



Phase One Environmental Site Assessment
King Street West, Gananoque, ON
PT LT 11, CON 1 LEEDS PT 1-5 28R5002; GANANAQUE

Prepared for:
9695443 Canada Inc.

Prepared by:
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June 29, 2020

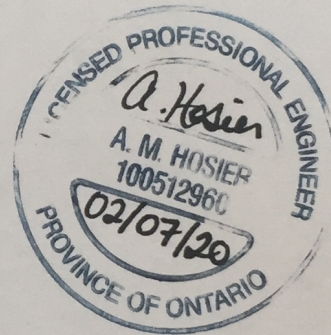
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Respectfully submitted on behalf of

ASC Environmental Inc.



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Executive Summary

The Phase One Environmental Site Assessment (ESA) was conducted for the property at King Street West, in Gananoque, Ontario (here after referred to as the 'subject property or site'). The property encompasses an area of approximately 5000 m² (0.5 ha). The legal description of the Site is described as: Part Lot 11, Concession 1, Parts 1-5, Plan 28R-5002, Parts 1 -3, Plan 28R-9972, Gananoque, County of Leeds and Grenville. A site location and site layout plan are shown on Figure 1 and 2 in Appendix A.

The Phase One ESA is required for potential multi-unit residential redevelopment purposes. The property has yet to be developed with a building, and therefore on this basis, a Record of Site Condition (RSC) is not believed to be required.

According to historical records and interviews, a municipal right-of-way utility corridor was installed on the subject property in 1986. Therefore, the first developed use of the property was determined to be in 1986 for **agricultural or other use**. We understand that the property is not used for agricultural purposes and future land use is intended to be residential. We recommend referenced site condition standards for the subject property to be most comparable to residential land use standards.

Currently, the site is uninhabited, having no buildings or structures. Immediate adjacent land use consists largely of residential activity, with commercial land use located west and north. Commercial operations identified within the Phase One Study Area include two existing motels, east and north adjacent, and two former retail fuel outlets, east of the subject property.

Topographically, the Phase One Study Area slopes down from the northwest to the southeast towards the St. Lawrence River, located approximately 515 m southeast of the subject property. A topographic map of the area is provided in Figure 5 in Appendix A.

Bedrock geology at the site is characterized by undifferentiated Precambrian rocks of the Grenville Province. The Phase One study area is within the Precambrian Hydrogeological Unit. The physiography of the region can be described as shallow till and rock ridges.

The Ministry of Environment, Conservation and Parks (MECP) online well records were consulted. There were thirteen (13) wells identified within the Phase One Study Area (an approximate 250 m radius from the property boundary). These included one (1) domestic well and twelve (12) monitoring wells. The well records indicate soil lithology composed of brown clay, silt, sand and cobbles. Bedrock encountered included sandstone and granite. Water was shown in the online MECP domestic well record to be encountered at a depth of approximately 18.6 m below ground surface.

No surface water bodies are located on the subject property. The nearest surface water body is a stormwater management pond, approximately 315 m south of the subject property. The St. Lawrence River is located approximately 515 m southeast of the subject property.

No sources of actual contamination were identified on the site during the records review, site reconnaissance or interviews.



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According to aerial photos, site reconnaissance work, internal historic reports, and interviews with the current property owner, Brian Wooding, two retail gasoline outlets were formerly present to the east of the subject property. Environmental investigative work was evident at the immediate east adjacent property, a residential property having municipal address 755 King Street West. It is presumed and further indicated by Mr. Wooding to have occurred as a result of potential off-site impact from the retail fuel outlet, located at 745 King Street West. Although property owners have not granted permission to share details of the investigation, ASC internal documents indicate the investigation having occurred in the mid-2000's. The residential home was present during investigative work and has since been removed. Rational for the removal of the residential structure is not known at this time.

Mr. Stefano Ferrante, potential subject property buyer, was also contacted regarding his knowledge of the subject property. He is aware of a historic investigation into a potential oil release at a neighbouring property, as a result of a former commercial fuel station to the east of the subject property.

No PCAs were identified on the subject property. Two (2) off-site PCAs were identified within the Phase One Study Area. These PCAs include:

PCA 1: (28) Gasoline and Associated Products Storage in Fixed Tanks

- According to site reconnaissance, interview and aerial photograph review, a retail fuel outlet was formerly present 30 m northeast and cross gradient of the subject property, municipal address 740 King Street West.

PCA 2: (28) Gasoline and Associated Products Storage in Fixed Tanks

- According to site reconnaissance, interview and aerial photograph review, a retail fuel outlet was formerly present 25 m east and cross gradient of the subject property, municipal address 745 King Street West. The current property owner is aware of environmental investigative work at the east adjacent property between the former gasoline station and the subject property due to possible impact.

Environmental concerns arising from off-site PCAs, were identified at the subject property. Results of environmental investigation conducted at 755 King Street West are not known at this time and no evidence of environmental remediation activities (e.g., fill removal) from this site was evident. These properties have been determined to be cross-gradient from the subject property. Based on their proximity to the subject property and the known transmissivity of the presumed contaminant of potential concern (i.e., fuel-grade petroleum), the subject property may be affected by contaminant transport by capillary action, as a result PCAs.

Underground utility trenches for wastewater collection, drinking water distribution and natural gas located along King Street West may have created preferential pathways for the migration of potential contamination from these off-site PCAs. As PCA 1 was identified on the north side of King Street West, the presence of these underground utility corridors reduces the likelihood for contaminants to transfer across the natural lateral gradient and across this preferential pathway. It is for this reason, PCA 1 is not considered to contribute toward an APEC at the subject property.



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For reasons listed above, PCA 2 is considered to have contributed toward an APEC at the subject property.

APEC	PCA	Details
APEC	<i>(28) Gasoline and Associated Products Storage in Fixed Tanks</i>	Former retail fuel outlet located east (municipal address 745 King Street West) of the subject property. Former environmental investigation efforts identified at the east adjacent residential property (municipal address 755 King Street West) and former retail fuel outlet (745 King Street West).

It is not believed that climatic or meteorological conditions have influenced the distribution or migration of potential contaminants in the soil or groundwater at the subject property. No other uncertainties that may affect the validity of the conceptual site model were identified during the Phase One ESA.

Based on an assessment of the available information, is it possible that contaminants exist on, in, or under the subject property. We recommend a conducting Phase Two ESA, to determine whether actual contamination is present at the subject property.



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1.0 Introduction

1.1 Phase One Property Information

ASC Environmental Inc. was retained by *9695443 Canada Inc.* (here after referred to as the 'Client') to conduct a Phase One ESA for an unaddressed property, located on the south side of King Street West, approximately 150 metres (m) west of the intersection with Garfield Street, in Gananoque, Ontario (here after referred to as the 'subject property'). The property encompasses an area of approximately 5,000 m² (0.5 ha). The legal description of the Site is described as: **Part Lot 11, Concession 1, Parts 1-5, Plan 28R-5002, Parts 1 -3, Plan 28R-9972, Gananoque, County of Leeds and Grenville.** A site location and site layout plan are shown on Figures 1 and 2, respectively, in Appendix A.

The objective of a Phase One ESA is to develop a preliminary determination of the likelihood that one or more contaminants have affected any land or water on, in, or under the phase one property. This is determined through an assessment of current and historic site uses on the subject and surrounding properties. Surrounding properties assessed are located wholly or partially within 250 m from the subject property boundary (here after referred to as the 'Phase One Study Area').

The Phase One ESA is requested for potential property sale. Future-use plans for the subject property include a potential multi-unit residential development. It is our understanding that an RSC is not required at this time.

1.2 Scope of Investigation

The Phase One ESA was completed in accordance with the Canadian Standards Association (CSA) Phase I Environmental Site Assessment Z768-01 (R2016), with reference to the Ministry of Environment, Conservation and Parks (MECP) Ontario Regulation (O Reg) 153/04, Records of Site Condition, as amended. In finalizing the Phase One ESA, the following tasks were undertaken:

Task 1: Records Review

Task 2: Interviews

Task 3: Site Reconnaissance

Task 4: Evaluation of Information

Task 5: Preparation of a Phase One ESA report

Task 6: Submission of the Phase One ESA report

1.3 Study Limitations

Work completed in conformance with the referenced requirements of Phase One ESAs has inherent limitations. The findings and conclusions regarding potential contamination of the property are based solely on the extent of observations and information gathered during the Phase One ESA. Subsequent investigations may reveal conflicting results.

The agreed upon work for this mandate was limited to the subject property and phase one study area (outlined in Figure 3 in Appendix A).



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2.0 Records Review

2.1 General

2.1.1 Phase One Study Area Determination

The Phase One Study Area is bound by those properties located wholly or partially within 250 metres from the boundaries of the subject property. The Phase One Study Area is comprised of largely residential with some commercial properties. The boundaries of the Phase One Study Area may be found on Figure 3 in Appendix A.

2.1.2 First Developed Use Determination

“First developed use” means the earlier of:

- a) the first use of a Phase One property in or after 1875 that resulted in the development of a building or structure on the property, and
- b) the first potentially contaminating use or activity on the Phase One property.

The subject property was severed from the parcel of land encompassing the Gateway Motel, municipal address 819 King St W, Gananoque, in 1986. According to aerial photograph review, the Gateway Motel was constructed between 1954 and 1969. The current owner of the subject property, Mr. Brian Wooding, is a descendant of the motel’s previous owner and he was familiar with its history. During the time his family owned the Gateway Motel, Mr. Wooding indicated the subject property was intended for use as expanded motel operations. To his knowledge, the intended future-use for the subject property had never been realized. When his family sold the Gateway Motel, they retained the subject property.

No evidence has been found to suggest the subject property has been used as part of the motel, including for equipment storage and parking. Additionally, the subject property was found to be at a significant gradient differential from the motel, suggesting a physical hinderance to its use by motel staff or visitors. The subject property’s first developed use is therefore not considered to have been affected by the motel.

According to the subject property owner, following the sale of 819 King St W in 1986, the subject property was subject to an easement for a utility corridor to the Gateway Motel. A flexible wastewater collection line was allowed to travel from the Gateway Motel, over the subject property, to deposit into a municipal sewage collection pipe, located on municipal property near the north-east corner of the subject property. The utility corridor has since been redirected around the subject property.

During site reconnaissance, flexible drainage tubing (big ‘O’ pipe) was observed just below the ground surface, extending across the property, north to south. During interviews, the property owner indicated the hosing to have been installed by the township of Leeds and Grenville, during reconstruction of the municipal roadway, King Street West (north adjacent to the subject property).



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On this basis, we determine the first developed use of the property to be in **1986 for agricultural or other use**. We understand that the property is not used for agricultural purposes and future land use is residential.

2.1.3 Fire Insurance Plans

Fire Insurance Plans were not available for the subject property.

2.1.4 Chain of Title

A review of land title records at the Leeds LRO (Land Registry Office) 28, available for review online¹, was undertaken to identify the owners' names and dates of ownership for the subject property. The following chain of ownership was identified from the records.

Year	Name of Owner	Description of Property Use	Property Use
2004	Wooding, Brian Wooding, Douglas	New land parcel. Vacant, subject to utility corridor easement.	Agricultural or other use
1999	Clark, John Clark, Collette		
1986	Wooding, Douglas		
1964	Wooding, Leonard	The area marked as the subject property remains vacant and partially groomed, and a Motel is constructed on the western portion of the overall property.	
1954	Thiele, Herbert	Vacant property, partially cleared and well maintained.	
1945	Running, Archibald Running, Augusta		
1944	Easterbrook, John Edward Easterbrook, Gladys		
1939	Smith, Stanley Smith, May		
1914	Dempster, George		
1888	Dempster, James		
1888	Dempster, Joseph		
Pre-1888	Crown/Town of Gananoque		

¹ Ontario Land Registry Access. Teranet, 2020. Accessed online at <https://www.onland.ca/ui/>



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2.1.5 Freedom of Information

A formal request was made under the Freedom of Information (FOI) and Protection of Privacy Act to the Ministry of Environment, Conservation, and Parks (MECP). At the time of writing, a response had not yet been received. Once received, an addendum to the report including any applicable response will be attached.

Three (3) additional formal FOI requests were also made to the MECP on June 16, 2020, requesting information pertaining to properties located at 740 King Street West, 745 King Street West and 755 King Street West. Additional FOI requests were made, following site reconnaissance visit and identification of potential former retail fuel outlets and environmental investigations occurring at these properties. A response for these FOI requests has not yet been received.

Once received, the FOI response will be submitted as an addendum to the client. Should results of the FOI response alter Phase One ESA recommendations, ASC reserves the right to update and re-submit the Phase One ESA.

2.1.6 Environmental Reports

No previous environmental reports for the subject property were available. Previous environmental investigations conducted at off-site properties, including 755 King Street West and 740 King Street West, were available for ASC personnel to review. A request was made to property owners to disclose results of these investigations. At the time of finalizing this Phase One ESA, a response has not been received. The results of these investigations, as known to ASC personnel, have been incorporated into the recommendations for next steps.

2.2 Environmental Source Information

To assess for potential environmental concern on the subject property and within the Phase One Study Area, Environmental Risk Information Services (ERIS) was contacted. A request was made to ERIS to search several databases for relevant environmental information. A copy of the report in its entirety is Attached in Annex A. This section provides a summary of the report.

On-Site

No records were found for the subject property.

Off-Site

A total of twenty-six (25) records were found within the Phase One Study Area. These records include:

- One (1) Certificate of Approval for release of particulate matter into air was authorized for Bruce Henry (owner of Colonial Resort and Spa) at 780 King Street West located approximately 153 m north of the subject property.
- One (1) ERIS Historical Search occurred at 665 King Street West, a multi-unit residential building, located approximately 152 m east of the subject property.



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- Three (3) records were identified within the List of Expired Fuels Safety Facilities for West Gate Service Centre, located at 745 King Street West, approximately 30 m east of the subject property.
- Five (5) records were identified within the Ontario Regulation 347 Waste Generators Summary, including:
 - The Ministry of the Environment and Climate Change was listed as a waste generator of light and heavy fuels at the property located at 745 King Street West, approximately 30 m east of the subject property. The waste generation approval was active from 2014-2016 and 2018.
 - Mary MacInnes, presumed owner of the described Real Estate Property Managers, located at 740 King Street West, approximately 30 m northeast of the subject property, was a listed generator of oil skimming and sludges in 2006.
- Fifteen (15) well records were identified within the Water Well Information System Database

2.3 Physical Setting Sources

2.3.1 Aerial Photographs

Seven (7) aerial photographs were available from the ERIS² database, encompassing the years 1931, 1948, 1954, 1969, 1974, 1989 and 1994 and four (4) satellite images were available for Google Earth³ review, from the years 2005, 2013, 2015 and 2018.

On-Site

The aerial photograph from **1931** identified that the subject property is a vacant parcel appearing to be cleared of trees and well groomed.

The aerial photograph from **1948, 1954** and **1969** identifies few significant changes.

The aerial photograph from **1974** shows a mark on the subject property. The photo resolution makes it difficult to discern whether the mark is a shadow from neighboring trees, or mounded soil. This could be an indication of fill material.

The aerial photograph from **1989** identifies what appears to be mounded soil, as well as a trench running northeast to southwest. This is presumed to be attributed to the utility corridor that was placed on the subject property as part of the municipal right-of-way.

In the aerial photograph from **1994**, the subject property appears cleared and well groomed. The soil mound and trench are no longer visible.

The satellite image from **2005, 2013, 2015** and **2018** identifies few significant changes.

² Environmental Risk Information Services (ERIS), 2020. Historical Aerials.

³ Google Earth, 2020.



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Off-Site

The aerial photograph from **1931** identifies the Phase One Study Area as having significantly fewer developed properties. Those developed properties identified within the Phase One Study Area appear to be residential and agricultural in nature. The present-day Highway 2/King Street West roadway is visible and exists in much the same location as today. Evidence of an older footpath running in the same direction slightly north of Highway 2 is visible. A crescent exists near the subject property, north of Highway 2, to connect two residential properties to the new Highway. Two structures may be seen east of the subject property, appearing to be a home and a large barn. The structures are at the location of the western portion of the present-day Gateway Motel. A fourth residence may be seen west of the subject property, at the location presently referred to as 745 King Street West. Agricultural pasture lands appear to surround the subject property to the north, northeast, south, southwest, and southeast. Treed land makes up the northwest portion of the Phase One Study Area. A minor roadway is visible south and south-west of the subject property, extending from behind the identified residence and barn structures to circumvent the pasture lands to the south. This roadway is believed to be a path for farm equipment and not an environmental concern to the subject property. Further east, residential subdivisions may be seen extending beyond the present-day Maple Street, toward the town of Gananoque.

The aerial photograph from **1949** did not identify any changes to the Phase One Study Area.

The aerial photograph from **1954** is of low-resolution quality and difficult to see detail. The photograph identifies the construction of residential streets including the present-day Steel Street, Ontario Street, and Hillside Drive.

The aerial photograph from **1969** identifies significant development in the Phase One Study Area, including the construction of the Gateway Motel to the west of the subject property in the same size and formation as the current buildings. The photograph also identifies the construction of the present-day Colonial Resort and Spa, located at 780 King Street West also in the same size and formation as the current buildings. Construction of Dempster Drive is visible, with one residential building present. The buildings located at 740 and 745 King St W. are now visible. It is unclear whether they were operating as a retail fuel outlet, however the large parking lots directly extending from the roadway suggest commercial activity. The residential building that was historically present east adjacent to the subject property (755 King St. W) is also evident. The aerial photograph also identifies a long building, oriented west to east along the north side of King Street East, near the present-day intersection with Garfield Street. It appears as though it may be another motel.

The aerial photograph from **1974** shows expanded residential development in the Phase One Study Area, including construction of residential buildings along Dempster Drive, south and south-east of the subject property. A large building may be identified east of the subject property, at the present location of 665 King Street West. Due to the size and parking area size, the building appears commercial in nature. As the image is of better resolution quality as compared to the previous photo, the details of 740 and 745 King Street West may be better viewed. These structures appear of a similar size and location to the present-



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day buildings and appear to be commercial in nature. Properties south-west appear agricultural in nature, with tree growth occurring beyond.

The aerial photograph from **1989** is of exceptional resolution quality and, as such, details may be better viewed. The commercial property identified at the present-day location of 665 King Street West can be viewed to be a 'C'-shaped motel with an outdoor pool. The building located at the present-day 745 King Street West can be viewed to be a retail fuel outlet, with pump island visible. The building located at 740 King Street West has no pump island and does not appear to be utilized as a retail fuel outlet at this time. No other significant changes were identified within the Phase One Study Area.

The aerial photograph from **1994** identifies no significant changes.

The satellite image from **2005** identifies the construction of Garfield Street and associated residential development.

In the satellite image from **2013**, the residential building located east adjacent to the subject property (755 King Street West) has been removed. No other significant changes were identified.

The aerial photograph from **2015** identifies the construction of the large residential building to the west northwest of the subject property. No other significant changes were identified.

The aerial photograph from **2018** identifies no significant changes.

2.3.2 Topography, Hydrology, Geology

Topographically, the Phase One Study Area slopes from the northwest to the southeast, towards the St. Lawrence River located approximately 515 m southeast of the subject property⁴. A topographic map of the area is provided in Figure 5 in Appendix A.

Bedrock geology at the site is characterized by Precambrian rocks⁵ of the Grenville Province, including a differential of late felsic plutonic rocks (e.g., alkalic granite) and clastic metasedimentary rocks (e.g., conglomerate and quartz)⁶. The Phase One study area is within the Precambrian Hydrogeological Unit⁷. The physiography of the region can be described as shallow till and rock ridges⁸ (for additional information see Section 2.3.5 Well Records).

⁴ Ministry of Natural Resources and Forestry. Make a Topographic Map. Accessed online at https://www.gisapplication.lrc.gov.on.ca/matm/Index.html?site=Make_A_Topographic_Map&viewer=MATM&locale=en-US

⁵ Ministry of Natural Resources: Paleozoic Geology of the Gananoque-Wolf Island Area, Southern Ontario. Map P.2496.

⁶ S.N. Singer, C.K. Cheng, and M.G. Scafe. "The Hydrogeology of Southern Ontario, Second Edition." Ministry of the Environment. 1993.

⁷ Ministry of the Environment, 2003: The Hydrogeology of Southern Ontario, Second Edition.

⁸ L.J. Chapman and D.F. Putnam, 1984: The Physiography of Southern Ontario, Third Edition. Map P.2715.



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2.3.3 Fill Materials

Fill materials were noted as possibly evident during aerial photograph review, however, could not be confirmed due to poor photo resolution. Potential importation of fill was identified in the aerial photograph from 1974 and 1989.

Information obtained from an interview with the current property owner, Brian Wooding, indicated he was not aware of fill materials being brought to the subject property. He was familiar with the installation of a utility corridor in the 1980's and its subsequent removal, as well as the installation of stormwater runoff drainage pipes during reconstruction of Highway 2/King Street West. All work was conducted by the township of Leeds and Grenville. Mr. Wooding was not aware whether fill was utilized in the installation, or whether the tubing was installed by digging a trench on the subject property and backfilling with trench cuttings.

As no direct evidence has been obtained to indicate fill materials being brought to the subject property, it is not considered a potential environmental concern. Should a Phase Two be conducted for other reasons, we feel it prudent to include a cursory investigation into soil quality near the ground surface.

2.3.4 Water Bodies and Areas of Natural Significance

No surface water bodies are located on the subject property. The nearest surface water body is the St. Lawrence River, located approximately 515 m southeast of the subject property. A stormwater management pond was identified approximately 315 m south of the subject property and presumed to be associated with residential subdivision development to the south and southeast of the subject property.

2.3.5 Well Records

The Ministry of Environment, Conservation and Parks (MECP) online well records were consulted⁹. Thirteen (13) well records were identified within the Phase One Study Area. These included one (1) domestic well and twelve (12) monitoring wells. The well records indicate soil lithology composed of brown clay, silt, sand and cobbles. Bedrock encountered included sandstone and granite. Water was shown in the online MECP domestic well record to be encountered at a depth of approximately 18.6 m below ground surface.

2.4 Site Operating Records

The subject property remains uninhabited. No historic site operating records were provided by the Client. A proposed site plan for the proposed residential apartments was provided by the Client.

⁹Ministry of the Environment, Conservation and Parks. Well Records. Accessed online at <https://www.ontario.ca/environment-and-energy/map-well-records>



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3.0 Interviews

Interviews were conducted by phone or via email. This information will be used in conjunction with the information found in the available records to assess the site's environmental history and sensitivity.

3.1 Government Agencies

Ministry of Environment, Conservation and Parks (MECP)

Mr. Craig Dobiech, Provincial Officer, MECP, Kingston Area Office (613) 848-0853

Mr. Craig Dobiech was contacted via email of June 5, 2020. He did not indicate any environmental concerns with the subject property. Mr. Dobiech indicated that a formal Freedom of Information request would provide any information that the MECP would have on the subject property.

Technical Standards and Safety Authority TSSA

Public Informant Agent 1-416-734-3383

A request was made via email to a TSSA public information agent regarding the presence of underground storage tanks at the Property on June 1, 2020. A public information agent at the TSSA replied that their records did not identify fuel storage tanks on the property via email on June 4, 2020.

Town of Gananoque

Chanti Birdi, Assistant Planner (613) 382-2149 ext. 1129

The planning department was contacted on June 10, 2020 regarding any environmental concerns with the subject property and the Phase One Study Area. Chanti Birdi, Assistant Planner for Town of Gananoque replied with her knowledge of motel use to the west of the subject property at 819 King Street West, former auto/gasoline station to the east of the subject property at 745 King Street West and former restaurant use at 740 King Street West.

3.2 Site Interviews

Brian Wooding, Property Owner

(613) 384-457, (613) 545-7096

Brian Wooding was contacted on June 4, 2020, regarding his knowledge of the subject property. Mr. Wooding acknowledged joint ownership with his parents, of the subject property. Mr. Wooding believed they had owned the property for over 45 years but was not certain of the exact time frame. Mr. Wooding was confident of the property's history, throughout his family's ownership. To Mr. Wooding's knowledge, no structure has ever been present on the subject property. Their family had formerly owned the west-adjacent Motel and the subject property was obtained as potential expansion space. Once the Motel was sold, his family decided to retain the subject property. Shortly after sale of the Motel, the new owner requested and was granted a right-of-way over the subject property, for purposes of access to local utilities (converted from holding tank to municipal sewer, for wastewater collection). A protected flexible pipe was allowed to cross the subject property, to access the municipal sewer system along the eastern boundary of the subject property. No concerns arose, to his knowledge, as a result of the wastewater



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piping. Although the right-of-way is still in place, the piping has since been removed from the subject property.

Mr. Wooding indicated that the property had sold for a period of approximately one year. However, due to personal matters, the buyer could not maintain the property and it was returned unchanged to the Wooding family.

During construction of the north-adjacent roadway (King Street West/County Road 2), flexible storm collection piping was allowed to cross the subject property, for deposition into an off-site marsh. Work to construct storm drains was conducted by the township of Gananoque. Mr. Wooding was not present during construction of storm drains and cannot confirm whether fill materials were utilized.

Mr. Wooding is aware of the former existence of two retail gas outlets to the east of the subject property. The retail fuel outlets have since ceased operation. He is aware of some environmental investigative work conducted at the immediate east-adjacent property, a former residential property, as a result of potential off-site transmission of gasoline from the retail fuel outlet. To his knowledge, no adverse effects were identified at this property.

Stefano Ferrante, Potential Buyer

Stefano Ferrante was contacted on June 4, 2020, regarding his knowledge of the subject property. Stefano's company have a conditional offer of purchase on the subject property. He is not aware of environmental concerns, associated with the property, however, is aware of a historic investigation into a potential oil release at a neighbouring property, as a result of a former commercial fuel station to the east of the subject property.

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4.0 Site Reconnaissance

A site visit that included a walk-through of the property was conducted on June 3, 2020 by ASC personnel. The purpose of this visit was to become familiar with the property's surface conditions, the activities on the property, activities on the surrounding properties and access limitations.

4.1 Site Observations

Topography

The subject property was observed to be flat. Properties to the north, west, and northwest were elevated higher than the subject property.

Properties to the northeast, east, and south were observed to be slightly lower elevation to the subject property.

There was a mound of soil (approximately 3 m³) observed near the south edge of the property towards the residential properties to the south. The soil appeared to originate from the residential properties to the south.

Geology

Bedrock outcropping was not observed on the subject property.

Surface Water

There were no surface water bodies observed on the subject property. A stormwater management pond was observed approximately 315 m south of the subject property. Storm water culverts (big O piping) were observed on the subject property to direct storm water from Highway 2/King Street West towards an unnamed marsh southeast of the site.

Exterior Stains

There were no exterior stains observed on the subject property.

Fill Areas

No areas of fill were identified on the subject property.

Surficial debris consisting of domestic materials (paint cans, plastic, lumber, etc.) were observed scattered on the eastern portion of the property. These materials appear to have originated from the residential properties to the south. We recommend removing the debris and disposal to a licensed waste facility prior to site development.

Solid and Liquid Wastes

The Phase One property is currently uninhabited and does not generate solid or liquid wastes.



Site Services

The subject property is not currently serviced. Electrical, natural gas, wastewater and drinking water services are available through municipal utility services.

Other

A water pipe connection was observed on the northwest corner of the property, leading underground. The pipe appeared to originate from the west adjacent property (Gateway Motel), but its source was not identified. The pipe is not identified as an environmental concern.

Evidence of former environmental investigative work in the form of monitoring wells was identified at the property east of the subject property, at the former residential property (755 King Street West) and the former retail fuel outlet (745 King Street West). Monitoring wells were also identified in the street northeast of the subject property.

4.2 Buildings and Structures

4.2.1 Summary of Potentially Hazardous Materials at the Site

Hazardous materials were not observed during the site reconnaissance.

4.2.2 Polychlorinated Biphenyls (PCBs)

Federal Chlorobiphenyls Regulations outline the handling, storage and disposal of PCBs and PCB containing equipment. Two hydro-pole transformers were identified within the Phase One Study Area, located approximately 165 m west of the western property boundary and 160 m east of the eastern property boundary. Hydro-pole transformers are considered to possibly contain PCB materials. Based on their location and distance from the subject property, these items are not considered to contribute toward a potential environmental concern.

4.2.3 Ozone Depleting Substances (ODSs)

The manufacture and sale of ODSs in Canada has been severely curtailed since the finalization of the Montreal Protocol in 1987. Prior to that time and to some extent after, ODSs may have been included in refrigeration and air conditioning units, as well as foam insulations. No ODSs were identified during the site reconnaissance.

4.2.4 Heating and Cooling

The property does not have a building on it, and no heating and cooling equipment was identified.

4.3 Storage Tanks

Storage tanks were not observed at the subject property.



4.4 Description of Adjacent Properties

The subject property is immediately surrounded by residential properties to the south and west, and commercial properties to the east and north. Beyond the immediately adjacent properties is largely residential subdivision developments with former commercial properties mixed in.

Commercial properties located in the Phase One Study Area include: the Gateway Motel, located west adjacent to the subject property, the Colonial Resort and Spa, located north adjacent on the north side of King Street West, a former commercial gasoline station and used car dealership, located approximately 30 m east of the property, and a former commercial restaurant and gasoline station, located approximately 25 m northeast of the subject property. The residential property located east adjacent is presently vacant, having the building removed. According to Google Earth historic imagery, the residence was demolished sometime after 2005 and before 2013.



5.0 Review and Evaluation of Information

5.1 Current and Past Uses

According to interviews with Brian Wooding, part property owner, no structure has been present on the subject property. A right-of-way was authorized in the 1980's, for installation of a utility corridor connecting 819 King Street West to the municipal sewer system. The utility infrastructure has since been removed; however, the right-of-way remains in place.

During re-construction of the north-adjacent roadway (King Street West/Highway 2), flexible storm piping was installed at the subject property for collection of stormwater runoff. The storm pipe (big O pipe) was visible during the site reconnaissance and was noted to drain off-site to a south-adjacent property.

5.2 Actual Contamination

On-Site

No sources of actual contamination were identified on the site during the records review, site reconnaissance or interviews.

Off-Site

According to aerial photos, site reconnaissance work, internal historic reports, and interviews with the current property owner, Brian Wooding, two retail gasoline outlets were formerly present to the east of the subject property. Environmental investigative work was evident at the immediate east adjacent property, a residential property having municipal address 755 King Street West. It is presumed and further indicated by Mr. Wooding to have occurred as a result of potential off-site impact from the retail fuel outlet, located at 745 King Street West. Although property owners have not granted permission to share details of the investigation, ASC internal documents indicate the investigation having occurred in the mid-2000's. The residential home was present during investigative work¹⁰ and has since been removed. Rational for the removal of the residential structure is not known at this time.

5.3 Potentially Contaminating Activities (PCAs)

On Site

No PCAs were identified on the subject property.

Off Site

Two (2) off-site PCAs were identified within the Phase One study area. These PCAs include:

PCA 1: (28) Gasoline and Associated Products Storage in Fixed Tanks

¹⁰ Province of Ontario. Map: Well records. Well Tag A028221. Accessed online at <https://www.ontario.ca/environment-and-energy/map-well-records>

June 29, 2020

- According to site reconnaissance, interview and aerial photograph review, a retail fuel outlet was formerly present 30 m northeast and cross gradient of the subject property, municipal address 740 King Street West.

PCA 2: (28) Gasoline and Associated Products Storage in Fixed Tanks

- According to site reconnaissance, interview and aerial photograph review, a retail fuel outlet was formerly present 25 m east and cross gradient of the subject property, municipal address 745 King Street West. The current property owner is aware of environmental investigative work at the east adjacent property between the former gasoline station and the subject property due to possible impact.

5.4 Areas of Potential Environmental Concern (APEC)

Environmental concerns arising from off-site PCAs, were identified at the subject property. Results of environmental investigation conducted at 755 King Street West are not known at this time and no evidence of environmental remediation activities (e.g., fill removal) from this site was evident. These properties have been determined to be cross-gradient from the subject property. Based on their proximity to the subject property and the known transmissivity of the presumed contaminant of potential concern (i.e., fuel-grade petroleum), the subject property may be affected by contaminant transport by capillary action, as a result PCAs.

Underground utility trenches for wastewater collection, drinking water distribution and natural gas located along King Street West may have created preferential pathways for the migration of potential contamination from these off-site PCAs. As PCA 1 was identified on the north side of King Street West, the presence of these underground utility corridors reduces the likelihood for contaminants to transfer across the natural lateral gradient and across this preferential pathway. It is for this reason, PCA 1 is not considered to contribute toward an APEC at the subject property.

For reasons listed above, PCA 2 is considered to have contributed toward an APEC at the subject property.

APEC	PCA	Details
APEC	<i>(28) Gasoline and Associated Products Storage in Fixed Tanks</i>	Former retail fuel outlet located east (municipal address 745 King Street West) of the subject property. Former environmental investigation efforts identified at the east adjacent residential property (municipal address 755 King Street West) and former retail fuel outlet (745 King Street West).

5.5 Phase One Conceptual Site Model

The Phase One ESA was conducted for the property at King Street West, in Gananoque, Ontario. The property encompasses an area of approximately 5000 m² (0.5 ha). The legal description of the Site is described as: Part Lot 11, Concession 1, Parts 1-5, Plan 28R-5002, Parts 1 -3, Plan 28R-9972, Gananoque, County of Leeds and Grenville. A site location and site layout plan are shown on Figure 1 and 2 in Appendix A.



June 29, 2020

According to aerial photograph review, a right-of-way utility corridor was placed on the subject property in 1986, following the sale and severance of the east-adjacent motel. Therefore, the first developed use of the property was determined to be in **1986** for **agricultural or other use**. We understand that the property is not used for agricultural purposes, and the intended future site use is residential. We recommend comparable site condition standards for the subject property to be as residential/parkland land use.

Currently, the site is uninhabited, having no buildings or structures. Immediate adjacent land use consists largely of residential activity, with commercial land use located west, north, and east of the subject property. Commercial land use identified in the Phase One Study Area includes two active motels and two former retail fuel outlets.

Topographically, the Phase One Study Area slopes down from the northwest to the southeast, towards the St. Lawrence River located approximately 515 m southeast of the subject property. A topographic map of the area is provided in Figure 5 in Appendix A.

Bedrock geology at the site is characterized by Precambrian rocks of the Grenville Province, including a differential of late felsic plutonic rocks (e.g., alkalic granite) and clastic metasedimentary rocks (e.g., conglomerate and quartz). The Phase One study area is within the Precambrian Hydrogeological Unit. The physiography of the region can be described as shallow till and rock ridges (for additional information see Section 2.3.5 Well Records).

The Ministry of Environment, Conservation and Parks (MECP) online well records were consulted. Thirteen (13) wells identified within the Phase One Study Area. These included one (1) domestic well and twelve (12) monitoring wells. The well records indicate soil lithology composed of brown clay, silt, sand and cobbles. Bedrock encountered included sandstone and granite. Water was shown in the online MECP domestic well record to be encountered at a depth of approximately 18.6 m below ground surface.

No evidence of fill materials was evident during the site reconnaissance. Fill materials were noted as possibly evident during aerial photograph review, however, could not be confirmed due to poor photo resolution. Site reconnaissance efforts indicated site activity, in the form of visible stormwater drainage lines just below the ground surface. The current site owner is unaware of fill materials being brought to the subject property, as part of the installation. As no direct evidence has been obtained to indicate fill materials being brought to the subject property, it is not considered a potential environmental concern. Should a Phase Two be conducted for other reasons, we feel it prudent to include a cursory investigation into soil quality near the ground surface.

No surface water bodies are located on the subject property. The nearest surface water body is a residential stormwater management pond, approximately 315 m south of the subject property. The St. Lawrence River is located approximately 515 m southeast of the subject property. .

No sources of actual contamination were identified on the subject property during the records review, site reconnaissance or interviews.



June 29, 2020

According to aerial photos, site reconnaissance work, internal historic reports, and interviews with the current property owner, Brian Wooding, two retail gasoline outlets were formerly present to the east of the subject property. Environmental investigative work was evident at the immediate east adjacent property, a residential property having municipal address 755 King Street West. It is presumed and further indicated by Mr. Wooding to have occurred as a result of potential off-site impact from the retail fuel outlet, located at 745 King Street West. Although property owners have not granted permission to share details of the investigation, ASC internal documents indicate the investigation having occurred in the mid-2000's. The residential home was present during investigative work and has since been removed. Rational for the removal of the residential structure is not known at this time.

Mr. Stefano Ferrante, potential subject property buyer, was also contacted regarding his knowledge of the subject property. He is aware of a historic investigation into a potential oil release at a neighbouring property, as a result of a former commercial fuel station to the east of the subject property.

No PCAs were identified on the subject property. Two (2) off-site PCAs were identified within the Phase One Study Area. These PCAs include:

PCA 1: (28) Gasoline and Associated Products Storage in Fixed Tanks

- According to site reconnaissance, interview and aerial photograph review, a retail fuel outlet was formerly present 30 m northeast and cross gradient of the subject property, municipal address 740 King Street West.

PCA 2: (28) Gasoline and Associated Products Storage in Fixed Tanks

- According to site reconnaissance, interview and aerial photograph review, a retail fuel outlet was formerly present 25 m east and cross gradient of the subject property, municipal address 745 King Street West. The current property owner is aware of environmental investigative work at the east adjacent property between the former gasoline station and the subject property due to possible impact.

Environmental concerns arising from off-site PCAs, were identified at the subject property. Results of environmental investigation conducted at 755 King Street West are not known at this time and no evidence of environmental remediation activities (e.g., fill removal) from this site was evident. These properties have been determined to be cross-gradient from the subject property. Based on their proximity to the subject property and the known transmissivity of the presumed contaminant of potential concern (i.e., fuel-grade petroleum), the subject property may be affected by contaminant transport by capillary action, as a result PCAs.

Underground utility trenches for wastewater collection, drinking water distribution and natural gas located along King Street West may have created preferential pathways for the migration of potential contamination from these off-site PCAs. As PCA 1 was identified on the north side of King Street West, the presence of these underground utility corridors reduces the likelihood for contaminants to transfer across the natural lateral gradient and across this preferential pathway. It is for this reason, PCA 1 is not considered to contribute toward an APEC at the subject property.



June 29, 2020

For reasons listed above, PCA 2 is considered to have contributed toward an APEC at the subject property.

APEC	PCA	Details
APEC	<i>(28) Gasoline and Associated Products Storage in Fixed Tanks</i>	Former retail fuel outlet located east (municipal address 745 King Street West) of the subject property. Former environmental investigation efforts identified at the east adjacent residential property (municipal address 755 King Street West) and former retail fuel outlet (745 King Street West).

It is not believed that climatic or meteorological conditions have influenced the distribution or migration of potential contaminants in the soil or groundwater at the subject property. No other uncertainties that may affect the validity of the conceptual site model were identified during the Phase One ESA.

6.0 Conclusions and Recommendations

We offer the following conclusions and recommendations based on the results of the Phase One ESA.

6.1 Actual Contamination

On-Site

No sources of actual contamination were identified on the site during the records review, site reconnaissance or interviews.

Off-Site

According to historical evidence, two former retail fuel outlets were formerly present to the east of the subject property, at municipal addresses 740 and 745 King Street West. Environmental investigative work was apparent at the former fuel outlet located at 745 King Street West, as well as the immediate east adjacent residential property. Evidence of monitoring wells was identified during the site reconnaissance, at these properties. Environmental investigative works on residential properties are most often a result of identified off-site contamination. Based on this evidence, we consider it likely that petroleum hydrocarbons were identified at 745 King Street West, either through the removal of a corrupted fuel tank or through a subsurface investigation.

6.2 Potential Contamination

On Site

No PCAs were identified on the subject property.

Off Site

Two (2) off-site PCAs were identified within the Phase One study area. These PCAs include:

PCA 1: (28) Gasoline and Associated Products Storage in Fixed Tanks



June 29, 2020

- According to site reconnaissance, interview and aerial photograph review, a retail fuel outlet was formerly present 30 m northeast and cross gradient of the subject property, municipal address 740 King Street West.

PCA 2: (28) Gasoline and Associated Products Storage in Fixed Tanks

- According to site reconnaissance, interview and aerial photograph review, a retail fuel outlet was formerly present 25 m east and cross gradient of the subject property, municipal address 745 King Street West. The current property owner is aware of environmental investigative work at the east adjacent property between the former gasoline station and the subject property due to possible impact.

6.3 Recommendation for a Phase Two Environmental Site Assessment

Environmental concerns arising from off-site PCAs, were identified at the subject property. Results of environmental investigation conducted at 755 King Street West are not known at this time and no evidence of environmental remediation activities (e.g., fill removal) from this site was evident. These properties have been determined to be cross-gradient from the subject property. Based on their proximity to the subject property and the known transmissivity of the presumed contaminant of potential concern (i.e., fuel-grade petroleum), the subject property may be affected by contaminant transport by capillary action, as a result PCAs.

Underground utility trenches for wastewater collection, drinking water distribution and natural gas located along King Street West may have created preferential pathways for the migration of potential contamination from these off-site PCAs. As PCA 1 was identified on the north side of King Street West, the presence of these underground utility corridors reduces the likelihood for contaminants to transfer across the natural lateral gradient and across this preferential pathway. It is for this reason, PCA 1 is not considered to contribute toward an APEC at the subject property.

For reasons listed above, PCA 2 is considered to have contributed toward an APEC at the subject property.

Based on an assessment of the available information, is it possible that contaminants exist on, in, or under the subject property. We recommend a conducting Phase Two ESA, to determine whether actual contamination is present at the subject property.



June 29, 2020

7.0 Study Limitations

ASC Environmental (ASC) was retained by *9695443 Canada Inc. (client)* to undertake a Phase One ESA of the subject property located at King Street West, Gananoque, Ontario (Part Lot 11, Concession 1, Parts 1-5, Plan 28R-5002, Parts 1 -3, Plan 28R-9972, Gananoque, County of Leeds and Grenville).

The purpose of the Phase One ESA is intended to reduce, but not necessarily eliminate, uncertainty regarding the potential for hazardous substances on a Property. In most cases, a Phase One ESA can only describe the *likelihood* of hazardous materials being present or absent at a Property.

This Phase One ESA was performed in general compliance with currently acceptable practices for environmental Site investigations, and specific client requests, as applicable to the subject property.

The information provided in this report is based upon analysis of available documents, records and drawings, and personal interviews. In evaluating the subject property, *ASC* has relied in good faith on information provided by other individuals noted in this report. *ASC* has assumed that the information provided is factual and accurate. In addition, the findings in this report are based, to a large degree, upon information provided by the current owner/occupant. *ASC* accepts no responsibility for any deficiency, misstatement or inaccuracy contained in this report as a result of omissions, misinterpretations or fraudulent acts of persons interviewed or contacted, or contained in reports that were reviewed. The scope of work for this Phase One ESA did not include an intrusive investigation for designated substances (i.e. asbestos, mould etc.).

ASC makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any Property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and these interpretations may change over time.

No legal survey, soil test, detailed structural engineering investigation, or quantity survey compilation have been made. No responsibility, therefore, is assumed concerning these matters, or for any failure to carry out those technical or engineering procedures required to discover any inherent or hidden condition of this property since such investigation work was not included in the terms of reference governing this study.

The conclusions and recommendations detailed in this report are based upon the information available at the time of preparation of the report. No investigative method eliminates the possibility of obtaining imprecise or incomplete information. Professional judgement was exercised in gathering and analyzing the information obtained and in the formulation of our conclusions and recommendations. The recommendations are not intended to be utilized as a detailed specification for any remedial work that may be required. *ASC* accepts no responsibility for interpretation of our recommendations, or actions taken based on them without our consultation and supervision.

ASC does not certify or warrant the environmental status of the Phase One property.



June 29, 2020

ASC is not able to represent that the Site or adjoining lands contain no hazardous waste, oil, or other latent condition beyond that detected or observed. The possibility exists for hazardous substances to migrate through surface water, air, soil or groundwater. The ability to accurately address the environmental risk associated with these media is beyond the scope of this assessment.

This document has been prepared by ASC for the sole use of 9695443 Canada Inc. and its assignees to assess potential hazardous substance impact related to the subject Property in preparation for potential property sale. Unauthorized reuse of this document for other purposes, or by any other party, or any reliance on or decisions to be made based on it.



**1305 Princess Street,
Kingston, ON K7M 3E3
Tel: (613) 634- 5596**

8.0 References

[1] Google Earth Pro, 2020.

[2] L.J. Chapman and D.F. Putnam, 1984: The Physiography of Southern Ontario, Third Edition. Map P.2715.

[3] Ministry of the Environment, Conservation and Parks. Well Records. Accessed online at <https://www.ontario.ca/environment-and-energy/map-well-records>

[4] Ministry of the Environment, 2003: The Hydrogeology of Southern Ontario, Second Edition.

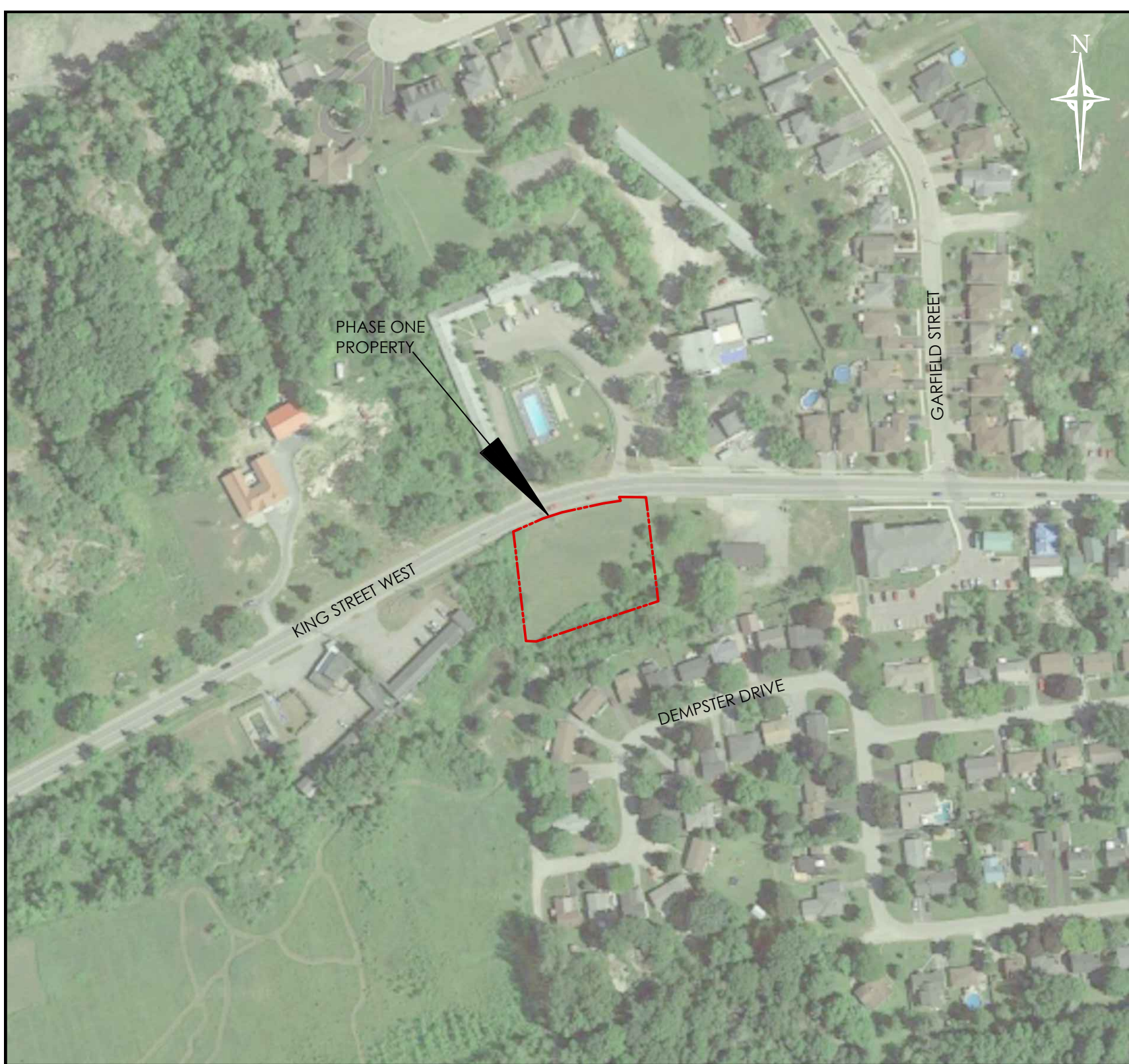
[5] Ministry of Natural Resources and Forestry. Make a Topographic Map. Accessed online at https://www.gisapplication.lrc.gov.on.ca/matm/Index.html?site=Make_A_Topographic_Map&viewer=MATM&locale=en-US

[6] Ministry of Natural Resources: Paleozoic Geology of the Gananoque-Wolf Island Area, Southern Ontario. Map P.2496.

[7] Ministry of Northern Development and Mines, 1991: Bedrock Geology of Ontario, Southern Sheet. Map 2544.

[8] Ontario Land Registry Access. Teranet, 2020. Accessed online at <https://www.onland.ca/ui/>

Appendix A: Figures

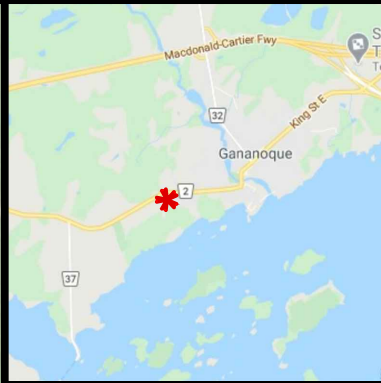


PHASE ONE
PROPERTY

GARFIELD STREET

KING STREET WEST

DEMPSTER DRIVE



LEGEND

- APPROXIMATE PROPERTY LOCATION
- APPROXIMATE SUBJECT PROPERTY

DRAWING TITLE
Site Location Plan

FIGURE NO. 01	DRAWN BY S. Johnston
-------------------------	--------------------------------

PROJECT
Phase One Environmental Site Assessment

CLIENT
9695443 Canada Inc.

LOCATION
King Street West,
Gananoque, Ontario

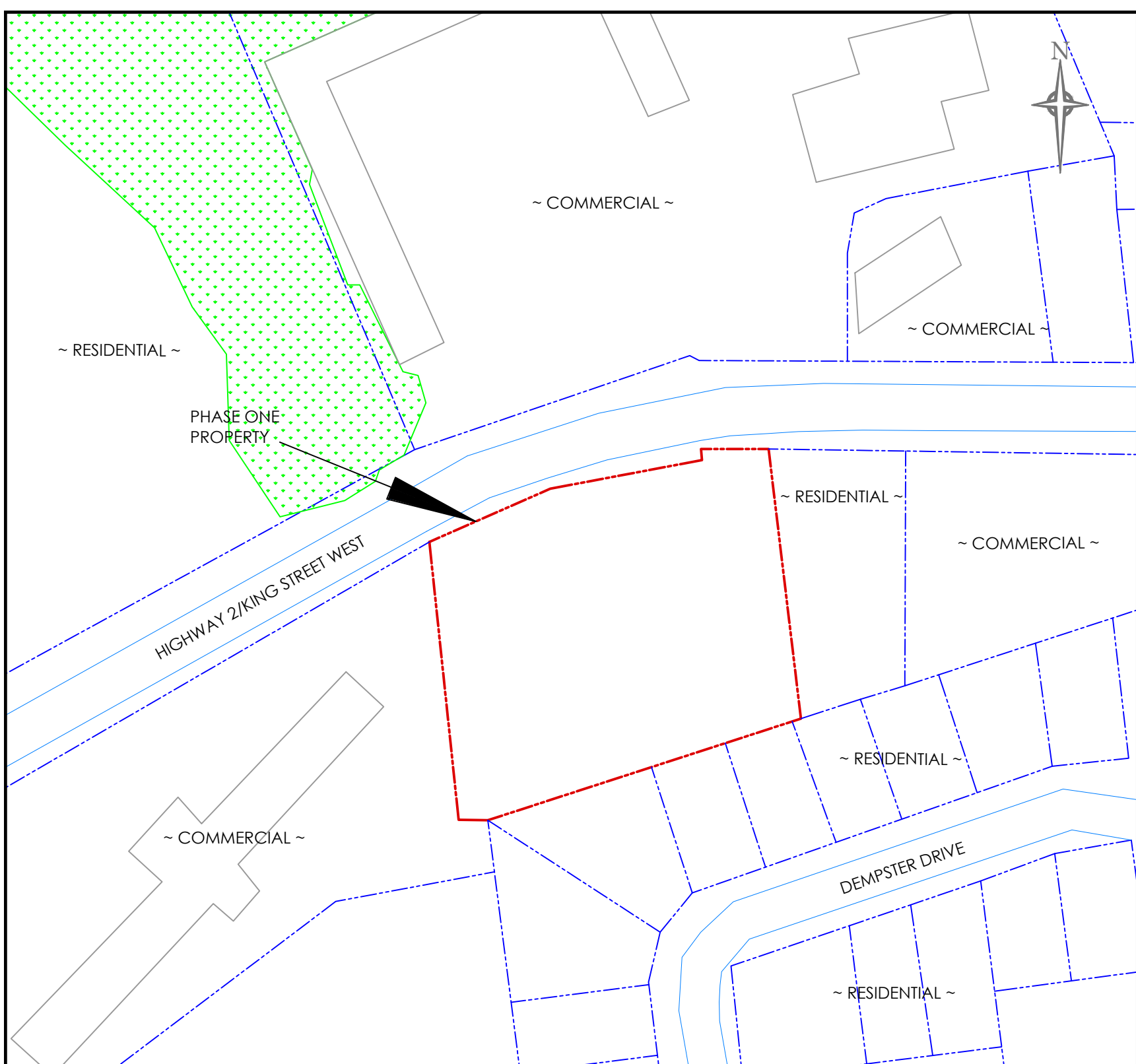
PROJECT NO. ASC-570	SCALE:
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DATE
04-June-2020



1305 Princess St
Kingston, ON, K7M 3E3

(613)634-5596
www.ascenvironmental.ca



LEGEND

- - - SUBJECT PROPERTY
- - - PROPERTY LINE
- EDGE OF ROAD
- BUILDING
- - - TREELINE

DRAWING TITLE
Site Layout Plan

FIGURE NO. 02	DRAWN BY S. Johnston
-------------------------	--------------------------------

PROJECT
Phase One Environmental Site Assessment

CLIENT
9695443 Canada Inc.

LOCATION
King Street West,
Gananoque, Ontario

PROJECT NO. ASC-570	SCALE:
-------------------------------	-------------------

DATE
04-June-2020

1305 Princess St
Kingston, ON, K7M 3E3

(613)634-5596
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PHASE ONE PROPERTY

HIGHWAY 2/KING STREET WEST

GARFIELD STREET

1

2

DEMPSTER STREET

ONTARIO STREET

STEEL STREET

HILLSIDE DRIVE

LEGEND

- SUBJECT PROPERTY
- - - - - PHASE ONE STUDY AREA

POTENTIALLY CONTAMINATING ACTIVITY

1. 740 KING STREET WEST, FORMER RETAIL OUTLET
2. 745 KING STREET WEST, FORMER RETAIL FUEL OUTLET


DRAWING TITLE
Phase One Study Area

FIGURE NO. 03	DRAWN BY S. Johnston
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PROJECT
Phase One Environmental Site Assessment

CLIENT
9695443 Canada Inc.

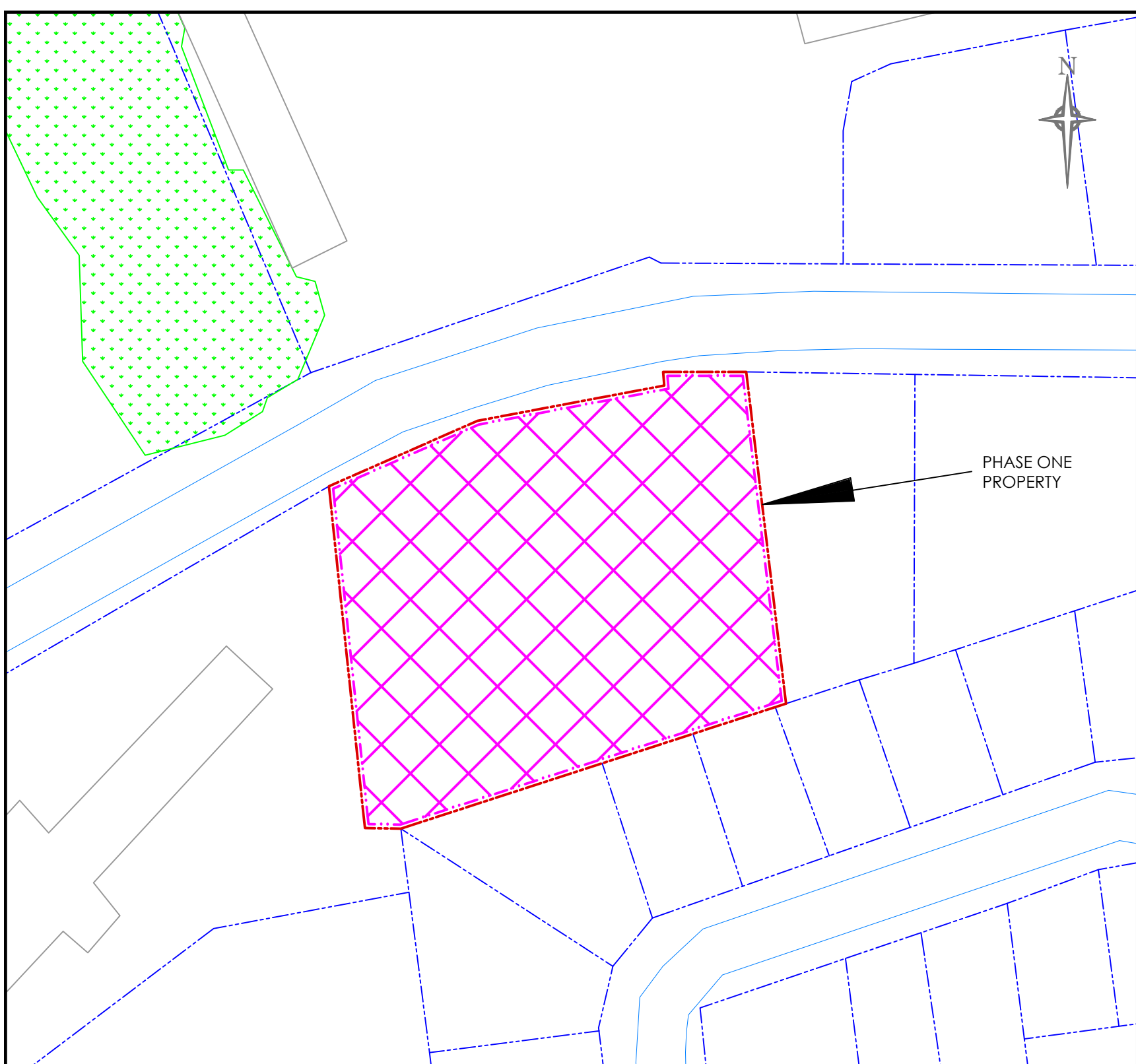
LOCATION
King Street West,
Gananoque, Ontario






PROJECT NO. ASC-570	SCALE: 
DATE 04-June-2020	




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Kingston, ON, K7M 3E3

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- LEGEND**
-  SUBJECT PROPERTY
 -  PROPERTY LINE
 -  EDGE OF ROAD
 -  BUILDING
 -  TREELINE

AREA OF POTENTIAL ENVIRONMENTAL CONCERN

 APEC 1 - ENTIRE PROPERTY: POTENTIAL HYDROCARBON CONTAMINATION AS A RESULT OF PCA 2


DRAWING TITLE
Areas of Potential Environmental Concern

FIGURE NO. 04	DRAWN BY S. McCallum
-------------------------	--------------------------------

PROJECT
Phase One Environmental Site Assessment

CLIENT
9695443 Canada Inc.

LOCATION
King Street West,
Gananoque, Ontario

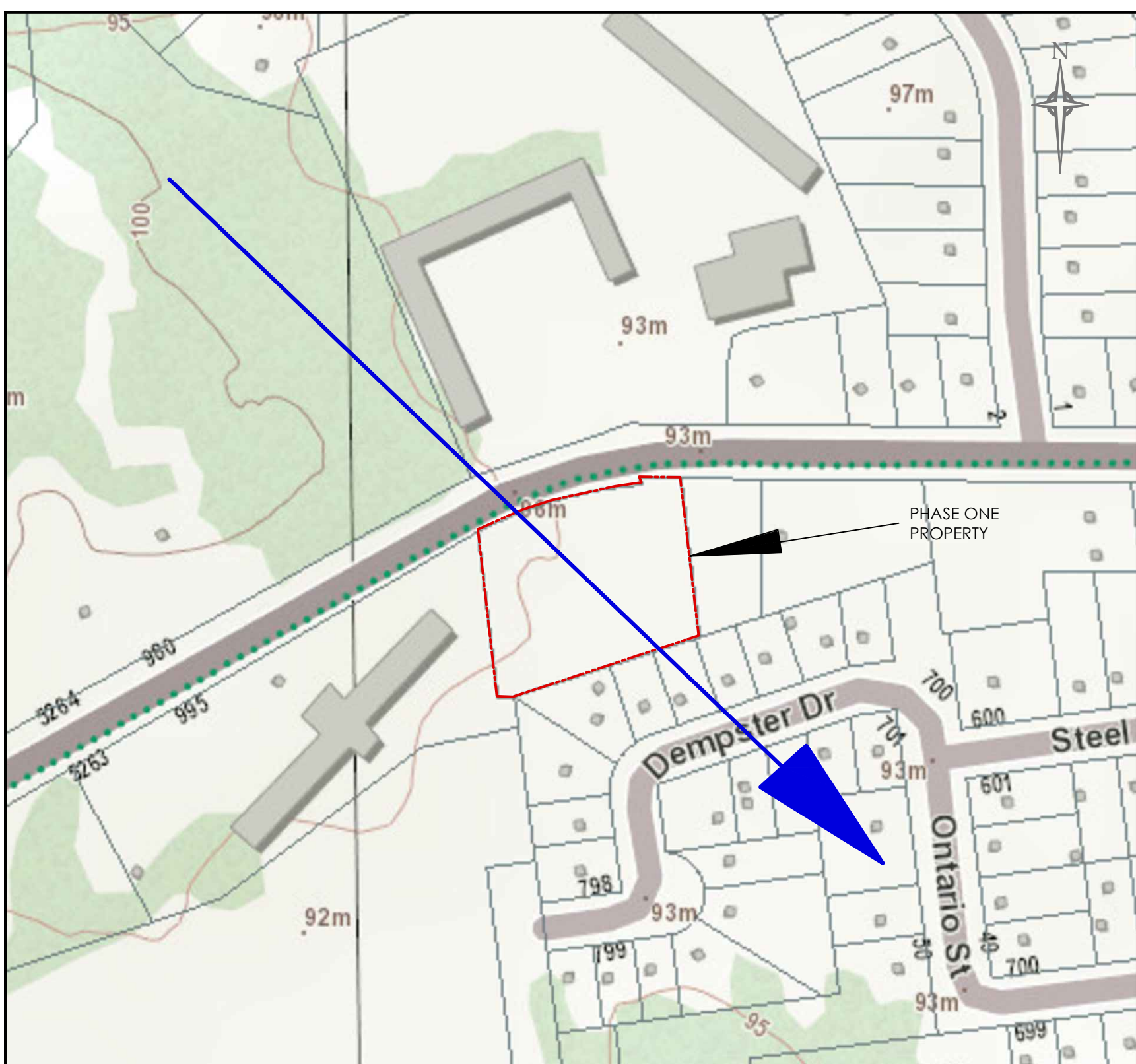
PROJECT NO. ASC-570	SCALE: 
-------------------------------	--

DATE 12-June-2020



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LEGEND

- - - SUBJECT PROPERTY
- ➔ PRESUMED DIRECTION OF GROUNDWATER FLOW


DRAWING TITLE
Topographic Map

FIGURE NO. 05	DRAWN BY S. Johnston
-------------------------	--------------------------------

PROJECT
Phase One Environmental Site Assessment

CLIENT
9695443 Canada Inc.

LOCATION
King Street West,
Gananoque, Ontario

PROJECT NO. ASC-570	SCALE: 
-------------------------------	--

DATE 04-June-2020



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Kingston, ON, K7M 3E3

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Appendix B: Assessor Qualifications

ASHLEY HOSIER, P.Eng

Project Manager

PROFESSIONAL EXPERIENCE

Ms. Hosier is a professional engineer with ASC Environmental Inc. She has been active in the environmental design, remediation, and regulation areas for the past ten years. Ms. Hosier has organized and managed numerous projects, with a particular emphasis on environmental site assessments (ESAs), environmental legislation, and waste collection and remediation.

Education

Dalhousie University, Halifax, Nova Scotia 2011
Bachelor of Engineering, Environmental Engineering

SARAH MCCALLUM, B.Sc.

Environmental Scientist/Technician

PROFESSIONAL EXPERIENCE

Ms. McCallum is an environmental scientist/technician with field and report writing experience in research and environmental consulting. Ms. McCallum has experience in conducting environmental site assessments (Phase One and Phase Two), designated substance reviews, hydrogeological assessment and conducting field monitoring programs.

EDUCATION

Trent University, Peterborough, Ontario, 2018
Bachelor of Science, Environmental and Resource Science, Biology



PAUL JOHNSTON, M.Sc., P.Eng., QP_{ESA}

Principal/Project Reviewer

PROFESSIONAL EXPERIENCE

Mr. Johnston is a senior engineer with ASC Environmental. He has 25 years of environmental engineering design, construction, and consulting experience. Mr. Johnston has managed and implemented numerous projects, with particular emphasis on environmental site assessments (Phase I, II, and III ESAs), designated substances and hazardous materials management projects, site decommissioning, remediation, hydrogeologic studies, waste management and regulatory compliance issues.

Education

Queen's University, Kingston, Ontario, 1991
Master of Science, Civil Engineering

Queen's University, Kingston, Ontario, 1989
Bachelor of Applied Science, Geological Engineering (Geotechnical option)

Mount Allison University, Sackville, New Brunswick, 1986
Bachelor of Science, Geology. Certificate of Engineering





Phase Two Environmental Site Assessment

King Street West, Gananoque, Ontario
PT LT 11, CON 1 LEEDS PT 1-5 28R5002; GANANAQUE

Prepared for:

9695443 Canada Inc.

Prepared by:

ASC Environmental Inc.
1305 Princess St,
Kingston, ON K7M 3E3

File: ASC-570 101r
October 1, 2020



ASC Environmental Inc.
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Kingston, ON K7M 3E3
Tel: (613) 634-5596
asc-environmental.com

October 1, 2020

Phase Two Environmental Site Assessment
King Street West, Gananoque, ON
PT LT 11, CON 1 LEEDS PT 1-5 28R5002; GANANOQUE

Prepared for:

9695443 Canada Inc.

Prepared by:

ASC Environmental Inc.
1305 Princess St,
Kingston, ON K7M 3E3



Respectfully submitted on behalf of

ASC Environmental Inc.

Reviewed By:

Sarah McCallum

Sarah McCallum, B.Sc.
Environmental Scientist

Ashley Hosier

Ashley Hosier, P.Eng., QP_{ESA}
Project Manager



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1.0 EXECUTIVE SUMMARY

ASC Environmental Inc. (ASC) was retained by *9695443 Canada Inc.* (herein referred to as the Client) to undertake a Phase Two Environmental Site Assessment (ESA) of the Site, located at King Street West, Gananoque, Ontario.

The purpose of the study was to determine environmental conditions in tested areas in preparation for potential property purchase by the Client. Based on results of the Phase One ESA, the current property use is considered agricultural or other use. Future land use of the subject property is anticipated to be a residential development. A Record of Site Condition (RSC) is not required for property use adjustments from a more restrictive standard (i.e., agricultural) to a less restrictive standard (i.e., residential).

The property is located on the south side of King Street West, west of Garfield Street in Gananoque, Ontario. The Site is irregular in shape and approximately 0.49 hectares in area, including approximately 80 metres (m) of frontage on King Street West. The property remains uninhabited and undeveloped.

Ground cover generally consisted of groomed grass coverage with some trees and shrubs along the west, east and south property boundaries. The site is accessible from the north via King Street West.

The site located in a predominantly residential area of Gananoque, with commercial activities to the west (Gateway Motel), north (Colonial Resort and Spa) and east (former retail fuel outlets). A Site location and site layout plan may be found in Figures 1 and 2 in Appendix A.

A Phase One ESA was conducted on the Site by ASC (ASC Report Reference No. ASC-570 100r, dated June 29, 2020) for 9695443 Canada Inc. The report identified two (2) Potentially Contaminating Activities (PCAs) within the Phase One Study Area (250 m radius of the property boundary). The identified off-site PCAs led to one (1) Area of Potential Environmental Concern (APEC). Contaminants of potential concern (COPCs) identified included petroleum hydrocarbons (PHCs) F1-F4 fractions, metals, and benzene, toluene, ethylbenzene, and xylenes (collectively known as BTEX). ASC recommended that a sampling and analytical testing program be carried out at the identified APEC, to investigate potential soil and groundwater impact as a result of the off-site PCAs.

Seven (7) boreholes were advanced at strategic locations by G.E.T. Drilling Ltd., on July 8, 2020. Boreholes were advanced to intersect the groundwater (at depths of approximately 0.6 – 4.9 metres (m) below ground surface) or to refusal on bedrock. Drilling was conducted using a split-spoon sampler, solid-stem auger, and air hammer.

A combustible gas indicator (CGI) was used to field analyse each soil sample for combustible gasses. CGI readings for soils were found to range from 0 ppm to 160 ppm.



Results of CGI analysis, combined with visual and olfactory evidence, were used to determine the 'worst case' soil samples, for laboratory analysis selection.

The site was found to be comparable to **Table 7**, "Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition" of the Soil, groundwater and sediment standards for use under Part XV.1 of the Environment Act (Soil Tables).

Four soil samples, selected from boreholes BH1, BH2, BH3, and BH7 were selected for laboratory analysis. Soil samples were submitted to an accredited laboratory (Paracel Laboratories Ltd.) for analysis of PHC F1-F4 fractions, BTEX, and metals. One representative sample was selected for analysis of pH and grain size. Borehole locations may be found on Figure 6 in Appendix A. Soil lithology encountered in boreholes during drilling is outlined in the borehole logs in Appendix B.

Results of the grain size analysis indicated the site may be compared to fine grained soil criteria. Results of the soil pH analysis indicated soils are within a pH of 5-9, indicating they may be compared to the Soil Tables. As the site is anticipated to be used as a residential property, the soil and groundwater results were compared to Table 7 Residential/Parkland/Institutional property use activity limitations.

Results of soil sample analysis indicated soils within BH1, BH2, and BH7 to be within allowable site condition standards for parameters analysed. An elevated concentration of cobalt was identified within BH3 at a depth of 0.7-1.5 metres below ground surface. As a result, approximately 45 cubic metres of soils within this area were removed and transported off-site for disposal at a licensed landfill. Verification sampling of the remaining excavated area indicates remaining soils are within allowable site condition standards.

Based on the results of soil analyses at locations investigated, soils at the subject property are within allowable site condition standards for parameters analyzed.

Three monitoring wells were installed at the site in boreholes BH1 (MW1), BH2 (MW2), and BH3 (MW3). One existing monitoring well (advanced by others) was existing on site, MW32. Water depths in the overburden monitoring wells (MW1, MW3, and MW32) were collected and compared against measured elevation survey results, to capture the groundwater elevations. Corresponding well water elevations indicate the inferred groundwater flow direction is generally toward the south-east.

Groundwater samples were collected from each of the four monitoring wells using low flow sampling techniques and submitted for laboratory analysis of metals, PHCs (F1-F4 fractions), and BTEX). Results of groundwater sample analyses were found to be within referenced MECP Table 7 residential property use site condition standards.

In accordance with MECP revised Regulation 903 (as amended), we recommend that the monitoring wells, if no longer required, be decommissioned by a licenced well contractor.



Based on results of the soil and groundwater investigation and analysis from areas investigated, the subject property is within referenced Table 7 criteria residential land use site condition standards.

It is not believed that climatic or meteorological conditions have influenced the distribution or migration of potential contaminants in the soil or groundwater. Underground utilities were identified on or adjacent to the subject property, which may act as a preferential pathway for contaminant migration on and off-site. No other uncertainties that may affect the validity of the conceptual site model were identified during the Phase Two ESA.



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LIST OF ACRONYMS

AST	Above-ground storage tank
BH	Borehole
BTEX	Benzene, toluene, ethylbenzene, and xylenes
CALA	Canadian Association of Laboratory Accreditation
CGI	Combustible gas indicator
CSA	Canadian Standards Association
ESA	Environmental Site assessment
F	fraction
ha	hectare
m	Metre
m ²	Square metre
m ³	Cubic metre
MDL	Minimum detection limit
MECP	Ministry of Environment, Conservation and Parks (Ontario)
MW	Monitoring well
PHC	Petroleum hydrocarbon
QA/QC	Quality assurance/quality control
QP	Qualified Person
RSC	Record of Site condition
SS	Split spoon
UST	Underground storage tank
VOC	Volatile organic compound



2.0 INTRODUCTION

2.1 Initiation and Objective

ASC Environmental Inc. (ASC) was retained by 9695443 Canada Inc. (herein referred to as the Client) to undertake a Phase Two Environmental Site Assessment (ESA) of a property located at King Street West, Gananoque, Ontario (herein referred to as the site or subject property). A site location plan and site layout plan are available in Figures 1 and 2 (in Appendix A).

The purpose of the study was to determine environmental conditions in tested areas in preparation for potential property purchase by the Client. We understand that a change in land use is not proposed and on that basis a Record of Site Condition (RSC) is not currently required.

The objective of this Phase Two ESA was to assess potential soil and groundwater contamination resulting from past and present uses at the site. The Phase Two ESA was conducted following the Canadian Standards Association (CSA) Z769-00 (Reaffirmed in 2013) Phase Two Environmental Site Assessment standard, with reference to Ontario Regulation 153/04 *Records of Site Condition – Part XV.1 of the Act*.

2.2 Site Description

The legal description of the site is described as *In the Town of Gananoque, County of Leeds, West of the Gananoque River, being composed of Part of Lot 11, Concession 1, designated as Parts 1-5 of Plan 28R5002; subject to a right-of-way for all those legally entitled thereto, over, along and upon Part 4 Plan 28R5002; Subject to an easement for maintenance of an overhead sewer force main over, along and upon Part 1,2, and 3 Plan 28R9972*. The site has no municipal address but may be found between 755 King Street West (east-adjacent) and 819 King Street West (west-adjacent). It is irregular in shape and is located on the south side of King Street West. The site is approximately 0.49 hectares in area, including approximately 80 metres of frontage on King Street West. The subject property remains uninhabited, having no structures or buildings.

Ground cover generally consisted of groomed grass coverage with some trees and shrubs along the west, east and south property boundaries. The site is accessed from the north via King Street West.

2.3 Property Ownership

The subject property is currently owned by Mr. Douglas William Wooding and Mr. Brian Douglas Wooding. Mr. Brian Wooding may be reached by telephone at 613-382-4571 or via cellular telephone at 613-545-7096.

The environmental investigative works is being conducted on behalf of 9695443 Canada Inc., as a potential property purchaser. The contact person for 9695443 Canada Inc. is Mr. Stef Ferrante, who may be reached via telephone at 613-889-3017 or via email at



stefandsteph@hotmail.com.

2.4 Current and Proposed Future Uses

Information obtained in the Phase One ESA, ASC-570 100r, indicated the most recent land use to be agricultural or other use, as described in Ontario Regulation 153/04.

Future use plans include a multi-unit residential development, an activity described under O Reg 153/04 as a residential use. A change of land use from agricultural or other use to residential use does not require a record of site condition (RSC), as described under section 168.3.1 of the Environmental Protection Act, R.S.O. 1990, c.E.19.

2.5 Applicable Site Condition Standard

In an effort to determine the applicable site condition standard, results from the soil and groundwater field sampling and chemical analysis were compared against the MECP O Reg 153/04^[1] (Record of Site Condition) as amended and the MECP 2011 standard *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*^[2] (herein referred to as the Land Use Standard).

MECP 2011 outlines nine different scenarios that properties may fall into, each offering slightly differing limiting criteria for soil and groundwater contaminants based on soil type, groundwater potability, environmental sensitivity, and proximity to bedrock, groundwater, or surface water. If the property falls within two or more scenarios, the site condition standards that are applicable are the most sensitive of the limiting criteria.

The subject property is located in an area municipally serviced for drinking water. During site activities, no drinking water wells were identified on site or within the proximal area surrounding the subject property. Future use plans involve connection into the local municipal drinking water system, for drinking water distribution. Based on this evidence, the property is considered to be comparable to a non-potable land use standard. Non potable standards are identified as odd-numbered tables (excluding Table 1) within the Land Use Standard.

The subject property was assessed for proximity to a surface water body or any areas of natural or scientific interest (ANSIs), as identified by the provincial Ministry of Natural Resources. Identification of these items on or within 30-metres of the subject property would require comparison to Table 9 of the Land Use Standard. The nearest surface water body was identified as a stormwater pond, located approximately 380-metres south of the site. Two provincially significant wetlands were identified within the study area (a 500-metre radius surrounding the subject property boundary). Each wetland was found to be approximately 300-metres or more from the subject property boundary. Based on these findings, the site is not considered to be affected by a surface water body or an

1 Ontario Regulation (O Reg) 153/04. October 1, 2004. (Amended to O Reg 511/09 December 29, 2009).

2 Standards for the Use Under Part XV.1 of the Environmental Protection Act. April 15, 2011 Ministry of Environment and Climate Change (MOECC), Soil, Ground Water and Sediment



area of natural significance.

The subject property was assessed for shallow soil property, denoted as having 2-metres or less soil cover or having groundwater levels within a 2-metre depth of the ground surface. Sites found to have shallow soil properties should be compared to Table 7 of the Land Use Standards. During drilling work, three (3) of the seven (7) boreholes were found to have less than 2 metres of overburden, indicating approximately 43% of the site may be characterized as having shallow soil property. This is sufficient to categorize the entire site as being of shallow soil property, therefore, the site is acceptable for comparison to **Table 7** "Generic Site Condition Standards for Shallow Soils in a Non-Potable Ground Water Condition" of the Land Use Standard.

Results of field testing for soil matrix indicated clay-like soils. Confirmation laboratory analysis on a representative soil sample identified 91% of the soil particles to be less than 0.075mm in diameter, indicating **fine-grained soil properties**. Fine-grained soil properties are identified as bracketed values within the Land Use Standard.

A representative soil sample was submitted for analysis of soil pH. Results of the soil pH analysis indicated soils are within the acceptable range pH of 5-9, indicating soils may be compared to the Land Use Standards.

As the site is planned for residential development, the soil and groundwater results were compared to MECP **Table 7** Residential/Parkland/Institutional property use standards.



3.0 BACKGROUND INFORMATION

3.1.1 Physical Setting

The site is located in a largely residential land use area of the Town of Gananoque. Commercial properties are found to the west (Gateway Motel), north (Colonial Resort and Spa) and east (former retail fuel outlets). Residential developments may be found to the immediate south, extending east and north. No areas of natural significance or water bodies are located on the site. The nearest water body is a stormwater management pond, located approximately 380-metres south. The nearest significant water body is the St. Lawrence River, located approximately 515 metres southeast of the site. A site location and site layout plan may be found in Figures 1 and 2, respectively, in Appendix A.

The topography of the site was generally observed to be flat. The local area is characterized by a southeast sloping grade. Neighbouring properties to the north and west are visibly at a higher elevation, as compared to the subject property, and the neighbouring property to the south visibly slopes away from the subject property. Neighbouring properties to the east appear at the same elevation as the subject property. A topographic map of the area is provided in Figure 5 in Appendix A.

No bedrock outcropping was observed on the site. Bedrock outcropping was observed west adjacent of the site, as an abrupt increase in elevation. Local bedrock geology is characterized by late felsic plutonic rocks, including granitic gneisses with metasedimentary xenoliths, migmatites, injection gneisses, and pegmatites³. The site location and site layout plans are shown on Figure 1 and 2 in Appendix A.

3.1.2 Past Investigations

A Phase One ESA was conducted on the site by ASC (ASC Report Reference No. ASC-570 100r, dated June 29, 2020) for 9695443 Canada Inc. The report identified two (2) Potentially Contaminating Activities (PCAs) within the Phase One Study Area (250 m radius of the property boundary), which led to one (1) Area of Potential Environmental Concern (APEC) on the subject property. In response, ASC recommended that a sampling and analytical testing program be carried out at the subject property in order to investigate the soil and groundwater quality within the identified APEC. Contaminants of potential concern included petroleum hydrocarbons (PHCs) F1-F4 fractions, metals, and benzene, toluene, ethylbenzene, and xylenes (collectively known as BTEX).

³ Ministry of Mines and Northern Affairs. 2018. Ontario Geological Survey. Google Earth Pro. Accessed online at <https://www.mndm.gov.on.ca/en/mines-and-minerals/applications/ogsearch/bedrock-geology>



4.0 SCOPE OF THE INVESTIGATION

4.1.1 Overview of Site Investigation

To address the APECs identified in the Phase One ESA, ASC conducted this Phase Two ESA consisting of a soil and groundwater investigation at strategic locations and depths, in an effort to capture environmental characteristics and determine if off-site PCAs have resulted in on-site impact.

The field investigations for the Phase Two ESA was carried out by ASC personnel from July 8, 2020 to August 27, 2020.

4.1.2 Media Investigated

The media investigated for the Phase Two ESA included soil and groundwater at the site. No sediment sampling was conducted, as no surface water body was identified on the site.

4.1.3 Phase One Conceptual Site Model

The Phase One ESA was conducted for the property at King Street West, in Gananoque, Ontario. The property encompasses an area of approximately 5000 m² (0.5 ha). The legal description of the site is described as: Part Lot 11, Concession 1, Parts 1-5, Plan 28R-5002, Parts 1 -3, Plan 28R-9972, Gananoque, County of Leeds and Grenville. A site location and site layout plan are shown on Figure 1 and 2 in Appendix A.

According to aerial photograph review, a right-of-way utility corridor was placed on the subject property in 1986, following the sale and severance of the east-adjacent motel. Therefore, the first developed use of the property was determined to be in **1986** for **agricultural or other use**. We understand that the property is not used for agricultural purposes, and the intended future site use is residential. We recommend comparable site condition standards for the subject property to be as residential/parkland land use.

Currently, the site is uninhabited, having no buildings or structures. Immediate adjacent land use consists largely of residential activity, with commercial land use located west, north, and east of the subject property. Commercial land use identified in the Phase One Study Area includes two active motels and two former retail fuel outlets.

Topographically, the Phase One Study Area slopes down from the northwest to the southeast, towards the St. Lawrence River located approximately 515 m southeast of the subject property. A topographic map of the area is provided in Figure 5 in Appendix A.

Bedrock geology at the site is characterized by Precambrian rocks of the Grenville Province, including a differential of late felsic plutonic rocks (e.g., alkalic granite) and clastic metasedimentary rocks (e.g., conglomerate and quartz). The Phase One study area is within the Precambrian Hydrogeological Unit. The physiography of the region can be described as Shallow Till and Rock Ridges (for additional information see Section 2.3.5 Well Records).



The Ministry of Environment, Conservation and Parks (MECP) online well records were consulted. Thirteen (13) wells identified within the Phase One Study Area. These included one (1) domestic well and twelve (12) monitoring wells. The well records indicate soil lithology composed of brown clay, silt, sand and cobbles. Bedrock encountered included sandstone and granite. Water was shown in the online MECP domestic well record to be encountered at a depth of approximately 18.6 m below ground surface.

No evidence of fill materials was evident during the site reconnaissance. Fill materials were noted as possibly evident during aerial photograph review, however, could not be confirmed due to poor photo resolution. Site reconnaissance efforts indicated site activity, in the form of visible stormwater drainage lines just below the ground surface. The current site owner is unaware of fill materials being brought to the subject property, as part of the installation. As no direct evidence has been obtained to indicate fill materials being brought to the subject property, it is not considered a potential environmental concern. Should a Phase Two be conducted for other reasons, we feel it prudent to include a cursory investigation into soil quality near the ground surface.

No surface water bodies are located on the subject property. The nearest surface water body is a residential stormwater management pond, approximately 315 m south of the subject property. The St. Lawrence River is located approximately 515 m southeast of the subject property.

No sources of actual contamination were identified on the subject property during the records review, site reconnaissance or interviews.

Interview with Mr. Brian Wooding, current part property owner, identified the former existence of two retail fuel outlets to the east of the subject property. He is aware of some environmental investigative work conducted at the immediate east-adjacent property, a former residential property, as a result of potential off-site transmission of gasoline from the retail fuel outlet.

Mr. Stefano Ferrante, potential subject property buyer, was also contacted regarding his knowledge of the subject property. He is aware of a historic investigation into a potential oil release at a neighbouring property, as a result of a former commercial fuel station to the east of the subject property.

No PCAs were identified on the subject property. Two (2) off-site PCAs were identified within the Phase One Study Area. These PCAs include:

(28) Gasoline and Associated Products Storage in Fixed Tanks

- According to site reconnaissance, interview and aerial photograph review, a retail fuel outlet was formerly present 25 m east and cross gradient of the subject property (municipal address 745 King Street West). The current property owner is aware of environmental investigative work at the east adjacent residential property



(755 King Street West) between the former gasoline station and the subject property, due to possible gasoline transmission.

(28) Gasoline and Associated Products Storage in Fixed Tanks

- According to site reconnaissance, interview and aerial photograph review, a retail fuel outlet was formerly present 30 m northeast and cross gradient of the subject property (municipal address 740 King Street West).

Off-site environmental concerns arising from former retail fuel outlets located east and northeast of the subject property were identified. Site reconnaissance work, aerial photograph and satellite image review and interviews identified environmental investigation at the east adjacent residential property. These properties have been determined to be cross-gradient from the subject property, however based on their proximity to the subject property and the known transmissivity of the presumed contaminant of potential concern (i.e., fuel-grade petroleum), the subject property may be affected by contaminant transport by capillary action.

Underground utility trenches for wastewater collection, drinking water distribution and natural gas may have also influenced and created preferential pathways the potential contamination migration of these off-site PCAs.

For these reasons, these PCAs are considered to have contributed towards an APEC at the subject property.

Table 1. APEC table for King St. West, Gananoque.

APEC	PCA	Details
APEC	<i>(28) Gasoline and Associated Products Storage in Fixed Tanks</i>	Former retail fuel outlets located east (municipal address 745 King Street West) and northeast (municipal address 740 King Street West) of the subject property. Former environmental investigation efforts identified at the east adjacent residential property (municipal address 755 King Street West), and former retail fuel outlet (745 King Street West).

4.1.4 Deviations from Sampling and Analysis Plan

No deviations from the SAP were identified.

4.1.5 Impediments

The Phase Two property was accessible at the time of the investigations and no physical impediments were encountered during the field investigations.



5.0 INVESTIGATION METHOD

5.1.1 General

This section of the report describes the various investigation methods used in the Phase Two ESA. Investigation methods follow standard operating procedures and generally acceptable industry standards. Investigation methods utilized in this Phase Two ESA include:

- Machine drilling using a CME truck-mounted drill rig;
- Soil sampling using a split-spoon sampler, dedicated field equipment, and laboratory-prepared jars;
- Field screening of soils using CGI, as well as visual and olfactory indicators;
- Monitoring well installation and groundwater monitoring;
- Groundwater field measurements of combustible gas build-up, using a CGI, pH, and temperature;
- Groundwater sampling using low-flow sampling techniques and dedicated field equipment;
- Analytical testing using an accredited laboratory;
- Management of residual soil cuttings; and
- Elevation surveying;

5.1.2 Drilling and Excavating

Seven (7) boreholes, three (3) of which were equipped with monitoring wells, were advanced at strategic locations by G.E.T. Drilling Ltd., following confirmation of underground service clearances and approval of the Client on July 8, 2020.

Boreholes were advanced to intersect the groundwater (at depths of approximately 0.6 – 4.9 metres (m) below ground surface) or to refusal on bedrock (where no monitoring well was planned). Drilling was conducted using a split-spoon sampler, solid-stem auger and air hammer. Borehole logs may be found in Appendix B.

The following borehole locations were selected following communication and agreement with Client:

- Monitoring Well **BH1 (MW1)**- advanced at the south-eastern edge of the property to assess potential subsurface contamination associated with the APEC resulting from the former retail fuel outlet east of the subject property.
- Monitoring Well **BH2 (MW2)** - advanced at the north-western edge of the property, to assess background soil and groundwater parameters at the site.
- Monitoring Well **BH3 (MW3)** – advanced along the southwestern corner of the property to assess background soil and groundwater parameters at the site.
- Borehole **BH4, BH5 and BH6** advanced in the central portion of the property to assess depth to bedrock.
- Borehole **BH7** - advanced in the eastern edge of the property to assess potential subsurface contamination associated with the APEC resulting from the former

retail fuel outlet east of the subject property.

5.1.3 Soil: Sampling

Soil samples were collected from each borehole during drilling activities using a 50-mm diameter split-spoon sampler. Samples were collected under the Ministry of Environment, Conservation and Parks (MECP) 2004 *Protocol for Analytical Methods Used in the Assessment of Properties*. Soil samples were collected using sterile sampling equipment, and were placed in pre-labelled, sterile laboratory jars. Samples were stored in a cooler on ice until delivered to an accredited laboratory for chemical analysis.

No olfactory signs of contamination were noted during drilling. Reusable sampling equipment was decontaminated between samples usingalconox detergent and rinsing with distilled water.

A minimum of one soil sample representing 'worst case' conditions was selected from boreholes **BH1(MW)**, **BH2(MW)**, **BH3(MW)** and **BH7** to assess in identifying environmental concerns. The samples were submitted to an accredited laboratory for analyses of PHC F1-F4 fractions, BTEX and metals. One representative sample was submitted for pH and grain size analysis.

Borehole locations may be found on Figure 6 in Appendix A. Soil lithology encountered in boreholes during drilling is outlined in the borehole logs in Appendix B.

5.1.4 Field Screening Measurements

A portion of each soil core was placed in a sealed Ziploc plastic bag and allowed to reach ambient temperature prior to field screening, using an RKI Eagle Combustible Gas Indicator (CGI). The measurements were made by inserting the instrument's probe into the plastic bag while manipulating the sample to ensure volatilization of the soil gases. These readings provide a real-time indication of the relative concentration of combustible vapors encountered in the subsurface during drilling and are used to aid in the assessment of the 'worst case' soil samples, for laboratory analysis selection.

The field screening measurements, in parts per million (ppm), are presented on the borehole logs in Appendix B.

5.1.5 Groundwater Monitoring Well Installation

Monitoring wells were installed within three (3) of the drilled boreholes at the property, to assess potential groundwater concerns. Monitoring wells were constructed using a 38-mm diameter slotted screen and solid plastic pipe. Silica sand was placed to approximately 0.3 m above the screened section and a bentonite seal was placed above the sand in accordance with standard MECP well construction methods. The three (3) monitoring wells were completed to grade and secured with a protective stick-up metal well casing. One (1) existing monitoring well was present on site on the north-eastern property boundary and was used for groundwater level monitoring and analysis (MW32).



Wells were GPS located and surveyed using a measurable and recoverable benchmark. Monitoring well locations are shown on Figure 6 in Appendix A. Monitoring well details are presented on the borehole logs in Appendix B.

5.1.6 Field Measurements of Groundwater Quality Parameters

The installed monitoring wells (including the existing on-site monitoring well) were developed to remove fine sediment particles potentially lodged in the sand pack and well screen to enhance hydraulic response with the surrounding formation water. Low density polyethylene tubing and a Spectra Field Pro peristaltic low-flow pump were used for well development and groundwater sampling.

Well development continued until field measurements taken using a Horiba U-52-2 Water Quality Meter stabilized. Water quality parameters collected in field included pH, temperature, conductivity (or specific conductance), the oxygen/reduction potential, and turbidity. Well development details were documented on a well development log sheet and may be found in Appendix D.

5.1.7 Groundwater Sampling

ASC personnel conducted groundwater monitoring and sampling on July 14, 2020.

Groundwater sampling was conducted by filling laboratory prepared bottles, following the stabilization of field measurements during low flow pumping of the monitoring wells. During the groundwater sampling, groundwater samples proposed for analysis of dissolved metals were field filtered using dedicated 0.45-micron Waterra filters to remove any sediment in the groundwater samples as required by the Analytical Protocol.

A graduated static level meter was used to record water depth below surface grade. The static water levels were measured to range from approximately 1.7 – 3.0 metres below the top of the well pipe at the time of initial sampling.

A combustible gas indicator (CGI) was used to measure vapour concentrations during the field work. Measurements read no response for the monitoring wells **MW1**, **MW2** and **MW32**. A response of 160 ppm was recorded for **MW3**.

No visual or olfactory signs of contamination were identified during sampling of monitoring wells. One groundwater sample from each monitoring well and one duplicate sample was collected directly into laboratory-prepared bottles and submitted under chain-of-custody protocol to a CALA-certified laboratory (Paracel Laboratories Ltd.). Groundwater samples were stored in a cooler on ice and submitted for analyses of PHC F1-F4, BTEX, and metals.

5.1.8 Sediment: Sampling

No sediment was encountered on the subject property. Sediment samples were not included as part of the scope for the Phase Two ESA.

5.1.9 Analytical Testing

Paracel Laboratories Ltd. performed chemical analysis on soil and groundwater samples collected from boreholes/monitoring wells at the site. Paracel is an accredited laboratory under the Standards Council of Canada (SCC) and the Canadian Association for Laboratory Accreditation (CALA), in accordance with the international standard ISO/IEC 17025:2005 – General Requirements for the Competence of Testing and Calibration Laboratories. Paracel is accredited for all parameters required under Ontario Regulation 153/04 – Record of Site Condition.

5.1.10 Residue Management Procedures

The residue materials produced during the soil and groundwater sampling programs consisted of soil cuttings from drilling activities. The soil cuttings generated from the drilling program were placed in labeled, sealed drums and remained on site until soil verification analysis indicated whether off-site management was required.

5.1.11 Elevation Surveying

The elevations of the boreholes and monitoring wells were surveyed by ASC. The elevations were related to a measurable and recoverable temporary benchmark, the streetlight located at the street at the northeast edge of the subject property. The temporary benchmark was set to 100.00 metres above sea level (masl).

5.1.12 Quality Assurance and Quality Control

The soil and groundwater quality assurance and quality control program included a duplicate sample with laboratory submission, as per O Reg 153/04.

A duplicate soil sample was analysed by Paracel laboratories, collected from **BH3 (MW)**. Results of duplicate the soil sample analyses were observed to be consistent with the original analyses, as shown in tabulated laboratory results and certificates of analysis, included in Appendix C and F, respectively.

A duplicate groundwater sample was collected from monitoring well **BH1(MW)** during groundwater sampling. Results of duplicate groundwater sample analyses were observed to be consistent with the original analyses, as shown in tabulated laboratory results and certificates of analysis, included in Appendix C and F, respectively. Based on these results, the laboratory analytical results from this investigation can be interpreted with confidence.

6.0 REVIEW AND EVALUATION

6.1.1 Geology

The detailed soil stratigraphy encountered in each borehole is provided on the borehole logs in Appendix B. Boundaries of soil indicated on the log sheets are intended to reflect transition zones for the purpose of environmental assessment and should not be interpreted as exact planes of geological change.

The general stratigraphy at the site, as observed in the boreholes, consists of **clayey silt** to varying depths of approximately 0.6 to 2.6 metres. Beyond the clayey silt, was **granite bedrock** to the maximum investigated depth of approximately 4.9 metres below ground surface (mbgs). Grey silty clay was identified in the south-western portion of the property at depths of approximately 1.5 mbgs, extending beyond 4.5 mbgs.

Bedrock was encountered within 2 metres of surface grade in three (3) of the seven (7) boreholes, or approximately 43% of the site.

The approximate locations of the boreholes and monitoring wells are shown on Figure 6 in Appendix A. The locations of cross-sections for soil stratigraphy at the Phase Two Property and Geological Cross-Sections A-A', and B-B' are shown on Figures 9 and 10 in Appendix A.

6.1.2 Groundwater: Elevations and Flow Direction

Groundwater infiltration was encountered in each monitoring wells during the drilling investigation between approximately 2.1 - 3.3 mbgs. Monitoring well screens were installed to intersect the top of the groundwater table in each borehole, with respect to indications of water-bearing soils. Groundwater was also identified in the existing monitoring well (MW32).

One monitoring well (MW2) was found to refuse on bedrock before intersecting with the groundwater table. This well was advanced into bedrock until groundwater infiltration was evident and screened interval was installed within the bedrock.

The monitoring wells were surveyed by ASC personnel and static groundwater levels measured on July 14, 2020, to permit the inference of groundwater elevations (see Table 2 below). The static depth of water was collected using a Heron Instruments Inc. dipper-T water level metre. The measured water elevations indicate that inferred onsite groundwater flow is generally toward the south-east. A hydrogeological cross section may be found in Figure 8 in Appendix A.

Table 2. Groundwater elevations, collected on July 14, 2020.

Well I.D.	Top of Pipe Elevation (m)	Water Depth (m)	Groundwater Elevation (m)	CGI Readings (ppm)
BH1 (MW)	100.729	2.99	97.739	NR
BH2 (MW)	101.449	2.49	98.579	NR
BH3 (MW)	101.069	2.91	98.159	160
MW32	99.49	1.67	97.820	NR
Notes:	1. Groundwater elevations are measured from the top of the PVC well pipe.			
	2. Elevations referenced to a temporary benchmark TBM1 (100.00m) located at the top of a light post at the northeast corner of the property at King Street West.			
	3. Groundwater elevations are subject to seasonal fluctuations.			
	4. NR – No Response.			

6.1.3 Groundwater: Hydraulic Gradients

The hydraulic gradient is measured as the change in groundwater elevation over distance travelled. It is measured as vertical metres over horizontal metres (rise over run) (metres/metres). The hydraulic gradient at the subject property can be measured from groundwater elevation data collected from overburden monitoring wells, MW1, MW3, and MW32. MW2 was excluded, as the well was screened into bedrock and it may not represent a similar hydraulic gradient.

The hydraulic gradient at the subject property was found to be 0.0067 m/m in the easterly direction and 0.0084 m/m in the southerly direction. Overall groundwater direction was found to flow toward the southeast.

6.1.4 Soil Texture

One (1) representative soil sample was submitted for grain size analysis. Laboratory analysis of soil grain size determined that 91% of the soil sample was retained on a 75 µm sieve. Based on this analysis, the soil texture was assessed to be medium/fine textured. A copy of the laboratory analysis is included in Appendix F.

6.1.5 Soil Field Screening

The combustible gas concentrations were measured in-field using a combustible gas indicator (CGI) on a portion of each soil sample collected. Readings of combustible gases ranged from 0 ppm to 160 ppm, with the greatest values identified in BH1.

6.1.6 Soil Quality

Soil samples collected and analyzed from boreholes **BH1**, **BH2**, and **BH7** were submitted for laboratory analysis of metals, PHCs, and BTEX and found to be within referenced MECP 2011 **Table 7** residential site condition standards for parameters analysed.

Results of soil sample analyses in **BH3-SS2** (located at the south-western corner of the subject property at a depth of 0.7 – 1.5 m) identified slightly elevated concentrations of parameters barium and cobalt (see Table 3, below).

Table 3. Parameters identified in soil sample BH3-SS2 to be above referenced Table 7 soil criteria for residential land use.

Sample ID	Borehole Location	Depth (mbgs)	Exceeding Parameters	Concentration	Units	MECP Table 7 Residential SCS
BH3-SS2	MW3	0.7-1.5	Barium	463	µg/g	390
			Cobalt	23.8	µg/g	22

Barium

Elevated levels of certain metal parameters have commonly been identified within soils in the Kingston area. An informal guideline published by the Kingston District office of the Ministry of Environment, Conservation and Parks (“Naturally occurring substances”) lists barium as naturally occurring within clay and clay-containing soils in the Kingston Area.

The local MECP office will support a case for naturally occurring high barium if the consultant can provide the standard justifications, including barium was not identified as a contaminant of concern in any PCA in the area, concentrations identified are within a reasonable range of 300-550 µg/g, and some comparisons to conditions at nearby sites (see email from Kingston District Engineer in Appendix E).

The soil collected and analyzed from BH3-SS2 may be described as grey silty clay, having no identifiable characteristics of indications of contamination. Grey silty clay was not identified in other areas of the subject property and concentrations of barium were found to be within a reasonable range (<550µg/g). Additionally, conclusions of the Phase One ESA did not identify barium as a potential COPC, nor was it associated with either of the two off-site PCAs.

Based on the lack of indication for elevated barium at the site, the presence of silty clay soils, and predominance of naturally occurring barium within the geographic area, it is believed the concentration of barium identified in BH3-SS2 is naturally occurring and not an exceedance of the subject property. **Based on this understanding, concentrations of barium are found to be within the applicable site condition standards.**

Cobalt

A 1976 review of background levels of cobalt in Ontario soils identified a range of 1 to 65.8 ppm, with a mean of 4.6 +/- 4.3 ppm⁴. Environment Canada indicated cobalt may be found in the upper continental crust in concentrations of 0.1 to 110 ppm, with an average of 25 ppm. As no previous indication for elevated cobalt concentration was identified, it was determined to be an anomalous exceedance and soil removal and off-site disposal

4 Frank R., Ishida, K., and Suda, P., 1976. Metals in Agricultural Soils of Ontario. Provincial Pesticide Residue Testing Laboratories, Ontario Ministry of Agriculture and Food. Accessed Online.



of the affected area was recommended.

In an effort to determine the extent of elevated cobalt parameter, two additional soil samples representing the upper and lower extents of the respective borehole (inclusive of **BH3-SS1** and **BH3-SS3** at depths of 0 – 0.7 m and 1.5 – 2.3 m) were submitted for laboratory analysis of metals. Results of laboratory analysis of these soils were found to be within site condition standards, indicating the metals exceedance to be limited to the investigated area at a depth of 0.7-1.5 metres below ground surface.

Following removal and decommissioning of MW3, soils in the investigated area were removed using a mini excavator and collected in a 60-yard roll-off bin, for off-site disposal. Soil excavation was conducted on August 27, 2020 by Morven Construction, under supervision of ASC personnel. An excavation area encompassing a volume of 45 cubic metres was collected and stored for off-site disposal. Verification soil sampling was conducted on the excavated area, following soil removal. Nine soil samples, representing four base and five sidewall samples were collected.

Following O Reg 153/04 requirements, five samples representing two base and three sidewall samples were submitted for laboratory analysis of metals. Results of laboratory analysis indicated the soils collected from the excavated area were within allowable site condition standards. **On this basis, soils remaining on site are considered to be within allowable site condition standards.** An overview of the excavation area and sample collection locations may be found in Figures 11 and 12 in Appendix A. Soil sample analyses results are presented in Appendix C. Analytical laboratory certificates are included in Appendix F.

Soils collected into the 60-yard roll-off bin were transported to a local licensed landfill for off-site disposal.

6.1.7 Groundwater Quality

Representative groundwater samples were collected from **BH1(MW1)**, **BH2(MW2)**, **BH3(MW3)** and **MW32** using low-flow sampling techniques. No visual or olfactory signs of contamination were noted during sampling of monitoring wells. Groundwater samples were submitted to an accredited laboratory for analysis of metals, PHCs (F1-F4 fractions) and BTEX.

During the sampling, groundwater samples proposed for analysis of dissolved metals were field filtered using dedicated 0.45-micron Waterra filters to remove any sediment in the groundwater samples as required by the Analytical Protocol.

Results of groundwater sample analysis of the four monitoring wells on the site were found to be within referenced MECP **Table 7** Residential/Parkland/ Institutional property use site condition standards. Groundwater sample analyses results are presented in Appendix C and analytical laboratory certificates are included in Appendix F.



6.1.8 Sediment Quality

As no surface water body exists on site, the Phase Two ESA did not include sediment sampling.

6.1.9 Quality Assurance and Control Results

The QA/QC samples for this Phase Two ESA investigation included one (1) laboratory duplicate for soil and one (1) laboratory duplicate for groundwater. This is consistent with O Reg 153/04 requirements of 10% duplicate sample collection and submission.

The purpose of the duplicate samples is to measure the precision and accuracy of the field and laboratory collection and analysis methodology. The precision is evaluated in terms of the relative percent difference (RPD). The Relative Percent Difference (RPD) for samples is calculated using the following formula:

$$RPD = \left\{ (A - B) \div \left[\frac{(A+B)}{2} \right] \right\} \times 100\%$$

Where:

A = concentration of compound in the primary sample, B = concentration of compound in the duplicate sample

Note that the RPD is calculated only for result pairs with concentrations greater than 5 times of the method detection limit in both samples, and RPDs are not calculated where results are below the laboratory minimum detection limits for sample pair.

O Reg 153/04 indicates the acceptable RPD limits for various analyzed groups are listed in the following table:

Analyzed Group	Recommended RPD in Soil	Recommended RPD in Groundwater
Metals	30%	20%

The RPDs for arsenic, barium, beryllium, chromium, cobalt, copper, lead, nickel, vanadium and zinc concentrations in soil between the primary and duplicate samples were calculated at less than recommended RPD listed above. The RPDs for remaining reported concentrations were not calculated considering that the results were below the laboratory minimum method detection limits or lesser than 5 times of the method detection limits in both samples. No other QA/QC concerns were noted.

The RPDs for barium, boron, cobalt, nickel, sodium, uranium and vanadium concentrations in groundwater between the primary and duplicate sample was calculated at less than recommended RPD listed above.

Laboratory quality control limits for duplicate, method blank, method blank spike, matrix spike and surrogate recoveries were within the acceptable limits. Samples were handled in accordance with the Analytical Protocol, with respect to preservation methods, storage requirements or container type without any exception. Holding times were met for all



samples. Based on this and the calculated RPDs for duplicate samples, the laboratory results are taken as accurate.



7.0 CONCLUSIONS

Based on the results of the Phase Two ESA, we offer the following comments:

- No areas of natural significance are located on the site or within 30 metres of the site. Two provincially significant wetlands were identified within the study area (a 500-metre radius surrounding the subject property boundary). Each wetland was found to be approximately 300-metres or more from the subject property boundary.
- No surface water bodies are located on the site. The nearest surface water body was identified as a stormwater pond, located approximately 380-metres south of the site. The nearest significant water body is the St. Lawrence River located approximately 515 m southeast of the site.
- The subject property is located in a non-potable area of the Town of Gananoque.
- Based on current site conditions, the site is acceptable for comparison to **Table 7**, *Generic Site condition standards for shallow soils in a non-potable groundwater condition*, of the MECP standard *Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act*.
- Based on identified anticipated future site use, laboratory results were compared to MECP **Table 7 Residential/Parkland/Institutional** property use site condition standards.
- Seven (7) boreholes were advanced at strategic locations at the subject property (denoted BH1-BH7). No visual or olfactory evidence of contamination were noted during soil sample field collection.
- Soil samples were field analyzed for combustible gasses using a CGI, in an effort to determine the 'worst case' samples. Results indicated combustible gas values to be 0 to 160 ppm, with the highest values found in BH1.
- Soil lithology in the investigated areas (boreholes) generally consisted of a mixture of sandy silt overlaying granite bedrock. One borehole, located in the southwestern portion of the site, was found to have sandy silt overlaying silty clay to extent of borehole.
- Bedrock was encountered at depths of approximately 0.6 – 2.6 metres below ground surface (mbgs) with three (3) of the seven (7) boreholes (~43% of the site) advanced to bedrock within 2 metres. One borehole (BH3) located in the southwestern portion of the site extended to 4.5 mbgs and did not encounter bedrock.
- Four soil samples, representing boreholes **BH1(MW)**, **BH2(MW)**, **BH3(MW)** and **BH7** were submitted for analysis of PHC F1-F4 fractions, BTEX and metals. One representative sample was submitted for pH and grain size analysis.
- Results of soil sample analysis indicated the soils were acceptable for comparison to fine-grained soil criteria.
- Results of soil sample analysis indicate the pH to be within the acceptable range of 5-9.
- Results of soil sample analysis indicated an elevated concentration of cobalt within BH3 at a depth of 0.7-1.5 metres below ground surface. As a result, approximately 45 cubic metres of soils within this area were removed and transported off-site for disposal in a landfill. Verification sampling of the remaining excavated area

indicated remaining soils are within allowable site condition standards.

- **Based on the results of soil analyses at locations investigated, soils at the subject property are within allowable site condition standards for parameters analyzed.**
- Three monitoring wells were installed in boreholes BH1 (MW1), BH2 (MW2), and BH3 (MW3). One existing monitoring well was on site, MW32.
- Water depths in the overburden monitoring wells (MW1, MW3, and MW32) were collected and compared against measured elevation survey results, to capture the depth to groundwater relative to surface elevation.
- The calculated well water elevations indicate the inferred groundwater flow is generally toward the south-east. Groundwater samples were collected from each of the four monitoring wells using low flow sampling techniques and submitted for laboratory analysis of metals, PHCs (F1-F4 fractions), and BTEX).
- **Results of groundwater sample analyses were found to be within referenced MECP Table 7 residential property use site condition standards.**
- Based on soil and groundwater investigation and analysis for the areas tested, the subject property meets referenced MECP Table 7 residential land use site condition standards.
- It is not believed that climatic or meteorological conditions have influenced the distribution or migration of potential contaminants in the soil or groundwater. No uncertainties that may affect the validity of the conceptual site model were identified during the Phase Two ESA.



8.0 STUDY LIMITATIONS

ASC Environmental Inc. was retained by *9695443 Canada Inc.* (the Client) to undertake a Phase Two Environmental Site Assessment of the site located at the south side of King Street West, Gananoque, Ontario.

The scope of work for this Phase Two ESA included: an initial site walkthrough visit, confirmation of underground clearances, borehole drilling and installation of three (3) monitoring wells, soil and groundwater sampling, remedial work and confirmatory soil sampling, and presentation of results in a written report.

The Phase Two ESA was conducted following the Ontario Regulation 153/04 *Records of Site Condition – Part XV.1 of the Act* with reference to the Canadian Standards Association (CSA) Z769-00 (Reaffirmed in 2013) Phase Two Environmental Site Assessment document.

The findings reported in this document are based on the tasks completed by *ASC Environmental Inc.* under the mutually agreed scope of work at the areas tested. Professional judgment, experience with similar investigations, and available data collected within the scope of work form the basis for this report. *ASC Environmental Inc.* has prepared this report using information understood to be factual and correct and shall not be responsible for conditions arising from information or facts that were inaccurate, concealed, or not fully disclosed at the time of investigation.

ASC Environmental Inc. makes no other representations whatsoever, including those concerning the legal significance of its findings, or as to other legal matters touched on in this report, including, but not limited to, ownership of any property, or the application of any law to the facts set forth herein. With respect to regulatory compliance issues, regulatory statutes are subject to interpretation and these interpretations may change over time.

ASC Environmental Inc. is not able to represent that the site or adjoining lands contain no hazardous waste, oil, or other latent condition beyond that detected or observed at the locations investigated. The possibility exists for hazardous substances to migrate through surface water, air, soil, or groundwater. The ability to accurately address the environmental risk associated with these media is beyond the scope of this assessment. This document has been prepared by *ASC Environmental Inc.* for the sole use of the *9695443 Canada Inc.* and *assignees* to assess potential hazardous substance impacts related to the site. Unauthorized reuse of this document for other purposes, or by any other party, or any reliance on or decisions to be made based on it, are the responsibility of the third parties. If additional parties require reliance on this report, written authorization from *ASC Environmental Inc.* will be required. Such reliance will only be provided by *ASC Environmental Inc.* following written authorization from the *9695443 Canada Inc.* *ASC Environmental Inc.* disclaims responsibility of consequential financial effects on transactions or property values, or requirements for follow-up actions and costs. No other warranties are implied or expressed.



October 1, 2020

ASC Environmental Inc. will not be responsible for any consequential or indirect damages. *ASC Environmental Inc.* will only be liable for damages resulting from negligence of *ASC Environmental Inc.* *ASC Environmental Inc.* will not be liable for any losses or damage if the Client has failed, within a period of two years following the date upon which the claim is discovered (Claim Period), to commence legal proceedings against *ASC Environmental Inc.* to recover such losses or damage unless the laws of the jurisdiction which govern the Claim Period which is applicable to such claim provides that the application Claim Period is greater than two years and cannot be abridged by the contract between the Client and *ASC Environmental Inc.*, in which case the Claim Period shall be deemed to be extended by the shortest additional period which results in this provision being legally enforceable.

We thank you for the opportunity to work with you on this project, and trust that this report meets your satisfaction.



ASC Environmental Inc.
1305 Princess Street,
Kingston, ON K7M 3E3
Tel: (613) 634- 5596

9.0 REFERENCES

- [1] CAN/CSA-Z769-00 (R2013). Phase II Environmental Site Assessment. CSA Group. National Standards of Canada.
- [2] MECP 2011. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. Ministry of the Environment.
- [3] Canadian Standards Association (CSA) Standard Z769 (R2013) *Phase II Environmental Site Assessment*.
- [4] Ministry of Environment, Conservation and Parks (MECP) 2004. Protocol for Analytical Methods Used in the Assessment of Properties. Ministry of Environment.
- [5] ASC Environmental Inc. 2020. Phase One Environmental Site Assessment – King Street West, Gananoque, Ontario ASC-570 100r.
- [6] RRO 903/90: Wells
- [7] O Reg 153/04: Records of Site Condition.
- [8] Google Maps. (2020). Internet: <https://www.google.ca/maps>

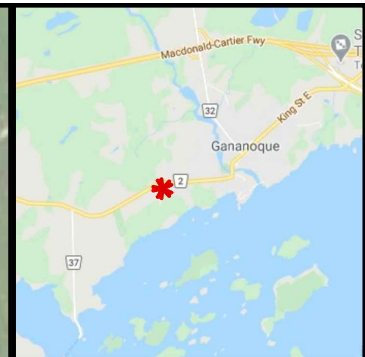
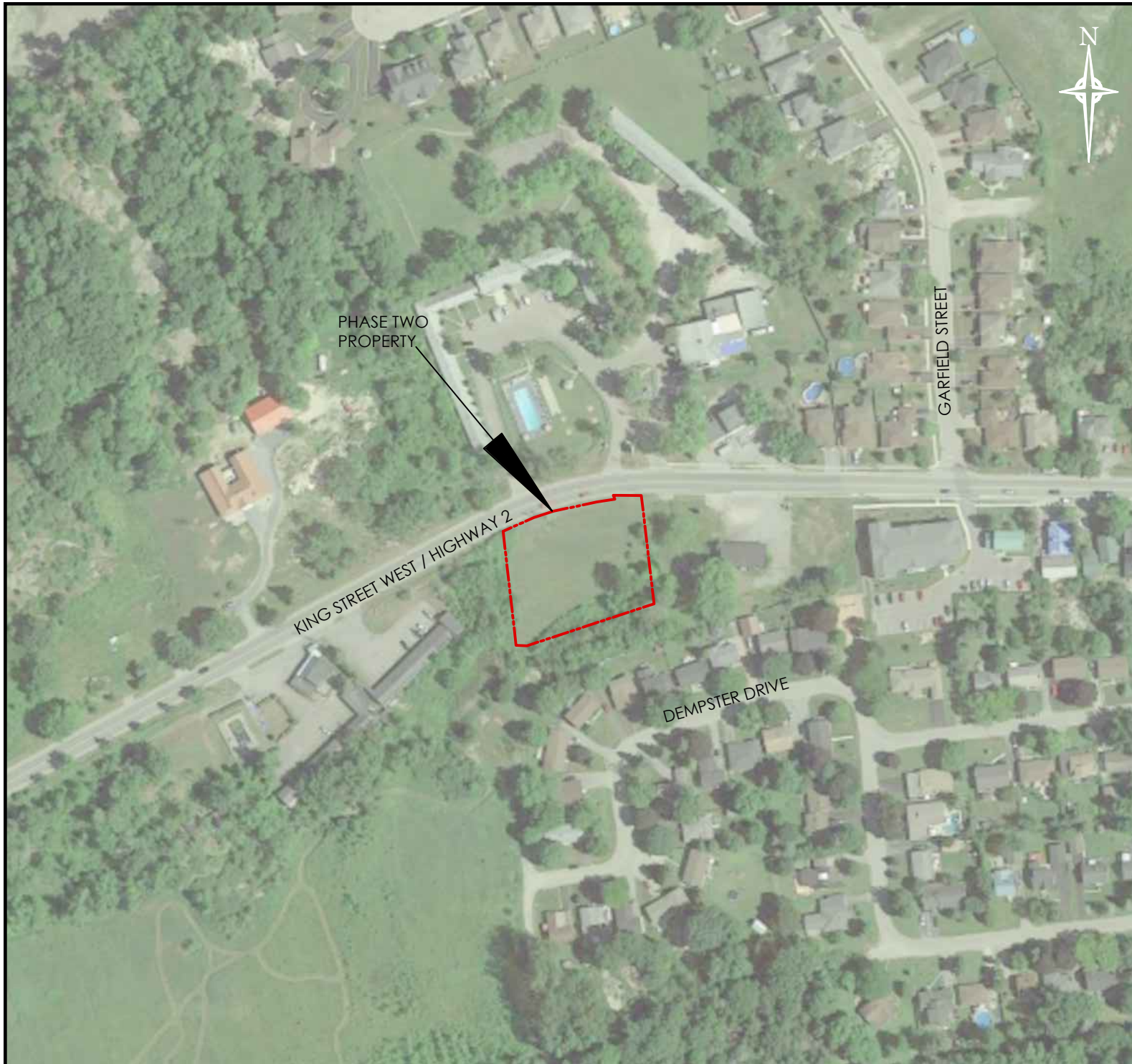


APPENDIX A


Figures




ASC Environmental Inc.
1305 Princess Street,
Kingston, ON K7M 3E3
Tel: (613) 634- 5596



LEGEND

 APPROXIMATE PROPERTY LOCATION

 APPROXIMATE SUBJECT PROPERTY


DRAWING TITLE
Site Location Plan

FIGURE NO. 01	DRAWN BY S. McCallum
-------------------------	--------------------------------

PROJECT
Phase Two Environmental Site Assessment

CLIENT
9695443 Canada Inc.

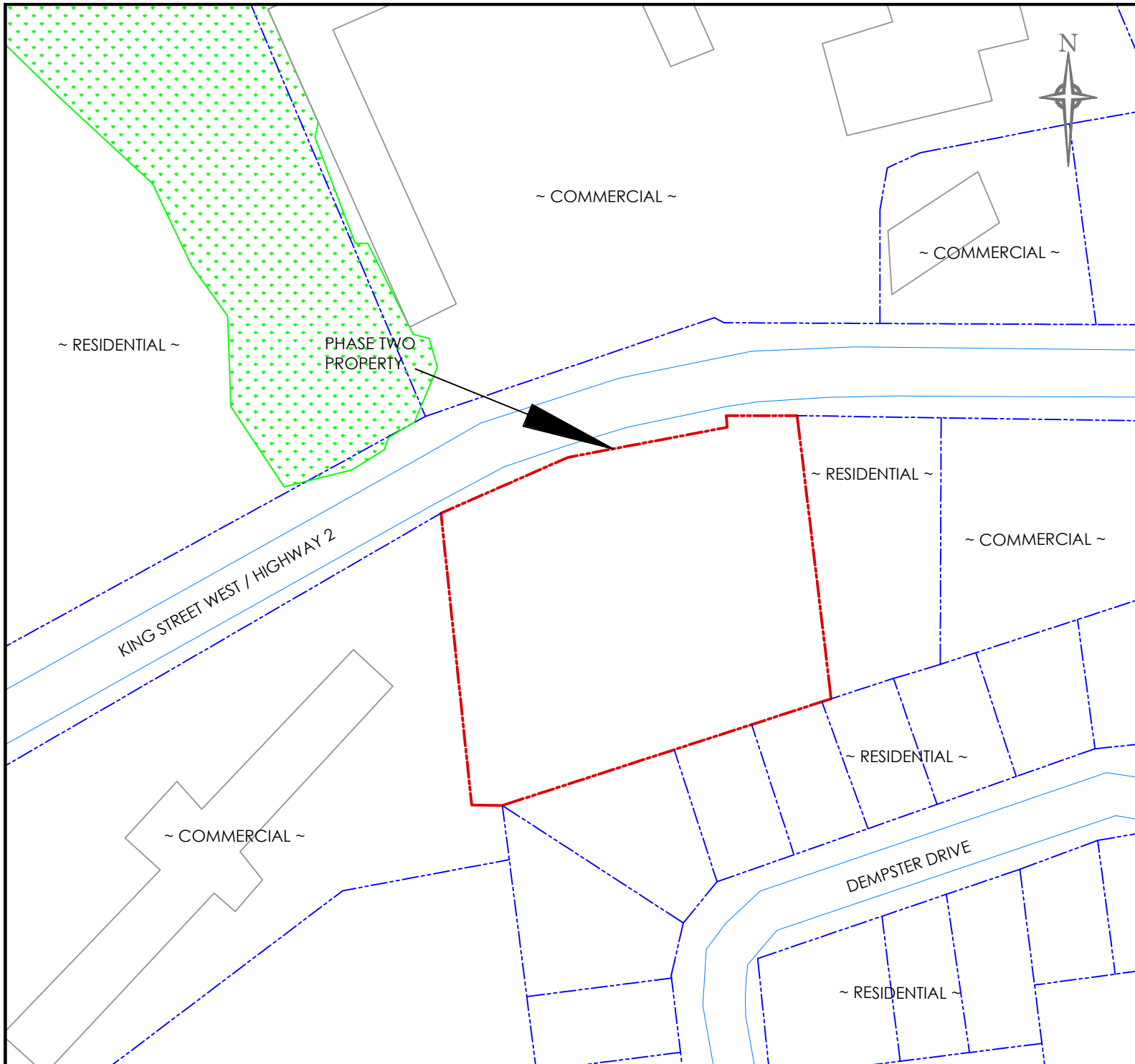
LOCATION
King Street West,
Gananoque, Ontario

PROJECT NO. ASC-570	SCALE: 
DATE 04-June-2020	



1305 Princess St
Kingston, ON, K7M 3E3

(613)634-5596
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LEGEND

- SUBJECT PROPERTY
- PROPERTY LINE
- EDGE OF ROAD
- BUILDING
- TREELINE

DRAWING TITLE
Site Layout Plan

FIGURE NO. 02	DRAWN BY S. Johnston
-------------------------	--------------------------------

PROJECT
Phase Two Environmental Site Assessment

CLIENT
9695443 Canada Inc.

LOCATION
King Street West,
Gananoque, Ontario

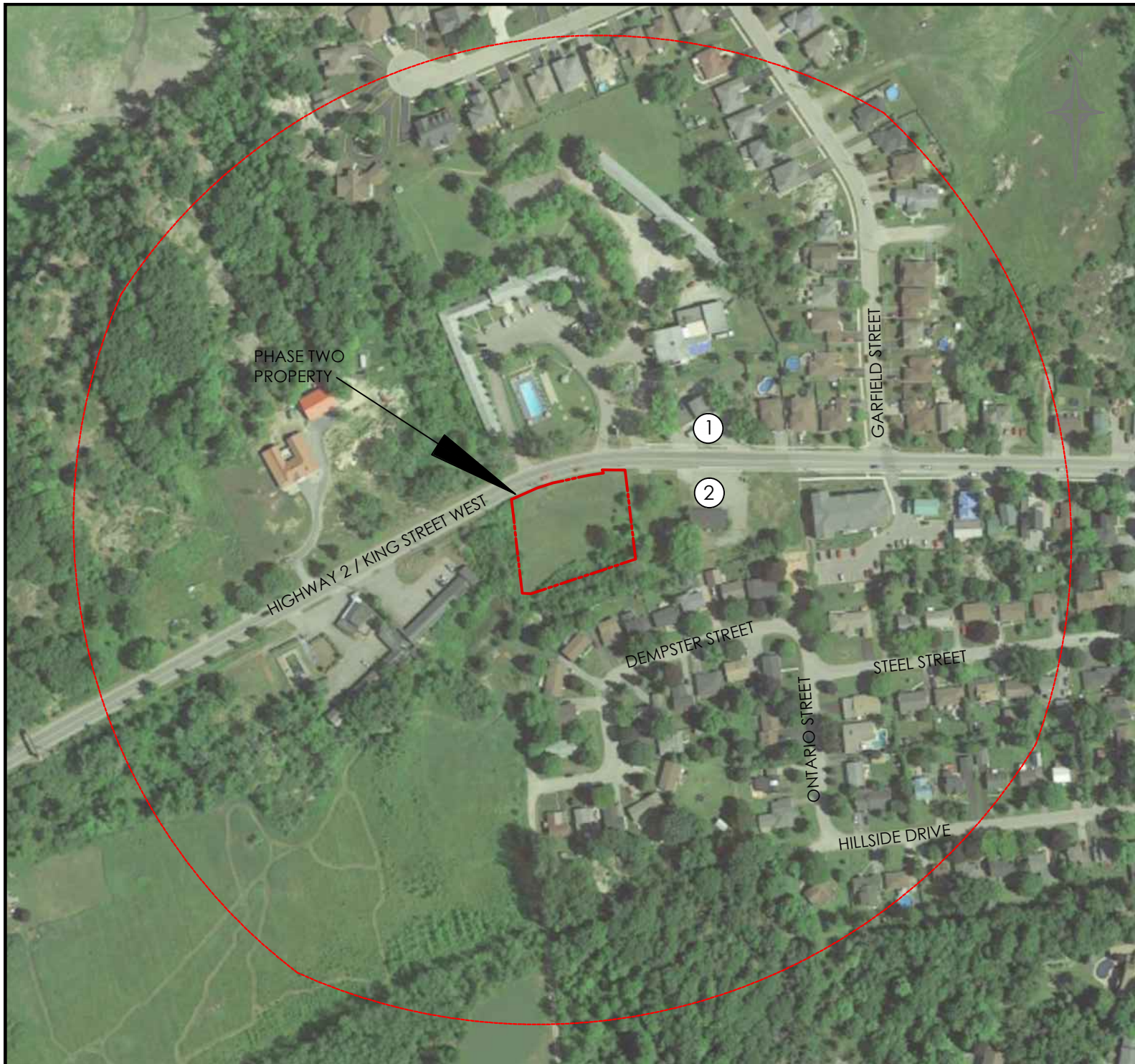
PROJECT NO. ASC-570	SCALE: 0 METRES 22
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DATE
04-June-2020

ASC ENVIRONMENTAL

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Kingston, ON, K7M 3E3

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LEGEND

----- SUBJECT PROPERTY

----- PHASE ONE STUDY AREA

POTENTIALLY CONTAMINATING ACTIVITY

1. 740 KING STREET WEST, FORMER RETAIL OUTLET
2. 745 KING STREET WEST, FORMER RETAIL FUEL OUTLET

DRAWING TITLE
250 Metre Study Area

FIGURE NO. 03	DRAWN BY S. Johnston
-------------------------	--------------------------------

PROJECT
Phase Two Environmental Site Assessment

CLIENT
9695443 Canada Inc.

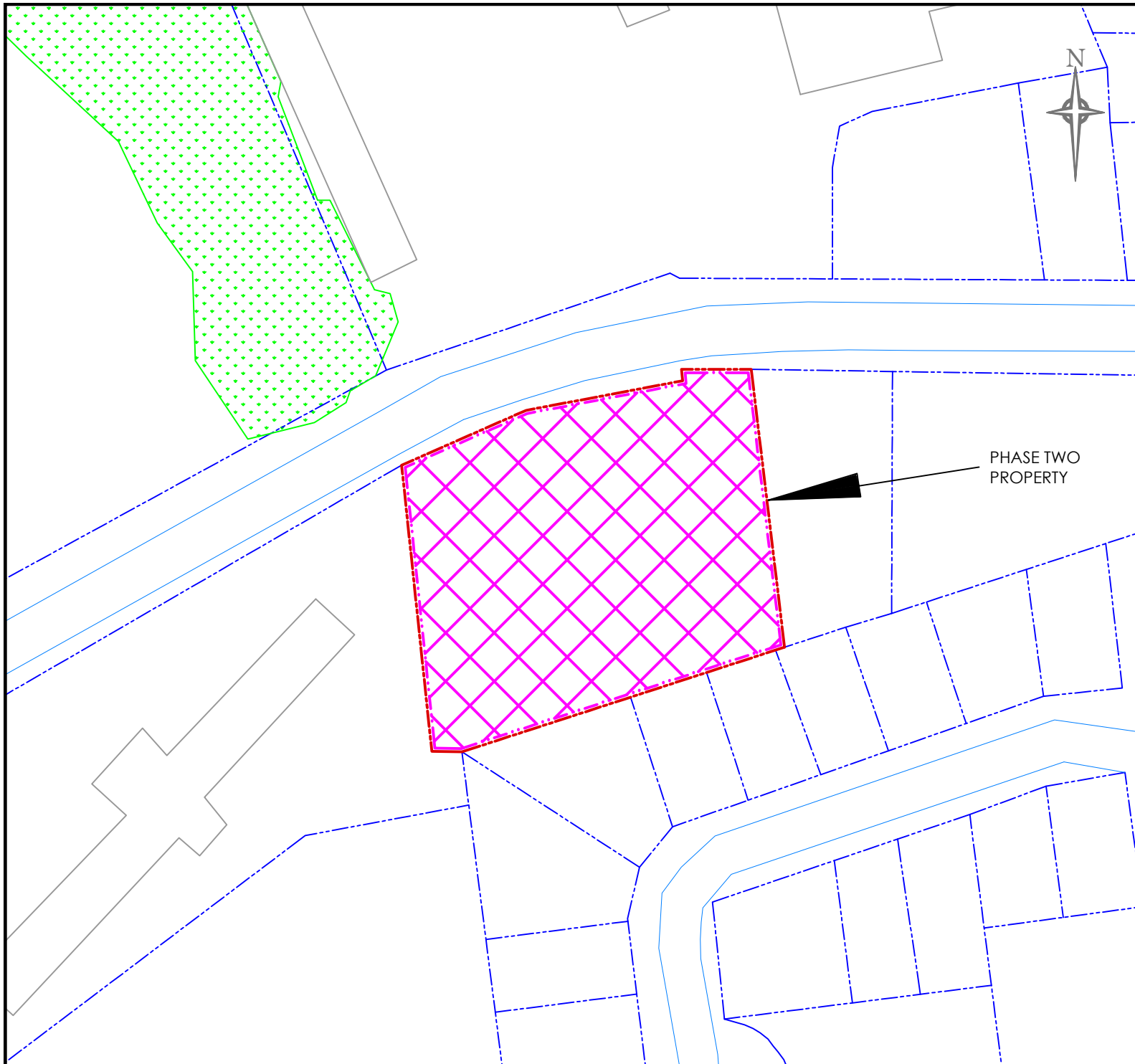
LOCATION
King Street West,
Gananoque, Ontario

PROJECT NO. ASC-570	SCALE: 0 METRES 70
DATE 04-June-2020	



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LEGEND


- - - SUBJECT PROPERTY
- - - PROPERTY LINE
- - - EDGE OF ROAD
- - - BUILDING
- + + + TREELINE

AREA OF POTENTIAL ENVIRONMENTAL CONCERN

X X X APEC 1 - ENTIRE PROPERTY: POTENTIAL HYDROCARBON CONTAMINATION AS A RESULT OF PCA 2

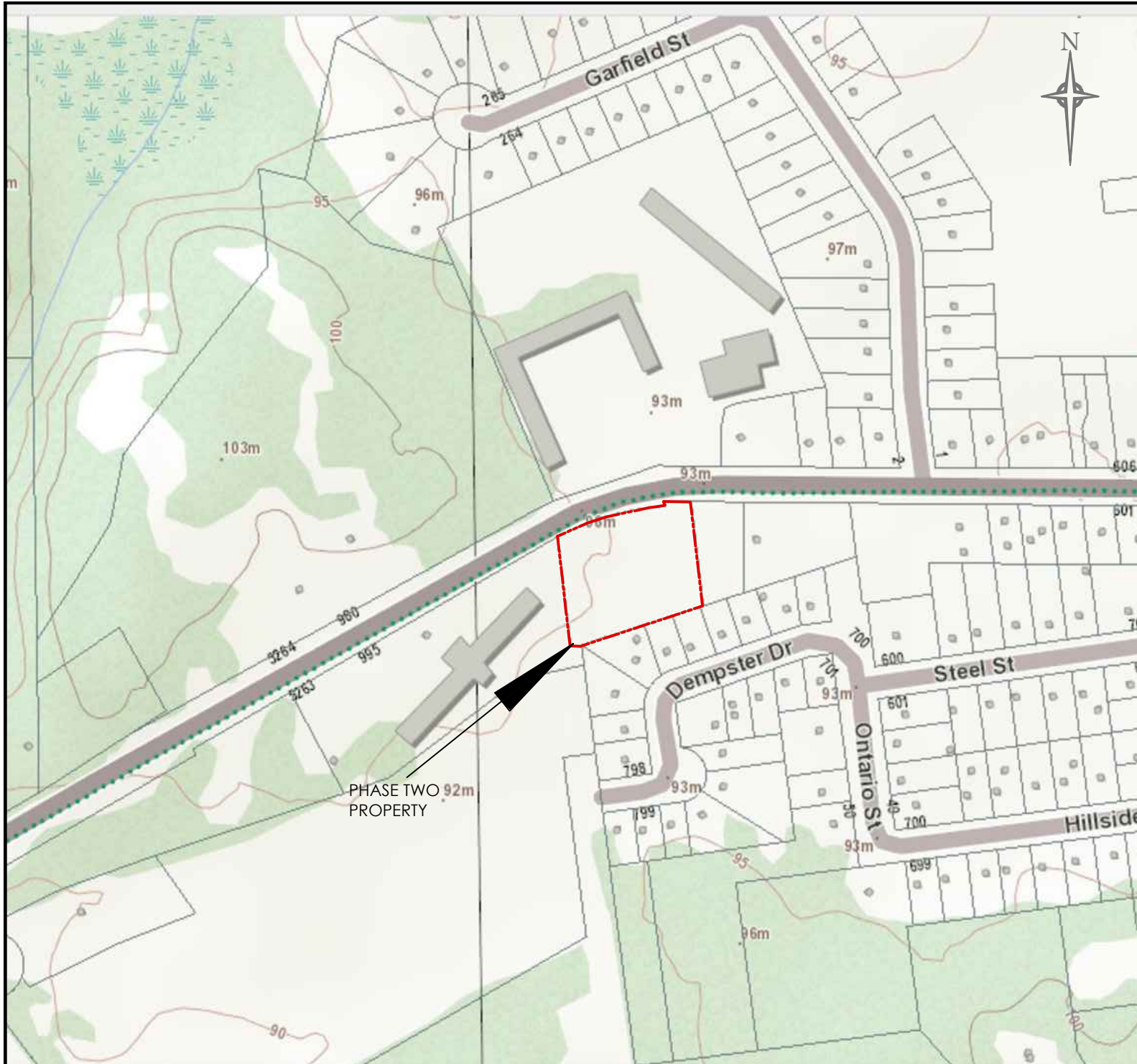
DRAWING TITLE
Areas of Potential Environmental Concern

FIGURE NO. 04	DRAWN BY S. McCallum
PROJECT Phase Two Environmental Site Assessment	
CLIENT 9695443 Canada Inc.	
LOCATION King Street West, Gananoque, Ontario	
PROJECT NO. ASC-570	SCALE: 0 METRES 22
DATE 12-June-2020	



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LEGEND

--- SUBJECT PROPERTY

DRAWING TITLE

Topographic Map

FIGURE NO.

05

DRAWN BY

S. Johnston

PROJECT

Phase Two Environmental Site Assessment

CLIENT

9695443 Canada Inc.

LOCATION

King Street West,
Gananoque, Ontario

PROJECT NO.

ASC-570

SCALE:



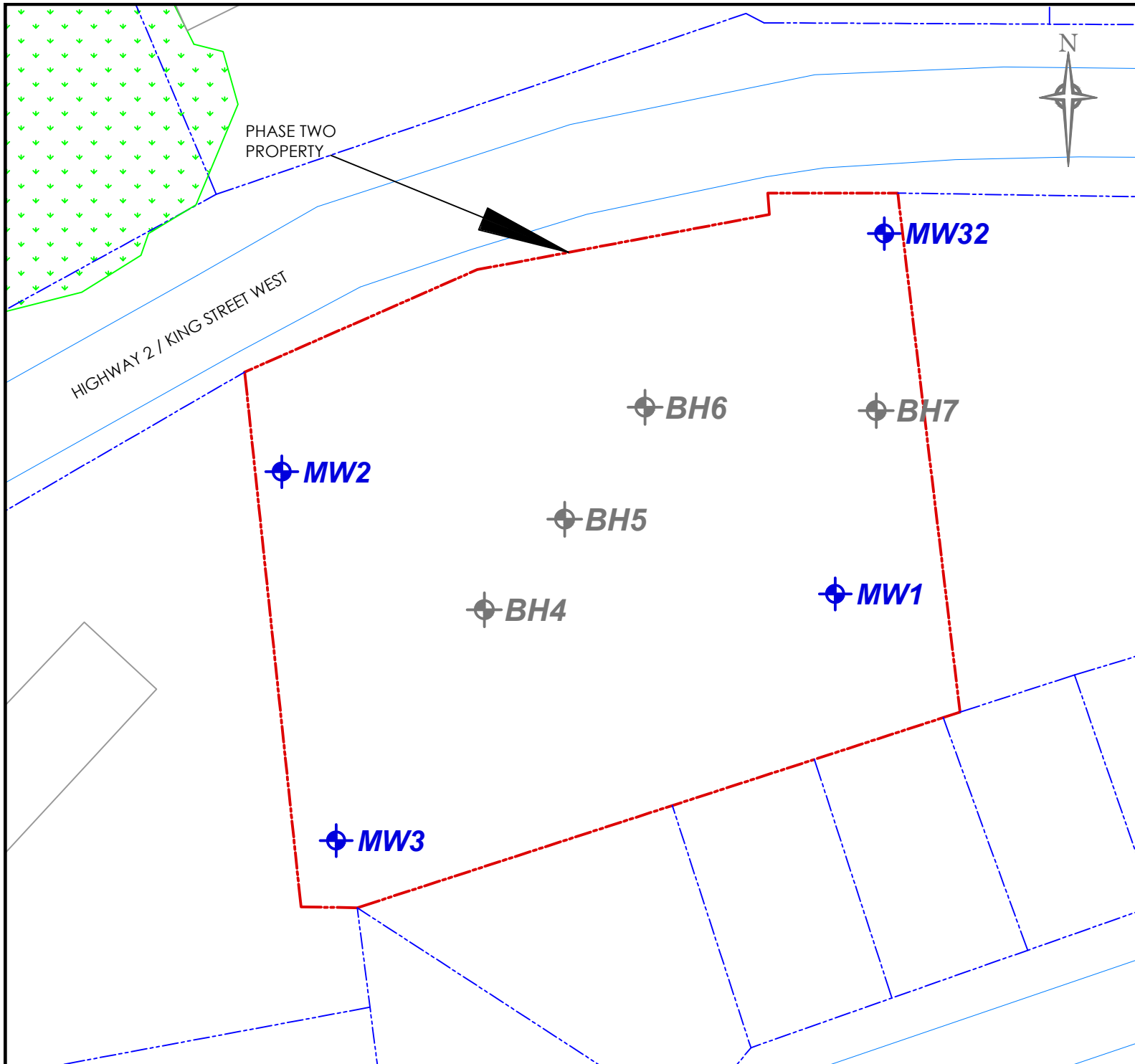
DATE

04-June-2020



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LEGEND

- - - SUBJECT PROPERTY
- - - PROPERTY LINE
- EDGE OF ROAD
- BUILDING
- - - TREELINE
- ⊕ MW1 MONITORING WELL
- ⊕ BH6 BOREHOLE

DRAWING TITLE
Borehole and Monitoring Well Locations

FIGURE NO. 06	DRAWN BY S. McCallum
-------------------------	--------------------------------

PROJECT
Phase Two Environmental Site Assessment

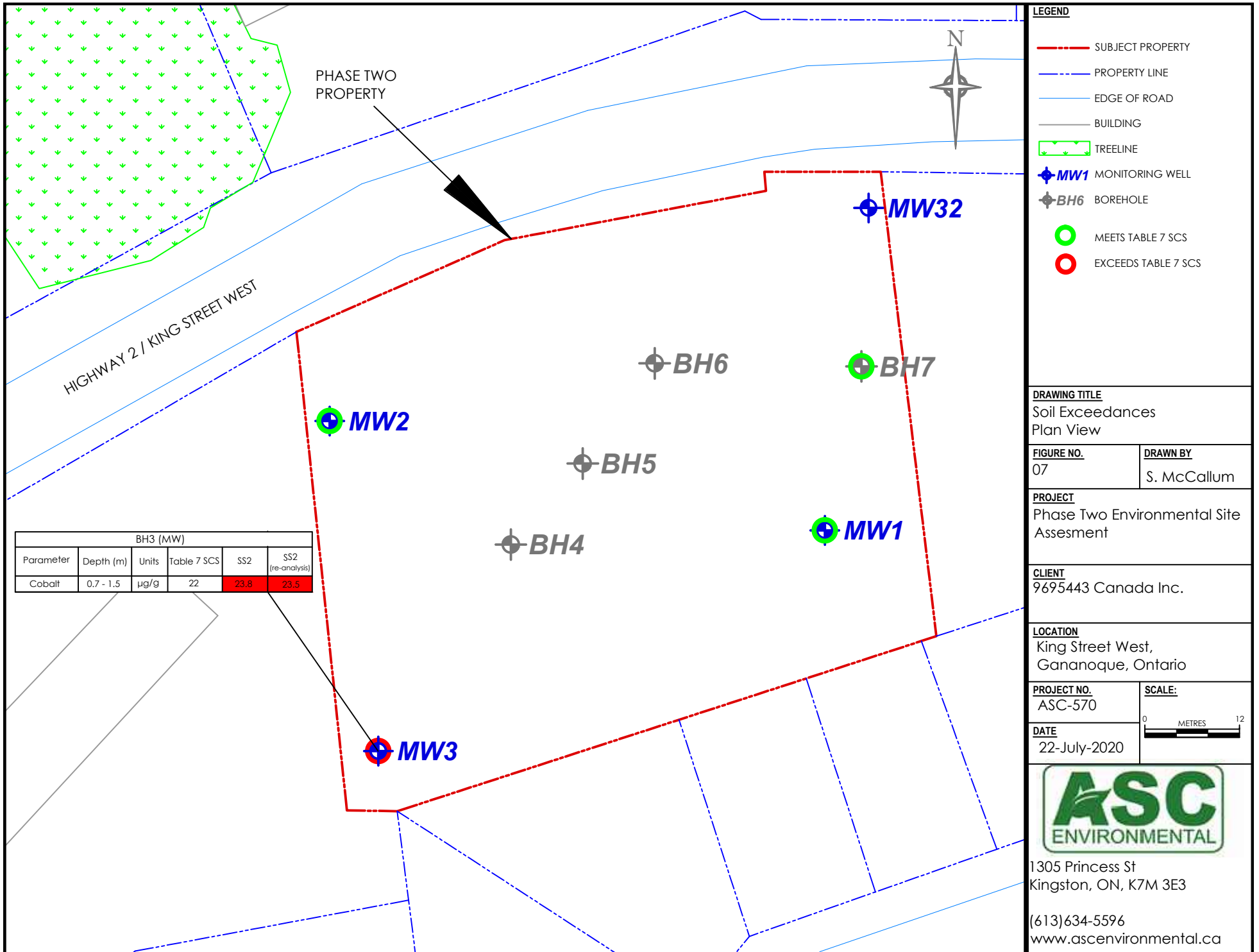
CLIENT
9695443 Canada Inc.

LOCATION
King Street West,
Gananoque, Ontario

PROJECT NO. ASC-570	SCALE: 0 METRES 12
DATE 16-July-2020	



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LEGEND

- SUBJECT PROPERTY
- - - PROPERTY LINE
- EDGE OF ROAD
- BUILDING
- - - TREELINE
- ⊕ **MW1** MONITORING WELL
- ⊕ **BH6** BOREHOLE
- MEETS TABLE 7 SCS
- EXCEEDS TABLE 7 SCS

DRAWING TITLE
Soil Exceedances
Plan View

FIGURE NO. 07	DRAWN BY S. McCallum
-------------------------	--------------------------------

PROJECT
Phase Two Environmental Site Assessment

CLIENT
9695443 Canada Inc.

LOCATION
King Street West,
Gananoque, Ontario

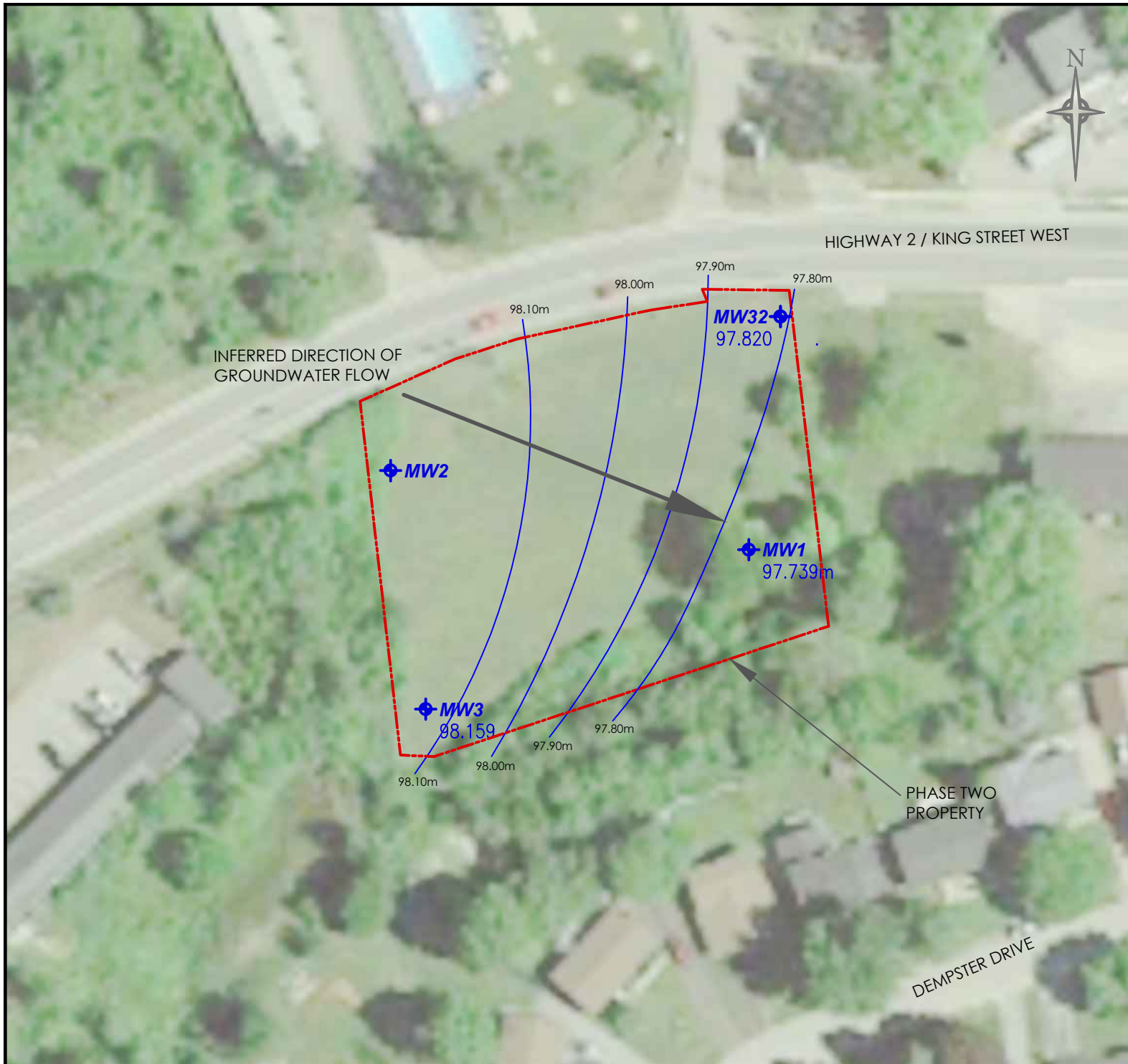
PROJECT NO. ASC-570	SCALE:
DATE 22-July-2020	



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BH3 (MW)					
Parameter	Depth (m)	Units	Table 7 SCS	SS2	SS2 (re-analysis)
Cobalt	0.7 - 1.5	µg/g	22	23.8	23.5



LEGEND	
	SUBJECT PROPERTY
	MONITORING WELL
97.870	GROUNDWATER ELEVATION (JULY 14, 2020)
	POTENTIOMETRIC LINE
	INFERRED DIRECTION OF GROUNDWATER FLOW

NOTES

MW2 NOT INCLUDED IN GROUNDWATER FLOW DIRECTION, AS WELL SCREEN LOCATION DIFFERS (I.E. BEDROCK VS. OVERBURDEN)

DRAWING TITLE	
Groundwater Flow Map (14-July-2020)	
FIGURE NO.	DRAWN BY
08	S. Johnston

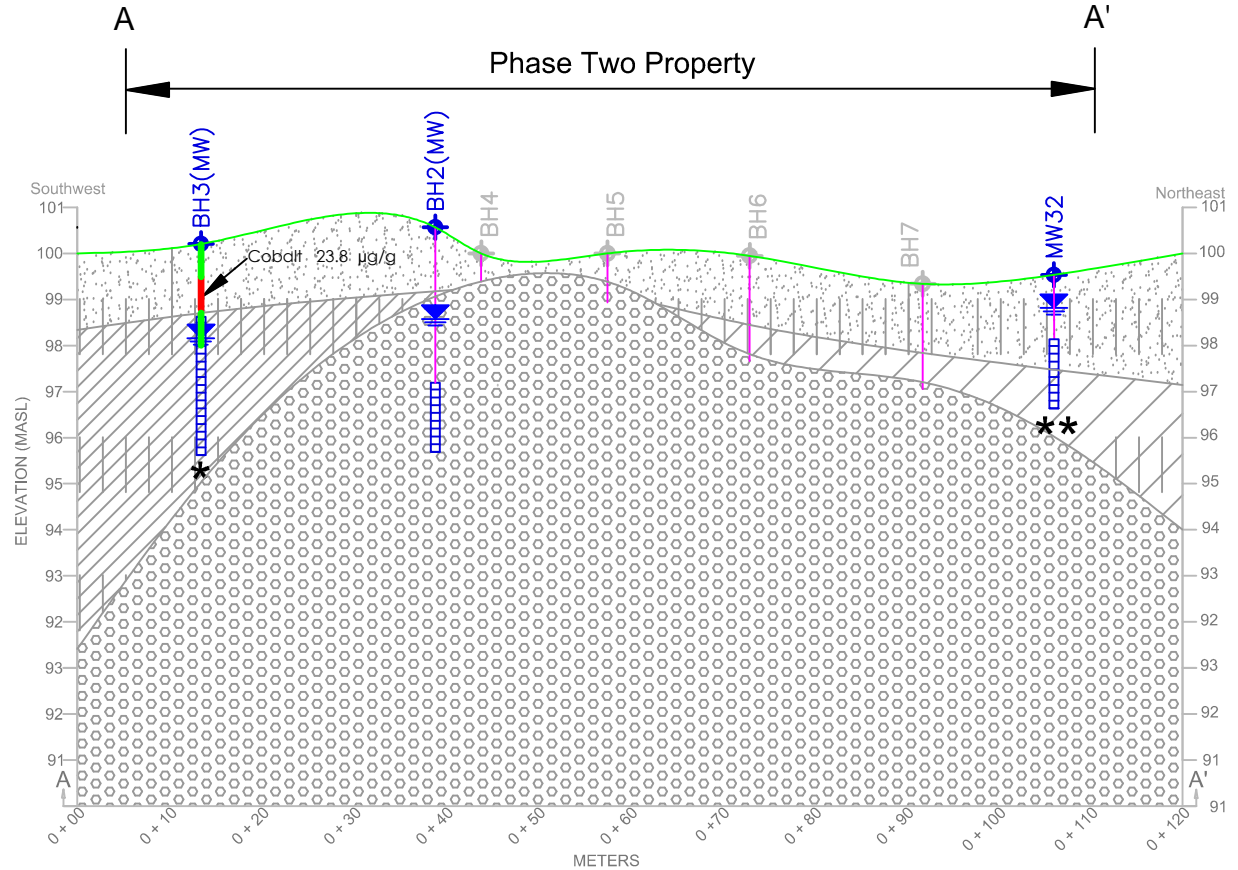
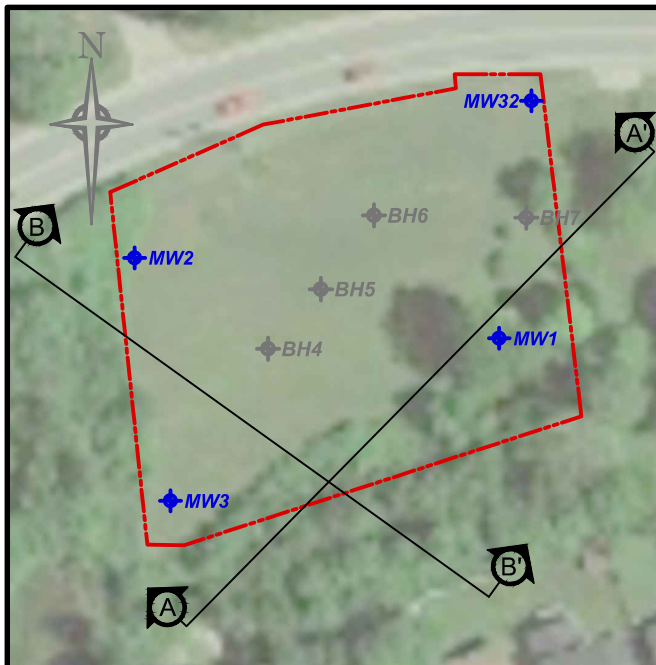
PROJECT	
Phase Two Environmental Site Assessment	
CLIENT	
9695443 Canada Inc.	

LOCATION	
King Street West, Gananoque, Ontario	
PROJECT NO.	SCALE:
ASC-570	
DATE	
20-July-2020	

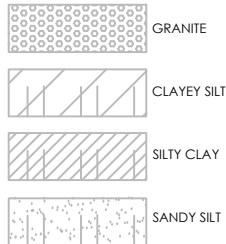


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SOIL LEGEND



DRAWING TITLE
A-A'
Vertical Cross Section

CLIENT
9695443 Canada Inc.

ADDRESS
King Street West, Gananoque, ON

PROJECT
Phase Two Conceptual Site Model

FIGURE NO.
09

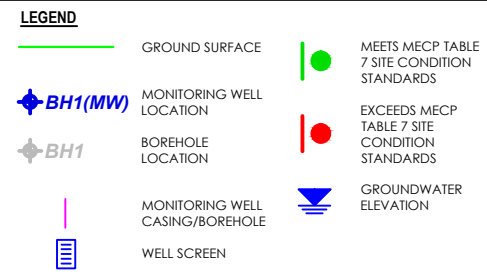
DRAWN BY
S. McCallum

NOTES

- * Bedrock not encountered, depth estimated
- ** Existing well, no BH log available
- MW1 omitted from drawing for visual purposes

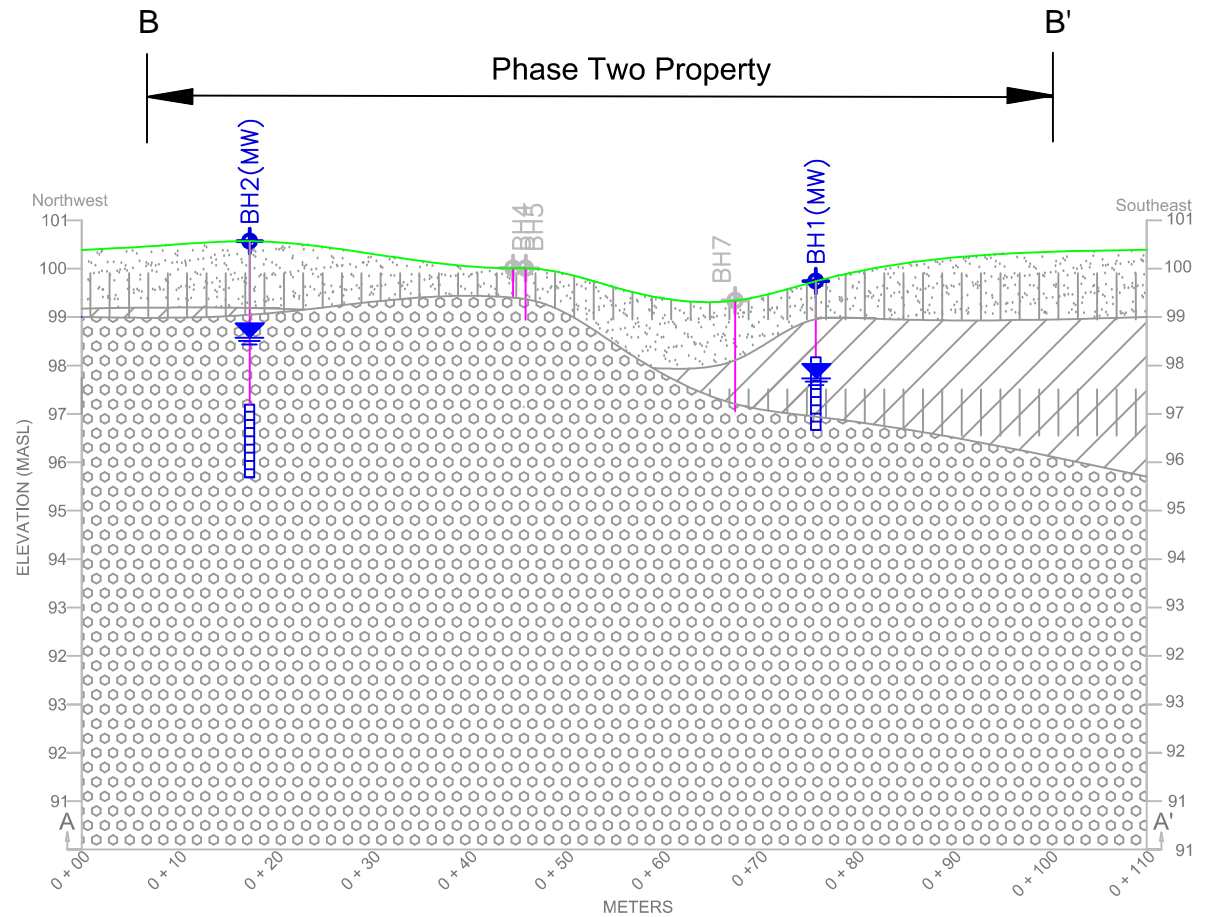
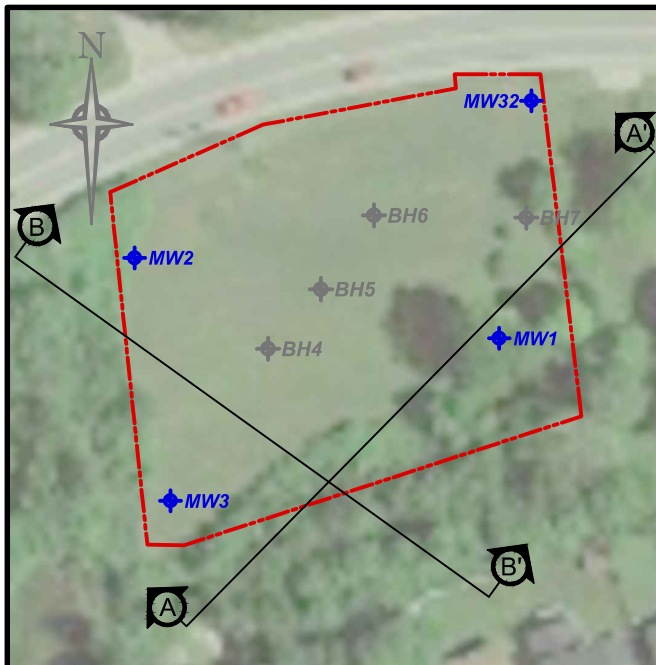
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ASC-570

DATE
22-Jul-2020

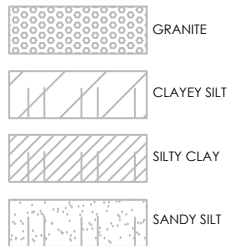


1305 Princess Street,
Kingston, ON K7M 3E3

(613) 561-7088
www.ascenvironmental.ca



SOIL LEGEND



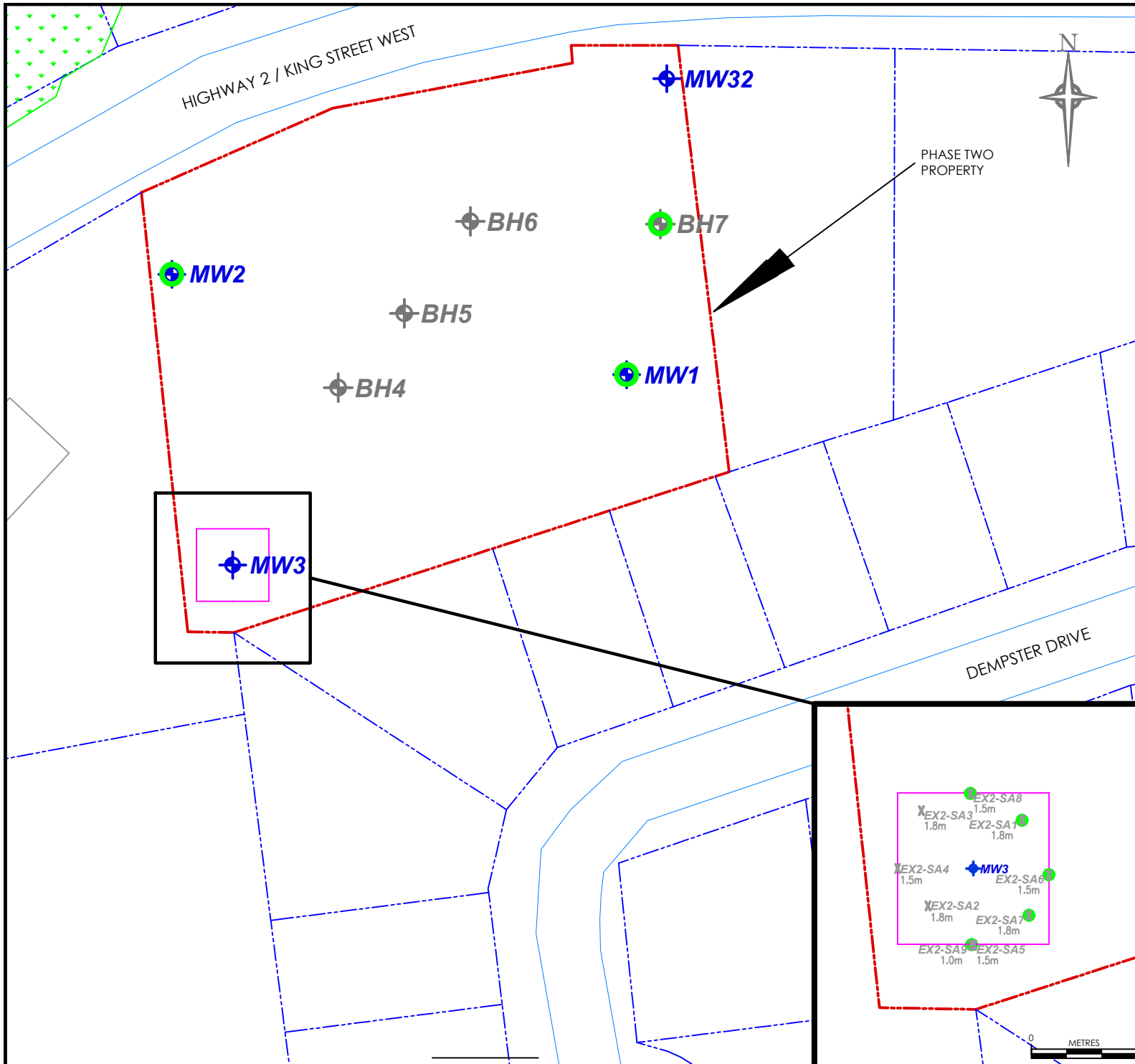
DRAWING TITLE B-B' Vertical Cross Section		CLIENT 9695443 Canada Inc.
PROJECT Phase Two Conceptual Site Model		ADDRESS King Street West, Gananoque, ON
FIGURE NO. 10	DRAWN BY S. McCallum	NOTES BH6, MW3 and MW32 omitted from drawing for visual purposes
PROJECT NO. ASC-570	DATE 22-Jul-2020	

LEGEND		MEETS MECP TABLE 7 SITE CONDITION STANDARDS
	GROUND SURFACE	
	MONITORING WELL LOCATION	EXCEEDS MECP TABLE 7 SITE CONDITION STANDARDS
	BOREHOLE LOCATION	
	MONITORING WELL CASING/BOREHOLE	
	WELL SCREEN	GROUNDWATER ELEVATION



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LEGEND

- SUBJECT PROPERTY
- PROPERTY LINE
- EDGE OF ROAD
- BUILDING
- TREELINE
- ◆ MW1 BOREHOLE
- ◆ BH6 MONITORING WELL
- MEETS TABLE 7 SCS
- EXCEEDS TABLE 7 SCS

DRAWING TITLE
Soil Excavation and Off-Site Disposal (28-Aug-2020)

FIGURE NO. 11	DRAWN BY S. McCallum
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PROJECT
Phase Two Environmental Site Assessment

CLIENT
9695443 Canada Inc.

LOCATION
King Street West,
Gananoque, Ontario

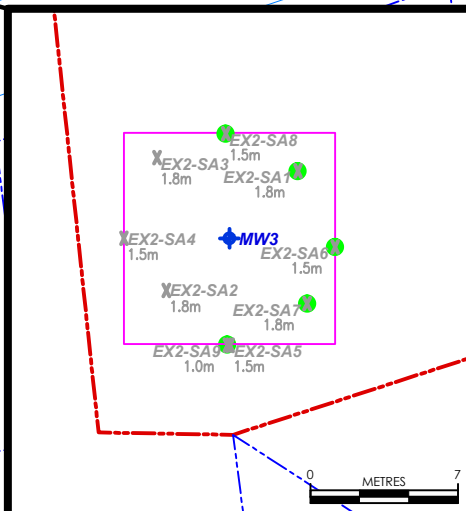
PROJECT NO. ASC-570	SCALE: 0 METRES 12
-------------------------------	------------------------------

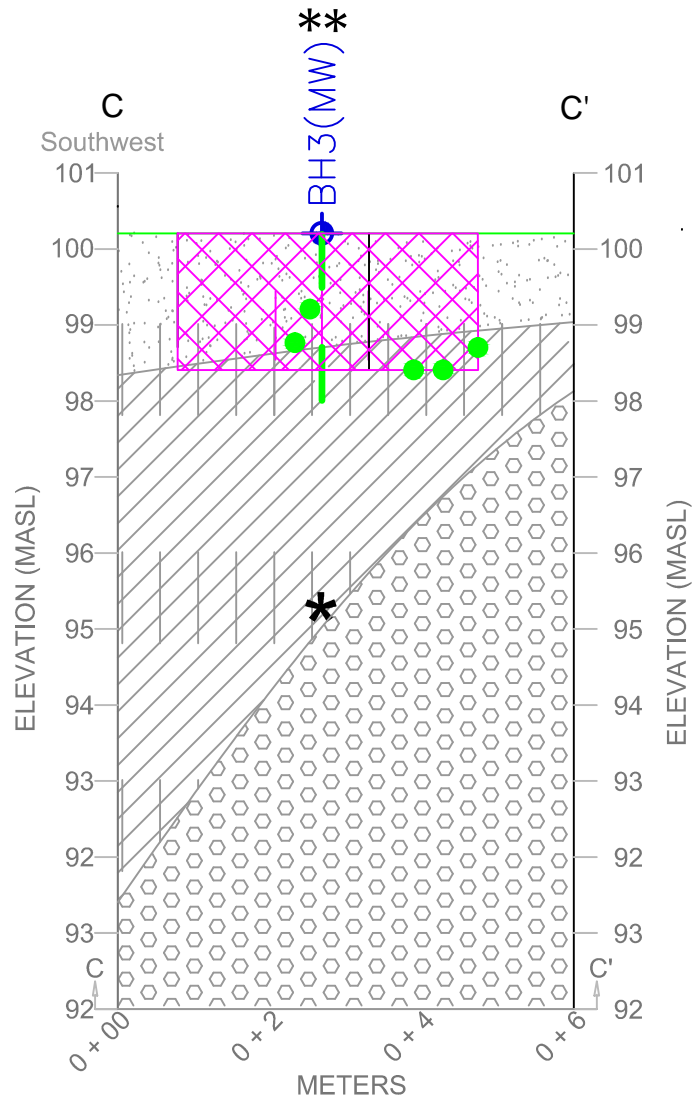
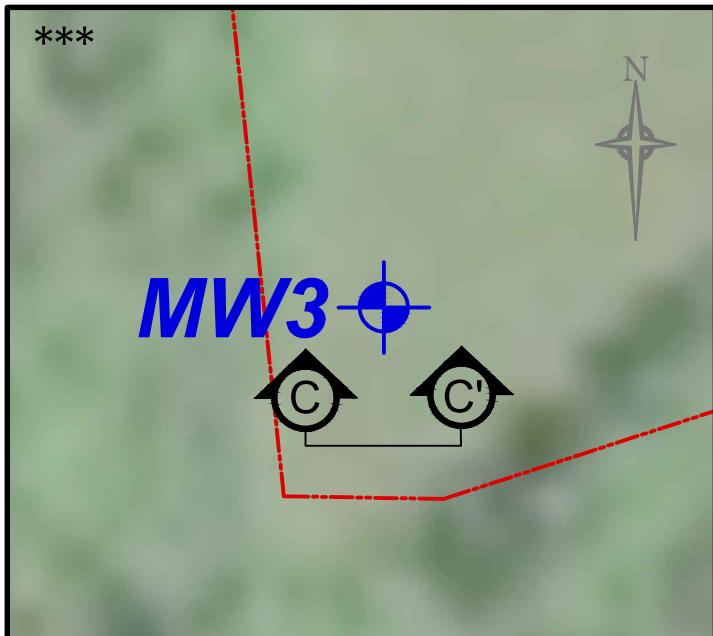
DATE
22-July-2020



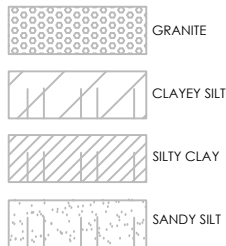
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SOIL LEGEND



DRAWING TITLE
C-C' Vertical Cross Section -
Metals Remediation

CLIENT
9695443 Canada Inc.

PROJECT
Phase Two Conceptual Site Model

ADDRESS
King Street West, Gananoque, ON

FIGURE NO.
12

DRAWN BY
S. McCallum

NOTES
* Bedrock not encountered, depth estimated
** MW3 decommissioned prior to excavation
*** Cross-section bounds not to scale, due to small size

PROJECT NO.
ASC-570

DATE
20-Aug-2020

LEGEND

- GROUND SURFACE
- BH1(MW)** MONITORING WELL LOCATION
- BH1** BOREHOLE LOCATION
- MONITORING WELL CASING/BOREHOLE
- WELL SCREEN
- EXCAVATED AREA
- MEETS MECP TABLE 7 SITE CONDITION STANDARDS
- EXCEEDS MECP TABLE 7 SITE CONDITION STANDARDS
- MEETS MECP TABLE 7 SITE CONDITION STANDARDS
- GROUNDWATER ELEVATION



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APPENDIX B

Borehole Logs



ASC Environmental Inc.
1305 Princess Street,
Kingston, ON K7M 3E3
Tel: (613) 634- 5596



Test Pit & Borehole Log Symbol Legend

Common Lithology Symbols

	Sand		Sandy Silt				Sand and Gravel		
	Gravel		Silt		Clayey Silt		Clay		Silty Clay
	Sandy Silty Clay		Silty Sand and Gravel		Silt and Gravel		Silty Clay and Gravel		Topsoil
	Fill		Till		Cobbles		Limestone		Sandstone
	Shale		Siltstone		Granite				

Well Construction Symbols

	Bentonite		Silica Sand		Pipe		Slotted Screen		Flush-mount Casing
	Monument Casing		Push-on Cap		Plug Cap		Concrete		Asphalt

Sample Type Symbols

	Split Spoon		Auger		Core Drill		Air Hammer		No Recovery
--	-------------	--	-------	--	------------	--	------------	--	-------------



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PROJECT: Phase Two Environmental Site Assessment		PROJECT NO.: ASC-570
CLIENT: 9695443 Canada Inc.	Location: King Street West, Gananoque, ON	BOREHOLE LOG: BH1
DRILLING CONTRACTOR: G.E.T Drilling		WELL ID: MW1
DRILLING EQUIPMENT: CME 55 - Truck Mounted		WELL TAG #:
DRILLING METHOD: Solid Stem Auger		GROUND SURFACE ELEV.: 99.740
SAMPLING METHOD: Split Spoon		TOP ELEVATION: 100.729
		DATUM: 18T
		EASTING: 0406097 E
		NORTHING: 4908679 N

LOGGED BY: S.M.	INPUT BY: S.M.	FIELD INSTRUMENT(S): CGI - Eagle	DATE DRILLED: July 8, 2020	VALIDATED BY:	CHECK:
------------------------	-----------------------	---	-----------------------------------	----------------------	---------------

Depth (m) Depth (ft)	Well Construction	Lithology	Description	Type	Moisture	Sample	Recovery (%)	RQD (%)	CGI (ppm)	PID (ppm)
0	Stick-Up		Ground Surface							
0			Topsoil - brown, dry organic							
1			Silty SAND - brown with cobble	Dry	SS1	80	-	160	-	
3			Clayey SILT with Sand - brown	Damp	SS2	100	-	5	-	
6				Damp	SS3	100	-	150	-	
8				Wet	SS4	100	-	0	-	
9			GRANITE		-	-	-	-	-	-
3	End of Borehole at 3.05 metres									
10										
11										
12										
13										
14										
15										
16										
17										
18										
19										
20										
21										
22										
23										
24										
25										



1305 Princess Street,
Kingston, ON K7M 3E3

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PROJECT: Phase Two Environmental Site Assessment		PROJECT NO.: ASC-570
CLIENT: 9695443 Canada Inc.	Location: King Street West, Gananoque, ON	BOREHOLE LOG: BH4
DRILLING CONTRACTOR: G.E.T Drilling		WELL ID:
DRILLING EQUIPMENT: CME 55 - Truck Mounted		WELL TAG #:
DRILLING METHOD: Solid Stem Auger		GROUND SURFACE ELEV: 100.009
SAMPLING METHOD: Split Spoon		TOP ELEVATION:
		DATUM: 18T
		EASTING: 0406043 E
		NORTHING: 4908683 N

LOGGED BY: S.M.	INPUT BY: S.M.	FIELD INSTRUMENT(S): CGI - Eagle	DATE DRILLED: July 8, 2020	VALIDATED BY:	CHECK:
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Depth (m)	Depth (ft)	Well Construction	Lithology	Description	Type	Moisture	Sample	Recovery (%)	RQD (%)	CGI (ppm)	PID (ppm)
0	0			Ground Surface							
1	1	N/A		Topsoil - brown, dry organic							
1	1			Silty SAND - brown with cobble		Dry	SS1	80	-	0	-
End of Borehole at 0.61 metres											

APPENDIX C

Laboratory Results



ASC Environmental Inc.
1305 Princess Street,
Kingston, ON K7M 3E3
Tel: (613) 634- 5596

Table C1. Laboratory Results of Soils Analysis

Parameter	Units	MDL	Regulation	Sample						
				BH1-SS1 2028370-01	BH2-SS2 2028370-02	BH3-SS2 2028370-03	BH3-SS2 2028370-03RE1	BH7-SS3 2028370-04	BH3-SS1 2030516-01	BH3-SS3 2030516-02
Sample Date (m/d/y)			Reg 153/04 (2011)-Table 7 Non-Potable Residential, fine	07/08/2020 09:00 AM	07/08/2020 10:15 AM	07/08/2020 11:45 AM	07/08/2020 11:45 AM	07/08/2020 03:30 PM	07/08/2020 11:45 AM	07/08/2020 11:45 AM
Sample Depth (m)				0 - 0.7	0.7 - 1.5	0.7 - 1.5	0.7 - 1.5	1.5 - 2.3	0 - 0.7	1.5 - 2.3
Physical Characteristics										
>0.075 mm	%	0.1		N/A	N/A	N/A	N/A	77.7	N/A	N/A
<0.075 mm	%	0.1		N/A	N/A	N/A	N/A	91.0	N/A	N/A
% Solids	% by WT.	0.1		91.5	80.0	70.4	N/A	Med/Fine	93.0	87.9
General Inorganics										
pH	pH Units	0.05		N/A	N/A	N/A	N/A	7.63	N/A	N/A
Metals										
Antimony	ug/g dry	1.0	7.5 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	N/A
Arsenic	ug/g dry	1.0	18 ug/g dry	2.9	5.0	4.9	4.5	3.9	4.0	N/A
Barium	ug/g dry	1.0	390 ug/g dry	89.0	148	463	452	114	144	155
Beryllium	ug/g dry	0.5	5 ug/g dry	ND (0.5)	0.8	1.2	1.1	0.6	0.7	N/A
Boron	ug/g dry	5.0	120 ug/g dry	5.5	7.5	10.2	5.4	9.7	9.4	N/A
Cadmium	ug/g dry	0.5	1.2 ug/g dry	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	N/A
Chromium	ug/g dry	5.0	160 ug/g dry	20.4	32.2	64.3	59.9	24.3	25.5	N/A
Cobalt	ug/g dry	1.0	22 ug/g dry	7.2	11.2	23.8	23.5	8.2	9.1	10
Copper	ug/g dry	5.0	180 ug/g dry	18.9	22.1	39.3	42.2	17.2	21.5	N/A
Lead	ug/g dry	1.0	120 ug/g dry	21.1	49.8	11.5	11.7	5.3	43.5	N/A
Molybdenum	ug/g dry	1.0	6.9 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	N/A
Nickel	ug/g dry	5.0	130 ug/g dry	13.1	20.2	54.8	53.4	17.3	16.7	N/A
Selenium	ug/g dry	1.0	2.4 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	N/A
Silver	ug/g dry	0.3	25 ug/g dry	ND (0.3)	ND (0.3)	ND (0.3)	ND (0.3)	ND (0.3)	ND (0.3)	N/A
Thallium	ug/g dry	1.0	1 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	N/A
Uranium	ug/g dry	1.0	23 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	N/A
Vanadium	ug/g dry	10.0	86 ug/g dry	31.1	44.0	81.8	74.8	40.6	36.6	N/A
Zinc	ug/g dry	20.0	340 ug/g dry	61.6	73.7	103	101	37.3	57.6	N/A
Volatiles										
Benzene	ug/g dry	0.02	0.17 ug/g dry	ND (0.02)	ND (0.02)	ND (0.02)	N/A	ND (0.02)	N/A	N/A
Ethylbenzene	ug/g dry	0.05	15 ug/g dry	ND (0.05)	ND (0.05)	ND (0.05)	N/A	ND (0.05)	N/A	N/A
Toluene	ug/g dry	0.05	6 ug/g dry	ND (0.05)	ND (0.05)	ND (0.05)	N/A	ND (0.05)	N/A	N/A
m/p-Xylene	ug/g dry	0.05		ND (0.05)	ND (0.05)	ND (0.05)	N/A	ND (0.05)	N/A	N/A
o-Xylene	ug/g dry	0.05		ND (0.05)	ND (0.05)	ND (0.05)	N/A	ND (0.05)	N/A	N/A
Xylenes, total	ug/g dry	0.05	25 ug/g dry	ND (0.05)	ND (0.05)	ND (0.05)	N/A	ND (0.05)	N/A	N/A
Hydrocarbons										
F1 PHCs (C6-C10)	ug/g dry	7	65 ug/g dry	ND (7)	ND (7)	ND (7)	N/A	ND (7)	N/A	N/A
F2 PHCs (C10-C16)	ug/g dry	4	150 ug/g dry	ND (4)	ND (4)	ND (4)	N/A	ND (4)	N/A	N/A
F3 PHCs (C16-C34)	ug/g dry	8	1300 ug/g dry	74	48	41	N/A	ND (8)	N/A	N/A
F4 PHCs (C34-C50)	ug/g dry	6	5600 ug/g dry	326	90	84	N/A	ND (6)	N/A	N/A
F4G PHCs (gravimetric)	ug/g dry	50	5600 ug/g dry	819	N/A	N/A	N/A	N/A	N/A	N/A
Notes			Exceeding MECP Table 7 Residential Site Condition Standards							

Table C2: Laboratory Results of Groundwater Sampling

Parameter	Units	MDL	Regulation	Sample				
				MW1 2029176-01	MW1-DUP 2029176-02	MW32 2029176-03	MW2 2029176-04	MW3 2029176-05
Sample Date (m/d/y)			Reg 153/04 (2011)-Table 7 Non-Potable Groundwater, fine	07/14/2020 12:30 PM	07/14/2020 12:30 PM	07/14/2020 02:00 PM	07/14/2020 03:00 PM	07/14/2020 04:00 PM
Metals								
Antimony	ug/L	0.5	16000 ug/L	ND (0.5)	ND (0.5)	1.3	ND (0.5)	ND (0.5)
Arsenic	ug/L	1	1500 ug/L	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Barium	ug/L	1	23000 ug/L	112	110	100	390	132
Beryllium	ug/L	0.5	53 ug/L	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Boron	ug/L	10	36000 ug/L	23	23	45	22	31
Cadmium	ug/L	0.1	2.1 ug/L	ND (0.1)	ND (0.1)	0.1	ND (0.1)	ND (0.1)
Chromium	ug/L	1	640 ug/L	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Cobalt	ug/L	0.5	52 ug/L	4.5	4.3	ND (0.5)	ND (0.5)	ND (0.5)
Copper	ug/L	0.5	69 ug/L	0.8	0.7	2.2	0.7	1.4
Lead	ug/L	0.1	20 ug/L	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	0.1
Molybdenum	ug/L	0.5	7300 ug/L	2.5	2.5	1.4	0.9	3.2
Nickel	ug/L	1	390 ug/L	17	17	1	ND (1)	ND (1)
Selenium	ug/L	1	50 ug/L	ND (1)	ND (1)	ND (1)	ND (1)	ND (1)
Silver	ug/L	0.1	1.2 ug/L	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Sodium	ug/L	200	1800000 ug/L	25100	24300	51800	143000	36200
Thallium	ug/L	0.1	400 ug/L	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)	ND (0.1)
Uranium	ug/L	0.1	330 ug/L	0.8	0.8	1.4	0.8	4.5
Vanadium	ug/L	0.5	200 ug/L	0.6	0.5	3.2	ND (0.5)	0.8
Zinc	ug/L	5	890 ug/L	ND (5)	ND (5)	5	ND (5)	ND (5)
Volatiles								
Benzene	ug/L	0.5	0.5 ug/L	ND (0.5)	N/A	ND (0.5)	ND (0.5)	ND (0.5)
Ethylbenzene	ug/L	0.5	54 ug/L	ND (0.5)	N/A	ND (0.5)	ND (0.5)	ND (0.5)
Toluene	ug/L	0.5	320 ug/L	ND (0.5)	N/A	ND (0.5)	ND (0.5)	ND (0.5)
m/p-Xylene	ug/L	0.5		ND (0.5)	N/A	ND (0.5)	ND (0.5)	ND (0.5)
o-Xylene	ug/L	0.5		ND (0.5)	N/A	ND (0.5)	ND (0.5)	ND (0.5)
Xylenes, total	ug/L	0.5	72 ug/L	ND (0.5)	N/A	ND (0.5)	ND (0.5)	ND (0.5)
Hydrocarbons								
F1 PHCs (C6-C10)	ug/L	25	420 ug/L	ND (25)	N/A	ND (25)	ND (25)	ND (25)
F2 PHCs (C10-C16)	ug/L	100	150 ug/L	ND (100)	N/A	ND (100)	ND (100)	ND (100)
F3 PHCs (C16-C34)	ug/L	100	500 ug/L	ND (100)	N/A	ND (100)	ND (100)	ND (100)
F4 PHCs (C34-C50)	ug/L	100	500 ug/L	ND (100)	N/A	ND (100)	ND (100)	ND (100)
Semi-Volatiles								
Acenaphthene	ug/L	0.05	17 ug/L	ND (0.05)	N/A	N/A	N/A	N/A
Acenaphthylene	ug/L	0.05	1 ug/L	ND (0.05)	N/A	N/A	N/A	N/A
Anthracene	ug/L	0.01	1 ug/L	ND (0.01)	N/A	N/A	N/A	N/A
Benzo[a]anthracene	ug/L	0.01	1.8 ug/L	ND (0.01)	N/A	N/A	N/A	N/A
Benzo[a]pyrene	ug/L	0.01	0.81 ug/L	ND (0.01)	N/A	N/A	N/A	N/A
Benzo[b]fluoranthene	ug/L	0.05	0.75 ug/L	ND (0.05)	N/A	N/A	N/A	N/A
Benzo[g,h,i]perylene	ug/L	0.05	0.2 ug/L	ND (0.05)	N/A	N/A	N/A	N/A
Benzo[k]fluoranthene	ug/L	0.05	0.4 ug/L	ND (0.05)	N/A	N/A	N/A	N/A
Chrysene	ug/L	0.05	0.7 ug/L	ND (0.05)	N/A	N/A	N/A	N/A
Dibenzo[a,h]anthracene	ug/L	0.05	0.4 ug/L	ND (0.05)	N/A	N/A	N/A	N/A
Fluoranthene	ug/L	0.01	44 ug/L	ND (0.01)	N/A	N/A	N/A	N/A
Fluorene	ug/L	0.05	290 ug/L	ND (0.05)	N/A	N/A	N/A	N/A
Indeno[1,2,3-cd]pyrene	ug/L	0.05	0.2 ug/L	ND (0.05)	N/A	N/A	N/A	N/A
1-Methylnaphthalene	ug/L	0.05	1500 ug/L	ND (0.05)	N/A	N/A	N/A	N/A
2-Methylnaphthalene	ug/L	0.05	1500 ug/L	ND (0.05)	N/A	N/A	N/A	N/A
Methylnaphthalene (1&2)	ug/L	0.10	1500 ug/L	ND (0.10)	N/A	N/A	N/A	N/A
Naphthalene	ug/L	0.05	7 ug/L	ND (0.05)	N/A	N/A	N/A	N/A
Phenanthrene	ug/L	0.05	380 ug/L	ND (0.05)	N/A	N/A	N/A	N/A
Pyrene	ug/L	0.01	5.7 ug/L	ND (0.01)	N/A	N/A	N/A	N/A
Notes			Exceeding MECP Table 7 Residential Site Condition Standards					

Table C3. Soil Verification following Excavation and Off-site Removal at BH3 (MW3)

Parameter	Units	MDL	Regulation	Sample				
				EX2-SA1 2035658-01	EX2-SA6 2035658-03	EX2-SA8 2035658-04	EX2-SA9 2035658-05	EX2-SA7 2035658-06
Sample Date (m/d/y)			Reg 153/04 (2011)-Table 7 Residential, fine	08/28/2020 09:00 AM	08/28/2020 09:00 AM	08/28/2020 09:00 AM	08/28/2020 09:00 AM	08/28/2020 09:00 AM
<i>Physical Characteristics</i>								
% Solids	% by Wt.	0.1		71.4	87.1	80.3	89.5	91
<i>Metals</i>								
Antimony	ug/g dry	1	7.5 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Arsenic	ug/g dry	1	18 ug/g dry	3	3.8	3.3	4.4	3.2
Barium	ug/g dry	1	390 ug/g dry	306	242	200	201	147
Beryllium	ug/g dry	0.5	5 ug/g dry	1.2	0.9	0.8	0.8	0.7
Boron	ug/g dry	5	120 ug/g dry	5.9	8.4	7.4	10.7	6.5
Cadmium	ug/g dry	0.5	1.2 ug/g dry	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)	ND (0.5)
Chromium	ug/g dry	5	160 ug/g dry	53.2	43.1	38.5	33.2	27.5
Cobalt	ug/g dry	1	22 ug/g dry	15.4	15.3	12.6	11.5	10.1
Copper	ug/g dry	5	180 ug/g dry	15.9	28.1	23	29.2	21.8
Lead	ug/g dry	1	120 ug/g dry	10.8	15.8	10.5	91.9	22
Molybdenum	ug/g dry	1	6.9 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Nickel	ug/g dry	5	130 ug/g dry	27.5	29.9	25.1	22.5	19.3
Selenium	ug/g dry	1	2.4 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Silver	ug/g dry	0.3	25 ug/g dry	ND (0.3)	ND (0.3)	ND (0.3)	ND (0.3)	ND (0.3)
Thallium	ug/g dry	1	1 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Uranium	ug/g dry	1	23 ug/g dry	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)	ND (1.0)
Vanadium	ug/g dry	10	86 ug/g dry	71.7	56.6	53.4	46.6	41.6
Zinc	ug/g dry	20	340 ug/g dry	69.8	84.3	72.6	88.7	62.5
Notes			Exceeding MECP Table 7 Residential Site Condition Standards					

APPENDIX D

Low-Flow Field Logs



ASC Environmental Inc.
1305 Princess Street,
Kingston, ON K7M 3E3
Tel: (613) 634- 5596

Low-Flow Groundwater Sampling Log



Project No.: ASC-570	Location: King St. W, Gananoque, ON	Well ID: MW3
Project: PHH ESA	Logged By: S.M.	
Client: Stephen Ferrante	Date: 14-July-2020	

Well Data	
Casing Diameter (mm): 1.5 inch	Stabilization Criteria pH: ±0.1 pH units Conductivity: ±3% µS/cm ORP: ±10 mV Turbidity: ±10 NTU Dissolved Oxygen: 0.3 mg/L
Screen Length (m): 10 Ft	
Depth (m): 5.96 m	
Static Tape Reading (m): 4.96 2.91 m	
Volume (L): 2.48 L	
Intake Depth (m): ~5.10 m	
Vapour Reading (ppm): 160 ppm	

Purging Log									
Time	Volume Purged (L)	Purge Rate (mL/min.)	Water Quality Parameters						Observations/Comments
			pH	Cond. (µS/cm)	Temp. (°C)	DO (mg/L)	ORP (mV)	Turb. (NTUs)	
3:25	0.75	150	4.94	626	25.10	6.48	238	25.4	clear, no colour
3:30	1.5		6.09	640	23.39	3.49	162	25.0	
3:35	2.25		6.74	626	21.44	3.74	123	27.1	
3:40	3.0		6.99	613	20.52	4.41	108	26.5	
3:45	3.75		7.08	636	19.74	4.50	106	25.6	↓
3:50	4.5		7.03	650	19.28	4.49	110	22.3	↓

Sampling Information				
Time	Sample ID	Analysis	No. of Containers	Comments
4:00	MW3	metals, PHC FI-F4, BTEX,	4	

APPENDIX E

MECP Email Communication



ASC Environmental Inc.
1305 Princess Street,
Kingston, ON K7M 3E3
Tel: (613) 634- 5596

APPENDIX F

Laboratory Certificates



ASC Environmental Inc.
1305 Princess Street,
Kingston, ON K7M 3E3
Tel: (613) 634- 5596

Certificate of Analysis

ASC Environmental

1305 Princess Street
Kingston, ON K7M 3E3
Attn: Sarah McCallum

Client PO:
Project: ASC-570
Custody: 127255

Report Date: 21-Jul-2020
Order Date: 9-Jul-2020

Revised Report

Order #: 2028370

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

Parcel ID	Client ID
2028370-01	BH1-SS1
2028370-02	BH2-SS2
2028370-03	BH3-SS2
2028370-04	BH7-SS3

Approved By:



Dale Robertson, BSc
Laboratory Director

Certificate of Analysis
Client: ASC Environmental
Client PO:

Report Date: 21-Jul-2020

Order Date: 9-Jul-2020

Project Description: ASC-570

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 8260 - P&T GC-MS	10-Jul-20	11-Jul-20
pH, soil	EPA 150.1 - pH probe @ 25 °C, CaCl buffered ext.	14-Jul-20	14-Jul-20
PHC F1	CWS Tier 1 - P&T GC-FID	10-Jul-20	11-Jul-20
PHC F4G (gravimetric)	CWS Tier 1 - Extraction Gravimetric	15-Jul-20	15-Jul-20
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	10-Jul-20	14-Jul-20
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	13-Jul-20	14-Jul-20
Solids, %	Gravimetric, calculation	11-Jul-20	11-Jul-20
Texture - Coarse Med/Fine	Based on ASTM D2487	10-Jul-20	15-Jul-20

Certificate of Analysis
 Client: ASC Environmental
 Client PO:

Report Date: 21-Jul-2020

Order Date: 9-Jul-2020

Project Description: ASC-570

Client ID:	BH1-SS1	BH2-SS2	BH3-SS2	BH3-SS2
Sample Date:	08-Jul-20 09:00	08-Jul-20 10:15	08-Jul-20 11:45	08-Jul-20 11:45
Sample ID:	2028370-01	2028370-02	2028370-03	2028370-03RE1
MDL/Units	Soil	Soil	Soil	Soil

Physical Characteristics

% Solids	0.1 % by Wt.	91.5	80.0	70.4	-
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Metals

Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	2.9	5.0	4.9	4.5
Barium	1.0 ug/g dry	89.0	148	463	452
Beryllium	0.5 ug/g dry	<0.5	0.8	1.2	1.1
Boron	5.0 ug/g dry	5.5	7.5	10.2	5.4
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	5.0 ug/g dry	20.4	32.2	64.3	59.9
Cobalt	1.0 ug/g dry	7.2	11.2	23.8	23.5
Copper	5.0 ug/g dry	18.9	22.1	39.3	42.2
Lead	1.0 ug/g dry	21.1	49.8	11.5	11.7
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	5.0 ug/g dry	13.1	20.2	54.8	53.4
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	10.0 ug/g dry	31.1	44.0	81.8	74.8
Zinc	20.0 ug/g dry	61.6	73.7	103	101

Volatiles

Benzene	0.02 ug/g dry	<0.02	<0.02	<0.02	-
Ethylbenzene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
m,p-Xylenes	0.05 ug/g dry	<0.05	<0.05	<0.05	-
o-Xylene	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Xylenes, total	0.05 ug/g dry	<0.05	<0.05	<0.05	-
Toluene-d8	Surrogate	117%	118%	118%	-

Hydrocarbons

F1 PHCs (C6-C10)	7 ug/g dry	<7	<7	<7	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	<4	<4	-
F3 PHCs (C16-C34)	8 ug/g dry	74	48	41	-
F4 PHCs (C34-C50)	6 ug/g dry	326 [1]	90	84	-
F4G PHCs (gravimetric)	50 ug/g dry	819	-	-	-

Certificate of Analysis
 Client: ASC Environmental
 Client PO:

Report Date: 21-Jul-2020

Order Date: 9-Jul-2020

Project Description: ASC-570

Client ID:	BH7-SS3	-	-	-
Sample Date:	08-Jul-20 15:30	-	-	-
Sample ID:	2028370-04	-	-	-
MDL/Units	Soil	-	-	-

Physical Characteristics

% Solids	0.1 % by Wt.	77.7	-	-	-
>75 um	0.1 %	9.0	-	-	-
<75 um	0.1 %	91.0	-	-	-
Texture	0.1 %	Med/Fine	-	-	-

General Inorganics

pH	0.05 pH Units	7.63	-	-	-
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Metals

Antimony	1.0 ug/g dry	<1.0	-	-	-
Arsenic	1.0 ug/g dry	3.9	-	-	-
Barium	1.0 ug/g dry	114	-	-	-
Beryllium	0.5 ug/g dry	0.6	-	-	-
Boron	5.0 ug/g dry	9.7	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	5.0 ug/g dry	24.3	-	-	-
Cobalt	1.0 ug/g dry	8.2	-	-	-
Copper	5.0 ug/g dry	17.2	-	-	-
Lead	1.0 ug/g dry	5.3	-	-	-
Molybdenum	1.0 ug/g dry	<1.0	-	-	-
Nickel	5.0 ug/g dry	17.3	-	-	-
Selenium	1.0 ug/g dry	<1.0	-	-	-
Silver	0.3 ug/g dry	<0.3	-	-	-
Thallium	1.0 ug/g dry	<1.0	-	-	-
Uranium	1.0 ug/g dry	<1.0	-	-	-
Vanadium	10.0 ug/g dry	40.6	-	-	-
Zinc	20.0 ug/g dry	37.3	-	-	-

Volatiles

Benzene	0.02 ug/g dry	<0.02	-	-	-
Ethylbenzene	0.05 ug/g dry	<0.05	-	-	-
Toluene	0.05 ug/g dry	<0.05	-	-	-
m,p-Xylenes	0.05 ug/g dry	<0.05	-	-	-
o-Xylene	0.05 ug/g dry	<0.05	-	-	-
Xylenes, total	0.05 ug/g dry	<0.05	-	-	-
Toluene-d8	Surrogate	117%	-	-	-

Hydrocarbons

F1 PHCs (C6-C10)	7 ug/g dry	<7	-	-	-
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Certificate of Analysis
 Client: **ASC Environmental**
 Client PO:

Report Date: 21-Jul-2020
 Order Date: 9-Jul-2020
 Project Description: **ASC-570**

	Client ID:	BH7-SS3	-	-	-
	Sample Date:	08-Jul-20 15:30	-	-	-
	Sample ID:	2028370-04	-	-	-
	MDL/Units	Soil	-	-	-
F2 PHCs (C10-C16)	4 ug/g dry	<4	-	-	-
F3 PHCs (C16-C34)	8 ug/g dry	<8	-	-	-
F4 PHCs (C34-C50)	6 ug/g dry	<6	-	-	-

Certificate of Analysis

Report Date: 21-Jul-2020

Client: ASC Environmental

Order Date: 9-Jul-2020

Client PO:

Project Description: ASC-570

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g						
F2 PHCs (C10-C16)	ND	4	ug/g						
F3 PHCs (C16-C34)	ND	8	ug/g						
F4 PHCs (C34-C50)	ND	6	ug/g						
F4G PHCs (gravimetric)	ND	50	ug/g						
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	5.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	5.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	5.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	10.0	ug/g						
Zinc	ND	20.0	ug/g						
Volatiles									
Benzene	ND	0.02	ug/g						
Ethylbenzene	ND	0.05	ug/g						
Toluene	ND	0.05	ug/g						
m,p-Xylenes	ND	0.05	ug/g						
o-Xylene	ND	0.05	ug/g						
Xylenes, total	ND	0.05	ug/g						
Surrogate: Toluene-d8	3.62		ug/g		113	50-140			

Certificate of Analysis

Report Date: 21-Jul-2020

Client: ASC Environmental

Order Date: 9-Jul-2020

Client PO:

Project Description: ASC-570

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
General Inorganics									
pH	7.64	0.05	pH Units	7.69			0.7	2.3	
Hydrocarbons									
F1 PHCs (C6-C10)	ND	7	ug/g dry	ND			NC	40	
F2 PHCs (C10-C16)	ND	4	ug/g dry	ND			NC	30	
F3 PHCs (C16-C34)	26	8	ug/g dry	42			NC	30	
F4 PHCs (C34-C50)	11	6	ug/g dry	9			22.2	30	
Metals									
Antimony	ND	1.0	ug/g dry	ND			NC	30	
Arsenic	3.3	1.0	ug/g dry	3.9			18.3	30	
Barium	52.9	1.0	ug/g dry	60.9			14.1	30	
Beryllium	0.5	0.5	ug/g dry	0.6			17.1	30	
Boron	ND	5.0	ug/g dry	5.4			NC	30	
Cadmium	ND	0.5	ug/g dry	ND			NC	30	
Chromium	17.1	5.0	ug/g dry	20.7			18.8	30	
Cobalt	4.7	1.0	ug/g dry	5.7			19.9	30	
Copper	13.0	5.0	ug/g dry	15.8			18.9	30	
Lead	6.3	1.0	ug/g dry	7.5			17.9	30	
Molybdenum	ND	1.0	ug/g dry	ND			NC	30	
Nickel	12.1	5.0	ug/g dry	14.7			19.1	30	
Selenium	ND	1.0	ug/g dry	ND			NC	30	
Silver	ND	0.3	ug/g dry	ND			NC	30	
Thallium	ND	1.0	ug/g dry	ND			NC	30	
Uranium	ND	1.0	ug/g dry	ND			NC	30	
Vanadium	26.9	10.0	ug/g dry	32.5			18.6	30	
Zinc	26.1	20.0	ug/g dry	31.7			19.3	30	
Physical Characteristics									
% Solids	88.2	0.1	% by Wt.	89.1			1.0	25	
Volatiles									
Benzene	ND	0.02	ug/g dry	ND			NC	50	
Ethylbenzene	ND	0.05	ug/g dry	ND			NC	50	
Toluene	ND	0.05	ug/g dry	ND			NC	50	
m,p-Xylenes	ND	0.05	ug/g dry	ND			NC	50	
o-Xylene	ND	0.05	ug/g dry	ND			NC	50	
Surrogate: Toluene-d8	4.07		ug/g dry		116	50-140			

Certificate of Analysis
 Client: **ASC Environmental**
 Client PO:

Report Date: 21-Jul-2020

Order Date: 9-Jul-2020

Project Description: **ASC-570**

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	199	7	ug/g	ND	99.5	80-120			
F2 PHCs (C10-C16)	94	4	ug/g	ND	104	60-140			
F3 PHCs (C16-C34)	289	8	ug/g	42	111	60-140			
F4 PHCs (C34-C50)	162	6	ug/g	9	108	60-140			
F4G PHCs (gravimetric)	960	50	ug/g	ND	96.0	80-120			
Metals									
Antimony	46.3	1.0	ug/g	ND	91.9	70-130			
Arsenic	54.1	1.0	ug/g	1.6	105	70-130			
Barium	72.4	1.0	ug/g	24.4	96.1	70-130			
Beryllium	50.7	0.5	ug/g	ND	101	70-130			
Boron	44.0	5.0	ug/g	ND	83.6	70-130			
Cadmium	49.7	0.5	ug/g	ND	99.3	70-130			
Chromium	58.1	5.0	ug/g	8.3	99.7	70-130			
Cobalt	51.1	1.0	ug/g	2.3	97.6	70-130			
Copper	53.7	5.0	ug/g	6.3	94.8	70-130			
Lead	47.5	1.0	ug/g	3.0	88.9	70-130			
Molybdenum	48.4	1.0	ug/g	ND	96.3	70-130			
Nickel	53.7	5.0	ug/g	5.9	95.6	70-130			
Selenium	49.0	1.0	ug/g	ND	97.8	70-130			
Silver	50.0	0.3	ug/g	ND	99.9	70-130			
Thallium	50.5	1.0	ug/g	ND	101	70-130			
Uranium	49.4	1.0	ug/g	ND	98.3	70-130			
Vanadium	62.1	10.0	ug/g	13.0	98.3	70-130			
Zinc	58.7	20.0	ug/g	ND	92.1	70-130			
Volatiles									
Benzene	2.47	0.02	ug/g	ND	61.9	60-130			
Ethylbenzene	3.91	0.05	ug/g	ND	97.6	60-130			
Toluene	3.87	0.05	ug/g	ND	96.6	60-130			
m,p-Xylenes	7.63	0.05	ug/g	ND	95.3	60-130			
o-Xylene	3.97	0.05	ug/g	ND	99.2	60-130			
Surrogate: Toluene-d8	2.82		ug/g		88.2	50-140			

Certificate of Analysis
Client: **ASC Environmental**
Client PO:

Report Date: 21-Jul-2020

Order Date: 9-Jul-2020

Project Description: **ASC-570**

Qualifier Notes:

Sample Qualifiers :

1 : GC-FID signal did not return to baseline by C50

QC Qualifiers :

Sample Data Revisions

None

Work Order Revisions / Comments:

Revision 1 - This report includes additional metals data

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.
Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.
- When reported, data for F4G has been processed using a silica gel cleanup.



Parcel Order Number (Lab Use Only) 2028370	Chain Of Custody (Lab Use Only) Nº 127255
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Client Name: ASC Environmental	Project Ref: ASC-570	Page <u>1</u> of <u>1</u>
Contact Name: Sarah McCallum	Quote #: S.O. 2020	Turnaround Time <input type="checkbox"/> 1 day <input type="checkbox"/> 3 day <input type="checkbox"/> 2 day <input checked="" type="checkbox"/> Regular
Address: Kingston, ON	PO #:	
Telephone: 613-929-0429	E-mail: All listed.	
Date Required: _____		

Regulation 153/04		Other Regulation		Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)			Required Analysis										
<input type="checkbox"/> Table 1	<input type="checkbox"/> Res/Park	<input type="checkbox"/> Med/Fine	<input type="checkbox"/> REG 558	<input type="checkbox"/> PWQO	Matrix	Air Volume	# of Containers	Sample Taken Date Time		PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP			pH	Texture
<input type="checkbox"/> Table 2	<input type="checkbox"/> Ind/Comm	<input type="checkbox"/> Coarse	<input type="checkbox"/> CCME	<input type="checkbox"/> MISA									Hg	CrVI	B (HWS)		
<input type="checkbox"/> Table 3	<input type="checkbox"/> Agri/Other		<input type="checkbox"/> SU - Sani	<input type="checkbox"/> SU - Storm													
<input type="checkbox"/> Table _____			Mun: _____														
For RSC: <input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Other: _____															
Sample ID/Location Name																	
1	BH1-SS1			S		2	Jul 8	9:00	X			X					
2	BH2-SS2			↓		↓	↓	10:15	X			X					
3	BH3-SS2			↓		↓	↓	11:45	X			X					
4	BH7-SS3			↓		↓	↓	3:30	X			X		X	X		
5																	
6																	
7																	
8																	
9																	
10																	

Comments:			Method of Delivery: Drop-Box			
Relinquished By (Sign): <i>S. McCallum</i>	Received By Driver/Dept: <i>Nyssa Fraser</i>	Received at Lab: <i>[Signature]</i>	Verified By: <i>Nyssa Fraser</i>			
Relinquished By (Print): S. McCallum	Date/Time: July 9/20 11:00	Date/Time: 7-20/20	Date/Time: July 9/20 11:10			
Date/Time: 09/07/20 AM	Temperature: 16.3 °C	Temperature: 8.7 °C	pH Verified: <input type="checkbox"/> By: _____			

Certificate of Analysis

ASC Environmental

1305 Princess Street
Kingston, ON K7M 3E3
Attn: Sarah McCallum

Client PO:
Project: ASC-570
Custody: 50229

Report Date: 30-Jul-2020
Order Date: 24-Jul-2020

Order #: 2030516

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

Parcel ID	Client ID
2030516-01	BH3-SS1
2030516-02	BH3-SS3

Approved By:



Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 30-Jul-2020

Client: **ASC Environmental**

Order Date: 24-Jul-2020

Client PO:

Project Description: ASC-570

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
Metals, ICP-MS	EPA 6020 - Digestion - ICP-MS	30-Jul-20	30-Jul-20
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	30-Jul-20	30-Jul-20
Solids, %	Gravimetric, calculation	30-Jul-20	30-Jul-20

Certificate of Analysis
 Client: **ASC Environmental**
 Client PO:

Report Date: 30-Jul-2020

Order Date: 24-Jul-2020

 Project Description: **ASC-570**

Client ID:	BH3-SS1	BH3-SS3	-	-
Sample Date:	08-Jul-20 11:45	08-Jul-20 11:45	-	-
Sample ID:	2030516-01	2030516-02	-	-
MDL/Units	Soil	Soil	-	-

Physical Characteristics

% Solids	0.1 % by Wt.	93.0	87.9	-	-
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Metals

Antimony	1.0 ug/g dry	<1.0	-	-	-
Arsenic	1.0 ug/g dry	4.0	-	-	-
Barium	1 ug/g dry	-	155	-	-
Barium	1.0 ug/g dry	144	-	-	-
Beryllium	0.5 ug/g dry	0.7	-	-	-
Boron	5.0 ug/g dry	9.4	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	5.0 ug/g dry	25.5	-	-	-
Cobalt	1 ug/g dry	-	10	-	-
Cobalt	1.0 ug/g dry	9.1	-	-	-
Copper	5.0 ug/g dry	21.5	-	-	-
Lead	1.0 ug/g dry	43.5	-	-	-
Molybdenum	1.0 ug/g dry	<1.0	-	-	-
Nickel	5.0 ug/g dry	16.7	-	-	-
Selenium	1.0 ug/g dry	<1.0	-	-	-
Silver	0.3 ug/g dry	<0.3	-	-	-
Thallium	1.0 ug/g dry	<1.0	-	-	-
Uranium	1.0 ug/g dry	<1.0	-	-	-
Vanadium	10.0 ug/g dry	36.6	-	-	-
Zinc	20.0 ug/g dry	57.6	-	-	-

Certificate of Analysis
Client: ASC Environmental
Client PO:

Report Date: 30-Jul-2020
 Order Date: 24-Jul-2020
Project Description: ASC-570

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	5.0	ug/g						
Cobalt	ND	1	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	5.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	5.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	10.0	ug/g						
Zinc	ND	20.0	ug/g						

Certificate of Analysis

Report Date: 30-Jul-2020

Client: ASC Environmental

Order Date: 24-Jul-2020

Client PO:

Project Description: ASC-570

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	1.3	1.0	ug/g dry	ND			NC	30	
Arsenic	5.4	1.0	ug/g dry	4.9			9.4	30	
Barium	964	1	ug/g dry	871			10.2	30	
Barium	94.6	1.0	ug/g dry	81.1			15.4	30	
Beryllium	0.8	0.5	ug/g dry	0.6			19.6	30	
Boron	11.0	5.0	ug/g dry	8.6			24.5	30	
Cadmium	ND	0.5	ug/g dry	ND			NC	30	
Chromium	26.7	5.0	ug/g dry	23.4			13.0	30	
Cobalt	8.3	1	ug/g dry	8.0			4.0	30	
Cobalt	9.6	1.0	ug/g dry	8.4			13.1	30	
Copper	24.0	5.0	ug/g dry	21.0			13.3	30	
Lead	20.3	1.0	ug/g dry	18.8			8.0	30	
Molybdenum	ND	1.0	ug/g dry	ND			NC	30	
Nickel	21.4	5.0	ug/g dry	18.9			12.3	30	
Selenium	ND	1.0	ug/g dry	ND			NC	30	
Silver	ND	0.3	ug/g dry	ND			NC	30	
Thallium	ND	1.0	ug/g dry	ND			NC	30	
Uranium	ND	1.0	ug/g dry	ND			NC	30	
Vanadium	36.7	10.0	ug/g dry	31.9			13.9	30	
Zinc	76.4	20.0	ug/g dry	67.9			11.7	30	
Physical Characteristics									
% Solids	35.0	0.1	% by Wt.	32.4			7.5	25	

Certificate of Analysis

Report Date: 30-Jul-2020

Client: ASC Environmental

Order Date: 24-Jul-2020

Client PO:

Project Description: ASC-570

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	50.0	1.0	ug/g	ND	99.8	70-130			
Arsenic	58.9	1.0	ug/g	2.0	114	70-130			
Barium	52.7	1	ug/g	ND	105	70-130			
Barium	93.7	1.0	ug/g	32.4	123	70-130			
Beryllium	53.7	0.5	ug/g	ND	107	70-130			
Boron	54.3	5.0	ug/g	ND	102	70-130			
Cadmium	51.8	0.5	ug/g	ND	103	70-130			
Chromium	71.6	5.0	ug/g	9.4	125	70-130			
Cobalt	53.6	1	ug/g	3.2	101	70-130			
Cobalt	60.8	1.0	ug/g	3.4	115	70-130			
Copper	63.5	5.0	ug/g	8.4	110	70-130			
Lead	62.6	1.0	ug/g	7.5	110	70-130			
Molybdenum	58.1	1.0	ug/g	ND	116	70-130			
Nickel	64.4	5.0	ug/g	7.6	114	70-130			
Selenium	52.3	1.0	ug/g	ND	104	70-130			
Silver	44.9	0.3	ug/g	ND	89.7	70-130			
Thallium	53.9	1.0	ug/g	ND	108	70-130			
Uranium	58.3	1.0	ug/g	ND	116	70-130			
Vanadium	76.7	10.0	ug/g	12.8	128	70-130			
Zinc	84.3	20.0	ug/g	27.2	114	70-130			

Certificate of Analysis

Report Date: 30-Jul-2020

Client: **ASC Environmental**

Order Date: 24-Jul-2020

Client PO:

Project Description: **ASC-570**

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.

Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.

Certificate of Analysis

ASC Environmental

1305 Princess Street
Kingston, ON K7M 3E3
Attn: Ashley Hosier

Client PO:
Project: ASC-570
Custody: 125048

Report Date: 15-Sep-2020
Order Date: 28-Aug-2020

Revised Report

Order #: 2035658

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

Parcel ID	Client ID
2035658-01	EX2-SA1
2035658-03	EX2-SA6
2035658-04	EX2-SA8
2035658-05	EX2-SA9
2035658-06	EX2-SA7

Approved By:



Dale Robertson, BSc
Laboratory Director

Certificate of Analysis

Report Date: 15-Sep-2020

Client: **ASC Environmental**

Order Date: 28-Aug-2020

Client PO:

Project Description: ASC-570

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
REG 153: Metals by ICP/MS, soil	EPA 6020 - Digestion - ICP-MS	31-Aug-20	31-Aug-20
Solids, %	Gravimetric, calculation	31-Aug-20	31-Aug-20

Certificate of Analysis
 Client: **ASC Environmental**
 Client PO:

Report Date: 15-Sep-2020

Order Date: 28-Aug-2020

 Project Description: **ASC-570**

Client ID:	EX2-SA1	EX2-SA6	EX2-SA8	EX2-SA9
Sample Date:	28-Aug-20 09:00	28-Aug-20 09:00	28-Aug-20 09:00	28-Aug-20 09:00
Sample ID:	2035658-01	2035658-03	2035658-04	2035658-05
MDL/Units	Soil	Soil	Soil	Soil

Physical Characteristics

% Solids	0.1 % by Wt.	71.4	87.1	80.3	89.5
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Metals

Antimony	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Arsenic	1.0 ug/g dry	3.0	3.8	3.3	4.4
Barium	1.0 ug/g dry	306	242	200	201
Beryllium	0.5 ug/g dry	1.2	0.9	0.8	0.8
Boron	5.0 ug/g dry	5.9	8.4	7.4	10.7
Cadmium	0.5 ug/g dry	<0.5	<0.5	<0.5	<0.5
Chromium	5.0 ug/g dry	53.2	43.1	38.5	33.2
Cobalt	1.0 ug/g dry	15.4	15.3	12.6	11.5
Copper	5.0 ug/g dry	15.9	28.1	23.0	29.2
Lead	1.0 ug/g dry	10.8	15.8	10.5	91.9
Molybdenum	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Nickel	5.0 ug/g dry	27.5	29.9	25.1	22.5
Selenium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Silver	0.3 ug/g dry	<0.3	<0.3	<0.3	<0.3
Thallium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Uranium	1.0 ug/g dry	<1.0	<1.0	<1.0	<1.0
Vanadium	10.0 ug/g dry	71.7	56.6	53.4	46.6
Zinc	20.0 ug/g dry	69.8	84.3	72.6	88.7

Certificate of Analysis
 Client: ASC Environmental
 Client PO:

Report Date: 15-Sep-2020

Order Date: 28-Aug-2020

Project Description: ASC-570

Client ID:	EX2-SA7	-	-	-
Sample Date:	28-Aug-20 09:00	-	-	-
Sample ID:	2035658-06	-	-	-
MDL/Units	Soil	-	-	-

Physical Characteristics

% Solids	0.1 % by Wt.	91.0	-	-	-
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Metals

Antimony	1.0 ug/g dry	<1.0	-	-	-
Arsenic	1.0 ug/g dry	3.2	-	-	-
Barium	1.0 ug/g dry	147	-	-	-
Beryllium	0.5 ug/g dry	0.7	-	-	-
Boron	5.0 ug/g dry	6.5	-	-	-
Cadmium	0.5 ug/g dry	<0.5	-	-	-
Chromium	5.0 ug/g dry	27.5	-	-	-
Cobalt	1.0 ug/g dry	10.1	-	-	-
Copper	5.0 ug/g dry	21.8	-	-	-
Lead	1.0 ug/g dry	22.0	-	-	-
Molybdenum	1.0 ug/g dry	<1.0	-	-	-
Nickel	5.0 ug/g dry	19.3	-	-	-
Selenium	1.0 ug/g dry	<1.0	-	-	-
Silver	0.3 ug/g dry	<0.3	-	-	-
Thallium	1.0 ug/g dry	<1.0	-	-	-
Uranium	1.0 ug/g dry	<1.0	-	-	-
Vanadium	10.0 ug/g dry	41.6	-	-	-
Zinc	20.0 ug/g dry	62.5	-	-	-

Certificate of Analysis
 Client: **ASC Environmental**
 Client PO:

Report Date: 15-Sep-2020
 Order Date: 28-Aug-2020
 Project Description: **ASC-570**

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	ND	1.0	ug/g						
Arsenic	ND	1.0	ug/g						
Barium	ND	1.0	ug/g						
Beryllium	ND	0.5	ug/g						
Boron	ND	5.0	ug/g						
Cadmium	ND	0.5	ug/g						
Chromium	ND	5.0	ug/g						
Cobalt	ND	1.0	ug/g						
Copper	ND	5.0	ug/g						
Lead	ND	1.0	ug/g						
Molybdenum	ND	1.0	ug/g						
Nickel	ND	5.0	ug/g						
Selenium	ND	1.0	ug/g						
Silver	ND	0.3	ug/g						
Thallium	ND	1.0	ug/g						
Uranium	ND	1.0	ug/g						
Vanadium	ND	10.0	ug/g						
Zinc	ND	20.0	ug/g						

Certificate of Analysis

Report Date: 15-Sep-2020

Client: ASC Environmental

Order Date: 28-Aug-2020

Client PO:

Project Description: ASC-570

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	1.7	1.0	ug/g dry	1.8			3.6	30	
Arsenic	3.4	1.0	ug/g dry	4.0			15.9	30	
Barium	175	1.0	ug/g dry	183			4.5	30	
Beryllium	ND	0.5	ug/g dry	ND			NC	30	
Boron	ND	5.0	ug/g dry	ND			NC	30	
Cadmium	ND	0.5	ug/g dry	ND			NC	30	
Chromium	37.2	5.0	ug/g dry	37.7			1.5	30	
Cobalt	8.0	1.0	ug/g dry	8.2			2.8	30	
Copper	26.7	5.0	ug/g dry	27.8			4.0	30	
Lead	132	1.0	ug/g dry	135			2.1	30	
Molybdenum	ND	1.0	ug/g dry	ND			NC	30	
Nickel	21.9	5.0	ug/g dry	22.1			0.7	30	
Selenium	ND	1.0	ug/g dry	ND			NC	30	
Silver	ND	0.3	ug/g dry	ND			NC	30	
Thallium	ND	1.0	ug/g dry	ND			NC	30	
Uranium	ND	1.0	ug/g dry	ND			NC	30	
Vanadium	37.5	10.0	ug/g dry	39.1			4.1	30	
Zinc	150	20.0	ug/g dry	151			0.9	30	
Physical Characteristics									
% Solids	71.3	0.1	% by Wt.	71.4			0.1	25	

Certificate of Analysis

Report Date: 15-Sep-2020

Client: ASC Environmental

Order Date: 28-Aug-2020

Client PO:

Project Description: ASC-570

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Metals									
Antimony	44.1	1.0	ug/g	ND	86.8	70-130			
Arsenic	49.5	1.0	ug/g	1.6	95.9	70-130			
Barium	121	1.0	ug/g	73.1	96.0	70-130			
Beryllium	48.1	0.5	ug/g	ND	95.9	70-130			
Boron	43.6	5.0	ug/g	ND	85.3	70-130			
Cadmium	47.3	0.5	ug/g	ND	94.4	70-130			
Chromium	65.1	5.0	ug/g	15.1	100	70-130			
Cobalt	52.1	1.0	ug/g	3.3	97.7	70-130			
Copper	57.5	5.0	ug/g	11.1	92.8	70-130			
Lead	94.9	1.0	ug/g	53.9	81.8	70-130			
Molybdenum	47.7	1.0	ug/g	ND	95.0	70-130			
Nickel	56.2	5.0	ug/g	8.8	94.8	70-130			
Selenium	45.3	1.0	ug/g	ND	90.4	70-130			
Silver	48.2	0.3	ug/g	ND	96.2	70-130			
Thallium	46.8	1.0	ug/g	ND	93.4	70-130			
Uranium	47.7	1.0	ug/g	ND	95.0	70-130			
Vanadium	65.0	10.0	ug/g	15.6	98.7	70-130			
Zinc	104	20.0	ug/g	60.6	87.1	70-130			

Certificate of Analysis

Report Date: 15-Sep-2020

Client: ASC Environmental

Order Date: 28-Aug-2020

Client PO:

Project Description: ASC-570

Qualifier Notes:

None

Sample Data Revisions

None

Work Order Revisions / Comments:

Revision 1 - This report includes an updated sample list

Other Report Notes:

n/a: not applicable

ND: Not Detected

MDL: Method Detection Limit

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

%REC: Percent recovery.

RPD: Relative percent difference.

NC: Not Calculated

Soil results are reported on a dry weight basis when the units are denoted with 'dry'.

Where %Solids is reported, moisture loss includes the loss of volatile hydrocarbons.



2035658

Nº 125048

Client Name: <u>ASC - 3700 Environmental</u>	Project Ref: <u>ASC-520</u>	Page <u>1</u> of <u>1</u>
Contact Name: <u>Ashley Hosier</u>	Quote #: <u>S.O. 2020</u>	Turnaround Time <input checked="" type="checkbox"/> 1 day <input type="checkbox"/> 3 day <input type="checkbox"/> 2 day <input type="checkbox"/> Regular
Address: <u>Kingston, ON</u>	PO #:	
Telephone: <u>613-453-8466</u>	E-mail: <u>All pls.</u>	Date Required: <u>ASAP</u>

Regulation 153/04		Other Regulation		Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)			Required Analysis																		
<input type="checkbox"/> Table 1	<input type="checkbox"/> Res/Park	<input type="checkbox"/> Med/Fine	<input type="checkbox"/> REG 558	<input type="checkbox"/> PWQO	Matrix	Air Volume	# of Containers	Sample Taken	Date	Time	PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	HG	CrVI	B (HWS)								
<input type="checkbox"/> Table 2	<input type="checkbox"/> Ind/Comm	<input type="checkbox"/> Coarse	<input type="checkbox"/> CCME	<input type="checkbox"/> MISA																					
<input checked="" type="checkbox"/> Table 3	<input type="checkbox"/> Agri/Other		<input type="checkbox"/> SU - Sani	<input type="checkbox"/> SU - Storm																					
<input checked="" type="checkbox"/> Table <u>7</u>			Mun: _____	<input type="checkbox"/> Other: _____																					
For RSC: <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No																									
Sample ID/Location Name																									
1	<u>EX2-SA1</u>		<u>S</u>	<u>1</u>	<u>28/08/20</u>	<u>A.M.</u>								<input checked="" type="checkbox"/>											
2	<u>EX2-SA2</u>		↓	↓										<input checked="" type="checkbox"/>											
3	<u>EX2-SA4</u>		↓	↓										<input checked="" type="checkbox"/>											
4	<u>EX2-SA6</u>		↓	↓										<input checked="" type="checkbox"/>											
5	<u>EX2-SA8</u>		↓	↓										<input checked="" type="checkbox"/>											
6	<u>EX2-SA9</u>		↓	↓										<input checked="" type="checkbox"/>											
7																									
8																									
9																									
10																									

Comments: Accidentally labeled the jars 27 instead of 28 (wrong date) SA4 missing - Disregard Extra samples SA7 and TELP-Analyze SA7. New Coc

Method of Delivery: drop-box

Relinquished By (Sign): <u>Ashley Hosier</u>	Received By Driver/Depot: <u>[Signature]</u>	Received at Lab: <u>[Signature]</u>	Verified By: <u>[Signature]</u>
Relinquished By (Print): <u>Ashley Hosier</u>	Date/Time: <u>Aug 28 12:45</u>	Date/Time: <u>Aug 29, 20 14:00</u>	Date/Time: <u>Aug 29, 2020 14:39</u>
Date/Time: <u>28/08/20</u>	Temperature: <u>23.0 °C</u>	Temperature: <u>5.4 °C</u>	pH Verified: <input type="checkbox"/> By: _____

Certificate of Analysis

ASC Environmental

1305 Princess Street
Kingston, ON K7M 3E3
Attn: Sarah McCallum

Client PO:
Project: ASC-570
Custody: 127201

Report Date: 21-Jul-2020
Order Date: 15-Jul-2020

Order #: 2029176

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

Parcel ID	Client ID
2029176-01	MW1
2029176-02	MW1-DUP
2029176-03	MW32
2029176-04	MW2
2029176-05	MW3

Approved By:



Dale Robertson, BSc
Laboratory Director

Certificate of Analysis
Client: **ASC Environmental**
Client PO:

Report Date: 21-Jul-2020
Order Date: 15-Jul-2020
Project Description: **ASC-570**

Analysis Summary Table

Analysis	Method Reference/Description	Extraction Date	Analysis Date
BTEX by P&T GC-MS	EPA 624 - P&T GC-MS	16-Jul-20	16-Jul-20
Metals, ICP-MS	EPA 200.8 - ICP-MS	17-Jul-20	17-Jul-20
PHC F1	CWS Tier 1 - P&T GC-FID	16-Jul-20	16-Jul-20
PHCs F2 to F4	CWS Tier 1 - GC-FID, extraction	20-Jul-20	20-Jul-20
REG 153: PAHs by GC-MS	EPA 625 - GC-MS, extraction	16-Jul-20	17-Jul-20

Certificate of Analysis
 Client: ASC Environmental
 Client PO:

Report Date: 21-Jul-2020

Order Date: 15-Jul-2020

Project Description: ASC-570

	Client ID:	MW1	MW1-DUP	MW32	MW2
	Sample Date:	14-Jul-20 12:30	14-Jul-20 12:30	14-Jul-20 14:00	14-Jul-20 15:00
	Sample ID:	2029176-01	2029176-02	2029176-03	2029176-04
	MDL/Units	Water	Water	Water	Water

Metals

	MDL/Units	MW1	MW1-DUP	MW32	MW2
Antimony	0.5 ug/L	<0.5	<0.5	1.3	<0.5
Arsenic	1 ug/L	<1	<1	<1	<1
Barium	1 ug/L	112	110	100	390
Beryllium	0.5 ug/L	<0.5	<0.5	<0.5	<0.5
Boron	10 ug/L	23	23	45	22
Cadmium	0.1 ug/L	<0.1	<0.1	0.1	<0.1
Chromium	1 ug/L	<1	<1	<1	<1
Cobalt	0.5 ug/L	4.5	4.3	<0.5	<0.5
Copper	0.5 ug/L	0.8	0.7	2.2	0.7
Lead	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Molybdenum	0.5 ug/L	2.5	2.5	1.4	0.9
Nickel	1 ug/L	17	17	1	<1
Selenium	1 ug/L	<1	<1	<1	<1
Silver	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Sodium	200 ug/L	25100	24300	51800	143000
Thallium	0.1 ug/L	<0.1	<0.1	<0.1	<0.1
Uranium	0.1 ug/L	0.8	0.8	1.4	0.8
Vanadium	0.5 ug/L	0.6	0.5	3.2	<0.5
Zinc	5 ug/L	<5	<5	5	<5

Volatiles

	MDL/Units	MW1	MW1-DUP	MW32	MW2
Benzene	0.5 ug/L	<0.5	-	<0.5	<0.5
Ethylbenzene	0.5 ug/L	<0.5	-	<0.5	<0.5
Toluene	0.5 ug/L	<0.5	-	<0.5	<0.5
m,p-Xylenes	0.5 ug/L	<0.5	-	<0.5	<0.5
o-Xylene	0.5 ug/L	<0.5	-	<0.5	<0.5
Xylenes, total	0.5 ug/L	<0.5	-	<0.5	<0.5
Toluene-d8	Surrogate	96.8%	-	96.1%	97.1%

Hydrocarbons

	MDL/Units	MW1	MW1-DUP	MW32	MW2
F1 PHCs (C6-C10)	25 ug/L	<25	-	<25	<25
F2 PHCs (C10-C16)	100 ug/L	<100	-	<100	<100
F3 PHCs (C16-C34)	100 ug/L	<100	-	<100	<100
F4 PHCs (C34-C50)	100 ug/L	<100	-	<100	<100

Semi-Volatiles

	MDL/Units	MW1	MW1-DUP	MW32	MW2
Acenaphthene	0.05 ug/L	<0.05	-	-	-
Acenaphthylene	0.05 ug/L	<0.05	-	-	-

Certificate of Analysis
 Client: **ASC Environmental**
 Client PO:

Report Date: 21-Jul-2020

Order Date: 15-Jul-2020

Project Description: **ASC-570**

	Client ID: Sample Date: Sample ID:	MW1 14-Jul-20 12:30 2029176-01 Water	MW1-DUP 14-Jul-20 12:30 2029176-02 Water	MW32 14-Jul-20 14:00 2029176-03 Water	MW2 14-Jul-20 15:00 2029176-04 Water
	MDL/Units				
Anthracene	0.01 ug/L	<0.01	-	-	-
Benzo [a] anthracene	0.01 ug/L	<0.01	-	-	-
Benzo [a] pyrene	0.01 ug/L	<0.01	-	-	-
Benzo [b] fluoranthene	0.05 ug/L	<0.05	-	-	-
Benzo [g,h,i] perylene	0.05 ug/L	<0.05	-	-	-
Benzo [k] fluoranthene	0.05 ug/L	<0.05	-	-	-
Chrysene	0.05 ug/L	<0.05	-	-	-
Dibenzo [a,h] anthracene	0.05 ug/L	<0.05	-	-	-
Fluoranthene	0.01 ug/L	<0.01	-	-	-
Fluorene	0.05 ug/L	<0.05	-	-	-
Indeno [1,2,3-cd] pyrene	0.05 ug/L	<0.05	-	-	-
1-Methylnaphthalene	0.05 ug/L	<0.05	-	-	-
2-Methylnaphthalene	0.05 ug/L	<0.05	-	-	-
Methylnaphthalene (1&2)	0.10 ug/L	<0.10	-	-	-
Naphthalene	0.05 ug/L	<0.05	-	-	-
Phenanthrene	0.05 ug/L	<0.05	-	-	-
Pyrene	0.01 ug/L	<0.01	-	-	-
2-Fluorobiphenyl	Surrogate	88.7%	-	-	-
Terphenyl-d14	Surrogate	107%	-	-	-

Certificate of Analysis
 Client: ASC Environmental
 Client PO:

Report Date: 21-Jul-2020

Order Date: 15-Jul-2020

Project Description: ASC-570

Client ID:	MW3	-	-	-
Sample Date:	14-Jul-20 16:00	-	-	-
Sample ID:	2029176-05	-	-	-
MDL/Units	Water	-	-	-

Metals

Antimony	0.5 ug/L	<0.5	-	-	-
Arsenic	1 ug/L	<1	-	-	-
Barium	1 ug/L	132	-	-	-
Beryllium	0.5 ug/L	<0.5	-	-	-
Boron	10 ug/L	31	-	-	-
Cadmium	0.1 ug/L	<0.1	-	-	-
Chromium	1 ug/L	<1	-	-	-
Cobalt	0.5 ug/L	<0.5	-	-	-
Copper	0.5 ug/L	1.4	-	-	-
Lead	0.1 ug/L	0.1	-	-	-
Molybdenum	0.5 ug/L	3.2	-	-	-
Nickel	1 ug/L	<1	-	-	-
Selenium	1 ug/L	<1	-	-	-
Silver	0.1 ug/L	<0.1	-	-	-
Sodium	200 ug/L	36200	-	-	-
Thallium	0.1 ug/L	<0.1	-	-	-
Uranium	0.1 ug/L	4.5	-	-	-
Vanadium	0.5 ug/L	0.8	-	-	-
Zinc	5 ug/L	<5	-	-	-

Volatiles

Benzene	0.5 ug/L	<0.5	-	-	-
Ethylbenzene	0.5 ug/L	<0.5	-	-	-
Toluene	0.5 ug/L	<0.5	-	-	-
m,p-Xylenes	0.5 ug/L	<0.5	-	-	-
o-Xylene	0.5 ug/L	<0.5	-	-	-
Xylenes, total	0.5 ug/L	<0.5	-	-	-
Toluene-d8	Surrogate	96.2%	-	-	-

Hydrocarbons

F1 PHCs (C6-C10)	25 ug/L	<25	-	-	-
F2 PHCs (C10-C16)	100 ug/L	<100	-	-	-
F3 PHCs (C16-C34)	100 ug/L	<100	-	-	-
F4 PHCs (C34-C50)	100 ug/L	<100	-	-	-

Certificate of Analysis

Report Date: 21-Jul-2020

Client: ASC Environmental

Order Date: 15-Jul-2020

Client PO:

Project Description: ASC-570

Method Quality Control: Blank

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L						
F2 PHCs (C10-C16)	ND	100	ug/L						
F3 PHCs (C16-C34)	ND	100	ug/L						
F4 PHCs (C34-C50)	ND	100	ug/L						
Metals									
Antimony	ND	0.5	ug/L						
Arsenic	ND	1	ug/L						
Barium	ND	1	ug/L						
Beryllium	ND	0.5	ug/L						
Boron	ND	10	ug/L						
Cadmium	ND	0.1	ug/L						
Chromium	ND	1	ug/L						
Cobalt	ND	0.5	ug/L						
Copper	ND	0.5	ug/L						
Lead	ND	0.1	ug/L						
Molybdenum	ND	0.5	ug/L						
Nickel	ND	1	ug/L						
Selenium	ND	1	ug/L						
Silver	ND	0.1	ug/L						
Sodium	ND	200	ug/L						
Thallium	ND	0.1	ug/L						
Uranium	ND	0.1	ug/L						
Vanadium	ND	0.5	ug/L						
Zinc	ND	5	ug/L						
Semi-Volatiles									
Acenaphthene	ND	0.05	ug/L						
Acenaphthylene	ND	0.05	ug/L						
Anthracene	ND	0.01	ug/L						
Benzo [a] anthracene	ND	0.01	ug/L						
Benzo [a] pyrene	ND	0.01	ug/L						
Benzo [b] fluoranthene	ND	0.05	ug/L						
Benzo [g,h,i] perylene	ND	0.05	ug/L						
Benzo [k] fluoranthene	ND	0.05	ug/L						
Chrysene	ND	0.05	ug/L						
Dibenzo [a,h] anthracene	ND	0.05	ug/L						
Fluoranthene	ND	0.01	ug/L						
Fluorene	ND	0.05	ug/L						
Indeno [1,2,3-cd] pyrene	ND	0.05	ug/L						
1-Methylnaphthalene	ND	0.05	ug/L						
2-Methylnaphthalene	ND	0.05	ug/L						
Methylnaphthalene (1&2)	ND	0.10	ug/L						
Naphthalene	ND	0.05	ug/L						
Phenanthrene	ND	0.05	ug/L						
Pyrene	ND	0.01	ug/L						
Surrogate: 2-Fluorobiphenyl	13.7		ug/L		68.3	50-140			
Surrogate: Terphenyl-d14	19.5		ug/L		97.4	50-140			
Volatiles									
Benzene	ND	0.5	ug/L						
Ethylbenzene	ND	0.5	ug/L						
Toluene	ND	0.5	ug/L						
m,p-Xylenes	ND	0.5	ug/L						
o-Xylene	ND	0.5	ug/L						
Xylenes, total	ND	0.5	ug/L						
Surrogate: Toluene-d8	79.1		ug/L		98.9	50-140			

Certificate of Analysis

Report Date: 21-Jul-2020

Client: ASC Environmental

Order Date: 15-Jul-2020

Client PO:

Project Description: ASC-570

Method Quality Control: Duplicate

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	ND	25	ug/L	ND			NC	30	
Metals									
Antimony	1.10	0.5	ug/L	0.75			NC	20	
Arsenic	ND	1	ug/L	ND			NC	20	
Barium	360	1	ug/L	341			5.4	20	
Beryllium	ND	0.5	ug/L	ND			NC	20	
Boron	40	10	ug/L	41			2.2	20	
Cadmium	ND	0.1	ug/L	ND			NC	20	
Chromium	ND	1	ug/L	ND			NC	20	
Cobalt	2.06	0.5	ug/L	2.05			0.1	20	
Copper	9.30	0.5	ug/L	9.24			0.6	20	
Lead	0.88	0.1	ug/L	0.91			3.5	20	
Molybdenum	3.23	0.5	ug/L	3.15			2.6	20	
Nickel	3.6	1	ug/L	3.7			0.6	20	
Selenium	ND	1	ug/L	ND			NC	20	
Silver	ND	0.1	ug/L	ND			NC	20	
Sodium	780000	2000	ug/L	832000			6.5	20	
Thallium	ND	0.1	ug/L	ND			NC	20	
Uranium	5.1	0.1	ug/L	5.3			2.8	20	
Vanadium	1.18	0.5	ug/L	1.25			6.1	20	
Zinc	7	5	ug/L	7			7.4	20	
Volatiles									
Benzene	ND	0.5	ug/L	ND			NC	30	
Ethylbenzene	ND	0.5	ug/L	ND			NC	30	
Toluene	ND	0.5	ug/L	ND			NC	30	
m,p-Xylenes	ND	0.5	ug/L	ND			NC	30	
o-Xylene	ND	0.5	ug/L	ND			NC	30	
Surrogate: Toluene-d8	77.0		ug/L		96.3	50-140			

Certificate of Analysis
 Client: **ASC Environmental**
 Client PO:

Report Date: 21-Jul-2020

Order Date: 15-Jul-2020

Project Description: **ASC-570**

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Hydrocarbons									
F1 PHCs (C6-C10)	1590	25	ug/L	ND	79.6	68-117			
F2 PHCs (C10-C16)	1670	100	ug/L	ND	105	60-140			
F3 PHCs (C16-C34)	4230	100	ug/L	ND	108	60-140			
F4 PHCs (C34-C50)	2400	100	ug/L	ND	96.6	60-140			
Metals									
Antimony	42.5	0.5	ug/L	ND	85.0	80-120			
Arsenic	50.3	1	ug/L	ND	101	80-120			
Barium	46.8	1	ug/L	ND	93.5	80-120			
Beryllium	47.9	0.5	ug/L	ND	95.8	80-120			
Boron	41	10	ug/L	ND	82.8	80-120			
Cadmium	46.8	0.1	ug/L	ND	93.6	80-120			
Chromium	49.5	1	ug/L	ND	98.9	80-120			
Cobalt	47.8	0.5	ug/L	ND	95.6	80-120			
Copper	45.7	0.5	ug/L	ND	91.5	80-120			
Lead	44.3	0.1	ug/L	ND	88.7	80-120			
Molybdenum	44.9	0.5	ug/L	ND	89.8	80-120			
Nickel	46.6	1	ug/L	ND	93.3	80-120			
Selenium	47.9	1	ug/L	ND	95.7	80-120			
Silver	46.7	0.1	ug/L	ND	93.5	80-120			
Sodium	9000	200	ug/L	ND	90.0	80-120			
Thallium	45.9	0.1	ug/L	ND	91.9	80-120			
Uranium	47.5	0.1	ug/L	ND	94.9	80-120			
Vanadium	48.4	0.5	ug/L	ND	96.8	80-120			
Zinc	45	5	ug/L	ND	89.9	80-120			
Semi-Volatiles									
Acenaphthene	4.45	0.05	ug/L	ND	89.1	50-140			
Acenaphthylene	4.07	0.05	ug/L	ND	81.4	50-140			
Anthracene	4.25	0.01	ug/L	ND	84.9	50-140			
Benzo [a] anthracene	4.87	0.01	ug/L	ND	97.5	50-140			
Benzo [a] pyrene	4.69	0.01	ug/L	ND	93.9	50-140			
Benzo [b] fluoranthene	6.03	0.05	ug/L	ND	121	50-140			
Benzo [g,h,i] perylene	4.85	0.05	ug/L	ND	97.1	50-140			
Benzo [k] fluoranthene	5.18	0.05	ug/L	ND	104	50-140			
Chrysene	5.28	0.05	ug/L	ND	106	50-140			
Dibenzo [a,h] anthracene	5.12	0.05	ug/L	ND	102	50-140			
Fluoranthene	3.40	0.01	ug/L	ND	68.0	50-140			
Fluorene	4.53	0.05	ug/L	ND	90.6	50-140			
Indeno [1,2,3-cd] pyrene	5.24	0.05	ug/L	ND	105	50-140			
1-Methylnaphthalene	3.82	0.05	ug/L	ND	76.5	50-140			
2-Methylnaphthalene	4.36	0.05	ug/L	ND	87.2	50-140			
Naphthalene	3.91	0.05	ug/L	ND	78.2	50-140			
Phenanthrene	4.21	0.05	ug/L	ND	84.1	50-140			
Pyrene	3.71	0.01	ug/L	ND	74.1	50-140			
Surrogate: 2-Fluorobiphenyl	16.7		ug/L		83.7	50-140			
Surrogate: Terphenyl-d14	23.9		ug/L		120	50-140			
Volatiles									
Benzene	39.0	0.5	ug/L	ND	97.6	60-130			
Ethylbenzene	34.4	0.5	ug/L	ND	86.0	60-130			

Certificate of Analysis

Report Date: 21-Jul-2020

Client: ASC Environmental

Order Date: 15-Jul-2020

Client PO:

Project Description: ASC-570

Method Quality Control: Spike

Analyte	Result	Reporting Limit	Units	Source Result	%REC	%REC Limit	RPD	RPD Limit	Notes
Toluene	35.3	0.5	ug/L	ND	88.2	60-130			
m,p-Xylenes	69.6	0.5	ug/L	ND	87.0	60-130			
o-Xylene	35.5	0.5	ug/L	ND	88.8	60-130			
Surrogate: Toluene-d8	76.2		ug/L		95.3	50-140			

Certificate of Analysis
Client: ASC Environmental
Client PO:

Report Date: 21-Jul-2020
Order Date: 15-Jul-2020
Project Description: ASC-570

Qualifier Notes:

QC Qualifiers :

Sample Data Revisions

None

Work Order Revisions / Comments:

None

Other Report Notes:

n/a: not applicable
ND: Not Detected
MDL: Method Detection Limit
Source Result: Data used as source for matrix and duplicate samples
%REC: Percent recovery.
RPD: Relative percent difference.
NC: Not Calculated

CCME PHC additional information:

- The method for the analysis of PHCs complies with the Reference Method for the CWS PHC and is validated for use in the laboratory. All prescribed quality criteria identified in the method has been met.
- F1 range corrected for BTEX.
- F2 to F3 ranges corrected for appropriate PAHs where available.
- The gravimetric heavy hydrocarbons (F4G) are not to be added to C6 to C50 hydrocarbons.
- In the case where F4 and F4G are both reported, the greater of the two results is to be used for comparison to CWS PHC criteria.
- When reported, data for F4G has been processed using a silica gel cleanup.



Parcel Order Number (Lab Use Only) 2029176	Chain Of Custody (Lab Use Only) No 127201
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Client Name: ASC Environmental	Project Ref: ASC-570	Page <u>1</u> of <u>1</u>
Contact Name: Sarah McCallum	Quote #: S.O. 2020	Turnaround Time <input type="checkbox"/> 1 day <input type="checkbox"/> 3 day <input type="checkbox"/> 2 day <input checked="" type="checkbox"/> Regular
Address: Kingston, ON	PO #:	
Telephone: 613-929-0429	E-mail: All listed	
Date Required: _____		

Regulation 153/04		Other Regulation		Matrix Type: S (Soil/Sed.) GW (Ground Water) SW (Surface Water) SS (Storm/Sanitary Sewer) P (Paint) A (Air) O (Other)		Required Analysis											
<input type="checkbox"/> Table 1	<input type="checkbox"/> Res/Park	<input type="checkbox"/> Med/Fine	<input type="checkbox"/> REG 558	<input type="checkbox"/> PWQO	Matrix	Air Volume	# of Containers	Sample Taken		PHCs F1-F4+BTEX	VOCs	PAHs	Metals by ICP	Hg	CrVI	B (HWS)	
<input type="checkbox"/> Table 2	<input type="checkbox"/> Ind/Comm	<input type="checkbox"/> Coarse	<input type="checkbox"/> CCME	<input type="checkbox"/> MISA				Date	Time								
<input type="checkbox"/> Table 3	<input type="checkbox"/> Agri/Other		<input type="checkbox"/> SU - Sani	<input type="checkbox"/> SU - Storm													
<input type="checkbox"/> Table _____			Mun: _____														
For RSC: <input type="checkbox"/> Yes <input type="checkbox"/> No		<input type="checkbox"/> Other: _____															
Sample ID/Location Name																	
1	MW1			GW	5	14-July-20	12:30	X	X	X							
2	MW1-Dup			GW	1		12:30				X						
3	MW 32			GW	4		2:00	X			X						
4	MW 2			GW	4		3:00	X			X						
5	MW3			GW	4	↓	4:00	X			X						
6																	
7																	
8																	
9																	
10																	

Comments: _____

Method of Delivery: **Drop-Box**

Relinquished By (Sign): <i>S. McCallum</i>	Received By Driver/Depot: <i>Kyssa F.</i>	Received at Lab: <i>Jimcepan</i>	Verified By: <i>Kyssa F.</i>
Relinquished By (Print): <i>S. McCallum</i>	Date/Time: <i>July 15/20 8:30</i>	Date/Time: <i>Jul 16, 2020 09:44</i>	Date/Time: <i>July 15/20 8:40</i>
Date/Time: <i>14-July-20 6 PM</i>	Temperature: <i>2.3</i> °C	Temperature: <i>6.3</i> °C	pH Verified: <input type="checkbox"/> By: <i>Kyssa F.</i>