%	73%	50%	140%	78%	50%	140%
Trichlorofluoromethane	9357596		< 0.40	< 0.40	NA	< 0.40	114%	50%	140%	80%	50%	140%	73%	50%	140%
Acetone	9357596		< 1.0	< 1.0	NA	< 1.0	95%	50%	140%	105%	50%	140%	105%	50%	140%
1,1-Dichloroethylene	9357596		< 0.30	< 0.30	NA	< 0.30	105%	50%	140%	87%	60%	130%	105%	50%	140%
Methylene Chloride	9357596		< 0.30	< 0.30	NA	< 0.30	105%	50%	140%	104%	60%	130%	94%	50%	140%
trans- 1,2-Dichloroethylene	9357596		< 0.20	< 0.20	NA	< 0.20	112%	50%	140%	90%	60%	130%	72%	50%	140%
Methyl tert-butyl ether	9357596		< 0.20	< 0.20	NA	< 0.20	84%	50%	140%	71%	60%	130%	101%	50%	140%
1,1-Dichloroethane	9357596		< 0.30	< 0.30	NA	< 0.30	92%	50%	140%	86%	60%	130%	72%	50%	140%
Methyl Ethyl Ketone	9357596		< 1.0	< 1.0	NA	< 1.0	82%	50%	140%	80%	50%	140%	110%	50%	140%
cis- 1,2-Dichloroethylene	9357596		< 0.20	< 0.20	NA	< 0.20	119%	50%	140%	93%	60%	130%	113%	50%	140%
Chloroform	9357596		< 0.20	< 0.20	NA	< 0.20	100%	50%	140%	107%	60%	130%	104%	50%	140%
1,2-Dichloroethane	9357596		< 0.20	< 0.20	NA	< 0.20	97%	50%	140%	113%	60%	130%	111%	50%	140%
1,1,1-Trichloroethane	9357596		< 0.30	< 0.30	NA	< 0.30	88%	50%	140%	97%	60%	130%	98%	50%	140%
Carbon Tetrachloride	9357596		< 0.20	< 0.20	NA	< 0.20	86%	50%	140%	89%	60%	130%	83%	50%	140%
Benzene	9357596		< 0.20	< 0.20	NA	< 0.20	111%	50%	140%	93%	60%	130%	90%	50%	140%
1,2-Dichloropropane	9357596		< 0.20	< 0.20	NA	< 0.20	104%	50%	140%	95%	60%	130%	96%	50%	140%
Trichloroethylene	9357596		< 0.20	< 0.20	NA	< 0.20	101%	50%	140%	98%	60%	130%	101%	50%	140%
Bromodichloromethane	9357596		< 0.20	< 0.20	NA	< 0.20	84%	50%	140%	81%	60%	130%	85%	50%	140%
Methyl Isobutyl Ketone	9357596		< 1.0	< 1.0	NA	< 1.0	109%	50%	140%	112%	50%	140%	101%	50%	140%
1,1,2-Trichloroethane	9357596		< 0.20	< 0.20	NA	< 0.20	115%	50%	140%	119%	60%	130%	102%	50%	140%
Toluene	9357596		< 0.20	< 0.20	NA	< 0.20	113%	50%	140%	108%	60%	130%	102%	50%	140%
Dibromochloromethane	9357596		< 0.10	< 0.10	NA	< 0.10	74%	50%	140%	83%	60%	130%	85%	50%	140%
Ethylene Dibromide	9357596		< 0.10	< 0.10	NA	< 0.10	97%	50%	140%	107%	60%	130%	115%	50%	140%
Tetrachloroethylene	9357596		< 0.20	< 0.20	NA	< 0.20	103%	50%	140%	97%	60%	130%	87%	50%	140%
1,1,1,2-Tetrachloroethane	9357596		< 0.10	< 0.10	NA	< 0.10	114%	50%	140%	99%	60%	130%	98%	50%	140%
Chlorobenzene	9357596		< 0.10	< 0.10	NA	< 0.10	108%	50%	140%	113%	60%	130%	111%	50%	140%
Ethylbenzene	9357596		< 0.10	< 0.10	NA	< 0.10	107%	50%	140%	110%	60%	130%	104%	50%	140%
m & p-Xylene	9357596		< 0.20	< 0.20	NA	< 0.20	112%	50%	140%	115%	60%	130%	108%	50%	140%
Bromoform	9357596		< 0.10	< 0.10	NA	< 0.10	80%	50%	140%	84%	60%	130%	89%	50%	140%
Styrene	9357596		< 0.10	< 0.10	NA	< 0.10	100%	50%	140%	116%	60%	130%	113%	50%	140%
1,1,2,2-Tetrachloroethane	9357596		< 0.10	< 0.10	NA	< 0.10	115%	50%	140%	109%	60%	130%	99%	50%	140%
o-Xylene	9357596		< 0.10	< 0.10	NA	< 0.10	115%	50%	140%	118%	60%	130%	114%	50%	140%
1,3-Dichlorobenzene	9357596		< 0.10	< 0.10	NA	< 0.10	109%	50%	140%	104%	60%	130%	102%	50%	140%
1,4-Dichlorobenzene	9357596		< 0.10	< 0.10	NA	< 0.10	116%	50%	140%	114%	60%	130%	115%	50%	140%
1,2-Dichlorobenzene	9357596		< 0.10	< 0.10	NA	< 0.10	115%	50%	140%	108%	60%	130%	110%	50%	140%
1,3-Dichloropropene	9357596		< 0.30	< 0.30	NA	< 0.30	91%	50%	140%	94%	60%	130%	99%	50%	140%



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T355895

PROJECT: 18-107

ATTENTION TO: Dave Ketcheson

SAMPLING SITE: Hasty Tract

SAMPLED BY: I. Acheson

Trace Organics Analysis (Continued)

RPT Date: Jul 05, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE		MATRIX SPIKE				
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

n-Hexane	9357596		< 0.20	< 0.20	NA	< 0.20	92%	50%	140%	84%	60%	130%	98%	50%	140%
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O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Soil)

F1 (C6 to C10)	9368498		< 5	< 5	NA	< 5	85%	60%	130%	97%	85%	115%	88%	70%	130%
F2 (C10 to C16)	9365492	9365492	< 10	< 10	NA	< 10	91%	60%	130%	101%	80%	120%	102%	70%	130%
F3 (C16 to C34)	9365492	9365492	< 50	< 50	NA	< 50	97%	60%	130%	92%	80%	120%	92%	70%	130%
F4 (C34 to C50)	9365492	9365492	< 50	< 50	NA	< 50	96%	60%	130%	85%	80%	120%	101%	70%	130%

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

F1 (C6 - C10)	9361737		< 25	< 25	NA	< 25	92%	60%	140%	85%	60%	140%	80%	60%	140%
F2 (C10 to C16)	9354292		310	270	NA	< 100	105%	60%	140%	75%	60%	140%	76%	60%	140%
F3 (C16 to C34)	9354292		< 100	< 100	NA	< 100	106%	60%	140%	88%	60%	140%	103%	60%	140%
F4 (C34 to C50)	9354292		< 100	< 100	NA	< 100	92%	60%	140%	92%	60%	140%	102%	60%	140%

Comments: When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:

N Popmukohol



Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

PROJECT: 18-107

SAMPLING SITE: Hasty Tract

AGAT WORK ORDER: 18T355895

ATTENTION TO: Dave Ketcheson

SAMPLED BY: I. Acheson

Water Analysis															
RPT Date: Jul 05, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - Metals (Including Hydrides) (Water)															
Antimony	9365477	9365477	<1.0	<1.0	NA	< 1.0	96%	70%	130%	97%	80%	120%	99%	70%	130%
Arsenic	9365477	9365477	<1.0	1.1	NA	< 1.0	98%	70%	130%	97%	80%	120%	98%	70%	130%
Barium	9365477	9365477	117	115	1.7%	< 2.0	97%	70%	130%	95%	80%	120%	97%	70%	130%
Beryllium	9365477	9365477	<0.5	<0.5	NA	< 0.5	104%	70%	130%	101%	80%	120%	105%	70%	130%
Boron	9365477	9365477	21.6	21.9	NA	< 10.0	102%	70%	130%	108%	80%	120%	105%	70%	130%
Cadmium	9365477	9365477	<0.2	<0.2	NA	< 0.2	97%	70%	130%	98%	80%	120%	98%	70%	130%
Chromium	9365477	9365477	2.2	<2.0	NA	< 2.0	102%	70%	130%	100%	80%	120%	95%	70%	130%
Cobalt	9365477	9365477	<0.5	<0.5	NA	< 0.5	95%	70%	130%	98%	80%	120%	93%	70%	130%
Copper	9365477	9365477	4.4	4.5	NA	< 1.0	98%	70%	130%	101%	80%	120%	96%	70%	130%
Lead	9365477	9365477	<0.5	<0.5	NA	< 0.5	94%	70%	130%	97%	80%	120%	94%	70%	130%
Molybdenum	9365477	9365477	4.7	4.7	0.2%	< 0.5	96%	70%	130%	95%	80%	120%	97%	70%	130%
Nickel	9365477	9365477	1.1	<1.0	NA	< 1.0	93%	70%	130%	96%	80%	120%	90%	70%	130%
Selenium	9365477	9365477	<1.0	<1.0	NA	< 1.0	97%	70%	130%	95%	80%	120%	96%	70%	130%
Silver	9365477	9365477	<0.2	<0.2	NA	< 0.2	94%	70%	130%	103%	80%	120%	106%	70%	130%
Thallium	9365477	9365477	<0.3	<0.3	NA	< 0.3	97%	70%	130%	102%	80%	120%	100%	70%	130%
Uranium	9365477	9365477	<0.5	<0.5	NA	< 0.5	99%	70%	130%	95%	80%	120%	98%	70%	130%
Vanadium	9365477	9365477	0.9	1.1	NA	< 0.4	97%	70%	130%	98%	80%	120%	95%	70%	130%
Zinc	9365477	9365477	5.6	5.1	NA	< 5.0	97%	70%	130%	98%	80%	120%	95%	70%	130%

Comments: NA signifies Not Applicable.

Duplicate Qualifier: As the measured result approaches the RL, the uncertainty associated with the value increases dramatically, thus duplicate acceptance limits apply only where the average of the two duplicates is greater than five times the RL.

Certified By:

Divine Basily



Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T355895

PROJECT: 18-107

ATTENTION TO: Dave Ketcheson

SAMPLING SITE:Hasty Tract

SAMPLED BY:I.Acheson

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Soil Analysis			
Antimony	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Barium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Boron	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Chromium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Copper	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Lead	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Nickel	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Selenium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Silver	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Thallium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Uranium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS
Zinc	MET-93-6103	EPA SW-846 3050B & 6020A	ICP-MS

Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

PROJECT: 18-107

SAMPLING SITE:Hasty Tract

AGAT WORK ORDER: 18T355895

ATTENTION TO: Dave Ketcheson

SAMPLED BY:I.Acheson

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
F1 (C6 to C10)	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F1 (C6 to C10) minus BTEX	VOL-91-5009	CCME Tier 1 Method, SW846 5035	P & T GC / FID
F2 (C10 to C16)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F3 (C16 to C34)	VOL-91-5009	CCME Tier 1 Method	GC / FID
F4 (C34 to C50)	VOL-91-5009	CCME Tier 1 Method	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5009	CCME Tier 1 Method	Balance
Moisture Content	VOL-91-5009	CCME Tier 1 Method, SW846 5035,8015	BALANCE
Terphenyl	VOL-91-5009	CCME Tier 1 Method	GC/FID
F1 (C6 - C10)	VOL-91- 5010	MOE PHC E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC / FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC / FID
F4 (C34 to C50)	VOL-91-5010	MOE PHC E3421	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
Dichlorodifluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Acetone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trans- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl tert-butyl Ether	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Cis- 1,2-Dichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Benzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Styrene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

PROJECT: 18-107

SAMPLING SITE:Hasty Tract

AGAT WORK ORDER: 18T355895

ATTENTION TO: Dave Ketcheson

SAMPLED BY:I.Acheson

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
o-Xylene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5002	EPA SW-846 5035 & 8260	(P&T)GC/MS
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS

Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T355895

PROJECT: 18-107

ATTENTION TO: Dave Ketcheson

SAMPLING SITE:Hasty Tract

SAMPLED BY:I.Acheson

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Water Analysis			
Antimony	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Arsenic	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Barium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Beryllium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Boron	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cadmium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Chromium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Cobalt	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Copper	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Lead	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Molybdenum	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Nickel	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Selenium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Silver	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Thallium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Uranium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Vanadium	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS
Zinc	MET-93-6103	EPA SW-846 6020A & 200.8	ICP-MS



Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: Azimut Environmental Consulting Inc.
Contact: Jan Adosen
Address: 642 Welham Rd
Barrie, ON
Phone: _____ Fax: _____
Reports to be sent to: _____
1. Email: jadosen@azimutenvironmental.com
2. Email: david@azimutenvironmental.com

Project Information:

Project: 18-107
Site Location: Hasty Tract
Sampled By: J. Adosen
AGAT Quote #: _____ PO: _____
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐
Company: _____
Contact: _____
Address: _____
Email: _____

Regulatory Requirements:

(Please check all applicable boxes)

☒ Regulation 153/04
Table 2
☐ Ind/Com
☐ Res/Park
☐ Agriculture
Soil Texture (Check One)
☒ Coarse
☐ Fine
☐ Sewer Use
☐ Sanitary
☐ Storm
Region: _____
☐ MISA
☐ Regulation 558
☐ CCME
☐ Prov. Water Quality Objectives (PWQO)
☐ Other
Indicate One

Is this submission for a Record of Site Condition?

☒ Yes ☐ No

Report Guideline on Certificate of Analysis

☒ Yes ☐ No

Sample Matrix Legend

B Biota
GW Ground Water
O Oil
P Paint
S Soil
SD Sediment
SW Surface Water

Field Filtered - Metals, Hg, CrVI

0. Reg 153

Metals and Inorganics
☐ All Metals ☐ 153 Metals (excl. Hydrides)
☐ Hydride Metals ☐ 153 Metals (incl. Hydrides)

ORPs: ☐ B-HWS ☐ Cl- ☐ CN
☐ Cr⁶⁺ ☐ EC ☐ FOC ☐ Hg
☐ pH ☐ SAR

Full Metals Scan

Regulation/Custom Metals

Nutrients: ☐ TP ☐ NH₃ ☐ TKN
☐ NO₃ ☐ NO₂ ☐ NO₃+NO₂

Volatiles: ☒ VOC ☐ BTEX ☐ THM

PHCs F1 - F4

ABNs

PAHs

PCBs: ☐ Total ☐ Aroclors

Organochlorine Pesticides

TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs

Sewer Use

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y / N	Field Filtered - Metals, Hg, CrVI	Metals and Inorganics	ORPs	Full Metals Scan	Regulation/Custom Metals	Nutrients	Volatiles	PHCs F1 - F4	ABNs	PAHs	PCBs	Organochlorine Pesticides	TCLP	Sewer Use
BH-11-1A	26 June 18	08:20	4	S		-														
BH-12-2	26 June 18	11:50	4	S		-														
MW-11	26 June 18	13:50	8	GW		Y														
MW-12	26 June 18	15:15	8	GW		Y														
BH-13-2	26 June 18	14:45	4	S		-														
MW-13	27 June 18	07:40	8	GW		Y														

Samples Relinquished By (Print Name and Sign): <u>Jan Adosen</u>	Date: <u>27 June 18</u> Time: <u>08:30</u>	Samples Received By (Print Name and Sign): <u>Rena</u>	Date: <u>2018/6/27</u> Time: <u>9:55</u>
Samples Relinquished By (Print Name and Sign): <u>Rena</u>	Date: <u>2018/6/27</u> Time: <u>2:42</u>	Samples Received By (Print Name and Sign):	Date: _____ Time: _____
Samples Relinquished By (Print Name and Sign):	Date: _____ Time: _____	Samples Received By (Print Name and Sign):	Date: _____ Time: _____

Laboratory Use Only

Work Order #: 18T355895
Cooler Quantity: 1
Arrival Temperatures: 39.36.38
34.18.2.29
Custody Seal Intact: ☐ Yes ☐ No ☐ N/A
Notes:

Turnaround Time (TAT) Required:

Regular TAT ☒ 5 to 7 Business Days

Rush TAT (Rush Surcharges Apply)

☐ 3 Business Days ☐ 2 Business Days ☐ Next Business Day

OR Date Required (Rush Surcharges May Apply):

Please provide prior notification for rush TAT
*TAT is exclusive of weekends and statutory holidays

For 'Same Day' analysis, please contact your AGAT CPM

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
642 WELHAM ROAD
BARRIE, ON L4N9A1
(705) 721-8451

ATTENTION TO: Ian Acheson

PROJECT: Hasty Tract

AGAT WORK ORDER: 18T380662

TRACE ORGANICS REVIEWED BY: Neli Popnikolova, Senior Chemist

DATE REPORTED: Sep 11, 2018

PAGES (INCLUDING COVER): 11

VERSION*: 1

Should you require any information regarding this analysis please contact your client services representative at (905) 712-5100

*NOTES

All samples will be disposed of within 30 days following analysis. Please contact the lab if you require additional sample storage time.



Certificate of Analysis

AGAT WORK ORDER: 18T380662

PROJECT: Hasty Tract

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:18-107

ATTENTION TO: Ian Acheson

SAMPLED BY:I.Acheson

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

DATE RECEIVED: 2018-08-31

DATE REPORTED: 2018-09-11

		SAMPLE DESCRIPTION:		MW-4	MW-10	MW-11	MW-12	MW-13
		SAMPLE TYPE:		Water	Water	Water	Water	Water
		DATE SAMPLED:		2018-08-30	2018-08-30	2018-08-30	2018-08-30	2018-08-30
Parameter	Unit	G / S	RDL	9516357	9516363	9516364	9516365	9516366
F1 (C6 - C10)	µg/L		25	<25	<25	<25	<25	<25
F1 (C6 to C10) minus BTEX	µg/L		25	<25	<25	<25	<25	<25
F2 (C10 to C16)	µg/L		100	<100	<100	<100	<100	<100
F3 (C16 to C34)	µg/L		100	240	<100	<100	<100	<100
F4 (C34 to C50)	µg/L		100	<100	<100	<100	<100	<100
Gravimetric Heavy Hydrocarbons	µg/L		500	NA	NA	NA	NA	NA
Surrogate	Unit	Acceptable Limits						
Terphenyl	%		60-140	74	80	83	82	93

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

9516357-9516366 The C6-C10 fraction is calculated using Toluene response factor.

The C10 - C16, C16 - C34, and C34 - C50 fractions are calculated using the average response factor for n-C10, n-C16, and n-C34.

Gravimetric Heavy Hydrocarbons are not included in the Total C16 - C50 and are only determined if the chromatogram of the C34 - C50 Hydrocarbons indicated that hydrocarbons >C50 are present.

The chromatogram has returned to baseline by the retention time of nC50.

Total C6-C50 results are corrected for BTEX contributions.

This method complies with the Reference Method for the CWS PHC and is validated for use in the laboratory.

nC6 and nC10 response factors are within 30% of Toluene response factor.

nC10, nC16 and nC34 response factors are within 10% of their average.

C50 response factor is within 70% of nC10 + nC16 nC34 average.

Linearity is within 15%.

Extraction and holding times were met for this sample.

Fractions 1-4 are quantified with the contribution of PAHs. Under Ontario Regulation 153, results are considered valid without determining the PAH contribution if not requested by the client.

Certified By:

N Popmukolof



Certificate of Analysis

AGAT WORK ORDER: 18T380662

PROJECT: Hasty Tract

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CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:18-107

ATTENTION TO: Ian Acheson

SAMPLED BY:I.Acheson

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-08-31

DATE REPORTED: 2018-09-11

SAMPLE DESCRIPTION:				MW-1	MW-1-1	MW-2	MW-4	MW-5	MW-6	MW-7	MW-8
SAMPLE TYPE:				Water	Water	Water	Water	Water	Water	Water	Water
DATE SAMPLED:				2018-08-30	2018-08-30	2018-08-30	2018-08-30	2018-08-30	2018-08-30	2018-08-30	2018-08-30
Parameter	Unit	G / S	RDL	9516351	9516352	9516353	9516357	9516358	9516359	9516360	9516361
Dichlorodifluoromethane	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L		0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Bromomethane	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	µg/L		0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Acetone	µg/L		1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethylene	µg/L		0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Methylene Chloride	µg/L		0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Methyl tert-butyl ether	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1-Dichloroethane	µg/L		0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Methyl Ethyl Ketone	µg/L		1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	µg/L		0.20	<0.20	<0.20	1.4	<0.20	0.96	<0.20	0.34	<0.20
1,2-Dichloroethane	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	µg/L		0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Carbon Tetrachloride	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzene	µg/L		0.20	0.95	1.0	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloropropane	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichloroethylene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bromodichloromethane	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Methyl Isobutyl Ketone	µg/L		1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	µg/L		0.20	0.72	0.84	<0.20	0.32	0.55	<0.20	0.32	<0.20
Dibromochloromethane	µg/L		0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Ethylene Dibromide	µg/L		0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tetrachloroethylene	µg/L		0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L		0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorobenzene	µg/L		0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Ethylbenzene	µg/L		0.10	0.15	0.15	<0.10	<0.10	0.11	<0.10	<0.10	<0.10
m & p-Xylene	µg/L		0.20	0.21	0.22	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

Certified By:



AGAT Laboratories

Certificate of Analysis

AGAT WORK ORDER: 18T380662

PROJECT: Hasty Tract

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,
SAMPLING SITE:18-107

ATTENTION TO: Ian Acheson

SAMPLED BY:I.Acheson

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-08-31

DATE REPORTED: 2018-09-11

		SAMPLE DESCRIPTION:		MW-1	MW-1-1	MW-2	MW-4	MW-5	MW-6	MW-7	MW-8
		SAMPLE TYPE:		Water	Water	Water	Water	Water	Water	Water	Water
		DATE SAMPLED:		2018-08-30	2018-08-30	2018-08-30	2018-08-30	2018-08-30	2018-08-30	2018-08-30	2018-08-30
Parameter	Unit	G / S	RDL	9516351	9516352	9516353	9516357	9516358	9516359	9516360	9516361
Bromoform	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Styrene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
o-Xylene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,3-Dichlorobenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,4-Dichlorobenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,2-Dichlorobenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,3-Dichloropropene	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Xylene Mixture	µg/L	0.20	0.21	0.22	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
n-Hexane	µg/L	0.20	0.68	0.88	<0.20	0.44	0.74	<0.20	0.38	<0.20	<0.20
Surrogate	Unit	Acceptable Limits									
Toluene-d8	% Recovery	50-140		106	119	105	117	116	106	101	114
4-Bromofluorobenzene	% Recovery	50-140		93	96	91	93	91	89	74	87

Certified By:

N Popmukolof



Certificate of Analysis

AGAT WORK ORDER: 18T380662

PROJECT: Hasty Tract

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
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FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:18-107

ATTENTION TO: Ian Acheson

SAMPLED BY:I.Acheson

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-08-31

DATE REPORTED: 2018-09-11

		SAMPLE DESCRIPTION:		MW-10	MW-11	MW-12	MW-13	Trip Blank
		SAMPLE TYPE:		Water	Water	Water	Water	Water
		DATE SAMPLED:		2018-08-30	2018-08-30	2018-08-30	2018-08-30	2018-08-30
Parameter	Unit	G / S	RDL	9516363	9516364	9516365	9516366	9516370
Dichlorodifluoromethane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Vinyl Chloride	µg/L	0.17	<0.17	<0.17	<0.17	<0.17	<0.17	<0.17
Bromomethane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichlorofluoromethane	µg/L	0.40	<0.40	<0.40	<0.40	<0.40	<0.40	<0.40
Acetone	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethylene	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Methylene Chloride	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
trans- 1,2-Dichloroethylene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Methyl tert-butyl ether	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1-Dichloroethane	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Methyl Ethyl Ketone	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
cis- 1,2-Dichloroethylene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Chloroform	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	0.99	<0.20
1,2-Dichloroethane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1-Trichloroethane	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Carbon Tetrachloride	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Benzene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,2-Dichloropropane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Trichloroethylene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Bromodichloromethane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Methyl Isobutyl Ketone	µg/L	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Toluene	µg/L	0.20	0.45	0.52	0.61	0.32	<0.20	<0.20
Dibromochloromethane	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Ethylene Dibromide	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Tetrachloroethylene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
1,1,1,2-Tetrachloroethane	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chlorobenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Ethylbenzene	µg/L	0.10	<0.10	0.13	0.10	<0.10	<0.10	<0.10
m & p-Xylene	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20

Certified By:

N Popmukolof



Certificate of Analysis

AGAT WORK ORDER: 18T380662

PROJECT: Hasty Tract

5835 COOPERS AVENUE
MISSISSAUGA, ONTARIO
CANADA L4Z 1Y2
TEL (905)712-5100
FAX (905)712-5122
<http://www.agatlabs.com>

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

SAMPLING SITE:18-107

ATTENTION TO: Ian Acheson

SAMPLED BY:I.Acheson

O. Reg. 153(511) - VOCs (Water)

DATE RECEIVED: 2018-08-31

DATE REPORTED: 2018-09-11

		SAMPLE DESCRIPTION:		MW-10	MW-11	MW-12	MW-13	Trip Blank
		SAMPLE TYPE:		Water	Water	Water	Water	Water
		DATE SAMPLED:		2018-08-30	2018-08-30	2018-08-30	2018-08-30	2018-08-30
Parameter	Unit	G / S	RDL	9516363	9516364	9516365	9516366	9516370
Bromoform	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Styrene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,1,2,2-Tetrachloroethane	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
o-Xylene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,3-Dichlorobenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,4-Dichlorobenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,2-Dichlorobenzene	µg/L	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
1,3-Dichloropropene	µg/L	0.30	<0.30	<0.30	<0.30	<0.30	<0.30	<0.30
Xylene Mixture	µg/L	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
n-Hexane	µg/L	0.20	0.50	0.71	0.75	0.21	<0.20	
Surrogate	Unit	Acceptable Limits						
Toluene-d8	% Recovery	50-140		119	103	116	103	104
4-Bromofluorobenzene	% Recovery	50-140		86	92	84	94	101

Comments: RDL - Reported Detection Limit; G / S - Guideline / Standard

Certified By:

N Popmukolof

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T380662

PROJECT: Hasty Tract

ATTENTION TO: Ian Acheson

SAMPLING SITE:18-107

SAMPLED BY:I.Acheson

Trace Organics Analysis															
RPT Date: Sep 11, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL			METHOD BLANK SPIKE			MATRIX SPIKE		
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper
O. Reg. 153(511) - VOCs (Water)															
Dichlorodifluoromethane	9515019		< 0.20	< 0.20	NA	< 0.20	78%	50%	140%	89%	50%	140%	78%	50%	140%
Vinyl Chloride	9515019		< 0.17	< 0.17	NA	< 0.17	77%	50%	140%	117%	50%	140%	103%	50%	140%
Bromomethane	9515019		< 0.20	< 0.20	NA	< 0.20	77%	50%	140%	109%	50%	140%	71%	50%	140%
Trichlorofluoromethane	9515019		< 0.40	< 0.40	NA	< 0.40	85%	50%	140%	118%	50%	140%	95%	50%	140%
Acetone	9515019		< 1.0	< 1.0	NA	< 1.0	118%	50%	140%	113%	50%	140%	118%	50%	140%
1,1-Dichloroethylene	9515019		< 0.30	< 0.30	NA	< 0.30	83%	50%	140%	111%	60%	130%	115%	50%	140%
Methylene Chloride	9515019		< 0.30	< 0.30	NA	< 0.30	114%	50%	140%	117%	60%	130%	118%	50%	140%
trans- 1,2-Dichloroethylene	9515019		< 0.20	< 0.20	NA	< 0.20	85%	50%	140%	114%	60%	130%	114%	50%	140%
Methyl tert-butyl ether	9515019		< 0.20	< 0.20	NA	< 0.20	116%	50%	140%	117%	60%	130%	114%	50%	140%
1,1-Dichloroethane	9515019		< 0.30	< 0.30	NA	< 0.30	97%	50%	140%	108%	60%	130%	118%	50%	140%
Methyl Ethyl Ketone	9515019		< 1.0	< 1.0	NA	< 1.0	97%	50%	140%	113%	50%	140%	109%	50%	140%
cis- 1,2-Dichloroethylene	9515019		< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	119%	60%	130%	114%	50%	140%
Chloroform	9515019		< 0.20	< 0.20	NA	< 0.20	92%	50%	140%	105%	60%	130%	115%	50%	140%
1,2-Dichloroethane	9515019		< 0.20	< 0.20	NA	< 0.20	89%	50%	140%	116%	60%	130%	116%	50%	140%
1,1,1-Trichloroethane	9515019		< 0.30	< 0.30	NA	< 0.30	78%	50%	140%	112%	60%	130%	111%	50%	140%
Carbon Tetrachloride	9515019		< 0.20	< 0.20	NA	< 0.20	80%	50%	140%	117%	60%	130%	103%	50%	140%
Benzene	9515019		< 0.20	< 0.20	NA	< 0.20	88%	50%	140%	115%	60%	130%	119%	50%	140%
1,2-Dichloropropane	9515019		< 0.20	< 0.20	NA	< 0.20	96%	50%	140%	117%	60%	130%	107%	50%	140%
Trichloroethylene	9515019		< 0.20	< 0.20	NA	< 0.20	76%	50%	140%	114%	60%	130%	112%	50%	140%
Bromodichloromethane	9515019		< 0.20	< 0.20	NA	< 0.20	84%	50%	140%	116%	60%	130%	110%	50%	140%
Methyl Isobutyl Ketone	9515019		< 1.0	< 1.0	NA	< 1.0	109%	50%	140%	116%	50%	140%	105%	50%	140%
1,1,2-Trichloroethane	9515019		< 0.20	< 0.20	NA	< 0.20	118%	50%	140%	119%	60%	130%	113%	50%	140%
Toluene	9515019		< 0.20	< 0.20	NA	< 0.20	118%	50%	140%	113%	60%	130%	117%	50%	140%
Dibromochloromethane	9515019		< 0.10	< 0.10	NA	< 0.10	95%	50%	140%	116%	60%	130%	112%	50%	140%
Ethylene Dibromide	9515019		< 0.10	< 0.10	NA	< 0.10	97%	50%	140%	107%	60%	130%	110%	50%	140%
Tetrachloroethylene	9515019		< 0.20	< 0.20	NA	< 0.20	99%	50%	140%	116%	60%	130%	120%	50%	140%
1,1,1,2-Tetrachloroethane	9515019		< 0.10	< 0.10	NA	< 0.10	112%	50%	140%	118%	60%	130%	111%	50%	140%
Chlorobenzene	9515019		< 0.10	< 0.10	NA	< 0.10	107%	50%	140%	119%	60%	130%	113%	50%	140%
Ethylbenzene	9515019		< 0.10	< 0.10	NA	< 0.10	107%	50%	140%	116%	60%	130%	114%	50%	140%
m & p-Xylene	9515019		< 0.20	< 0.20	NA	< 0.20	113%	50%	140%	78%	60%	130%	119%	50%	140%
Bromoform	9515019		< 0.10	< 0.10	NA	< 0.10	99%	50%	140%	115%	60%	130%	115%	50%	140%
Styrene	9515019		< 0.10	< 0.10	NA	< 0.10	87%	50%	140%	105%	60%	130%	116%	50%	140%
1,1,2,2-Tetrachloroethane	9515019		< 0.10	< 0.10	NA	< 0.10	112%	50%	140%	115%	60%	130%	115%	50%	140%
o-Xylene	9515019		< 0.10	< 0.10	NA	< 0.10	116%	50%	140%	118%	60%	130%	101%	50%	140%
1,3-Dichlorobenzene	9515019		< 0.10	< 0.10	NA	< 0.10	95%	50%	140%	113%	60%	130%	116%	50%	140%
1,4-Dichlorobenzene	9515019		< 0.10	< 0.10	NA	< 0.10	104%	50%	140%	113%	60%	130%	108%	50%	140%
1,2-Dichlorobenzene	9515019		< 0.10	< 0.10	NA	< 0.10	95%	50%	140%	115%	60%	130%	106%	50%	140%
1,3-Dichloropropene	9515019		< 0.30	< 0.30	NA	< 0.30	84%	50%	140%	109%	60%	130%	105%	50%	140%
n-Hexane	9515019		< 0.20	< 0.20	NA	< 0.20	111%	50%	140%	115%	60%	130%	71%	50%	140%

Quality Assurance

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T380662

PROJECT: Hasty Tract

ATTENTION TO: Ian Acheson

SAMPLING SITE:18-107

SAMPLED BY:I.Acheson

Trace Organics Analysis (Continued)

RPT Date: Sep 11, 2018			DUPLICATE			Method Blank	REFERENCE MATERIAL		METHOD BLANK SPIKE			MATRIX SPIKE			
PARAMETER	Batch	Sample Id	Dup #1	Dup #2	RPD		Measured Value	Acceptable Limits		Recovery	Acceptable Limits		Recovery	Acceptable Limits	
								Lower	Upper		Lower	Upper		Lower	Upper

O. Reg. 153(511) - PHCs F1 - F4 (-BTEX) (Water)

F1 (C6 - C10)	9515774		< 25	< 25	NA	< 25	88%	60%	140%	90%	60%	140%	84%	60%	140%
F2 (C10 to C16)		TW	< 100	< 100	NA	< 100	101%	60%	140%	68%	60%	140%	62%	60%	140%
F3 (C16 to C34)		TW	< 100	< 100	NA	< 100	102%	60%	140%	90%	60%	140%	80%	60%	140%
F4 (C34 to C50)		TW	< 100	< 100	NA	< 100	88%	60%	140%	104%	60%	140%	104%	60%	140%

Comments: Tap water analysis has been performed as QC sample testing for duplicate and matrix spike due to insufficient sample volume.

When the average of the sample and duplicate results is less than 5x the RDL, the Relative Percent Difference (RPD) will be indicated as Not Applicable (NA).

Certified By:





Method Summary

CLIENT NAME: AZIMUTH ENVIRONMENTAL CONSULTING,

AGAT WORK ORDER: 18T380662

PROJECT: Hasty Tract

ATTENTION TO: Ian Acheson

SAMPLING SITE:18-107

SAMPLED BY:I.Acheson

PARAMETER	AGAT S.O.P	LITERATURE REFERENCE	ANALYTICAL TECHNIQUE
Trace Organics Analysis			
F1 (C6 - C10)	VOL-91- 5010	MOE PHC E3421	(P&T)GC/FID
F1 (C6 to C10) minus BTEX	VOL-91-5010	MOE PHC E3421	(P&T)GC/FID
F2 (C10 to C16)	VOL-91-5010	MOE PHC E3421	GC / FID
F3 (C16 to C34)	VOL-91-5010	MOE PHC E3421	GC / FID
F4 (C34 to C50)	VOL-91-5010	MOE PHC E3421	GC / FID
Gravimetric Heavy Hydrocarbons	VOL-91-5010	MOE PHC E3421	BALANCE
Terphenyl	VOL-91-5010		GC/FID
Dichlorodifluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Vinyl Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromomethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichlorofluoromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Acetone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methylene Chloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
trans- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl tert-butyl ether	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Ethyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
cis- 1,2-Dichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chloroform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Carbon Tetrachloride	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Benzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichloropropane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Trichloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromodichloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Methyl Isobutyl Ketone	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2-Trichloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Dibromochloromethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylene Dibromide	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Tetrachloroethylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,1,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Chlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Ethylbenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
m & p-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Bromoform	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Styrene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,1,2,2-Tetrachloroethane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
o-Xylene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,4-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,2-Dichlorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
1,3-Dichloropropene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Xylene Mixture	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
n-Hexane	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
Toluene-d8	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS
4-Bromofluorobenzene	VOL-91-5001	EPA SW-846 5030 & 8260	(P&T)GC/MS



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Chain of Custody Record

If this is a Drinking Water sample, please use Drinking Water Chain of Custody Form (potable water consumed by humans)

Report Information:

Company: Azimuth Environmental Consulting Inc.
Contact: 642 Welham Rd
Address: Barrie, ON L4N 9A1
Contact: Ian Acheson
Phone: (705) 721-8451 Fax: (705) 721-8926
Reports to be sent to: i.acheson@azimuthenvironmental.com
1. Email: i.acheson@azimuthenvironmental.com
2. Email: david@azimuthenvironmental.com

Project Information:

Project: Hasty Tract
Site Location: 18-107
Sampled By: I. Acheson
AGAT Quote #: 2024325R PO: _____
Please note: If quotation number is not provided, client will be billed full price for analysis.

Invoice Information:

Bill To Same: Yes ☒ No ☐

Company: _____
Contact: _____
Address: _____
Email: _____

Regulatory Requirements:

☐ No Regulatory Requirement

(Please check all applicable boxes)

☒ Regulation 153/04

☐ Sewer Use

☐ Regulation 558

Table Indicate One
☐ Ind/Com

☐ Sanitary

☐ CCME

☒ Res/Park
☐ Agriculture

☐ Storm

☐ Prov. Water Quality
Objectives (PWQO)

Soil Texture (Check One)

Region Indicate One

☐ Other

☒ Coarse

☐ MISA

Indicate One

Is this submission for a
Record of Site Condition?

☒ Yes ☐ No

Report Guideline on
Certificate of Analysis

☒ Yes ☐ No

Sample Matrix Legend

B Biota
GW Ground Water
O Oil
P Paint
S Soil
SD Sediment
SW Surface Water

Field Filtered - Metals, Hg, CrVI

0. Reg 153

Metals and Inorganics
☐ All Metals ☐ 153 Metals (excl. Hydrides)
☐ Hydride Metals ☐ 153 Metals (incl. Hydrides)

ORPs: ☐ B-HWS ☐ Cl ☐ CN
☐ C⁴⁺ ☐ EC ☐ FOC ☐ Hg
☐ pH ☐ SAR

Full Metals Scan

Regulation/Custom Metals

Nutrients: ☐ TP ☐ NH₃ ☐ TKN
☐ NO₃ ☐ NO₂ ☐ NO₂ + NO₃

Volatiles: ☒ VOC ☐ BTEX ☐ THM

PHCs F1 - F4

ABNs

PAHs

PCBs: ☐ Total ☐ Aroclors

Organochlorine Pesticides

TCLP: ☐ M&I ☐ VOCs ☐ ABNs ☐ B(a)P ☐ PCBs

Sewer Use

Sample Identification	Date Sampled	Time Sampled	# of Containers	Sample Matrix	Comments/ Special Instructions	Y/N	Metals and Inorganics	ORPs	Full Metals Scan	Regulation/Custom Metals	Nutrients	Volatiles	PHCs F1 - F4	ABNs	PAHs	PCBs	Organochlorine Pesticides	TCLP	Sewer Use
MW-1	8/30/18	11:00	3	GW		N/A													
MW-1-1		11:00	3	GW															
MW-2		11:30	3	GW															
MW-4		14:00	7	GW															
MW-5		10:20	3	GW															
MW-6		10:40	3	GW															
MW-7		0930	3	GW															
MW-8		0950	3	GW															
MW-10		12:00	7	GW															
MW-11		13:30	7	GW															
MW-12	8/30/18	13:00	7	GW		N/A													

Samples Relinquished By (Print Name and Sign):

Samples Relinquished By (Print Name and Sign):

Samples Relinquished By (Print Name and Sign):

Date

Date

Date

Time

Time

Time

Samples Received By (Print Name and Sign):

Samples Received By (Print Name and Sign):

Samples Received By (Print Name and Sign):

Date

Date

Date

Time

Time

Time

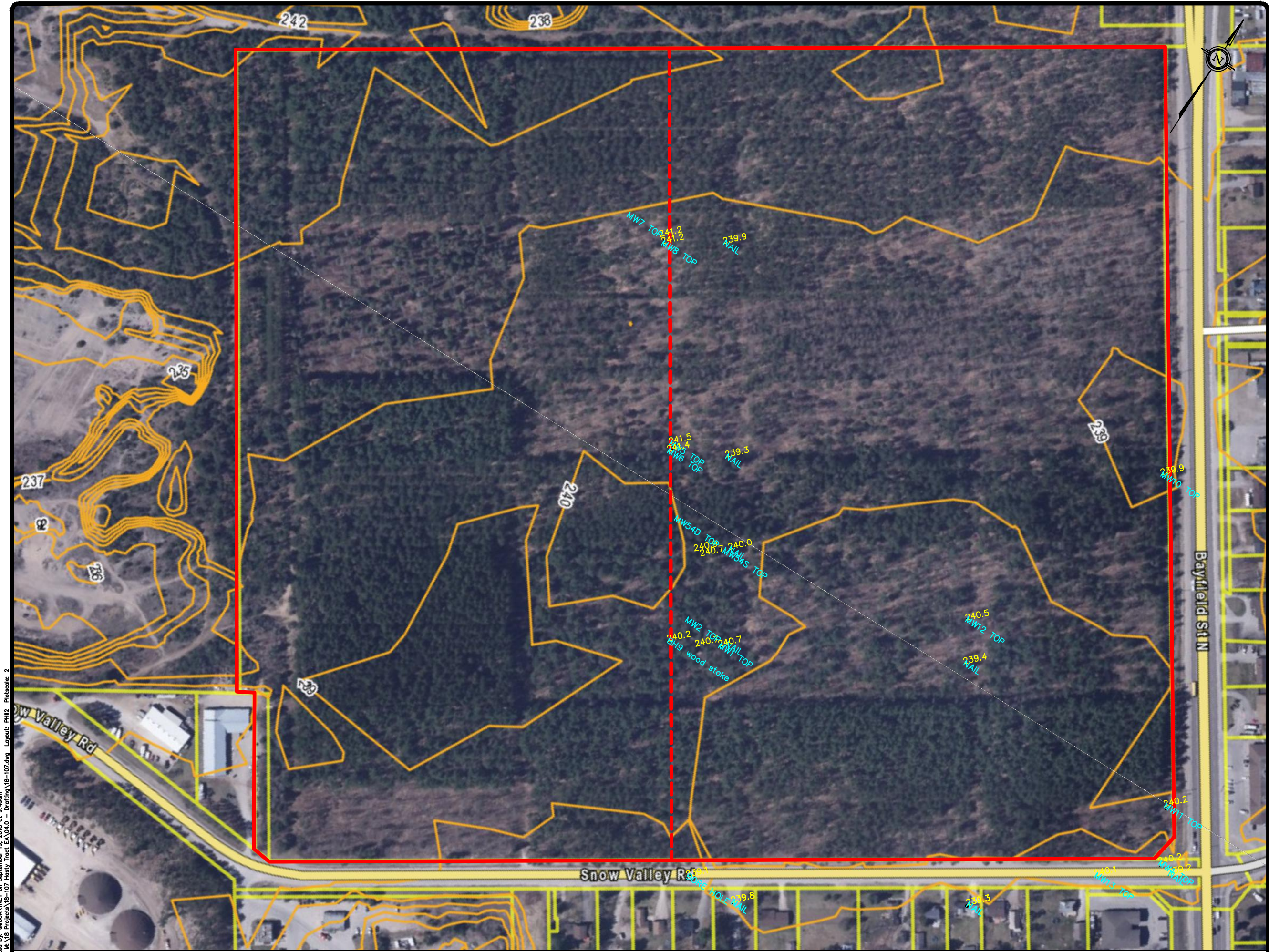
Page 1 of 2

Nº: T076392



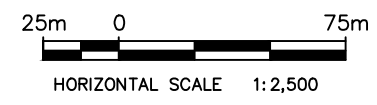
APPENDIX H

Elevation Survey



LEGEND:

- Approx. Property Boundary
- Severance Limit
- 1m FBS Contours



Phase I Site Location

Hasty Tract EA,
Midhurst, ON

DATE ISSUED:	July 2018	Figure No. 2
CREATED BY:	JLM	
PROJECT NO.:	18-107	
REFERENCE:	Simcoe County Maps	

DAYSTAMP: M:\18 Projects\18-107 Hasty Tract EA\04.0 - Drafting\18-107.dwg

Plotted by: JMCARTNEY on September 19, 2018 at 9:49am
File: M:\18 Projects\18-107 Hasty Tract EA\04.0 - Drafting\18-107.dwg Layout: PH12 PlotScale: 2