

Prepared By:



JR Capital Holdings Inc.

Phase Two Environmental Site Assessment
1873 London Line, City of Sarnia

GMBP File: 219125

July 2019

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PHASE TWO ENVIRONMENTAL SITE ASSESSMENT

1873 LONDON LINE, CITY OF SARNIA

JR CAPITAL HOLDINGS INC.

JULY 2019

GMBP FILE: 219125

1. INTRODUCTION AND BACKGROUND INFORMATION

GM BluePlan Engineering Limited (GMBP) was retained by JR Capital Holdings Inc. (hereafter referred to as the "Client/Owner") to undertake a Phase Two Environmental Site Assessment (ESA) at a property located at 1873 London Line in the City of Sarnia (hereafter referred to as the "Site"). The location and layout of the Site is presented in Figure 1 and 2. GMBP conducted a Phase One ESA at the Site in July 2019.

The Site is approximately 9.2 hectares (47.6 acres) in size and is located in the east part of the City of Sarnia, south of London Line, east of Blackwell Side Road as presented on Figures 1 and 2. The Site is currently owned by JR Capital Holdings Inc., who operate a golf course on the Site. The Site has been historically under agricultural and landscaping/garden centre (nursery) use.

The results of the Phase One ESA indicated the following Areas of Potential Environmental Concern (APECs) regarding the property:

1. **On-Site fuel storage:** one (1) diesel fuel and (1) gasoline storage tank present on-Site
 - **Potential Contaminants of Concern:** Petroleum Hydrocarbons (PHCs)
 - **Potentially Impacted Media:** Soil
2. **Fill of unknown quality and general shallow soil quality:**
 - a) Potential use of fill material at the northwest portion of the Site during development of the property at an unknown date, and general shallow soil quality related to storage of miscellaneous materials and equipment in this area.
 - b) General shallow soil quality at the northeast portion of the Site, in the outdoor storage area, where miscellaneous building materials and equipment are stored.
 - **Potential Contaminants of Concern:** Polycyclic Aromatic Hydrocarbons (PAHs); Metals (M) and Petroleum Hydrocarbons (PHCs)
 - **Potentially Impacted Media:** Soil

The Phase Two ESA was completed based on the findings of the Phase One ESA completed in June/July 2019 by GMBP. The assessment included the excavation of a series of test pits generally at the northern portion of the property to investigate, the identified APECs and the completion of a soil sampling program in the general area of the identified APECs. The Phase Two ESA was completed to assess the environmental condition of the subsurface soils related to the APECs identified in the Phase One ESA. The Phase Two ESA investigation was undertaken to further reduce the uncertainty with respect to the environmental condition of the subsurface soil conditions at the Site.

It is our understanding that this Phase Two ESA is conducted to support an Official Plan and Zoning By-law amendment application and draft plan approval for the Site and that it is not required to support a Record of Site Condition (RSC) under Ontario Regulation (O. Reg.) 153/04 (as amended).

2. METHODOLOGY

The current investigation was conducted following the recommendations laid out in the Phase One ESA which was completed in June/July 2019 by GMBP. To complete the additional investigation, a fieldwork program was designed to focus on the locations identified as being Areas of Potential Environmental Concern related to general shallow soil quality in the northwest portion of the Site, specifically in the area surrounding the above ground storage tanks (ASTs) used to hold gasoline and diesel fuel, the outdoor storage areas, and the potential use of imported fill at the northwest portion of the Site. The APECs are shown on Figure 2. The purpose of the subsurface investigation was primarily to determine the quality of the subsurface soils associated with the locations of the identified on-Site APECs.

The fieldwork program included the excavation of test pits, the collection of soil samples, the submission of select soil samples to an accredited analytical laboratory for environmental analysis and assessment of findings. Details of the investigative activities are presented below.

Prior to the start of the on-Site investigations, public utility locates were reported to be arranged for by the Client. Private utility locates were arranged for by the Client to identify the locations of underground services and buried utilities at the Site.

On June 19, 2019, the test pit locations were laid out and observed in the field by GMBP environmental staff, Mr. Michael MacKenzie, EIT. A total of seven (7) test pits were excavated by a mini-excavator and/or backhoe operated by St. Clair Mechanical Inc., as well as one (1) testhole was dug manually, at approximate locations shown on Figure 3. Conditions were sunny with clear skies, moderate winds, and a temperature of approximately 25 °C. During the excavation of each test pit, soil conditions were observed and logged by GMBP environmental staff.

The test pits were excavated to a depth of up to approximately 1.7 metres below ground surface (mbgs) to observe the subsurface soil conditions at the Site. Grab soil samples were collected from each test pit and were subjected to visual and olfactory screening in the field for apparent environmental impacts. Headspace vapour analysis of selected test pit soil samples was conducted using a MiniRae 3000 Photo Ionization Detector (PID), a field-screening tool, which is used to analyze soil samples for presence of petroleum hydrocarbons (PHC) and volatile organic compound (VOC) vapours. This unit has an accuracy of +/- 10% of the recorded reading for measurements between 0 and 10,000 parts per million (ppm). Prior to use, the unit was calibrated based on manufacturer's directions. Upon completion of the test pit observations and sampling, the excavated soils were used to backfill the test pits and were compacted to existing grade with the mini-excavator and/or the backhoe.

Select soil sample(s) from select test pit locations were designated for laboratory analyses. These selections were made on the basis of the test pit location, visual soil observations and results of field-screening i.e. where a sample was identified by screening to have the highest potential for impacts within a test pit, that sample was submitted for laboratory analyses. Where no obvious differences in the soils were observed throughout a test pit, select samples were submitted for general screening purposes.

Collected soil samples were placed in laboratory supplied sample jars and were kept cool (between 0 °C and 10 °C) prior to submittal under standard chain of custody protocols within specified hold times to an environmental laboratory. The laboratory selected for the analysis, Bureau Veritas (formerly Maxxam Analytics Inc.) located in Mississauga, Ontario, is accredited by Standards Council of Canada (SCC) and Canadian Association for Laboratory Accreditation (CALA).

The submitted soil samples were analyzed for one (1) or more of the following groups of contaminants: polycyclic aromatic hydrocarbons (PAHs), metals, and F1 to F4 fractions of petroleum hydrocarbons (PHCs)

including benzene, toluene, ethylbenzene and xylenes (BTEX) as per the Ontario Regulation (O. Reg.) 153/04 (as amended) parameter groupings and laboratory protocols.

Soil samples were collected with sample dedicated, disposable nitrile gloves using industry accepted methodology. Soil samples for analysis of F1 fraction of PHCs and BTEX were collected and prepared for analysis using laboratory supplied, sample dedicated syringes to collect plugs of soil (approximately ~5 grams) and were deposited into laboratory supplied, pre-weighed 40 mL vials with 10 mL of purge and trap grade methanol for preservation following sample collection. Placement of soil plugs into the methanol vials was conducted to prevent volatile losses and care was exercised in order to avoid spillage of methanol preservative from within the vials to maintain an unchanged volume of methanol inside the vial.

Samples submitted for the analysis of F2 to F4 fractions of PHCs and PAHs were placed into laboratory supplied 120 mL clear glass jars with a Teflon lined lid to minimize head space and no sample preservative as per laboratory protocols. Duplicate soil samples were collected for each identified contaminant of concern for Quality Assurance/Quality Control purposes. The field duplicate samples are intended to assess the reproducibility of analytical results.

A summary of the test pit locations, the associated APECs and rationale, and the analytical testing conducted is provided in Table 1 below (also shown on Figure 2 and 3). Test pit logs are enclosed in Appendix A; select photographs in Appendix B; and laboratory Certificate of Analysis in Appendix C, with the laboratory results summarized in Tables 2 to 4.

Table 1: Summary of Test Pit and Sampling Information

Test Pit ID	Test Pit Location	APEC and Rationale	Soil Analysis
TP4, TP5, TP6, TP8	TP4 – located to the east the ASTs TP5 – located to the south of the ASTs TP6 – located to the west the ASTs TP8 – (manually dug testhole) located in the space directly between the two ASTs	APEC 1: To investigate the subsurface soils for evidence of fuel impacts related to on-Site fuel storage.	BTEX & F1-F4 PHC Fractions. Soil quality screening for Metals and PAHs (select samples).
TP1, TP7	Located at the northwest portion of the property, adjacent to the parking area and south of the neighbouring boat storage property.	APEC 2a: To investigate the unknown subsurface conditions and shallow soil quality associated with potential fill of unknown quality and on-grade storage of miscellaneous materials and equipment.	Metals and PAHs (select samples).
TP2, TP3	Located in the northeast portion of site, along the east property line, east of the shed building.	APEC 2b: To investigate the subsurface soil conditions and shallow soil quality associated with potential fill of unknown quality and the on-grade storage of miscellaneous materials and equipment.	Metals and PAHs (select samples).

3. APPLICABLE SITE CONDITION STANDARD

To facilitate the assessment in determining the presence of environmental impacts, analytical soil quality results are reviewed in comparison with an appropriate set of criteria. The set of criteria applicable to this investigation are presented in the *Soil, Ground Water, and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act* (Ministry of the Environment, Conservation and Parks (MECP), April 2011), hereafter referred to as the “Standard”. For the purpose of determining the applicable regulatory criteria under Ontario Regulation (O. Reg. 153/04 (as amended)), the Site must be characterized based on its property use, drinking water source, soil grain size, depth of overburden, and proximity to a water body, as summarized below.

Property Use

The property uses for determining the applicable criteria are divided into three (3) categories: Residential/Parkland/Institutional; Industrial/Commercial/Community; and Agricultural or Other. Currently, a golf course is operated at the Site and the proposed use of the Site would be residential. Therefore, the regulatory criteria for Residential/Parkland/Institutional property use have been selected.

Drinking Water Source

There are two (2) sets of generic criteria for a site condition, with respect to drinking water source, which includes a non-potable groundwater condition and a potable groundwater condition. The Site and surrounding properties are supplied water via municipal water supply obtained from the St. Clair River. The Site is not located within a Wellhead Protection Area and is therefore considered to be in a “non-potable ground water condition”. Consequently, Table 3 criteria of the Standard (i.e., for a non-potable groundwater condition) was selected as the regulatory criteria for the Phase Two ESA investigation.

Soil Grain Size

As part of the determination of the applicable criteria, the soil texture must be defined as “medium and fine textured” or “coarse” based on site conditions. By definition, coarse soils contain more than 50 percent by mass of particles greater than or equal to 75 µm in diameter. Based on field observations and on a review of available well logs and geologic mapping, the native soils on Site primarily consist of silty sand (fill) and clay loam underlain by native clay deposits. As such, medium and fine textured soil criteria have been selected as the applicable regulatory criteria.

Depth of Overburden

The depth of soil (overburden) must also be taken into consideration. Sites containing less than 2 m of overburden over 1/3 of the property or more are defined as being “a shallow soil property” by O. Reg. 153/04 (as amended) and as a result, are considered more environmentally sensitive and have a more stringent set of criteria.

Based on the observations as part of the Phase Two ESA investigation and a preliminary review of available water well records in the area of the Site, the depth of overburden in the area of the Site is expected to be in the range of 30 to 40 metres below the ground surface overlying the limestone and shale bedrock. Therefore, based on the observed subsurface conditions and the documented depth of overburden in the area, the shallow soil property criteria are not applicable.

Proximity to a Water Body

Where all or part of the subject property lies within 30 m of a surface water body, separate criteria were derived with the objective of protecting surface water body ecology. The Telfer Diversion Channel, which flows north parallel to the Site, approximately 25 m west of the property line, is a constructed drainage channel, therefore it is not considered a surface water body as defined by O. Reg. 153/04. Perch Creek crosses the southwestern corner of the property. The locations of the test pits and samples collected as part of the Phase Two ESA investigation are located greater than 30 m from this surface water body, therefore these criteria are considered not to apply to the sampled locations at the subject Site.

In consideration of the Site-specific conditions noted above, the Table 3 Residential/Parkland/Institutional Property Use criteria for medium and fine textured soils, in a non-potable groundwater condition, was selected as the regulatory Standard for the Phase Two investigation.

4. FINDINGS OF FIELD INVESTIGATION

4.1 Subsurface Investigation

The subsurface investigation involved the excavation of eight (8) test pits/testholes (i.e. TP1 through TP8) at the locations shown on Figure 3 to depths from 0.5 to 1.7 mbgs. The test pits were located in areas that were accessible and reported as clear of utilities, in order to obtain information on the general soil quality and subsurface conditions throughout the property. Groundwater was encountered in TP1 and TP7 at the northwest portion of the property, and in TP4 east of the above ground storage tanks. Stratigraphic logs describing the soil conditions encountered during the investigation are provided in Appendix A. Select photographs of the test pits are provided in Appendix B.

The soils encountered during the subsurface investigation were in the following typical stratigraphic pattern:

- Granular fill intermixed with miscellaneous building materials including concrete fragments, and recycled asphalt at some locations (at the northwest corner of the property), and gravel surface cover material (typically encountered throughout the other investigated locations in varying amounts).
- Silty sand fill with trace clay/clay loam inclusions and cobbles near the east property line and in vicinity of the ASTs.
- Native, grey, dark grey and blue clay deposits, at depth.

Brown sand and gravel fill with crushed recycled asphalt surface cover material was encountered at the investigated locations that were located near the surface of the parking or outdoor storage areas. This fill material varied in thickness and generally extended from ground surface down to approximately 0.5 mbgs. Fill material, including obsolete building materials such as concrete fragments, wood and brick, with no noticeable petroleum hydrocarbon odours was encountered at TP1 and TP7, locations. Fill material, consisting of silty sand/sandy silt with cobbles, some clay and trace bricks was encountered at location of TP2 and TP3. In the vicinity of the ASTs, slight evidence of petroleum hydrocarbon odours (PID readings of up to 7.7 ppm) was detected during the excavation of the test pits/testhole, at locations of TP4, TP5, TP6 and TP8 in the silty sand fill material. At the location of TP1, TP7 and TP4 saturated soil conditions were encountered.

At the northwest portion of the property (TP1 and TP7), the underlying native soils consisted of grey clay. At the two (2) test pit locations along the east property line (TP2 and TP3), the sand and gravel surface cover fill material was underlain by clay. Under this layer was heavy blue and grey clay. In the vicinity of the the ASTs (TP4, TP5, TP6 and TP8), the granular surface material/silty sand with cobbles and clay fill was underlain by clay at approximately 0.7 to 1.0 mbgs.

4.2 Soil Quality Analyses

Nine (9) soil samples, were submitted to the laboratory for one (1) or more of the following analyses: metals, PAHs, and PHCs. The samples were collected from depths ranging from 0 to 1.0 mbgs (from the overlying fill material) down to 1.5 mbgs, from the native clays at the investigated locations at the Site. The laboratory results are summarized in Table 2 (PHCs), Table 3 (PAHs) and Table 4 (metals), and the laboratory Certificate of Analysis is enclosed in Appendix C. The approximate locations of the investigative test pits are presented on Figure 3.

APEC 1: On-Site fuel storage

In the vicinity of the ASTs, at the locations of TP4, TP5, TP6, and TP8, the silty sand/sand with cobbles and clay loam/clay inclusions fill, encountered beneath the granular surface cover material at approximately 0.2 m to 1.0 m, was light to dark brown in appearance. During the investigation, slight evidence of PHC odours was encountered in samples from location of TP5 and TP8, up to 1.0 mbgs, with PID field-screening readings of up to 7.7 ppm. Samples of this shallow fill material, retrieved from test pits TP5 (south of the ASTs) and TP8 (between the ASTs), where elevated PID readings were encountered at 6.0 and 7.7 ppm, respectively, were analyzed for PHCs (sample IDs: TP5 0-1.0M and TP8 0-0.6M). A sample from the native clay from location of TP5 (TP5 1-1.5M) was also collected to assess this location for vertical extent of potential impacts at this location. At the location of TP4 and TP6, as well as in the sample from TP5 at depth (1-1.5 mbgs), no field evidence or PID readings indicative of PHC impacts was observed.

One (1) exceedance of applicable Standards, for F2 fraction of PHCs was reported in the samples collected in the vicinity of the ASTs. The sample collected from the location of TP8 (between the two (2) ASTs) from a depth of 0-0.6 mbgs was reported to contain 240 ug/g concentration of F2 PHCs, exceeding the applicable Standard of 150 ug/g, at this location. This sample also contained measurable concentrations of F3 and F4 PHCs at 950 ug/g and 680 ug/g, below the Standard value of 1,300 ug/g and 5,600 ug/g, respectively, for these parameters. Based on the nature of the PHCs identified in this sample, which was included heavier chain hydrocarbons (greater than Carbon-50), the laboratory also performed F4 PHC gravimetric analysis on this sample. The reported analytical result of 3,000 ug/g is below the applicable standard of F4 PHCs of 5,600 ug/g.

Based on the reported laboratory results, the concentrations of F1 PHCs and BTEX were below the Standard values and/or below the laboratory detection limit in the samples analyzed from TP5 and TP8 locations. In the sample collected from TP5 from 0-1 mbgs (south of the fuel storage tanks) measurable concentrations of F2 and F3 PHCs at 20 ug/g and 120 ug/g, below the Standard value of 150 ug/g and 1,300 ug/g, respectively for these parameters, was reported. The sample collected from the native clay at approximately 1 to 1.5 mbgs at TP5 contained trace concentration of F2 PHCs (15 ug/g), well below the 150 ug/g Standard value.

Based on presence of fill material at this location, the sample from location of TP6 (TP6 0-0.5M) collected from the silty sand fill was also analyzed for PAHs and metals, to confirm fill material quality in the vicinity. The reported analytical results of the soil sample from this location indicated non-detectable concentrations of PAHs and trace presence of a few metals, at concentrations below the applicable Table 3 criteria of the Standard for each of the analyzed parameters.

APEC 2a and 2b: Fill of Unknown Origin and General Shallow Soil Quality

APEC 2a - Northwest portion of Site

In the northwest portion of the Site (APEC 2a), granular fill material encountered from the ground surface to a depth of approximately 1.5 mbgs at the location of TP1 and TP7, was dark grey and wet, and contained miscellaneous construction debris. During the investigation, no field evidence of PHCs or apparent PHC odours were detected at these locations (PID readings of 0 ppm), therefore PHC analysis was not requested on the sample from this location. Based on presence of fill, samples of this fill material were analyzed for PAHs

and metals (sample collected from 0.0 to 1.0 mbgs). The reported analytical results of the soil sample from this location indicated trace presence of a several metals and PAH compounds, below the applicable Table 3 criteria of the Standard for the analyzed parameters.

APEC 2b - Northeast portion of Site

The silty sand to sandy fill encountered at approximately 0.2 m to 1.0 m at the location of TP2 and TP3 at the easterly portion of Site, was brown to dark brown in appearance and contained occasional brick fragment (at TP2). To confirm shallow soil quality, samples of fill collected from 0.0 to 1.0 mbgs were analyzed for metals (both test pits) and PAHs (TP3). During the investigation, no apparent PHC odours were observed at this location (PID readings of 0 ppm), therefore PHC analysis was not requested at these locations.

The reported analytical results of the soil sample from TP3 location indicated concentrations of arsenic (23 ug/g) and hot water-soluble boron (2.5 ug/g), above the applicable Standard values of 18 ug/g and 1.5 ug/g, respectively, for these parameters. The results also indicated trace presence of several PAH compounds, at concentrations below the applicable Table 3 criteria of the Standard for the analyzed parameters. In the sample from TP2 and TP3 locations, trace concentrations of several other metals were reported, below the Standard values for these parameters.

5. DISCUSSION

APEC 1: On-Site Fuel Storage

In the vicinity of the ASTs, limited field evidence of impacts to the shallow fill material was identified using the PID field-screening tool. The analytical results for samples where elevated PID readings were observed, were reported to meet the Standard, with the exception of F2 fraction of PHCs in the shallow fill material at the location of test pit TP8, located between the two (2) ASTs. This sample also contained measurable concentrations of F3 and F4 PHCs, reported below the Standard value for these parameters. Based on the field observations and results of selected soil samples, impacts related to fuel storage and handling appear to be limited to the near surface and were found above the criteria of the Standard at a single location.

Based on the limited concentration and extent of the detected F2 fraction of PHCs, a risk to human health and the environment is not expected. With such a limited area and degree of impact, it is recommended that remedial measures be implemented when (and if) tank removal decommissioning occurs. Prior to remedial measures, additional sampling may be warranted to confirm the soil quality at that time.

APEC 2a and 2b: Fill of Unknown Origin and General Shallow Soil Quality

Granular to silty sand fill intermixed with miscellaneous building materials including concrete fragments, lumber, and recycled asphalt at some locations (at the northwest corner of the property) with trace bricks (at the northeastern portion of the property), and gravel surface cover material (typically encountered at the other investigated locations in varying amounts) was encountered. The surficial fill material generally consists of silty sand/sandy silt or sand with some clay and cobbles. The fill layer varied in thickness and composition and is overlying native clay deposits.

With respect to shallow fill material, the soil quality was reported to meet the standard at three (3) of the four (4) sample locations. One (1) sample from TP3 location collected from the surficial fill material in the northeast portion of the Site, exceeded the applicable Standard for two (2) metals: arsenic and hot water-soluble boron. It is suspected that the limited occurrence of arsenic may be related to historical use of the property as a garden centre/nursery, as historically certain pesticide products contained arsenic. However, the actual source of arsenic may be related to the source of the fill material. Based on the single exceedance of arsenic and the concentrations of arsenic at the other investigated locations of 12 ug/g, or lower, there does not appear to be an area wide occurrence of arsenic, even within the fill materials sampled.

The limited occurrence of arsenic at a single location is not considered to pose an immediate risk to human health or the environment.

An exceedance for hot water soluble (HWS) boron is noted at the same sample location as the arsenic exceedance. The Standard for HWS boron is set based on the potential for influence on plant growth for certain species. Based on the use of the material as fill, the HWS boron is not considered to pose a risk. Based on our experience, the occurrence of boron is often influenced naturally through the occurrence of clay minerals. Native soils at this Site are clay, with clay also encountered within the fill material at some of the investigated locations.

Based on the future development of the Site, these specific fill materials are not recommended for residential use. Beyond the analytical results, the occurrence of asphalt fragments and other debris is not considered suitable fill (beyond geotechnical issues that may be identified).

If the soil is removed from Site, additional sampling is recommended to confirm soil quality and disposal requirements through an Excess Soil Management Plan developed in accordance with most current MECP *Management of Excess Soil – a Guide for Best Management Practices* guidance documents and other regulatory requirements. Should soils found to exceed the Standards, disposal of the soil off-Site at a landfill or waste management facility may be required.

6. CONCLUSIONS AND RECOMMENDATIONS

It is our understanding that this Phase Two ESA is conducted to support an Official Plan and Zoning By-law amendment application and draft plan approval for the Site and that it is not required to support a Record of Site Condition (RSC) under Ontario Regulation (O. Reg.) 153/04 (as amended).

The Phase Two ESA investigated the potential for impacts associated with the following APECs:

1. **On-Site fuel storage:** one (1) diesel fuel and (1) gasoline storage tank present on-Site.
 - **Potential Contaminants of Concern:** Petroleum Hydrocarbons (PHCs)
 - **Potentially Impacted Media:** Soil
2. **Fill of unknown quality and general shallow soil quality:**
 - a) Potential use of fill material at the northwest portion of the Site during development of the property at an unknown date, and general shallow soil quality related to storage of miscellaneous materials and equipment in this area.
 - b) General shallow soil quality at the northeast portion of the Site, in the outdoor storage area, where miscellaneous building materials and equipment are stored.
 - **Potential Contaminants of Concern:** Polycyclic Aromatic Hydrocarbons (PAHs); Metals (M) and Petroleum Hydrocarbons (PHCs)
 - **Potentially Impacted Media:** Soil

Based on the findings of the Phase Two ESA, the following conclusions and recommendations are made.

APEC 1: On-site Fuel Storage

The reported analytical results meet the Standard at the locations sampled with the exception of F2 fraction of PHCs in the shallow fill/soils (0 – 0.6 mbgs) at TP8, located between the ASTs. Based on the field observations and results of selected soil samples, impacts related to fuel storage and handling appear to be limited to the near surface and were found above the criteria of the Standard at a single investigated location.

Based on the limited concentration and extent of the detected F2 fraction of PHCs, a risk to human health and the environment is not expected. With such a limited area and degree of impact, it is recommended that remedial measures be implemented when (and if) tank removal/decommissioning occurs. Prior to remedial measures, additional sampling may be warranted to confirm the soil quality at that time.

APEC 2a and 2b: Fill of Unknown Origin and General Shallow Soil Quality

Fill material intermixed with miscellaneous building materials including concrete fragments, lumber, and recycled asphalt at some locations (at the northwest corner of the property) with trace bricks (at the northeastern portion of the property), and gravel surface cover material (typically encountered at the other investigated locations in varying amounts) was encountered. The surficial fill material generally consists of silty sand/sandy silt or sand with some clay/clay loam and cobbles. The fill layer varied in thickness and composition and is overlying native clay deposits.

With respect to shallow fill material, the soil quality was reported to meet the standard at three (3) of the four (4) sample locations. One (1) sample from TP3 location collected from the surficial fill material in the northeast portion of the Site, exceeded the applicable Standard for two (2) metals: arsenic and HWS boron. The limited occurrence of arsenic and HWS boron at a single location is not considered to pose an immediate risk to human health or the environment.

Based on the future development of the Site, these specific fill materials are not recommended for residential use. Beyond the analytical results, the occurrence of asphalt fragments and other debris is not considered suitable fill (beyond geotechnical issues that may be identified).

If the soil/fill is removed from Site, additional sampling is recommended to confirm soil quality and disposal requirements through an Excess Soil Management Plan developed in accordance with *Management of Excess Soil – a Guide for Best Management Practices* (MECP 2017) and other regulatory requirements. Should soils be found to exceed the Standard, disposal of the soil off-Site at a landfill or waste management facility may be required.

7. STATEMENT OF LIMITATIONS

The information presented in this Phase Two Environmental Site Assessment report is intended for the use by JR Capital Holdings Inc. GM BluePlan Engineering Limited accepts no liability for use of this information by third parties. Any decisions made by third parties on the basis of information provided in this report are made at the sole risk of the third parties.

GM BluePlan Engineering Limited cannot guarantee the accuracy or reliability of information provided by others. GM BluePlan Engineering Limited does not accept liability for unknown, unidentified, undisclosed, or unforeseen surface or sub-surface contamination that may later be identified.

The conclusions pertaining to the environmental condition of the soils identified at the Site are based on the visual observations at the locations of the investigative test pits only and on the analytical data for the selected soil samples. GM BluePlan Engineering Limited cannot guarantee the environmental condition of soil and/or groundwater that may be encountered at the Site at locations that were not specifically investigated as part of this Phase Two Environmental Site Assessment.

The analytical findings represent soil conditions at the locations sampled only and do not necessarily represent the environmental condition of all fill or subsurface soils or groundwater located on the Site. Further classification of the subsurface soil and groundwater conditions at locations other than those investigated as part of this Phase Two Environmental Site Assessment (i.e. below the footprint of buildings and in other

locations across the property) would require additional subsurface investigation and further laboratory analyses. This report is believed to provide documentation of the Site conditions as of June 19, 2019.

8. QUALIFICATIONS OF ASSESSORS

Phase Two ESA investigation and analyses were performed by Mr. Michael MacKenzie, E.I.T., with assistance from Ms. Joanna Olesiuk, M. A. Sc., C. Tech., under the direct supervision of Mr. Matthew Nelson, M.Sc., P. Eng., P. Geo.

Ms. Olesiuk, M. A. Sc., C. Tech. is an Environmental Technologist with over fourteen years of experience in environmental and hydrogeological investigations. Ms. Olesiuk has been involved in conducting field activities, performing data analysis and report writing for numerous Phase One and Two Environmental Site Assessments, site remediation, hydrogeologic studies, dewatering studies and various environmental investigations for residential, commercial and industrial properties.

Mr. MacKenzie, E.I.T. is a Project Designer with just under one year of experience in environmental and hydrogeological investigations. Mr. MacKenzie has been involved in conducting field activities and report writing for Phase One and Two Environmental Site Assessments, Designated Substance Assessments, site remediation for commercial and industrial properties.

Mr. Nelson, M.Sc., P. Eng., P. Geo. is an Environmental Engineer/Hydrogeologist with over eighteen years of experience with environmental, hydrogeological, and remedial investigations. Mr. Nelson has experience preparing numerous Phase One and Phase Two Environmental Site Assessments, environmental investigations, and the completion of Phase Three site remediation projects. Mr. Nelson has been involved with detailed environmental site investigations for numerous large commercial and industrial properties in Canada and the United States.

GM BluePlan Engineering Limited has completed numerous Phase One Environmental Site Assessments, which also include follow-up Phase Two Environmental Site Assessments. GM BluePlan Engineering Limited has also been involved with the remediation of several sites (Phase Three ESAs), and with the preparation of a Record of Site Condition for residential, commercial and industrial properties

All of which is respectfully submitted.

GM BluePlan Engineering Limited

Per:

A handwritten signature in blue ink, appearing to read 'Michael MacKenzie'.

Michael MacKenzie, E.I.T.

A handwritten signature in blue ink, appearing to read 'Matthew Nelson'.

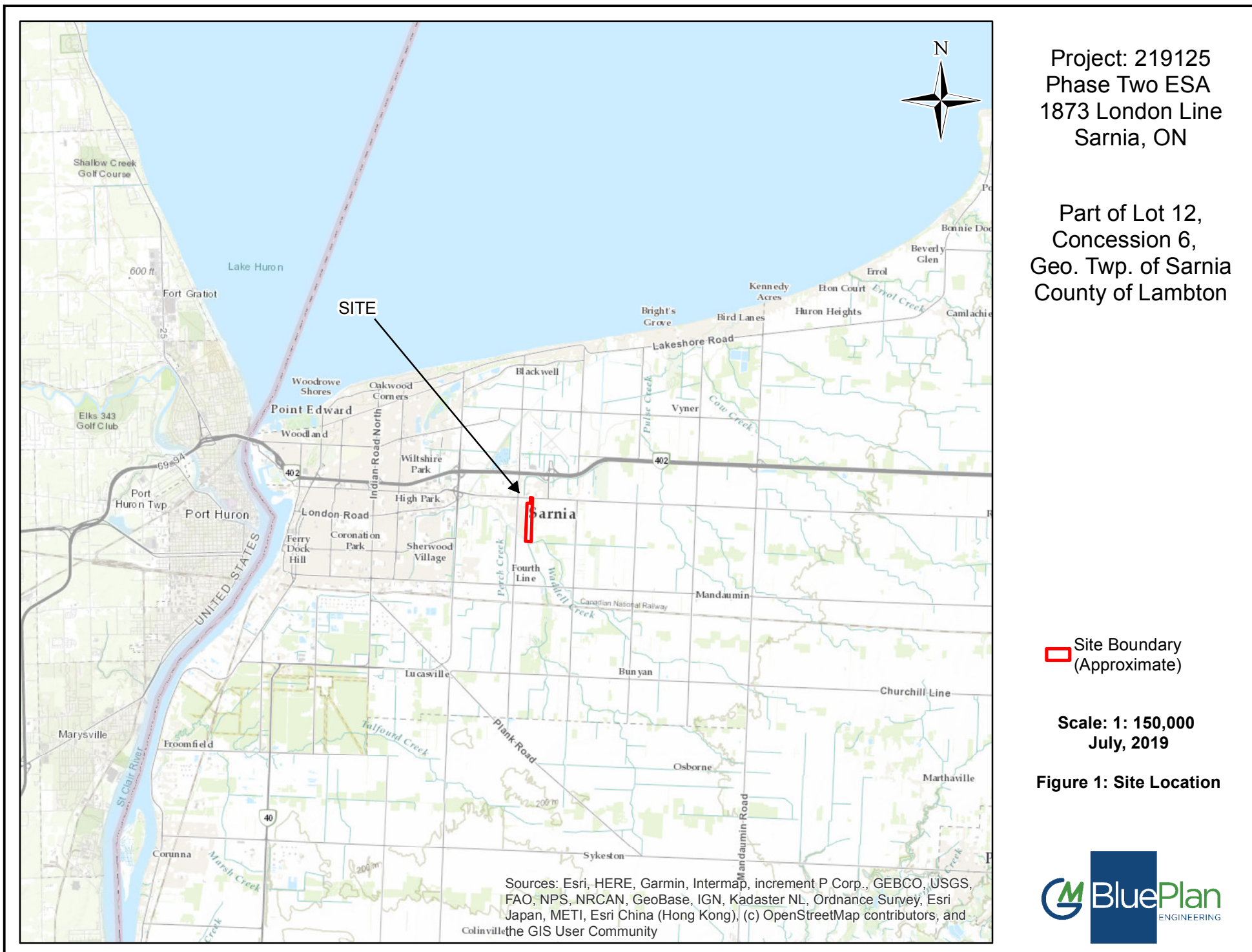
Matthew Nelson, M. Sc., P. Eng., P. Geo.

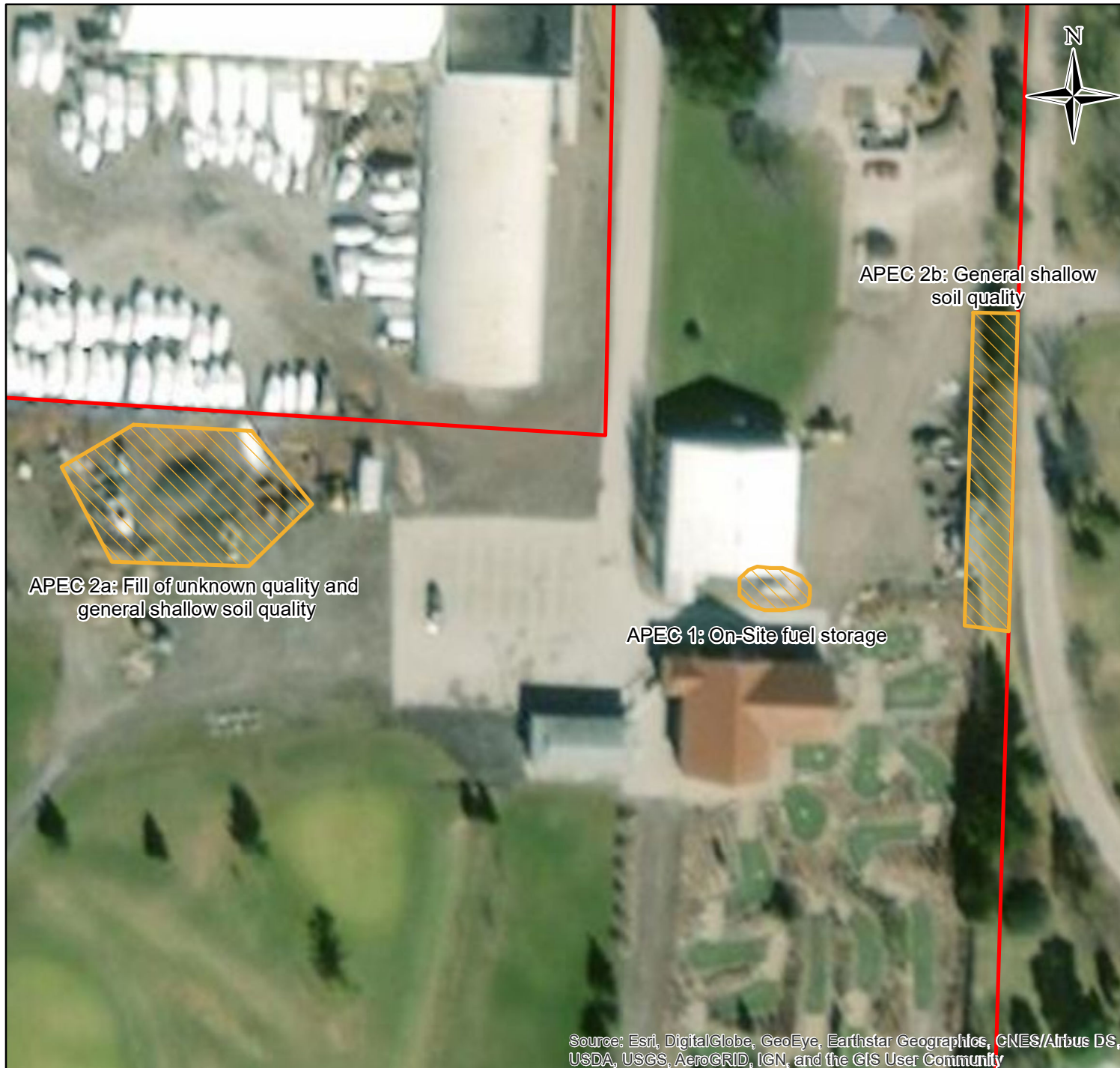
9. REFERENCE MATERIALS

GM BluePlan Engineering Limited. 2019. Phase One Environmental Site Assessment: 1873 London Line, City of Sarnia. GM BluePlan Engineering Limited File: 219125. July 2019.

Ontario Ministry of the Environment, Conservation and Parks. 2011. Soil, Ground Water and Sediment Standards for Use Under Part XV.1 of the Environmental Protection Act. PIBS #7382e01.



FIGURES





Project: 219125
Phase Two ESA
1873 London Line
Sarnia, ON

Part of Lot 12,
Concession 6,
Geo. Twp. of Sarnia
County of Lambton

-  APECs
(approximate)
-  Site Boundary
(Approximate)

Scale: 1: 850
July, 2019

Figure 2: Site Layout
and APECs

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS,
USDA, USGS, AeroGRID, IGN, and the GIS User Community



Project: 219125
Phase Two ESA
1873 London Line
Sarnia, ON

Part of Lot 12,
Concession 6,
Geo. Twp. of Sarnia
County of Lambton

- Test Pits
(Approximate
Locations)
- Site Boundary
(Approximate)

Scale: 1: 850
July, 2019

Figure 3: Test Pit Locations

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS,
USDA, USGS, AeroGRID, IGN, and the GIS User Community

TABLES

Table 2
Petroleum Hydrocarbons (PHCs) in Soil

Parameter	Criteria ¹	Units	RDL	Sample ID			
				BV Labs Job ID / Sample ID			
				Sample Collection Date			
				Sample Collection Time			
				TP5 0-1.0M B9H1874 / KBU616 Jun 19, 2019 12:00 PM	TP5 1-1.5M B9H1874 / KBU617 Jun 19, 2019 12:15 PM	TP5A 1-1.5M B9H1874 / KBU618 Jun 19, 2019 12:15 PM	TP8 0-0.6M B9H1874 / KBU621 Jun 19, 2019 03:00 PM
Petroleum Hydrocarbons							
F1 (C6-C10)	65	ug/g	10	<10	<10	<10	<10
F1 (C6-C10) - BTEX	65	ug/g	10	<10	<10	<10	<10
F2 (C10-C16)	150	ug/g	10	20	15	<10	240
F3 (C16-C34)	1300	ug/g	50	120	<50	<50	950
F4 (C34-C50)	5600	ug/g	50	<50	<50	<50	680
Reached Baseline at C50		ug/g		YES	YES	YES	NO
F4G (Gravimetric)	5600	ug/g	100	-	-	-	3000
Volatile Organic Compounds							
Benzene	0.17	ug/g	0.020	0.03	<0.020	<0.020	<0.020
Toluene	6	ug/g	0.020	0.024	<0.020	<0.020	<0.020
Ethylbenzene	15	ug/g	0.020	<0.020	<0.020	<0.020	<0.020
m+p-Xylene		ug/g	0.040	0.3	<0.040	<0.040	<0.040
o-Xylene		ug/g	0.020	0.03	<0.020	<0.020	<0.020
Xylenes, Total	25	ug/g	0.040	0.33	<0.040	<0.040	<0.040

Legend	
RDL	Reportable Detection Limit
Exceeds one Criteria	Result
Criteria 1	Reg153/04 T3-Soil/Res-F/M

Table 3
Polycyclic Aromatic Hydrocarbons (PAHs) in Soil

Parameter	Criteria ¹	Units	RDL	Sample ID			
				BV Labs Job ID / Sample ID			
				Sample Collection Date			
				Sample Collection Time			
				TP1 0-1M B9H1874 / KBU609 Jun 19, 2019 09:00 AM	TP3 0-1M B9H1874 / KBU612 Jun 19, 2019 10:30 AM	TP6 0-0.5M B9H1874 / KBU619 Jun 19, 2019 01:00 PM	TP6A 0-0.5M B9H1874 / KBU620 Jun 19, 2019 01:00 PM
Polycyclic Aromatic Hydrocarbons (PAHs)							
Acenaphthene	58	ug/g	0.0050 - 0.050	0.046	0.012	<0.050	<0.050
Acenaphthylene	0.17	ug/g	0.0050 - 0.050	0.018	0.0065	<0.050	<0.050
Anthracene	0.74	ug/g	0.0050 - 0.050	0.13	0.03	<0.050	<0.050
Benzo(a)anthracene	0.63	ug/g	0.0050 - 0.050	0.23	0.15	<0.050	<0.050
Benzo(a)pyrene	0.3	ug/g	0.0050 - 0.050	0.19	0.14	<0.050	<0.050
Benzo(b/j)fluoranthene	0.78	ug/g	0.0050 - 0.050	0.25	0.19	<0.050	<0.050
Benzo(g,h,i)perylene	7.8	ug/g	0.0050 - 0.050	0.11	0.094	<0.050	<0.050
Benzo(k)fluoranthene	0.78	ug/g	0.0050 - 0.050	0.089	0.064	<0.050	<0.050
Chrysene	7.8	ug/g	0.0050 - 0.050	0.2	0.13	<0.050	<0.050
Dibenz(a,h)anthracene	0.1	ug/g	0.0050 - 0.050	0.032	0.024	<0.050	<0.050
Fluoranthene	0.69	ug/g	0.0050 - 0.050	0.62	0.3	<0.050	<0.050
Fluorene	69	ug/g	0.0050 - 0.050	0.11	0.01	<0.050	<0.050
Indeno(1,2,3-cd)pyrene	0.48	ug/g	0.0050 - 0.050	0.12	0.092	<0.050	<0.050
1-Methylnaphthalene	3.4	ug/g	0.0050 - 0.050	0.031	0.032	<0.050	<0.050
2-Methylnaphthalene	3.4	ug/g	0.0050 - 0.050	0.037	0.032	<0.050	<0.050
1+2-Methylnaphthalene	3.4	ug/g	0.0071 - 0.071	0.068	0.064	<0.071	<0.071
Naphthalene	0.75	ug/g	0.0050 - 0.050	0.1	0.015	<0.050	<0.050
Phenanthrene	7.8	ug/g	0.0050 - 0.050	0.61	0.17	<0.050	<0.050
Pyrene	78	ug/g	0.0050 - 0.050	0.47	0.25	<0.050	<0.050

Legend	
RDL	Reportable Detection Limit
Exceeds one Criteria	Result
Criteria 1	Reg153/04 T3-Soil/Res-F/M

Table 4
Metals and Inorganics in Soil

Parameter	Criteria ¹	Units	RDL	Sample ID					
				BV Labs Job ID / Sample ID					
				Sample Collection Date					
				Sample Collection Time					
				TP1 0-1M B9H1874 / KBU609 Jun 19, 2019 09:00 AM	TP2 0-1M B9H1874 / KBU610 Jun 19, 2019 10:00 AM	TP3 0-1M B9H1874 / KBU612 Jun 19, 2019 10:30 AM	TP6 0-0.5M B9H1874 / KBU619 Jun 19, 2019 01:00 PM	TP6A 0-0.5M B9H1874 / KBU620 Jun 19, 2019 01:00 PM	TP6A 0-0.5M Lab-Dup B9H1874 / KBU620 Jun 19, 2019 01:00 PM
Metals (including Hydride-Forming Metals)									
Acid Extractable Antimony (Sb)	7.5	ug/g	0.20	0.24	0.56	0.79	0.35	0.38	-
Acid Extractable Arsenic (As)	18	ug/g	1.0	2.6	5.3	23	3.6	12	-
Acid Extractable Barium (Ba)	390	ug/g	0.50	26	57	80	20	23	-
Acid Extractable Beryllium (Be)	5	ug/g	0.20	0.25	0.43	0.66	<0.20	0.23	-
Acid Extractable Boron (B)	120	ug/g	5.0	6	9.9	15	5.6	6	-
Acid Extractable Cadmium (Cd)	1.2	ug/g	0.10	0.37	0.42	0.74	0.39	0.28	-
Acid Extractable Chromium (Cr)	160	ug/g	1.0	14	16	19	8.7	13	-
Acid Extractable Cobalt (Co)	22	ug/g	0.10	3.4	4.6	6.3	3.3	3.7	-
Acid Extractable Copper (Cu)	180	ug/g	0.50	12	23	37	12	20	-
Acid Extractable Lead (Pb)	120	ug/g	1.0	27	51	48	20	23	-
Acid Extractable Molybdenum (Mo)	6.9	ug/g	0.50	0.64	1	1.5	0.87	1	-
Acid Extractable Nickel (Ni)	130	ug/g	0.50	9.4	14	20	7.5	8.5	-
Acid Extractable Selenium (Se)	2.4	ug/g	0.50	<0.50	<0.50	0.96	<0.50	<0.50	-
Acid Extractable Silver (Ag)	25	ug/g	0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-
Acid Extractable Thallium (Tl)	1	ug/g	0.050	0.073	0.12	0.14	0.053	0.064	-
Acid Extractable Uranium (U)	23	ug/g	0.050	0.58	0.85	1.2	0.65	0.78	-
Acid Extractable Vanadium (V)	86	ug/g	5.0	15	19	24	12	14	-
Acid Extractable Zinc (Zn)	340	ug/g	5.0	80	83	100	63	77	-
Other Regulated Parameters									
Hot Water Extractable Boron	1.5	ug/g	0.050	0.25	-	2.5	1	1	1
Hexavalent Chromium (CrVI)	10	ug/g	0.2	<0.2	-	<0.2	<0.2	<0.2	-
Acid Extractable Mercury (Hg)	1.8	ug/g	0.050	<0.050	0.077	0.092	<0.050	<0.050	-

Legend	
RDL	Reportable Detection Limit
Lab-Dup	Laboratory Duplicate
Exceeds one Criteria	Result
Criteria 1	Reg153/04 T3-Soil/Res-F/M

APPENDIX A: TEST PIT LOGS

CLIENT <u>JR Capital Holdings Inc.</u>	PROJECT NAME <u>Phase Two ESA for 1873 London Line</u>
PROJECT NUMBER <u>219125</u>	PROJECT LOCATION <u>Samia, ON</u>
DATE COMPLETED <u>2019-06-19</u>	CONTRACTOR _____
LOGGED BY <u>MM</u>	METHOD <u>Backhoe</u>
DEPTH TO GROUNDWATER <u>▼</u>	Testhole Location _____

DEPTH	ELEVATION	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	ENVIRONMENTAL DATA	Remarks
				Ground Surface		
m ft				0.00 (GP) Granular FILL, with Asphalt, Bricks, Crushed Concrete. Saturated. 100.00		
0.5						
1.0		GB 1			PID = 0	
1.5						
0.5	99.5					
2.0						
2.5		GB 2			PID = 0	
3.0						
1.0	99.0					
3.5						
4.0						
4.5						
1.5	98.5			1.50 (CL) Dark grey CLAY. 98.50		
5.0						

Testhole Terminated at 1.60 m.

CLIENT	JR Capital Holdings Inc.	PROJECT NAME	Phase Two ESA for 1873 London Line
PROJECT NUMBER	219125	PROJECT LOCATION	Sarnia, ON
DATE COMPLETED	2019-06-19	CONTRACTOR	
LOGGED BY	MM	METHOD	Mini Excavator
DEPTH TO GROUNDWATER	▼	Testhole Location	

DEPTH	ELEVATION	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	ENVIRONMENTAL DATA	Remarks
				Ground Surface		
m ft				0.00 Brown TOPSOIL, with Organics and Roots. 100.00		
0.5						
1.0				0.30 (SP-SM) Brown FILL, Silty Sand with Cobbles. 99.70		
1.5						
0.5	99.5	GB 1			PID = 0	
2.0						
2.5				0.70 (CL) Blue CLAY 99.30		
3.0						
1.0	99.0	GB 2			PID = 0	
3.5						

Testhole Terminated at 1.10 m.

CLIENT	JR Capital Holdings Inc.	PROJECT NAME	Phase Two ESA for 1873 London Line
PROJECT NUMBER	219125	PROJECT LOCATION	Sarnia, ON
DATE COMPLETED	2019-06-19	CONTRACTOR	
LOGGED BY	MM	METHOD	Mini Excavator
DEPTH TO GROUNDWATER	▼	Testhole Location	

DEPTH	ELEVATION	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	ENVIRONMENTAL DATA	Remarks
				Ground Surface		
m ft				0.00 Brown TOPSOIL. 100.00		
0.5				0.20 99.80		
1.0				Brown FILL, Silty Sand to Sand Silt, with some Bricks.		
1.5						
0.5	99.5				PID = 0	
2.0		GB 1				
2.5				0.70 99.30		
3.0				Blue CLAY.		
1.0	99.0					
3.5						

Testhole Terminated at 1.10 m.

CLIENT <u>JR Capital Holdings Inc.</u>	PROJECT NAME <u>Phase Two ESA for 1873 London Line</u>
PROJECT NUMBER <u>219125</u>	PROJECT LOCATION <u>Sarnia, ON</u>
DATE COMPLETED <u>2019-06-19</u>	CONTRACTOR _____
LOGGED BY <u>MM</u>	METHOD <u>Mini Excavator</u>
DEPTH TO GROUNDWATER <u>▼</u>	Testhole Location _____

DEPTH	ELEVATION	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	ENVIRONMENTAL DATA	Remarks
				Ground Surface		
m ft				0.00 (GP) Grey FILL, Granular. 100.00		
0.5				0.20 (SM) Brown FILL, Silty Sand with Cobbles. 99.80	PID = 0.2	
1.0		GB 1				
1.5	99.5					
2.0						
2.5		GB 2			PID = 0	
3.0						
1.0 3.5	99.0			1.00 (CL) Grey CLAY. 99.00		

Testhole Terminated at 1.10 m.

CLIENT	JR Capital Holdings Inc.	PROJECT NAME	Phase Two ESA for 1873 London Line
PROJECT NUMBER	219125	PROJECT LOCATION	Sarnia, ON
DATE COMPLETED	2019-06-19	CONTRACTOR	
LOGGED BY	MM	METHOD	Mini Excavator
DEPTH TO GROUNDWATER	▼	Testhole Location	

DEPTH	ELEVATION	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	ENVIRONMENTAL DATA	Remarks
				Ground Surface		
m ft				0.00 (GP) FILL, Granular. 100.00		
0.5						
1.0		GB 1		0.30 (SM) Brown FILL, Silty Sand, some Clay/Clay Loam, with Cobbles 99.70	PID = 0.2	
1.5						
0.5	99.5					
2.0		GB 2			PID = 6	
2.5						
3.0				0.80 (CL) Grey CLAY. 99.20		
1.0	99.0					
3.5						
4.0						
4.5		GB 3			PID = 0.5	
1.5	98.5					
5.0					PID = 0	
5.5						

Testhole Terminated at 1.70 m.

CLIENT	JR Capital Holdings Inc.	PROJECT NAME	Phase Two ESA for 1873 London Line
PROJECT NUMBER	219125	PROJECT LOCATION	Sarnia, ON
DATE COMPLETED	2019-06-19	CONTRACTOR	
LOGGED BY	MM	METHOD	Mini Excavator
DEPTH TO GROUNDWATER	▼	Testhole Location	

DEPTH	ELEVATION	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	ENVIRONMENTAL DATA	Remarks
				Ground Surface		
m ft				0.00 (SW) 100.00 Brown FILL, Silty Sand. Some Clay Observed at 0.3 m.		
0.5					PID = 0	
1.0		GB 1				
1.5	99.5					
2.0						
2.5				0.70 (CL) 99.30 Dark grey CLAY.	PID = 0	
3.0						
1.0	99.0					

Testhole Terminated at 1.00 m.

CLIENT	JR Capital Holdings Inc.	PROJECT NAME	Phase Two ESA for 1873 London Line
PROJECT NUMBER	219125	PROJECT LOCATION	Samia, ON
DATE COMPLETED	2019-06-19	CONTRACTOR	
LOGGED BY	MM	METHOD	Backhoe
DEPTH TO GROUNDWATER	▼	Testhole Location	

DEPTH	ELEVATION	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	ENVIRONMENTAL DATA	Remarks
				Ground Surface		
m ft				0.00 (GP) 100.00 Grey to Brown FILL, Granular to Silty Sand, with crushed Concrete and Bricks. Saturated.		
0.5						
1.0						
1.5						
0.5	99.5					
2.0						
2.5						
3.0						
1.0	99.0					
3.5						
4.0						
4.5						
1.5	98.5					
5.0				1.50 (CL) 98.50 CLAY.		

Testhole Terminated at 1.60 m.

CLIENT	JR Capital Holdings Inc.	PROJECT NAME	Phase Two ESA for 1873 London Line
PROJECT NUMBER	219125	PROJECT LOCATION	Sarnia, ON
DATE COMPLETED	2019-06-19	CONTRACTOR	
LOGGED BY	MM	METHOD	Hand
DEPTH TO GROUNDWATER	▼	Testhole Location	

DEPTH	ELEVATION	SAMPLE TYPE NUMBER	GRAPHIC LOG	MATERIAL DESCRIPTION	ENVIRONMENTAL DATA	Remarks
				Ground Surface		
m ft				0.00 (SP) 100.00 Brown FILL, Sand with Cobbles, trace to some Silt, some Clay/Clay Loam.		
0.5						
1.0						
1.5					PID = 7.7	
0.5	99.5	GB 1				
2.0				0.60 99.40 Grey CLAY.		

Testhole Terminated at 0.70 m.

**APPENDIX B:
SELECT SITE PHOTOGRAPHS**



Photograph 1: Test pit TP1, located in the northwest portion of the property.



Photograph 2: Test pit TP2, located in the northeast portion of property.



Photograph 3: Test pit, TP3, located in the northeast portion of property.



Photograph 4: Test pit TP4, located to the east of the above ground storage tanks.



Photograph 5: Test pit TP5, located south of the above ground storage tanks.



Photograph 6: Test pit TP6, located west of the above ground fuel storage tanks.



Photograph 7: Test pit TP7, located in the northwest portion of the property.



Photograph 8: Testhole TP8, located between the above ground fuel storage tanks.

APPENDIX C:
LABORATORY CERTIFICATE OF ANALYSIS



Your Project #: 219125
Site Location: 1873 LONDON LINE, SARNIA
Your C.O.C. #: N/A

Attention: Michael McKenzie

GM BluePlan Engineering Limited
235 N Centre Rd Suite 103
London, ON
Canada N5X 4 E7

Report Date: 2019/07/10
Report #: R5791745
Version: 4 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: B9H1874

Received: 2019/06/21, 10:55

Sample Matrix: Soil
Samples Received: 9

Analyses	Date		Date Analyzed	Laboratory Method	Reference
	Quantity	Extracted			
Methylnaphthalene Sum	4	N/A	2019/06/28	CAM SOP-00301	EPA 8270D m
Hot Water Extractable Boron	4	2019/06/26	2019/06/26	CAM SOP-00408	R153 Ana. Prot. 2011
Hexavalent Chromium in Soil by IC (1)	4	2019/06/26	2019/06/27	CAM SOP-00436	EPA 3060/7199 m
Petroleum Hydro. CCME F1 & BTEX in Soil (2)	3	N/A	2019/06/26	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydro. CCME F1 & BTEX in Soil (2)	1	N/A	2019/06/27	CAM SOP-00315	CCME PHC-CWS m
Petroleum Hydrocarbons F2-F4 in Soil (3)	4	2019/06/26	2019/06/26	CAM SOP-00316	CCME CWS m
F4G (CCME Hydrocarbons Gravimetric)	1	2019/06/28	2019/06/28	CAM SOP-00316	CCME PHC-CWS m
Strong Acid Leachable Metals by ICPMS	1	2019/06/26	2019/06/26	CAM SOP-00447	EPA 6020B m
Strong Acid Leachable Metals by ICPMS	3	2019/06/26	2019/06/28	CAM SOP-00447	EPA 6020B m
Strong Acid Leachable Metals by ICPMS	1	2019/07/09	2019/07/09	CAM SOP-00447	EPA 6020B m
Moisture	8	N/A	2019/06/26	CAM SOP-00445	Carter 2nd ed 51.2 m
PAH Compounds in Soil by GC/MS (SIM)	4	2019/06/26	2019/06/27	CAM SOP-00318	EPA 8270D m

Remarks:

Bureau Veritas Laboratories are accredited to ISO/IEC 17025 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by BV Labs are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in BV Labs profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and BV Labs in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported; unless indicated otherwise, associated sample data are not blank corrected. Where applicable, unless otherwise noted, Measurement Uncertainty has not been accounted for when stating conformity to the referenced standard.

BV Labs liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. BV Labs has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by BV Labs, unless otherwise agreed in writing. BV Labs is not responsible for the accuracy or any data impacts, that result from the information provided by the customer or their agent.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested. When sampling is not conducted by BV Labs, results relate to the supplied samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.



Your Project #: 219125
Site Location: 1873 LONDON LINE, SARNIA
Your C.O.C. #: N/A

Attention: Michael McKenzie

GM BluePlan Engineering Limited
235 N Centre Rd Suite 103
London, ON
Canada N5X 4 E7

Report Date: 2019/07/10
Report #: R5791745
Version: 4 - Revision

CERTIFICATE OF ANALYSIS – REVISED REPORT

BV LABS JOB #: B9H1874

Received: 2019/06/21, 10:55

- (1) Soils are reported on a dry weight basis unless otherwise specified.
- (2) No lab extraction date is given for F1BTX & VOC samples that are field preserved with methanol. Extraction date is the date sampled unless otherwise stated.
- (3) All CCME PHC results met required criteria unless otherwise stated in the report. The CWS PHC methods employed by Bureau Veritas Laboratories conform to all prescribed elements of the reference method and performance based elements have been validated. All modifications have been validated and proven equivalent following "Alberta Environment's Interpretation of the Reference Method for the Canada-Wide Standard for Petroleum Hydrocarbons in Soil Validation of Performance-Based Alternative Methods September 2003". Documentation is available upon request. Modifications from Reference Method for the Canada-wide Standard for Petroleum Hydrocarbons in Soil-Tier 1 Method: F2/F3/F4 data reported using validated cold solvent extraction instead of Soxhlet extraction.

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.
Ashton Gibson, Project Manager
Email: Ashton.Gibson@bvlabs.com
Phone# (905)817-5765

=====

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



BUREAU
VERITAS

BV Labs Job #: B9H1874
Report Date: 2019/07/10

GM BluePlan Engineering Limited
Client Project #: 219125
Site Location: 1873 LONDON LINE, SARNIA
Sampler Initials: MM

O.REG 153 ICPMS METALS (SOIL)

BV Labs ID		KBU610		
Sampling Date		2019/06/19 10:00		
COC Number		N/A		
	UNITS	TP2 0-1M	RDL	QC Batch
Metals				
Acid Extractable Antimony (Sb)	ug/g	0.56	0.20	6218177
Acid Extractable Arsenic (As)	ug/g	5.3	1.0	6218177
Acid Extractable Barium (Ba)	ug/g	57	0.50	6218177
Acid Extractable Beryllium (Be)	ug/g	0.43	0.20	6218177
Acid Extractable Boron (B)	ug/g	9.9	5.0	6218177
Acid Extractable Cadmium (Cd)	ug/g	0.42	0.10	6218177
Acid Extractable Chromium (Cr)	ug/g	16	1.0	6218177
Acid Extractable Cobalt (Co)	ug/g	4.6	0.10	6218177
Acid Extractable Copper (Cu)	ug/g	23	0.50	6218177
Acid Extractable Lead (Pb)	ug/g	51	1.0	6218177
Acid Extractable Molybdenum (Mo)	ug/g	1.0	0.50	6218177
Acid Extractable Nickel (Ni)	ug/g	14	0.50	6218177
Acid Extractable Selenium (Se)	ug/g	<0.50	0.50	6218177
Acid Extractable Silver (Ag)	ug/g	<0.20	0.20	6218177
Acid Extractable Thallium (Tl)	ug/g	0.12	0.050	6218177
Acid Extractable Uranium (U)	ug/g	0.85	0.050	6218177
Acid Extractable Vanadium (V)	ug/g	19	5.0	6218177
Acid Extractable Zinc (Zn)	ug/g	83	5.0	6218177
Acid Extractable Mercury (Hg)	ug/g	0.077	0.050	6218177
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				

BUREAU
VERITASBV Labs Job #: B9H1874
Report Date: 2019/07/10GM BluePlan Engineering Limited
Client Project #: 219125
Site Location: 1873 LONDON LINE, SARNIA
Sampler Initials: MM**O.REG 153 METALS PACKAGE (SOIL)**

BV Labs ID		KBU609		KBU612	KBU619	KBU620		
Sampling Date		2019/06/19 09:00		2019/06/19 10:30	2019/06/19 13:00	2019/06/19 13:00		
COC Number		N/A		N/A	N/A	N/A		
	UNITS	TP1 0-1M	QC Batch	TP3 0-1M	TP6 0-0.5M	TP6A 0-0.5M	RDL	QC Batch

Inorganics								
Chromium (VI)	ug/g	<0.2	6198088	<0.2	<0.2	<0.2	0.2	6198088
Metals								
Hot Water Ext. Boron (B)	ug/g	0.25	6197509	2.5	1.0	1.0	0.050	6198064
Acid Extractable Antimony (Sb)	ug/g	0.24	6197535	0.79	0.35	0.38	0.20	6197961
Acid Extractable Arsenic (As)	ug/g	2.6	6197535	23	3.6	12	1.0	6197961
Acid Extractable Barium (Ba)	ug/g	26	6197535	80	20	23	0.50	6197961
Acid Extractable Beryllium (Be)	ug/g	0.25	6197535	0.66	<0.20	0.23	0.20	6197961
Acid Extractable Boron (B)	ug/g	6.0	6197535	15	5.6	6.0	5.0	6197961
Acid Extractable Cadmium (Cd)	ug/g	0.37	6197535	0.74	0.39	0.28	0.10	6197961
Acid Extractable Chromium (Cr)	ug/g	14	6197535	19	8.7	13	1.0	6197961
Acid Extractable Cobalt (Co)	ug/g	3.4	6197535	6.3	3.3	3.7	0.10	6197961
Acid Extractable Copper (Cu)	ug/g	12	6197535	37	12	20	0.50	6197961
Acid Extractable Lead (Pb)	ug/g	27	6197535	48	20	23	1.0	6197961
Acid Extractable Molybdenum (Mo)	ug/g	0.64	6197535	1.5	0.87	1.0	0.50	6197961
Acid Extractable Nickel (Ni)	ug/g	9.4	6197535	20	7.5	8.5	0.50	6197961
Acid Extractable Selenium (Se)	ug/g	<0.50	6197535	0.96	<0.50	<0.50	0.50	6197961
Acid Extractable Silver (Ag)	ug/g	<0.20	6197535	<0.20	<0.20	<0.20	0.20	6197961
Acid Extractable Thallium (Tl)	ug/g	0.073	6197535	0.14	0.053	0.064	0.050	6197961
Acid Extractable Uranium (U)	ug/g	0.58	6197535	1.2	0.65	0.78	0.050	6197961
Acid Extractable Vanadium (V)	ug/g	15	6197535	24	12	14	5.0	6197961
Acid Extractable Zinc (Zn)	ug/g	80	6197535	100	63	77	5.0	6197961
Acid Extractable Mercury (Hg)	ug/g	<0.050	6197535	0.092	<0.050	<0.050	0.050	6197961
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								



BUREAU
VERITAS

BV Labs Job #: B9H1874

Report Date: 2019/07/10

GM BluePlan Engineering Limited

Client Project #: 219125

Site Location: 1873 LONDON LINE, SARNIA

Sampler Initials: MM

O.REG 153 METALS PACKAGE (SOIL)

BV Labs ID		KBU620		
Sampling Date		2019/06/19 13:00		
COC Number		N/A		
	UNITS	TP6A 0-0.5M Lab-Dup	RDL	QC Batch
Metals				
Hot Water Ext. Boron (B)	ug/g	1.0	0.050	6198064
RDL = Reportable Detection Limit QC Batch = Quality Control Batch Lab-Dup = Laboratory Initiated Duplicate				

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VERITAS

BV Labs Job #: B9H1874

Report Date: 2019/07/10

GM BluePlan Engineering Limited

Client Project #: 219125

Site Location: 1873 LONDON LINE, SARNIA

Sampler Initials: MM

O.REG 153 PAHS (SOIL)

BV Labs ID		KBU609	KBU612		KBU619	KBU620		
Sampling Date		2019/06/19 09:00	2019/06/19 10:30		2019/06/19 13:00	2019/06/19 13:00		
COC Number		N/A	N/A		N/A	N/A		
	UNITS	TP1 0-1M	TP3 0-1M	RDL	TP6 0-0.5M	TP6A 0-0.5M	RDL	QC Batch
Inorganics								
Moisture	%	9.6	22	1.0	18	19	1.0	6197570
Calculated Parameters								
Methylnaphthalene, 2-(1-)	ug/g	0.068	0.064	0.0071	<0.071	<0.071	0.071	6191840
Polyaromatic Hydrocarbons								
Acenaphthene	ug/g	0.046	0.012	0.0050	<0.050	<0.050	0.050	6198508
Acenaphthylene	ug/g	0.018	0.0065	0.0050	<0.050	<0.050	0.050	6198508
Anthracene	ug/g	0.13	0.030	0.0050	<0.050	<0.050	0.050	6198508
Benzo(a)anthracene	ug/g	0.23	0.15	0.0050	<0.050	<0.050	0.050	6198508
Benzo(a)pyrene	ug/g	0.19	0.14	0.0050	<0.050	<0.050	0.050	6198508
Benzo(b/j)fluoranthene	ug/g	0.25	0.19	0.0050	<0.050	<0.050	0.050	6198508
Benzo(g,h,i)perylene	ug/g	0.11	0.094	0.0050	<0.050	<0.050	0.050	6198508
Benzo(k)fluoranthene	ug/g	0.089	0.064	0.0050	<0.050	<0.050	0.050	6198508
Chrysene	ug/g	0.20	0.13	0.0050	<0.050	<0.050	0.050	6198508
Dibenz(a,h)anthracene	ug/g	0.032	0.024	0.0050	<0.050	<0.050	0.050	6198508
Fluoranthene	ug/g	0.62	0.30	0.0050	<0.050	<0.050	0.050	6198508
Fluorene	ug/g	0.11	0.010	0.0050	<0.050	<0.050	0.050	6198508
Indeno(1,2,3-cd)pyrene	ug/g	0.12	0.092	0.0050	<0.050	<0.050	0.050	6198508
1-Methylnaphthalene	ug/g	0.031	0.032	0.0050	<0.050	<0.050	0.050	6198508
2-Methylnaphthalene	ug/g	0.037	0.032	0.0050	<0.050	<0.050	0.050	6198508
Naphthalene	ug/g	0.10	0.015	0.0050	<0.050	<0.050	0.050	6198508
Phenanthrene	ug/g	0.61	0.17	0.0050	<0.050	<0.050	0.050	6198508
Pyrene	ug/g	0.47	0.25	0.0050	<0.050	<0.050	0.050	6198508
Surrogate Recovery (%)								
D10-Anthracene	%	95	93		99	101		6198508
D14-Terphenyl (FS)	%	88	86		80	86		6198508
D8-Acenaphthylene	%	84	84		81	85		6198508
RDL = Reportable Detection Limit								
QC Batch = Quality Control Batch								



BUREAU
VERITAS

BV Labs Job #: B9H1874

Report Date: 2019/07/10

GM BluePlan Engineering Limited

Client Project #: 219125

Site Location: 1873 LONDON LINE, SARNIA

Sampler Initials: MM

O.REG 153 PETROLEUM HYDROCARBONS (SOIL)

BV Labs ID		KBU616	KBU617	KBU618	KBU621		
Sampling Date		2019/06/19 12:00	2019/06/19 12:15	2019/06/19 12:15	2019/06/19 15:00		
COC Number		N/A	N/A	N/A	N/A		
	UNITS	TP5 0-1.0M	TP5 1-1.5M	TP5A 1-1.5M	TP8 0-0.6M	RDL	QC Batch
Inorganics							
Moisture	%	22	19	21	19	1.0	6197570
BTEX & F1 Hydrocarbons							
Benzene	ug/g	0.030	<0.020	<0.020	<0.020	0.020	6198017
Toluene	ug/g	0.024	<0.020	<0.020	<0.020	0.020	6198017
Ethylbenzene	ug/g	<0.020	<0.020	<0.020	<0.020	0.020	6198017
o-Xylene	ug/g	0.030	<0.020	<0.020	<0.020	0.020	6198017
p+m-Xylene	ug/g	0.30	<0.040	<0.040	<0.040	0.040	6198017
Total Xylenes	ug/g	0.33	<0.040	<0.040	<0.040	0.040	6198017
F1 (C6-C10)	ug/g	<10	<10	<10	<10	10	6198017
F1 (C6-C10) - BTEX	ug/g	<10	<10	<10	<10	10	6198017
F2-F4 Hydrocarbons							
F2 (C10-C16 Hydrocarbons)	ug/g	20	15	<10	240	10	6197615
F3 (C16-C34 Hydrocarbons)	ug/g	120	<50	<50	950	50	6197615
F4 (C34-C50 Hydrocarbons)	ug/g	<50	<50	<50	680	50	6197615
Reached Baseline at C50	ug/g	Yes	Yes	Yes	No		6197615
Surrogate Recovery (%)							
1,4-Difluorobenzene	%	100	99	99	99		6198017
4-Bromofluorobenzene	%	102	100	99	101		6198017
D10-Ethylbenzene	%	102	97	102	101		6198017
D4-1,2-Dichloroethane	%	90	89	89	92		6198017
o-Terphenyl	%	91	88	89	91		6197615
RDL = Reportable Detection Limit							
QC Batch = Quality Control Batch							



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VERITAS

BV Labs Job #: B9H1874

Report Date: 2019/07/10

GM BluePlan Engineering Limited

Client Project #: 219125

Site Location: 1873 LONDON LINE, SARNIA

Sampler Initials: MM

PETROLEUM HYDROCARBONS (CCME)

BV Labs ID		KBU621		
Sampling Date		2019/06/19 15:00		
COC Number		N/A		
	UNITS	TP8 0-0.6M	RDL	QC Batch
F2-F4 Hydrocarbons				
F4G-sg (Grav. Heavy Hydrocarbons)	ug/g	3000	100	6202528
RDL = Reportable Detection Limit				
QC Batch = Quality Control Batch				



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VERITAS

BV Labs Job #: B9H1874
Report Date: 2019/07/10

GM BluePlan Engineering Limited
Client Project #: 219125
Site Location: 1873 LONDON LINE, SARNIA
Sampler Initials: MM

TEST SUMMARY

BV Labs ID: KBU609
Sample ID: TP1 0-1M
Matrix: Soil

Collected: 2019/06/19
Shipped:
Received: 2019/06/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6191840	N/A	2019/06/28	Automated Statchk
Hot Water Extractable Boron	ICP	6197509	2019/06/26	2019/06/26	Archana Patel
Hexavalent Chromium in Soil by IC	IC/SPEC	6198088	2019/06/26	2019/06/27	Sally Norouz
Strong Acid Leachable Metals by ICPMS	ICP/MS	6197535	2019/06/26	2019/06/26	Daniel Teclu
Moisture	BAL	6197570	N/A	2019/06/26	Mithunaa Sasitheepan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6198508	2019/06/26	2019/06/27	Mitesh Raj

BV Labs ID: KBU610
Sample ID: TP2 0-1M
Matrix: Soil

Collected: 2019/06/19
Shipped:
Received: 2019/06/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Strong Acid Leachable Metals by ICPMS	ICP/MS	6218177	2019/07/09	2019/07/09	Daniel Teclu

BV Labs ID: KBU612
Sample ID: TP3 0-1M
Matrix: Soil

Collected: 2019/06/19
Shipped:
Received: 2019/06/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6191840	N/A	2019/06/28	Automated Statchk
Hot Water Extractable Boron	ICP	6198064	2019/06/26	2019/06/26	Medhat Nasr
Hexavalent Chromium in Soil by IC	IC/SPEC	6198088	2019/06/26	2019/06/27	Sally Norouz
Strong Acid Leachable Metals by ICPMS	ICP/MS	6197961	2019/06/26	2019/06/28	Daniel Teclu
Moisture	BAL	6197570	N/A	2019/06/26	Mithunaa Sasitheepan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6198508	2019/06/26	2019/06/27	Mitesh Raj

BV Labs ID: KBU616
Sample ID: TP5 0-1.0M
Matrix: Soil

Collected: 2019/06/19
Shipped:
Received: 2019/06/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6198017	N/A	2019/06/26	Anca Ganea
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6197615	2019/06/26	2019/06/26	Prabhjot Gulati
Moisture	BAL	6197570	N/A	2019/06/26	Mithunaa Sasitheepan

BV Labs ID: KBU617
Sample ID: TP5 1-1.5M
Matrix: Soil

Collected: 2019/06/19
Shipped:
Received: 2019/06/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6198017	N/A	2019/06/26	Anca Ganea
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6197615	2019/06/26	2019/06/26	Prabhjot Gulati
Moisture	BAL	6197570	N/A	2019/06/26	Mithunaa Sasitheepan



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VERITAS

BV Labs Job #: B9H1874

Report Date: 2019/07/10

GM BluePlan Engineering Limited

Client Project #: 219125

Site Location: 1873 LONDON LINE, SARNIA

Sampler Initials: MM

TEST SUMMARY

BV Labs ID: KBU618
Sample ID: TP5A 1-1.5M
Matrix: Soil

Collected: 2019/06/19
Shipped:
Received: 2019/06/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6198017	N/A	2019/06/26	Anca Ganea
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6197615	2019/06/26	2019/06/26	Prabhjot Gulati
Moisture	BAL	6197570	N/A	2019/06/26	Mithunaa Sasitheepan

BV Labs ID: KBU619
Sample ID: TP6 0-0.5M
Matrix: Soil

Collected: 2019/06/19
Shipped:
Received: 2019/06/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6191840	N/A	2019/06/28	Automated Statchk
Hot Water Extractable Boron	ICP	6198064	2019/06/26	2019/06/26	Medhat Nasr
Hexavalent Chromium in Soil by IC	IC/SPEC	6198088	2019/06/26	2019/06/27	Sally Norouz
Strong Acid Leachable Metals by ICPMS	ICP/MS	6197961	2019/06/26	2019/06/28	Daniel Teclu
Moisture	BAL	6197570	N/A	2019/06/26	Mithunaa Sasitheepan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6198508	2019/06/26	2019/06/27	Mitesh Raj

BV Labs ID: KBU620
Sample ID: TP6A 0-0.5M
Matrix: Soil

Collected: 2019/06/19
Shipped:
Received: 2019/06/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Methylnaphthalene Sum	CALC	6191840	N/A	2019/06/28	Automated Statchk
Hot Water Extractable Boron	ICP	6198064	2019/06/26	2019/06/26	Medhat Nasr
Hexavalent Chromium in Soil by IC	IC/SPEC	6198088	2019/06/26	2019/06/27	Sally Norouz
Strong Acid Leachable Metals by ICPMS	ICP/MS	6197961	2019/06/26	2019/06/28	Daniel Teclu
Moisture	BAL	6197570	N/A	2019/06/26	Mithunaa Sasitheepan
PAH Compounds in Soil by GC/MS (SIM)	GC/MS	6198508	2019/06/26	2019/06/27	Mitesh Raj

BV Labs ID: KBU620 Dup
Sample ID: TP6A 0-0.5M
Matrix: Soil

Collected: 2019/06/19
Shipped:
Received: 2019/06/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hot Water Extractable Boron	ICP	6198064	2019/06/26	2019/06/26	Medhat Nasr

BV Labs ID: KBU621
Sample ID: TP8 0-0.6M
Matrix: Soil

Collected: 2019/06/19
Shipped:
Received: 2019/06/21

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Petroleum Hydro. CCME F1 & BTEX in Soil	HSGC/MSFD	6198017	N/A	2019/06/27	Anca Ganea
Petroleum Hydrocarbons F2-F4 in Soil	GC/FID	6197615	2019/06/26	2019/06/26	Prabhjot Gulati
F4G (CCME Hydrocarbons Gravimetric)	BAL	6202528	2019/06/28	2019/06/28	Debra Deslandes
Moisture	BAL	6197570	N/A	2019/06/26	Mithunaa Sasitheepan



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VERITAS

BV Labs Job #: B9H1874

Report Date: 2019/07/10

GM BluePlan Engineering Limited

Client Project #: 219125

Site Location: 1873 LONDON LINE, SARNIA

Sampler Initials: MM

GENERAL COMMENTS

Revised Report (2019/07/10): Metals Scan included for sample TP2 0-1M, as per client request .

Revised Report (2019/07/10): B and Hg included for sample TP2 0-1 m, as per client request .

Sample KBU619 [TP6 0-0.5M] : PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Sample KBU620 [TP6A 0-0.5M] : PAH analysis: Due to the sample matrix, sample required dilution. Detection limits were adjusted accordingly.

Results relate only to the items tested.

BUREAU
VERITAS

BV Labs Job #: B9H1874

Report Date: 2019/07/10

QUALITY ASSURANCE REPORT

GM BluePlan Engineering Limited

Client Project #: 219125

Site Location: 1873 LONDON LINE, SARNIA

Sampler Initials: MM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6197615	o-Terphenyl	2019/06/26	95	60 - 130	93	60 - 130	90	%		
6198017	1,4-Difluorobenzene	2019/06/26	100	60 - 140	100	60 - 140	100	%		
6198017	4-Bromofluorobenzene	2019/06/26	104	60 - 140	103	60 - 140	100	%		
6198017	D10-Ethylbenzene	2019/06/26	99	60 - 140	99	60 - 140	100	%		
6198017	D4-1,2-Dichloroethane	2019/06/26	91	60 - 140	91	60 - 140	91	%		
6198508	D10-Anthracene	2019/06/27	102	50 - 130	96	50 - 130	96	%		
6198508	D14-Terphenyl (FS)	2019/06/27	89	50 - 130	84	50 - 130	84	%		
6198508	D8-Acenaphthylene	2019/06/27	87	50 - 130	85	50 - 130	87	%		
6197509	Hot Water Ext. Boron (B)	2019/06/26	97	75 - 125	99	75 - 125	<0.050	ug/g	1.7	40
6197535	Acid Extractable Antimony (Sb)	2019/06/26	97	75 - 125	105	80 - 120	<0.20	ug/g	NC	30
6197535	Acid Extractable Arsenic (As)	2019/06/26	97	75 - 125	101	80 - 120	<1.0	ug/g	13	30
6197535	Acid Extractable Barium (Ba)	2019/06/26	92	75 - 125	102	80 - 120	<0.50	ug/g	0.90	30
6197535	Acid Extractable Beryllium (Be)	2019/06/26	99	75 - 125	102	80 - 120	<0.20	ug/g	NC	30
6197535	Acid Extractable Boron (B)	2019/06/26	103	75 - 125	106	80 - 120	<5.0	ug/g		
6197535	Acid Extractable Cadmium (Cd)	2019/06/26	93	75 - 125	101	80 - 120	<0.10	ug/g	NC	30
6197535	Acid Extractable Chromium (Cr)	2019/06/26	99	75 - 125	102	80 - 120	<1.0	ug/g		
6197535	Acid Extractable Cobalt (Co)	2019/06/26	94	75 - 125	102	80 - 120	<0.10	ug/g	0.36	30
6197535	Acid Extractable Copper (Cu)	2019/06/26	94	75 - 125	103	80 - 120	<0.50	ug/g	7.6	30
6197535	Acid Extractable Lead (Pb)	2019/06/26	93	75 - 125	102	80 - 120	<1.0	ug/g	6.5	30
6197535	Acid Extractable Mercury (Hg)	2019/06/26	85	75 - 125	98	80 - 120	<0.050	ug/g	NC	30
6197535	Acid Extractable Molybdenum (Mo)	2019/06/26	97	75 - 125	101	80 - 120	<0.50	ug/g	11	30
6197535	Acid Extractable Nickel (Ni)	2019/06/26	97	75 - 125	102	80 - 120	<0.50	ug/g	0.71	30
6197535	Acid Extractable Selenium (Se)	2019/06/26	97	75 - 125	102	80 - 120	<0.50	ug/g	NC	30
6197535	Acid Extractable Silver (Ag)	2019/06/26	96	75 - 125	100	80 - 120	<0.20	ug/g	NC	30
6197535	Acid Extractable Thallium (Tl)	2019/06/26	92	75 - 125	101	80 - 120	<0.050	ug/g		
6197535	Acid Extractable Uranium (U)	2019/06/26	90	75 - 125	95	80 - 120	<0.050	ug/g	2.6	30
6197535	Acid Extractable Vanadium (V)	2019/06/26	102	75 - 125	103	80 - 120	<5.0	ug/g	4.9	30
6197535	Acid Extractable Zinc (Zn)	2019/06/26	95	75 - 125	100	80 - 120	<5.0	ug/g	4.8	30
6197570	Moisture	2019/06/26							4.2	20
6197615	F2 (C10-C16 Hydrocarbons)	2019/06/26	103	50 - 130	102	80 - 120	<10	ug/g	NC	30
6197615	F3 (C16-C34 Hydrocarbons)	2019/06/26	100	50 - 130	98	80 - 120	<50	ug/g	NC	30
6197615	F4 (C34-C50 Hydrocarbons)	2019/06/26	103	50 - 130	102	80 - 120	<50	ug/g	NC	30

BUREAU
VERITAS

BV Labs Job #: B9H1874

Report Date: 2019/07/10

QUALITY ASSURANCE REPORT(CONT'D)

GM BluePlan Engineering Limited

Client Project #: 219125

Site Location: 1873 LONDON LINE, SARNIA

Sampler Initials: MM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6197961	Acid Extractable Antimony (Sb)	2019/06/28	99	75 - 125	104	80 - 120	<0.20	ug/g	44 (1)	30
6197961	Acid Extractable Arsenic (As)	2019/06/28	102	75 - 125	100	80 - 120	<1.0	ug/g	6.0	30
6197961	Acid Extractable Barium (Ba)	2019/06/28	NC	75 - 125	107	80 - 120	<0.50	ug/g	13	30
6197961	Acid Extractable Beryllium (Be)	2019/06/28	101	75 - 125	94	80 - 120	<0.20	ug/g	6.2	30
6197961	Acid Extractable Boron (B)	2019/06/28	97	75 - 125	97	80 - 120	<5.0	ug/g	NC	30
6197961	Acid Extractable Cadmium (Cd)	2019/06/28	99	75 - 125	98	80 - 120	<0.10	ug/g	4.3	30
6197961	Acid Extractable Chromium (Cr)	2019/06/28	104	75 - 125	96	80 - 120	<1.0	ug/g	0.98	30
6197961	Acid Extractable Cobalt (Co)	2019/06/28	100	75 - 125	100	80 - 120	<0.10	ug/g	1.6	30
6197961	Acid Extractable Copper (Cu)	2019/06/28	NC	75 - 125	101	80 - 120	<0.50	ug/g	0.94	30
6197961	Acid Extractable Lead (Pb)	2019/06/28	NC	75 - 125	97	80 - 120	<1.0	ug/g	1.7	30
6197961	Acid Extractable Mercury (Hg)	2019/06/28	108	75 - 125	95	80 - 120	<0.050	ug/g	14	30
6197961	Acid Extractable Molybdenum (Mo)	2019/06/28	101	75 - 125	98	80 - 120	<0.50	ug/g	NC	30
6197961	Acid Extractable Nickel (Ni)	2019/06/28	99	75 - 125	98	80 - 120	<0.50	ug/g	6.9	30
6197961	Acid Extractable Selenium (Se)	2019/06/28	103	75 - 125	96	80 - 120	<0.50	ug/g	16	30
6197961	Acid Extractable Silver (Ag)	2019/06/28	100	75 - 125	98	80 - 120	<0.20	ug/g	1.4	30
6197961	Acid Extractable Thallium (Tl)	2019/06/28	96	75 - 125	96	80 - 120	<0.050	ug/g	8.5	30
6197961	Acid Extractable Uranium (U)	2019/06/28	94	75 - 125	87	80 - 120	<0.050	ug/g	55 (1)	30
6197961	Acid Extractable Vanadium (V)	2019/06/28	105	75 - 125	98	80 - 120	<5.0	ug/g	2.8	30
6197961	Acid Extractable Zinc (Zn)	2019/06/28	NC	75 - 125	98	80 - 120	<5.0	ug/g	0.17	30
6198017	Benzene	2019/06/26	88	60 - 140	95	60 - 140	<0.020	ug/g	NC	50
6198017	Ethylbenzene	2019/06/26	94	60 - 140	100	60 - 140	<0.020	ug/g	NC	50
6198017	F1 (C6-C10) - BTEX	2019/06/26					<10	ug/g	NC	30
6198017	F1 (C6-C10)	2019/06/26	104	60 - 140	98	80 - 120	<10	ug/g	NC	30
6198017	o-Xylene	2019/06/26	87	60 - 140	95	60 - 140	<0.020	ug/g	NC	50
6198017	p+m-Xylene	2019/06/26	93	60 - 140	101	60 - 140	<0.040	ug/g	NC	50
6198017	Toluene	2019/06/26	90	60 - 140	97	60 - 140	<0.020	ug/g	NC	50
6198017	Total Xylenes	2019/06/26					<0.040	ug/g	NC	50
6198064	Hot Water Ext. Boron (B)	2019/06/26	NC	75 - 125	105	75 - 125	<0.050	ug/g	0.85	40
6198088	Chromium (VI)	2019/06/27	0.42 (2)	70 - 130	94	80 - 120	<0.2	ug/g	NC	35
6198508	1-Methylnaphthalene	2019/06/27	100	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
6198508	2-Methylnaphthalene	2019/06/27	93	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
6198508	Acenaphthene	2019/06/27	94	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40

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BV Labs Job #: B9H1874

Report Date: 2019/07/10

QUALITY ASSURANCE REPORT(CONT'D)

GM BluePlan Engineering Limited

Client Project #: 219125

Site Location: 1873 LONDON LINE, SARNIA

Sampler Initials: MM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6198508	Acenaphthylene	2019/06/27	87	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
6198508	Anthracene	2019/06/27	84	50 - 130	78	50 - 130	<0.0050	ug/g	NC	40
6198508	Benzo(a)anthracene	2019/06/27	99	50 - 130	90	50 - 130	<0.0050	ug/g	NC	40
6198508	Benzo(a)pyrene	2019/06/27	94	50 - 130	88	50 - 130	<0.0050	ug/g	2.5	40
6198508	Benzo(b,j)fluoranthene	2019/06/27	93	50 - 130	87	50 - 130	<0.0050	ug/g	15	40
6198508	Benzo(g,h,i)perylene	2019/06/27	91	50 - 130	89	50 - 130	<0.0050	ug/g	NC	40
6198508	Benzo(k)fluoranthene	2019/06/27	92	50 - 130	88	50 - 130	<0.0050	ug/g	NC	40
6198508	Chrysene	2019/06/27	94	50 - 130	87	50 - 130	<0.0050	ug/g	NC	40
6198508	Dibenz(a,h)anthracene	2019/06/27	98	50 - 130	94	50 - 130	<0.0050	ug/g	NC	40
6198508	Fluoranthene	2019/06/27	95	50 - 130	86	50 - 130	<0.0050	ug/g	28	40
6198508	Fluorene	2019/06/27	88	50 - 130	82	50 - 130	<0.0050	ug/g	NC	40
6198508	Indeno(1,2,3-cd)pyrene	2019/06/27	96	50 - 130	93	50 - 130	<0.0050	ug/g	NC	40
6198508	Naphthalene	2019/06/27	85	50 - 130	80	50 - 130	<0.0050	ug/g	NC	40
6198508	Phenanthrene	2019/06/27	93	50 - 130	86	50 - 130	<0.0050	ug/g	NC	40
6198508	Pyrene	2019/06/27	93	50 - 130	85	50 - 130	<0.0050	ug/g	18	40
6202528	F4G-sg (Grav. Heavy Hydrocarbons)	2019/06/28	NC	65 - 135	101	65 - 135	<100	ug/g	14	50
6218177	Acid Extractable Antimony (Sb)	2019/07/09	87	75 - 125	103	80 - 120	<0.20	ug/g	25	30
6218177	Acid Extractable Arsenic (As)	2019/07/09	98	75 - 125	102	80 - 120	<1.0	ug/g	5.2	30
6218177	Acid Extractable Barium (Ba)	2019/07/09	NC	75 - 125	93	80 - 120	<0.50	ug/g	1.6	30
6218177	Acid Extractable Beryllium (Be)	2019/07/09	94	75 - 125	98	80 - 120	<0.20	ug/g	1.8	30
6218177	Acid Extractable Boron (B)	2019/07/09	95	75 - 125	97	80 - 120	<5.0	ug/g	1.4	30
6218177	Acid Extractable Cadmium (Cd)	2019/07/09	98	75 - 125	101	80 - 120	<0.10	ug/g	5.7	30
6218177	Acid Extractable Chromium (Cr)	2019/07/09	NC	75 - 125	101	80 - 120	<1.0	ug/g	1.7	30
6218177	Acid Extractable Cobalt (Co)	2019/07/09	99	75 - 125	101	80 - 120	<0.10	ug/g	1.1	30
6218177	Acid Extractable Copper (Cu)	2019/07/09	NC	75 - 125	100	80 - 120	<0.50	ug/g	4.8	30
6218177	Acid Extractable Lead (Pb)	2019/07/09	NC	75 - 125	103	80 - 120	<1.0	ug/g	2.8	30
6218177	Acid Extractable Mercury (Hg)	2019/07/09	106	75 - 125	104	80 - 120	<0.050	ug/g	26	30
6218177	Acid Extractable Molybdenum (Mo)	2019/07/09	96	75 - 125	97	80 - 120	<0.50	ug/g	7.4	30
6218177	Acid Extractable Nickel (Ni)	2019/07/09	NC	75 - 125	102	80 - 120	<0.50	ug/g	1.0	30
6218177	Acid Extractable Selenium (Se)	2019/07/09	100	75 - 125	107	80 - 120	<0.50	ug/g	NC	30
6218177	Acid Extractable Silver (Ag)	2019/07/09	98	75 - 125	101	80 - 120	<0.20	ug/g	NC	30
6218177	Acid Extractable Thallium (Tl)	2019/07/09	98	75 - 125	102	80 - 120	<0.050	ug/g	3.9	30



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BV Labs Job #: B9H1874

Report Date: 2019/07/10

QUALITY ASSURANCE REPORT(CONT'D)

GM BluePlan Engineering Limited

Client Project #: 219125

Site Location: 1873 LONDON LINE, SARNIA

Sampler Initials: MM

QC Batch	Parameter	Date	Matrix Spike		SPIKED BLANK		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
6218177	Acid Extractable Uranium (U)	2019/07/09	102	75 - 125	103	80 - 120	<0.050	ug/g	0.89	30
6218177	Acid Extractable Vanadium (V)	2019/07/09	NC	75 - 125	101	80 - 120	<5.0	ug/g	0.50	30
6218177	Acid Extractable Zinc (Zn)	2019/07/09	NC	75 - 125	101	80 - 120	<5.0	ug/g	4.3	30

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

Surrogate: A pure or isotopically labeled compound whose behavior mirrors the analytes of interest. Used to evaluate extraction efficiency.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference $\leq 2 \times$ RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) The matrix spike recovery was below the lower control limit. This may be due in part to the reducing environment of the sample. The matrix spike was reanalyzed to confirm result.



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BV Labs Job #: B9H1874

Report Date: 2019/07/10

GM BluePlan Engineering Limited

Client Project #: 219125

Site Location: 1873 LONDON LINE, SARNIA

Sampler Initials: MM

VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Anastassia Hamanov, Scientific Specialist

Brad Newman, Scientific Service Specialist

BV Labs has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

21-Jun-19 18:20

Ashton Gibson



B9H1874

KFL

ENV-1380

obello Road, Mississauga, Ontario L5N 2L8

-817-5700 Fax: 905-817-5779 Toll Free: 800-563-6266

1191/5

CHAIN OF CUSTODY RECORD

Page 1 of 2

Report Information (if differs from invoice)		Project Information (where applicable)		Turnaround Time (TAT) Required																																																																																																																																		
Company Name: GM BluePlan Engineering Limited	Company Name: GM BluePlan Engineering Limited	Quotation #:	<input checked="" type="checkbox"/> Regular TAT (5-7 days) Most analyses	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS																																																																																																																																		
Contact Name: Joe Rotondi	Contact Name: Michael MacKenzie/ Joanna Olesiuk	P.O. #/ AFE#:	Rush TAT (Surcharges will be applied)																																																																																																																																			
Address: 650 Woodlawn Road West, Block C, Unit 2	Address: 235 North Centre Road, Suite 103	Project #: 219125	<input type="checkbox"/> 1 Day	<input type="checkbox"/> 2 Days	<input type="checkbox"/> 3-4 Days																																																																																																																																	
Guelph ON N1K 1B8	London ON N5X 4E7	Site Location: 1873 London Line, Sarnia																																																																																																																																				
Phone: 5198248150 Fax:	Phone: 5198248150/5736729403 Fax:	Site #:																																																																																																																																				
Email: joe.rotondi@gmblueplan.ca	Email: Michael.Mackenzie@gmblueplan.ca / Joanna.Olesiuk@gmblueplan.ca	Site Location Province: ON	Date Required:																																																																																																																																			
MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS LABORATORIES' DRINKING WATER CHAIN OF CUSTODY		Sampled By: M. MacKenzie	Rush Confirmation #:																																																																																																																																			
Regulation 153 <input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input checked="" type="checkbox"/> Med/ Fine <input checked="" type="checkbox"/> Table 2 <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Coarse <input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/ Other <input checked="" type="checkbox"/> Table 1 FOR RSC (PLEASE CIRCLE) Y / N <input type="radio"/> Y <input checked="" type="radio"/> N		Other Regulations <input type="checkbox"/> CCME <input type="checkbox"/> Sanitary Sewer Bylaw <input type="checkbox"/> MISA <input type="checkbox"/> Storm Sewer Bylaw <input type="checkbox"/> PWQO Region <input type="checkbox"/> Other (Specify) <input type="checkbox"/> REG 558 (MIN. 3 DAY TAT REQUIRED)		Analysis Requested <table border="1"> <tr> <th># OF CONTAINERS SUBMITTED</th> <th>FIELD FILTERED (CIRCLE) Metals / Hg / CrVI</th> <th>BTEX/ PHC F1</th> <th>PHCS F2 - F4</th> <th>VOCs</th> <th>REG 153 METALS & INORGANICS</th> <th>REG 153 ICPMS METALS</th> <th>REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)</th> <th>PAHs</th> <th>OTHER</th> <th>DO NOT ANALYZE</th> </tr> <tr> <td>2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td>X</td> <td></td> <td>X</td> </tr> <tr> <td>5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> </tr> <tr> <td>2</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> <td>X</td> <td></td> <td></td> </tr> <tr> <td>3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> </tr> <tr> <td>5</td> <td></td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>X</td> </tr> <tr> <td>5</td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>X</td> <td>X</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>		# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCS F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)	PAHs	OTHER	DO NOT ANALYZE	2							X	X		X	5							X	X			2										X	2							X	X			3										X	5		X	X								5										X	5	X	X									5	X	X									LABORATORY USE ONLY <table border="1"> <tr> <th colspan="2">CUSTODY SEAL</th> <th rowspan="2">COOLER TEMPERATURES</th> </tr> <tr> <th>Present</th> <th>Intact</th> </tr> <tr> <td>Y</td> <td>Y</td> <td>9/8/2°C</td> </tr> <tr> <td></td> <td></td> <td>5/5/5</td> </tr> <tr> <td colspan="3">COOLING MEDIA PRESENT: <input checked="" type="radio"/> Y <input type="radio"/> N</td> </tr> <tr> <td colspan="3">COMMENTS</td> </tr> </table>		CUSTODY SEAL		COOLER TEMPERATURES	Present	Intact	Y	Y	9/8/2°C			5/5/5	COOLING MEDIA PRESENT: <input checked="" type="radio"/> Y <input type="radio"/> N			COMMENTS		
# OF CONTAINERS SUBMITTED	FIELD FILTERED (CIRCLE) Metals / Hg / CrVI	BTEX/ PHC F1	PHCS F2 - F4	VOCs	REG 153 METALS & INORGANICS	REG 153 ICPMS METALS	REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)	PAHs	OTHER	DO NOT ANALYZE																																																																																																																												
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Include Criteria on Certificate of Analysis: Y / N <input type="radio"/> Y <input checked="" type="radio"/> N		SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS																																																																																																																																				
SAMPLE IDENTIFICATION	DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX																																																																																																																																			
1 TP1 0-0.5 m	6/19/2019	0900	Soil	2																																																																																																																																		
2 TP1 0-1 m	6/19/2019	0900	Soil	5																																																																																																																																		
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7 TP 4 0.3-1 m	6/19/2019	1100	Soil	5																																																																																																																																		
8 TP5 0-0.5m	6/19/2019	1130	Soil	5																																																																																																																																		
9 TP5 0-1.0m	6/19/2019	1200	Soil	5																																																																																																																																		
10 TP5 1-1.5m	6/19/2019	1215	Soil	5																																																																																																																																		
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)																																																																																																																																		
Mike MacKenzie		2019/6/19	1830	ASHTON DENISON																																																																																																																																		
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6740 Campobello Road, Mississauga, Ontario L5N 2L8
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CAM FCD-01191/5

CHAIN OF CUSTODY RECORD

Page 2 of 2
1 of 1

Invoice Information		Report Information (if differs from invoice)		Project Information (where applicable)		Turnaround Time (TAT) Required			
Company Name: GM BluePlan Engineering Limited		Company Name: GM BluePlan Engineering Limited		Quotation #:		<input checked="" type="checkbox"/> Regular TAT (5-7 days) Most analyses			
Contact Name: Joe Rotondi		Contact Name: Michael MacKenzie/Joanna Olesiuk		P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS			
Address: 650 Woodlawn Road West, Block C, Unit 2		Address: 235 North Centre Road, Suite 103		Project #: 219125		Rush TAT (Surcharges will be applied)			
Address: Guelph ON N1K 1B8		Address: London ON N5X 4E7		Site Location: 1873 London Line, Sarnia		<input type="checkbox"/> 1 Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 3-4 Days			
Phone: 5198248150 Fax:		Phone: 5198248150/5736729403 Fax:		Site #:		Date Required:			
Email:		Email: Michael.MacKenzie@gmblueplan.ca / Joanna.Olesiuk@gmblueplan.ca		Site Location Province: ON		Rush Confirmation #:			
MOE REGULATED DRINKING WATER OR WATER INTENDED FOR HUMAN CONSUMPTION MUST BE SUBMITTED ON THE BUREAU VERITAS LABORATORIES' DRINKING WATER CHAIN OF CUSTODY				Sampled By: M. MacKenzie		LABORATORY USE ONLY			
Regulation 153		Other Regulations		Analysis Requested		CUSTOMER SEAL			
<input type="checkbox"/> Table 1 <input type="checkbox"/> Res/Park <input checked="" type="checkbox"/> Med/ Fine		<input type="checkbox"/> CCME <input type="checkbox"/> Sanitary Sewer Bylaw		<div># OF CONTAINERS SUBMITTED</div> <div>FIELD FILTERED (CIRCLE) Metals / Hg / CrVI</div> <div>BTX/ PHC F1</div> <div>PHCS F2 - F4</div> <div>VOCs</div> <div>REG 153 METALS & INORGANICS</div> <div>REG 153 ICPMS METALS</div> <div>REG 153 METALS (Hg, Cr VI, ICPMS Metals, HWS - B)</div> <div>PAHs</div> <div>HOLD - DO NOT ANALYZE</div>		<input checked="" type="checkbox"/> Y <input type="checkbox"/> N		COOLER TEMPERATURES	
<input checked="" type="checkbox"/> Table 2 <input type="checkbox"/> Ind/Comm <input type="checkbox"/> Coarse		<input type="checkbox"/> MISA <input type="checkbox"/> Storm Sewer Bylaw				Present		Intact	
<input type="checkbox"/> Table 3 <input type="checkbox"/> Agri/ Other		<input type="checkbox"/> PWQO Region				<input checked="" type="checkbox"/> Y		<input checked="" type="checkbox"/> Y	
<input checked="" type="checkbox"/> Table 1		<input type="checkbox"/> Other (Specify)							
FOR RSC (PLEASE CIRCLE) Y / N <input type="radio"/>		<input type="checkbox"/> REG 558 (MIN. 3 DAY TAT REQUIRED)				9/8/7°C			
Include Criteria on Certificate of Analysis: Y / N <input type="radio"/>						5/5/5			
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO BUREAU VERITAS						COOLING MEDIA PRESENT: <input checked="" type="radio"/> Y <input type="radio"/> N <input checked="" type="radio"/> ice			
SAMPLE IDENTIFICATION		DATE SAMPLED (YYYY/MM/DD)	TIME SAMPLED (HH:MM)	MATRIX			COMMENTS		
1	TP5A 1-1.5m	6/19/2019	1215	Soil	3	X	X	Hold additional containers/vials for all.	
2	TP6 0-0.5 m	6/19/2019	1300	Soil	2			Will advise of additional analysis, as required.	
3	TP6A 0-0.5 m	6/19/2019	1300	Soil	2				
4	TP8 0-0.6m	6/19/2019	1500	Soil	5	X	X	after hours	
5									
6									
7									
8									
9									
10									
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	BV JOB #	
Mike MacKenzie		2019/6/19	19:00	LAWSON DENISON		2019/06/21	10:55		
				Secbs 1					

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