CITY OF WHITEHORSE

FORMER MOTORWAYS PROPERTY
REMEDIATION SUMMARY REPORT

REPORT

FEBRUARY 2013
ISSUED FOR USE
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1.0 INTRODUCTION

The following report has been prepared by EBA Engineering Consultants Ltd. operating as EBA, a Tetra Tech Company (EBA), to present a summary of the historic and current remediation work conducted at the Former Motorways Property, in support of future development of the property for Lots 24-31, 38, 41, 43 and 45.

This report includes a summary of the data gap analysis, soil sampling program and underground storage tank (UST) investigation, remediation plan, and remedial excavation work conducted by EBA since October 2010.

The area of the Former Motorways Property covered in this report is bounded by First Avenue and Second Avenue, between Ogilvie Street and Strickland Street, Whitehorse, Yukon (the Site; Figure 1). The Former Motorways Property was previously owned by White Pass Transportation Ltd. and was purchased by the City of Whitehorse in 1994. The property had been historically used as an ore concentrate handing site by the White Pass Railway.

2.0 BACKGROUND SUMMARY OF WORK CONDUCTED BY EBA

In October of 2010, the City of Whitehorse approached EBA to complete a Data Gap Analysis of remediation work on portions of the Former Motorways Property (Lots 24-31 and 34-38, Block 316, 93845 CLSR 2008-0034 LTO) in Whitehorse, Yukon to determine if contamination still remains on site and if further remedial work is recommended. Metal contaminated soil has been known to exist throughout the area based on previous work conducted by EBA and other consultants.

Environmental assessments and remediation work had been carried out on the Site by various environmental consultants since 1994, however a summary of the all the efforts to date had not been compiled.

In March 2011, EBA provided the City of Whitehorse with a data gap analysis of the environmental site assessment, sampling, and remediation work conducted on the Former Motorways Property up to the date of the report. The report identified areas on the Site that required additional investigation for metal contamination and two potential USTs.

After the data gap analysis was completed by EBA in 2011, the Site had been re-surveyed and the lot boundaries had been modified from the 2008 survey (Plan 93845 CLSR YT 2008-0034). This report uses the most up to date site information in accordance with the 2011 Survey (Plan 98798 CLSR YT 2011-087 LTO) in which Lot 34 from the 2008 survey was divided into Lots 41 and 42, and Lots 35, 36 and 37 from the 2008 survey were consolidated into Lots 43 and 45, as presented in Figure 1. The results from the 2011 data gap analysis have been interpreted to the new lot boundaries for this report.

In May 2012, EBA started an extensive soil sampling program for metal contamination in the areas identified in the data gap analysis. A summary report of the sampling program was provided by EBA to the City of Whitehorse on September 28, 2012 (Summary of the Former Motorways Metal Contamination Delineation Program and UST Investigation, Whitehorse, YT). EBA also provided the City of Whitehorse...
with a Remediation Plan for removing and disposing of metal contaminated material from the subject site on October 2, 2012.

In November 2012, EBA supervised the remedial excavation and disposal of metal contaminated material from areas on the Former Motorways Property identified during the EBA 2012 sampling program and remediation plan development.

### 3.0 POTENTIAL CONTAMINANTS OF CONCERN AND REGULATORY STANDARDS

All analytical results reviewed or collected during the data gap analysis, soil sampling program and remediation plan development were compared to the Yukon Contaminated Sites Regulation (YCSR).

#### 3.1 Yukon Contaminated Sites Regulation (YCSR) Soil Standards

The YCSR provides standards for the assessment and remediation of contaminated sites in the Yukon. Schedule 1 and 2 of the YCSR provide generic and matrix numerical standards respectively, for the assessment and clean-up of soil that are based on site-specific land uses.

The YCSR standards for residential land use (RL) were selected as the most applicable soil standards for comparison of the soil sample analytical results based on the intended mixed commercial/residential land use for the Site. Schedule 2 matrix standards for intake of contaminated soil, groundwater flow to surface water used by aquatic life, and toxicity to soil invertebrates and plants were all considered in determining the most restrictive applicable soil standards.

#### 3.2 Yukon Contaminated Sites Regulation (YCSR) Water Standards

The YCSR also includes standards to ensure that water at a site, or which flows from a site, is suitable for direct use and is clean enough to protect water uses on adjacent properties. Schedule 3 of the YCSR provides generic standards for water based on site specific and downstream water use.

As groundwater on the Former Motorways property is adjacent to the Yukon River (a fish bearing water body), EBA applied the YCSR Aquatic Life (AL) standards for comparison to available water quality data.

### 4.0 2011 DATA GAP ANALYSIS

In March 2011, EBA completed a Data Gap Analysis of remediation work on portions of the Former Motorways Property. At the time of the data gap analysis, EBA assessed Lots 24-31 and 34-38 (Block 316, 93845 CLSR YT, 2008-0034 LTO), as requested by the City of Whitehorse.

Historic reports summarizing environmental conditions of the Site were obtained from the City of Whitehorse, Yukon Government (YG) Department of Environment, YG Highways and Public Works, and by an internal EBA file search. The sources of these reports include studies conducted by EBA, Golder Associates Ltd. (Golder), Norecol, Dames & Moore Inc. (NDM), Access Consulting Group (Access), and Gartner Lee Ltd (Gartner Lee).
The following list of reports was reviewed as part of this work:


EBA summarized the scope of work, results, conclusions and recommendations of each relevant historic report in the 2011 data gap analysis report. EBA used this information to better understand what areas of potential environmental concern (APECs) have been addressed and which remain on Site.

EBA did not independently verify the results reported by others, however EBA did compare previous analytical results to the current applicable YCSR RL standards in order to assess whether any APECs remain.

The majority of the remediation work on the site was conducted by Golder, which included a Phase I Environmental Site Assessment (ESA) and Phase II ESA sampling program conducted in 1994, as well as the monitoring of remedial efforts by White Pass in 1995.

### 4.1 Summary of Findings

The following section provides a summary of the key reports and environmental concerns identified during the data gap analysis.
### Phase I and Phase II Environmental Site Assessment (ESA) – Golder, 1994

In 1994 Golder conducted a Phase I and a Phase II ESA of the entire Former Motorways Property. The Phase I ESA included a review of historical records and a site reconnaissance. At the time of the Phase I ESA, the Former Motorways Property covered a greater extent of land to the east than what is considered in this report. Therefore, only areas of concern directly affecting the lots in question were investigated in detail.

As part of the Phase I ESA, Golder identified a total of thirteen APECs, over the entire Former Motorways Property, four of which were applicable to the lots assessed in the data gap analysis. The areas of concern include:

- **Ore Concentrate in Surface Soils** (includes Lot 23 - 31, 41 - 45).
- **Underground Storage Tanks** (southwest boundary of Lot 31, east boundary of Lot 28, and under Black St.).
- **Imported Fill within Ore Concentrate Area** (Lot 43 and Lot 24).
- **Asbestos Handling Area** (north of Lot 24).

Golder conducted the Phase II ESA soil sampling program by dividing the entire Former Motorways Property into 40 m x 40 m grid cells and collected samples at the surface and 0.15 m below ground. Copper, lead and zinc were found to exceed YCSR RL land use standards within the top 0.15 m throughout most of the Ore Concentrate Area (located on the Site). Along the western portion of the property, copper concentrations were also found to exceed YCSR RL standards between 0.15 m and 0.3 m below ground in the area of imported fill (within the Ore Concentrate Area).

Three USTs were located on the Former Motorways Property within the vicinity of the lots assessed. One UST was removed at the time of the Phase II ESA, near the southwest corner of what is now Lot 31 (Figure 1). Hydrocarbon contaminated material was also excavated from the UST location southwest of Lot 31 during removal of the tank. Hydrocarbon contamination was considered to be likely related to incidental overfilling of the UST. Confirmatory sample results from the excavation sidewalls and base were interpreted by EBA to be below YCSR RL standards.

Two USTs were thought to be located under the main building as they could not be found during the excavations in the areas of the tank. One potential tank location was along the eastern boundary of what is now Lot 28, while the other potential location is directly under Black Street.

Asbestos fibers greater than 1% were found in soils around the Asbestos Shed located on Lot 23, which is north to Lot 24, but not included in the lots assessed as part of the data gap analysis (the area was excavated in 1995 and confirmatory analytical results indicated asbestos concentrations were below 1%).

Groundwater monitoring wells were installed and sampled during the Phase II ESA. Groundwater concentrations of dissolved copper were found to exceed the YCSR AL standards at all wells installed over the entire subject site.
4.1.2 Soils Remediation Program – Golder, 1995

In 1995, Golder was retained by White Pass Transportation Ltd. to document and monitor the site remediation activities at the Former Motorways Property. The remediation activities addressed the following items located on the lots included as part of the data gap analysis:

- Shallow (0.0 m to 0.15 m depth) metals contaminated soil (Lot 23 - 31, 43 and 45).
- Deep (greater than 0.15 m) metals contaminated soil (Lot 43).
- Hydrocarbon contaminated soil (east boundary of Lot 28, southwest boundary of Lot 31, and within Lot 41 and 42).

As part of the remediation program monitored by Golder, a supplemental soil sampling program was conducted which divided the original 40 m x 40 m sampling grid used by Golder in 1994 into 20 m x 20 m sampling grids. This was done to further assess shallow soil conditions that were suspected of containing metal concentrations above the YCSR RL standards. Five samples were collected from within each grid cell and analyzed for copper, zinc and lead concentrations. This sampling program was used to delineate the extent of the shallow soil metal contamination for excavation.

As part of the remedial work, the Ore Concentrate Area was excavated between 0.2 m – 0.4 m below the surface (See dark grey areas in Figure 1). Confirmatory samples were collected at 0.15 m below the excavation base throughout the 20 m x 20 m sampling grid cells in the excavated areas. Confirmatory sampling results indicated that metal concentrations were below the YCSR RL standard in most of the areas excavated, but that localized pockets of metal concentrations above the YCSR RL standards still remained in six locations (referred to herein as Subject Areas). These localized pockets were expected to represent 5% - 10% of the volume of soil in the base of the excavation, and were left to be managed in place (see Subject Areas 1 – 6 in Figure 1).

Hydrocarbon contaminated material was removed from an identified UST location on the eastern boundary of Lot 28 (Figure 1). Hydrocarbon contamination was considered to be likely related to incidental overfilling of the UST. Confirmatory sampling from the excavation side walls and base were interpreted by EBA to be below the YCSR RL standards. The UST was not found during a subsequent UST investigation by EBA in 2012.

Hydrocarbon contaminated material was also removed from within Lot 41 and 42 (Figure 1). Hydrocarbon contamination in this area was considered to be likely related to the localized release (i.e. leak or spill from a former heating oil storage tank in the area and migrated from the surface down an abandoned sanitary sewer line). Confirmatory sampling from the excavation side walls and base were interpreted by EBA to be below the YCSR RL standards.

4.1.3 Groundwater Assessments

The strategy of the remedial excavation of metals from the site in 1995 involved removing the contaminant source thereby reducing the long term potential for copper to be leached from the soils into the groundwater.
Additional groundwater assessments conducted by Gartner Lee (1999), EBA (2003), and Access (2005 and 2006) from groundwater wells installed on the Site in 1995 indicated that metal and hydrocarbon concentrations in groundwater monitoring wells on site were below the YCSR AL standards.

4.2 **Recommendations**

Through review of the Golder assessment and remediation reports, and additional information for the Site, EBA identified one Area of Environmental Concern (AEC) and two APECs as part of the data gap analysis. The AEC included six areas (Figure 1 – Subject Areas 1-6) where localized pockets of metal concentrations (copper, lead and/or zinc) were observed to be above the YCSR RL standards. EBA recommended further soil sampling within these six Subject Areas to determine the extents of remaining metal contamination and additional remediation requirements.

The two APECs included two USTs that could not be accounted for during excavation work conducted on Site by Golder in 1994/1995. These tanks were not found during exploratory digging, but were also not confirmed to have been removed from the Site. Therefore these USTs could potentially remain in place. One potential UST was located along the eastern boundary of Lot 28, while the second tank is potentially located under what is now Black Street. The City of Whitehorse indicated that no UST was reported to have been found during excavation for the construction of Black Street or during the installation of underground utilities in this area.

In September 2011, Aurora Geoscience conducted an electromagnetic field survey of the Site, which included the eastern sides of Lots 27 and 28 of the Former Motorways Property. The results of the survey showed a magnetic anomaly which indicated the possibility of an UST on site in proximity of the APEC on Lot 28 identified by EBA in the data gap analysis. Therefore, further investigation was recommended in this area.

5.0 **2012 METAL CONTAMINATION DELINATION SAMPLING PROGRAM**

In May 2012, EBA developed and started an extensive soil sampling program to investigate the six Subject Areas on the Former Motorway Property where localized pockets of metal concentrations were observed to be above the YCSR RL standards. In addition, a UST investigation was conducted to determine the presence of a UST along the eastern perimeter of Lot 28.

5.1 **Site Description**

The six Subject Areas identified in the data gap analysis spanned the boundaries of the various lots surveyed on the Former Motorways Property. Figure 1 identifies the location of each Subject Area relative to the lot boundaries based on the 2011 Survey (Plan 98798 CLSR YT 2011-087). A summary the lots associated with each Subject Area are provided below:

- Subject Area 1 – Lot 31 (Figure 2).
- Subject Area 2 – Lot 29 (Figure 3).
- Subject Area 3 – Lot 27 and Lot 28 (Figure 4).
Subject Area 4 – Lot 24 and Lot 25 (Figure 5).

Subject Area 5 – Lot 43 (Figure 6). and

Subject Area 6 – Lot 43 and Lot 45 (Figure 7).

Figures 1 through 7 provide a summary of the Subject Area sampling grids, areas of the 2012 remedial excavation work as well as historical remediation work performed on the Former Motorways Property for Lots 24-31, 38, 41 - 45.

5.2 Soil Sampling Methodology

The boundaries of the six Subject Areas identified during the data gap analysis as having localized pockets of remaining metal contamination were surveyed and identified on site by Underhill Geomatics Ltd. prior to the start of the sampling. Locates for water/sewer, fiber optic and electrical utilities were also conducted within the proximity of each Subject Area prior to sampling.

The area of investigation for each Subject Area was limited to within the boundaries of Lots 24 – 31, and Lots 43 and 45, where the City of Whitehorse identified future residential/commercial development was to occur. For example, only a small portion of Subject Area 2 is located within Lot 29 (Figure 1 and Figure 3), while the remainder extends under Black Street. Therefore only the portion of Subject Area 2 located within Lot 29 was identified for sampling.

In instances where the Subject Area boundaries crossed transmission line easements, or were located within one metre of underground transmission lines, sewer or other utilities, the sampling area was modified to exclude these areas for the following reasons:

- Managing safety risks for workers.
- No residential development is expected to occur within previously established utility corridors.
- Previous excavation work performed when installing utilities would have disturbed the original soil conditions. As a result, engineered backfill placed within the utility trenches is not expected to be representative of the original material.

Once the sampling extents within each Subject Area were established, each Subject Area was then subdivided into 5 m x 5 m sampling grids. A letter-number grid system was established to identify each grid cell within a Subject Area. Grid cell numbers were spray painted on the ground in each Subject Area prior to sampling.

All 2012 soil samples were collected with reference to the original ground level in 2005. After the initial sampling and excavation work conducted on the Former Motorways Property by Golder in 1995, sections of the Site were leveled for landscaping and paving after 2005 using material transported from offsite. The City of Whitehorse provided EBA with figures showing both the original ground level (as of 2005) and existing grade at cross-sections through the various Subject Areas. Original ground level in 2005 was assumed to be representative of conditions on site after the 1995 remedial excavation work as the site remained an empty lot until landscaping and paving after 2005.
The original ground level from 2005 was covered by up to approximately one metre of fill in some Subject Areas. Therefore, during sample collection the original ground level was estimated using the figures supplied by the City of Whitehorse, in combination with visual inspection of soil stratigraphy.

Soil sampling was completed by EBA in approximately the center of each surveyed 5 m x 5 m grid cell using a Kubota backhoe operated by Arctic Backhoe Services Ltd (ABS). Test pits were initially excavated to the approximate depth of original ground level. Samples were then collected at a depth of 0.3 m, 0.6 m, and 0.9 m below original ground level.

Soil samples were placed in clean plastic bags identified with the Subject Area, grid coordinates and sample depth. Collected samples were assumed to be representative of all the material located within each 5 m x 5 m grid cell at the particular sample depth. Material removed from each test pit was replaced after the excavation was complete.

As the surface of some grid cells within Subject Areas 3, 5 and 6 were paved at the time of sampling, a rotary saw was used to cut a hole in the asphalt. The asphalt was then removed using the backhoe bucket. This procedure was completed for each paved section of sampling grid to minimize the amount of asphalt waste generated. Asphalt waste was piled nearby and removed from the site by ABS following sampling activities. Scrap metal was observed during sampling within numerous grid cells, but was returned back into the excavation upon sample completion.

Based on EBA’s experience at surrounding sites, metal contamination observed at 0.3 m below original ground level was an indicator of potential metal concentrations above the YCSR RL standard at greater depths. If metal concentrations were found to be below the YCSR RL standards at 0.3 m, additional analysis at greater depths was also found to be below the YCSR RL standards. Therefore, metals analysis was requested for all samples collected at a depth of 0.3 m below original ground level. A hold was requested on all other samples pending results for samples collected at 0.3 m. In instances where sample results at 0.3 m depth exceeded the YCSR RL in a particular grid cell, additional metals analysis was requested for the sample collected at 0.6 m below ground level. In instances where sample results at 0.6 m depth exceeded the YCSR RL in a particular grid cell, additional metals analysis was requested for the sample collected at 0.9 m below ground level.

The above analytical approach was used to delineate the vertical extent of metal contamination within a grid cell, if found to be present. Metal concentration results from adjacent grid cells were used to delineate the horizontal extent of contamination surrounding a grid cell where contamination was identified.

Initial soil samples were collected from Subject Areas 1, 3, 4, 5 and 6 between May 31, 2012 and June 8, 2012 and submitted for laboratory analysis. Based on the initial laboratory analytical results, additional sampling was conducted for Subject Area 4 on July 18, 2012, and July 31, 2012, and Subject Area 5 on July 18, 2012. Subject Area 2 was included in the sampling program on July 9, 2012, upon request by the City of Whitehorse, and additional sampling in this area was conducted on July 18, 2012.

A total of 303 soil samples were collected during the course of the initial investigation between May 31, 2012 and June 8, 2012. A total of 106 samples were analyzed for metal concentrations (101 samples at 0.3 m below original ground level, four samples at 0.6 m below ground level, and one sample at 0.9 m below original ground level). A total of eight additional samples were collected and analyzed after the
initial investigation in order to further refine the horizontal extents of metal contamination found in two grid cells.

### 5.3 Analytical Laboratory

Soil samples were collected and stored in plastic sampling bags provided by ALS Laboratories (ALS). Once sampling from a Subject Area had been completed, all samples were delivered to ALS in Whitehorse accompanied by a “Chain of Custody” form. Samples were then shipped to ALS in Burnaby B.C. for analysis.

Soil samples were analyzed from metal concentrations using the British Columbia Contaminated Sites Regulations analytical method of "Strong Acid Leachable Metals in Soil". ALS Laboratories is an accredited lab with the Canadian Association for Laboratory Accreditation (CALA).

Laboratory analytical results for soil samples collected during the 2012 EBA sampling program were previously provided in the Summary of the Former Motorways Metal Contamination Delineation Program and UST Investigation, Whitehorse, YT report by EBA in September 2012.

### 5.4 Summary of Soil Sampling Results

A total of four soil samples out of the 101 samples collected at 0.3 m below original ground level analyzed during the initial sampling program had metal concentrations above the YCSR RL standard, which included:

- Subject Area 3 – Grid cells E2 and E3.
- Subject Area 4 – Grid Cell D2.
- Subject Area 5 – Grid Cell D1.

Additional analysis was conducted on samples collected in these grid cells at 0.6 m below the original ground level. Out of the four samples analyzed at 0.6 m, the sample in Subject Area 4 – Grid Cell D2 indicated further metal exceedences above YCRS RL standard. The sample collected 0.9 m below original ground level in Subject Area 4 – Grid Cell D2 was then analyzed. No metal exceedences were found to occur at 0.9 m.

At sampling locations where metal concentrations were found to exceed the YCSR RL, these exceedences typically included copper, lead, zinc, or a combination of them. This was similar to observations made in the 1994 Golder report.

A summary of soil sample results from the 2012 EBA sampling program that exceeded the YCSR RL standard is provided in Table 1. This table also includes a comparison of the analytical results to the YCSR Industrial Land use (IL) standard for information purposes.
### Table 1: Summary of 2012 Soil Sampling Results above the YCSR RL Standards

<table>
<thead>
<tr>
<th>Lot # / Subject Area / Grid Cell /</th>
<th>Depth below Original Ground Level (m)</th>
<th>Metal Exceedence</th>
<th>Observed Concentration (µg/g)</th>
<th>YCSR RL Standard (µg/g)</th>
<th>YCSR IL Standard (µg/g)</th>
<th>YCSR Schedule 2 Matrix Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lot 28 / SA 3 / E2</td>
<td>0.3</td>
<td>Lead²</td>
<td>526</td>
<td>500</td>
<td>NS</td>
<td>Intake of Contaminated Soil.</td>
</tr>
<tr>
<td>Lot 27 &amp; Lot 28 / SA 3 / E3</td>
<td>0.3</td>
<td>Chromium²</td>
<td>77.9</td>
<td>60</td>
<td>60</td>
<td>Groundwater flow to surface water used by aquatic life.</td>
</tr>
<tr>
<td>Lot 27 &amp; Lot 28 / SA 3 / E3</td>
<td>0.3</td>
<td>Tin¹</td>
<td>87.5</td>
<td>50</td>
<td>300</td>
<td>Schedule 1 generic.</td>
</tr>
<tr>
<td>Lot 24 / SA 4 / D2</td>
<td>0.3</td>
<td>Lead²</td>
<td>801</td>
<td>500</td>
<td>NS</td>
<td>Intake of Contaminated Soil.</td>
</tr>
<tr>
<td>Lot 24 / SA 4 / D2</td>
<td>0.3</td>
<td>Zinc²</td>
<td>648</td>
<td>450</td>
<td>600</td>
<td>Toxicity to soil invertebrates and plants.</td>
</tr>
<tr>
<td>Lot 24 / SA 4 / D2</td>
<td>0.6</td>
<td>Tin¹</td>
<td>164</td>
<td>50</td>
<td>300</td>
<td>Schedule 1 generic.</td>
</tr>
<tr>
<td>Lot 43 / SA 5 / D1</td>
<td>0.3</td>
<td>Copper²</td>
<td>294</td>
<td>150</td>
<td>250</td>
<td>Toxicity to soil invertebrates and plants.</td>
</tr>
<tr>
<td>Lot 43 / SA 5 / D1</td>
<td>0.3</td>
<td>Molybdenum¹</td>
<td>14</td>
<td>10</td>
<td>40</td>
<td>Schedule 1 generic.</td>
</tr>
</tbody>
</table>

1 – indicates metal exceeded the YCSR Schedule 1 generic RL standard
2 – indicates metal exceeded the YCSR Schedule 2 matrix RL standard

All soil samples collected in Subject Areas 1, 2 and 6 were found to contain metal concentrations below the YCSR RL standards at 0.3 m below original ground level and no further action was considered necessary.

EBA collected an additional eight samples within the perimeter of grid cells D2 (Subject Area 3) and D1 (Subject Area 5). Analytical results showed that metal exceedences above the YCSR RL standard were limited to within these 5 m x 5 m grid cells.

No additional sampling was conducted to refine the delineation of metal contamination for Subject Area 3 grid cells E2 and E3 during the sampling program.

#### 5.5 UST Investigation

At the end of the initial soil sampling program, EBA conducted a test pitting program along the eastern property boundary of Lot 28 for a potential UST. A series of four trenches approximately 2 m apart were dug in the area initially identified during the data gap analysis by EBA, and later identified by Aurora Geosciences during the magnetic survey of the area.
Trenches were dug by ABS with the same Kubota backhoe used in the soil sampling program. Original ground was encountered at a depth of approximately 0.3 m below grade in the area of trenching. Each trench was excavated to a depth of 1.5 – 2.0 m below original ground level.

Pieces of rebar and buried concrete were encountered in all four trenches, in addition to a 3 m long metal bar. No evidence of a UST or piping was observed during trenching activities. EBA concluded that the buried rebar and metal bar likely resulted in the anomaly found by Aurora Geoscience during the magnetic survey of the area. No UST or evidence of hydrocarbon contamination was found in the vicinity of the investigated area.

5.6 Recommendations

Based on analytical results from the soil sampling program, EBA recommended removing and disposing of metal contaminated soils from the grid cells in Subject Areas 3, 4 and 5 where metal concentrations exceeded the YCSR RL standards.

No further action was recommended for Subject Areas 1, 2 and 6.

No UST or hydrocarbon contamination was observed in the area of the potential UST. No further action was recommended.

6.0 2012 REMEDIATION PLAN

EBA used the results of the 2012 soil sampling program to develop a remediation plan for the removal of material from the grid cells in Subject Areas 3, 4 and 5 where metal concentrations exceeded the YCSR RL standards. EBA provided a remediation plan to the City of Whitehorse on October 2, 2012.

The remediation plan included recommended disposal options for the metal contaminated material, based on the particular species of metal that were above the YCSR RL standards. EBA recommended that material containing metal concentrations above the YCSR IL standard be transported to the Tervita North Rockies engineered landfill in Fort Nelson, British Columbia for disposal. Additional analytical results were required by the Tervita Landfill in order to classify the material as non-hazardous waste for disposal purposes. A summary of the analytical results for waste classification of the disposed material is provided in Table 2 and Appendix B.

EBA recommended that material containing metal concentrations above the YCSR RL standard, but below the YCSR IL standard, be disposed of at the Whitehorse City Landfill for use as interim cover material.

The original estimated volume of material to be removed during remedial excavation of metal contaminated material was 128 m³. The excavation extents for each of the four identified areas was based on the proximity of the nearest analytical results obtained during the sampling program which demonstrated metal concentrations below the YCSR RL standards.

EBA conducted additional sampling and analysis around the perimeter of Subject Area 3 – E3 to refine the excavation extent, similar to grid cells in Subject Area 4 – D2 and Subject Area 5 – D1 during the sampling program. Soil samples were analyzed for chromium and tin only as they were the only metals of concern in
Subject Area 3 – E3. Analytical results for the additional samples conducted around the perimeter of Subject Area – E3 are provided in Table 3 and Appendix B.

The total volume of soil to be removed from Subject Area 3 – E3 was refined from 45 m$^3$ to 15 m$^3$. This was conducted after the remediation plan was provided to the City of Whitehorse. The estimated volume of soil to be removed was revised to 98 m$^3$.

A summary of the recommend excavation extents and estimated soil volumes are provided in Table 4, and presented in in Figures 4, 5 and 6.

**Table 4: Summary of Recommended Excavation Extents, Soil Volumes and Disposal Locations**

<table>
<thead>
<tr>
<th>Subject Area / Grid Cell</th>
<th>Lot #</th>
<th>Depth from grade to original ground level</th>
<th>Depth to clean material below original ground level</th>
<th>Extent of Excavation Boundary</th>
<th>Total Volume of Material to be Removed</th>
<th>Disposal Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject Area 3 / E2</td>
<td>Lot 28</td>
<td>0.7 - 0.8 m</td>
<td>0.6 m</td>
<td>7.5 m x 10 m</td>
<td>45 m$^3$</td>
<td>City of Whitehorse Landfill.</td>
</tr>
<tr>
<td>Subject Area 3 / E3</td>
<td>Lot 28</td>
<td>0.7 - 0.8 m</td>
<td>0.6 m</td>
<td>5 m x 5 m</td>
<td>15 m$^3$</td>
<td>Tervita Landfill Fort Nelson, BC.</td>
</tr>
<tr>
<td>Subject Area 4 / D2</td>
<td>Lot 24</td>
<td>0.7 m</td>
<td>0.6 m</td>
<td>5 m x 5 m</td>
<td>15 m$^3$</td>
<td>Tervita Landfill Fort Nelson, BC.</td>
</tr>
<tr>
<td>Subject Area 4 / D2</td>
<td>Lot 24</td>
<td>0.7 m</td>
<td>0.9 m</td>
<td>5 m x 5 m</td>
<td>8 m$^3$</td>
<td>City of Whitehorse Landfill.</td>
</tr>
<tr>
<td>Subject Area 5 / D1</td>
<td>Lot 43</td>
<td>0.0 m – 0.1 m</td>
<td>0.6 m</td>
<td>5 m x 5 m</td>
<td>15 m$^3$</td>
<td>Tervita Landfill Fort Nelson, BC.</td>
</tr>
</tbody>
</table>

Material removed from each Subject Area during the remedial excavation work was to be kept separate so that stockpiles to be disposed of at the City of Whitehorse Landfill were not cross-contaminated with material to be disposed of at the Tervita North Rockies Landfill.

EBA recommended that overlying fill material above original ground level be stockpiled and used for backfill, as well as clean fill material be provided by ABS to backfill the remedial excavations to existing grade.

### 7.0 2012 REMEDIAL EXCAVATION AND DISPOSAL OF METAL CONTAMINATED MATERIAL

The remedial excavation of metal contaminated material identified in the 2012 sampling program was conducted in November 2012 by ABS and supervised by EBA. The remediation plan developed by EBA was used as the basis for the remedial excavation work and disposal.

Relocation permits were obtained from the Yukon Government Environment Branch prior to the start of the excavation work.
7.1 Methodology

EBA was on site in November 2012 to monitor the removal of the metal contaminated soil from Subject Area 3 – E2, Subject Area 3 – E3, Subject Area 4 – D2 and Subject Area 5 – D1. Soil was excavated by ABS using a backhoe, equipped with a frost bucket as the top 0.6 - 0.7 m of ground was frozen at the time of excavation work.

The extent of each excavation was marked with spray paint prior to the start of work, and each excavation was monitored by EBA to ensure the correct starting depth, completion depth, and horizontal extents of the metal contaminated material were achieved.

In Subject Area 3 and Subject Area 4, the original ground level was located approximately 0.7 m – 0.8 m below existing grade, therefore the uncontaminated overlying fill material was removed and stockpiled near the excavation.

The original ground level in the area of the Subject Area 5 – D1 excavation was considered to be at grade (directly below the asphalt), therefore no additional stockpiling of overlying fill material was required during the excavation.

The Subject Area 5 – D1 excavation area was located directly adjacent (within 1 m) of a transmission line, therefore a hydrovac unit was used by ABS to first expose the transmission line prior to the excavation work. The area of this excavation was covered with asphalt, which was cut and removed prior to exposing the material below. Removal of material from around the transmission line was monitored on site by both EBA and Yukon Electrical Company Ltd. (YECL) to ensure property safety protocols were met. All material excavated using the hydrovac unit was located within the utility trench for the transmission line. As this material was transported to site at the time of the utility trench installation, the material was not considered to be representative of the original site conditions and therefore did not require special means of disposal. Once the transmission line was exposed and approved by YECL, ABS completed the excavation of metal contaminated material from the area within the grid cell.

Metal contaminated material was stockpiled on paved sections of the Former Motorways Property for later disposal, therefore preventing contamination of underlying soil. Metal contaminated material was loaded into haul trucks by ABS and transported to either the City of Whitehorse Landfill or the Tervita North Rockies Landfill, depending on the characteristics of the material being excavated.

Each excavation was backfilled with clean fill material provided by ABS, and the stockpiled material overlying the original ground level for excavations in Subject Area 3 and Subject Area 4. Backfill was compacted with the backhoe bucket up to existing grade in each area.

7.2 Disposal of Material

As identified in the remediation plan, metal contaminated material from Subject Area 3 – E2 and Subject Area 4 – D2 (0.6 m – 0.9 m below original ground level) was disposed of at the City of Whitehorse Landfill by ABS, to be later used as interim cover. This resulted in a total of 53 m$^3$ of material being removed under Relocation Permit # 4202-23-482.
The remaining metal contaminated material from Subject Area 3 –E3, Subject Area 4 – D2 (0.0 m - 0.6 m below original ground level) was transported by ABS and disposed of at the Tervita North Rockies Landfill in Fort Nelson, British Columbia. A total of 55 m³ of material was removed to Tervita North Rockies Landfill under Relocation Permit # 4202-23-484.

7.3 Conclusions

During the 2012 soil sampling program completed at the Former Motorways Property, EBA identified and delineated metal contaminated material above the YCSR RL standards within three of the six Subject Areas investigated. Metal contaminated material was excavated from Subject Areas 3, 4 and 5 to known boundaries where metal concentrations were below the YSR RL standards.

Metal contaminated material was disposed of at the City of Whitehorse Landfill and Tervita North Rockies Landfill in Fort Nelson British Columbia based on the characteristics of metal contamination at each excavation.

EBA has no recommendations for further remediation work at this time in the six Subject Areas.

8.0 FINAL CONCLUSIONS

Table 5 provides an overall summary of the historic and current environmental concerns identified on a lot by lot basis for Lots 24-31, 38, 41, 43 and 45, including remedial actions taken, and conclusions of the remedial work.

<table>
<thead>
<tr>
<th>Lot</th>
<th>Environmental Concerns</th>
<th>Remedial Action</th>
<th>Conclusions</th>
</tr>
</thead>
</table>
| 24  | - Shallow metal contaminated soil (Golder, 1994).  
- Localized pockets of metal contaminated soil remain after 1995 remedial excavation (Golder, 1995).  
- Sampling conducted by EBA in 2012 showed metal contaminated material that extended to 0.6 m below 1995 remedial excavation depth in one area of Subject Area 4. | - Remedial excavation of metal contaminated material was conducted by Golder in 1995 between 0.2 – 0.4 m below grade as identified in Figure 1 and Figure 5.  
- Additional remedial excavation was conducted by EBA in 2012 to 0.9 m below original ground level in Subject Area 4, identified in Figure 1 and Figure 5. | - Metal contaminated material has been remediated to below YCSR RL standards based on the Golder 1995 remediation report and additional remedial efforts by EBA in 2012. |
Table 5: Summary of Environmental Concerns, Remedial Actions and Conclusions.

<table>
<thead>
<tr>
<th>Lot</th>
<th>Environmental Concerns</th>
<th>Remedial Action</th>
<th>Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>25</td>
<td>- Shallow metal contaminated soil (Golder, 1994).</td>
<td>- Remedial excavation of metal contaminated material was conducted by Golder in 1995 between 0.2 – 0.4 m below grade as identified in Figure 1 and Figure 5.</td>
<td>- Metal contaminated material has been remediated to below YCSR RL standards based on the Golder 1995 remediation report.</td>
</tr>
<tr>
<td></td>
<td>- Localized pockets of metal contaminated soil remain in a small area on the north side of the lot after 1995 remedial excavation (1995 Golder).</td>
<td>- Sampling conducted by EBA in 2012 showed no metal contamination above the YCSR RL standards at 0.3 m below original ground level in the area identified as having localized pockets of metal contamination (Subject Area 4) as identified in Figure 1 and Figure 5.</td>
<td>- Potentially remaining localized pockets of metal contaminated material were not identified in any samples analyzed by EBA in this area and are not considered to be a risk.</td>
</tr>
<tr>
<td>26</td>
<td>- Shallow metal contaminated soil (Golder, 1994).</td>
<td>- Remedial excavation of metal contaminated material was conducted by Golder in 1995 between 0.2 – 0.4 m below grade as identified in Figure 1.</td>
<td>- Metal contaminated material has been remediated to below YCSR RL standards based on Golder 1995 report.</td>
</tr>
<tr>
<td>27</td>
<td>- Shallow metal contaminated soil (Golder, 1994).</td>
<td>- Remedial excavation of metal contaminated material was conducted by Golder in 1995 between 0.2 – 0.4 m below grade as identified in Figure 1 and Figure 4.</td>
<td>- Metal contaminated material has been remediated to below YCSR RL standards based on the Golder 1995 remediation report and additional remedial efforts by EBA in 2012.</td>
</tr>
<tr>
<td></td>
<td>- Localized pockets of metal contaminated soil remain after 1995 remedial excavation (Golder, 1995).</td>
<td>- Additional remedial excavation was conducted by EBA in 2012 to 0.6 m below original ground level in Subject Area 3, identified in Figure 1 and Figure 4.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Sampling conducted by EBA in 2012 showed metal contaminated material that extended to 0.3 m below 1995 remedial excavation depth in one area of Subject Area 3 on the lot.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Potential UST location was identified during the 2011 data gap analysis on at the eastern boundary of the lot.</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>- A magnetic survey conducted on site in 2011 identified an anomaly on the eastern boundary of the site as a potential UST.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>- Shallow metal contaminated soil (Golder, 1994).</td>
<td>- Remedial excavation of metal contaminated material was conducted by Golder in 1995 between 0.2 – 0.4 m below grade as identified in Figure 1 and Figure 4.</td>
<td>- Metal contaminated material has been remediated to below YCSR RL standards based on Golder 1995 report and additional remedial efforts by EBA in 2012.</td>
</tr>
<tr>
<td></td>
<td>- Localized pockets of metal contaminated soil remain after 1995 remedial excavation (Golder 1995).</td>
<td>- Additional remedial excavation was conducted by EBA in 2012 to 0.6 m below original ground level in Subject Area 3, identified in Figure 1 and Figure 4.</td>
<td>- No UST or hydrocarbon contamination was found during the investigation in 2012 and assumed to have been previously removed from site.</td>
</tr>
<tr>
<td></td>
<td>- Sampling conducted by EBA in 2012 showed metal contaminated material that extended to 0.3 m below 1995 remedial excavation depth in two areas of Subject Area 3 on the lot.</td>
<td>- An investigation was conducted by EBA in 2012 to determine the presence of a UST in the area of the magnetic survey. No UST or hydrocarbon contamination was found during the investigation. Buried re-bar and a metal bar were found in the area identified in the magnetic survey.</td>
<td>- Remaining material from the excavation of the hydrocarbon contaminated material east of Lot 28 was found to be below the YCSR RL standards (Golder 1995).</td>
</tr>
</tbody>
</table>
Table 5: Summary of Environmental Concerns, Remedial Actions and Conclusions.

<table>
<thead>
<tr>
<th>Lot</th>
<th>Environmental Concerns</th>
<th>Remedial Action</th>
<th>Conclusions</th>
</tr>
</thead>
</table>
| 29  | - Hydrocarbon contaminated material was identified east of the Lot 28 boundary in 1995 (Golder 1995).  
     - Localized pockets of metal contaminated soil remain in a small area on the north side of the lot after 1995 remedial excavation (1995 Golder). | - Remedial excavation of metal contaminated material was conducted by Golder in 1995 between 0.2 – 0.4 m below grade as identified in Figure 1 and Figure 3.  
     - Sampling conducted by EBA in 2012 showed no metal contamination above the YCSR RL standards at 0.3 m below original ground level in the area identified as having localized pockets of metal contamination (Subject Area 2) as identified in Figure 1 and Figure 3.  
     - Hydrocarbon contaminated material was removed from the area east of Lot 28 during the 1995 remedial work by Golder as identified in Figure 1 and Figure 4.  
     - Metal contaminated material has been remediated to below YCSR RL standards based on Golder 1995 report.  
     - Potentially remaining localized pockets of metal contaminated material were not identified in any samples analyzed by EBA in this area and are not considered to be a risk. |                                                                                                           |
| 30  | - Shallow metal contaminated soil (Golder, 1994).  
     - Localized pockets of metal contaminated soil remain after 1995 remedial.  
     - A UST was removed adjacent to the southwest corner of Lot 31 during the 1994 Golder investigation. Hydrocarbon contamination was observed when the UST was removed. | - Remedial excavation of metal contaminated material was conducted by Golder in 1995 between 0.2 – 0.4 m below grade as identified in Figure 1.  
     - Hydrocarbon contaminated material was removed from the area southwest of Lot 31 during the 1995 remedial work by Golder (Figure 1 and Figure 2).  
     - Metal contaminated material has been remediated to below YCSR RL standards based on Golder 1995 report.  
     - Potentially remaining localized pockets of metal contaminated material were not identified in any samples analyzed by EBA in this area and are not considered to be a risk.  
     - Confirmatory sampling of the excavation by Golder in 1995 indicated hydrocarbon concentrations were below the YCSR RL standards. |                                                                                                           |
| 31  | - Shallow metal contaminated soil (Golder, 1994).  
     - Localized pockets of metal contaminated soil remain after 1995 remedial.  
     - A UST was removed adjacent to the southwest corner of Lot 31 during the 1994 Golder investigation. Hydrocarbon contamination was observed when the UST was removed. | - Remedial excavation of metal contaminated material was conducted by Golder in 1995 between 0.2 – 0.4 m below grade as identified in Figure 1 and Figure 2.  
     - Sampling conducted by EBA in 2012 showed no metal contamination above the YCSR RL standards at 0.3 m below original ground level in the area identified as having localized pockets of metal contamination (Subject Area 1) as identified in Figure 1 and Figure 2.  
     - Hydrocarbon contaminated material was removed from the area southwest of Lot 31 during the 1995 remedial work by Golder (Figure 1 and Figure 2).  
     - Metal contaminated material has been remediated to below YCSR RL standards based on Golder 1995 report.  
     - Potentially remaining localized pockets of metal contaminated material were not identified in any samples analyzed by EBA in this area and are not considered to be a risk.  
     - Confirmatory sampling of the excavation by Golder in 1995 indicated hydrocarbon concentrations were below the YCSR RL standards. |                                                                                                           |
| 38  | - No specific environmental concerns were identified by Golder in the 1994 and 1995 sampling and investigation programs. | - No remedial efforts were undertaken.  
     - No environmental concerns have been identified on this lot. |                                                                                                           |
Table 5: Summary of Environmental Concerns, Remedial Actions and Conclusions.

<table>
<thead>
<tr>
<th>Lot</th>
<th>Environmental Concerns</th>
<th>Remedial Action</th>
<th>Conclusions</th>
</tr>
</thead>
<tbody>
<tr>
<td>41</td>
<td>Shallow metal contaminated soil (Golder, 1994). Hydrocarbon contaminated material was identified within the Lot 41 and Lot 42 boundaries in 1995 (Golder 1995).</td>
<td>Remedial excavation of metal contaminated material was conducted by Golder in 1995 between 0.2 – 0.4 m below grade as identified in Figure 1. Hydrocarbon contaminated material was removed from within Lot 41 and Lot 42 during the 1995 remedial work by Golder (Figure 1).</td>
<td>Metal contaminated material has been remediated to below YCSR RL standards based on Golder 1995 report. Confirmatory sampling of the remedial excavation by Golder in 1995 indicated hydrocarbon concentrations within Lot 41 and 42 were below the YCSR RL standards.</td>
</tr>
<tr>
<td>43</td>
<td>Shallow metal contaminated soil (Golder, 1994). Localized pockets of metal contaminated soil remain after 1995 remedial excavation (Golder 1995). Sampling conducted by EBA in 2012 showed metal contaminated material that extended to 0.3 m below 1995 remedial excavation depth in one area of Subject Area 5.</td>
<td>Remedial excavation of metal contaminated material was conducted by Golder in 1995 between 0.2 – 0.4 m below grade as identified in Figure 1 and Figure 6. Additional remedial excavation was conducted by EBA in 2012 to 0.6 m below original ground level in the area of Subject Area 5, identified in Figure 1 and Figure 6. Sampling conducted by EBA in 2012 showed no metal contamination above the YCSR RL standards at 0.3 m below original ground level in the area identified as having localized pockets of metal contamination (Subject Area 6) as identified in Figure 6.</td>
<td>Metal contaminated material has been remediated to below YCSR RL standards based on the Golder 1995 remediation report and additional remedial efforts by EBA in 2012 in Subject Area 5. Potentially remaining localized pockets of metal contaminated were not identified in any samples analyzed by EBA in Subject Area 6 and are not considered to be a risk.</td>
</tr>
<tr>
<td>45</td>
<td>Shallow metal contaminated soil (Golder, 1994). Localized pockets of metal contaminated soil remain after 1995 remedial excavation (Golder 1995).</td>
<td>Remedial excavation was conducted by Golder in 1995 between 0.2 – 0.4 m below grade as identified in Figure 1. Sampling conducted by EBA in 2012 showed no metal contamination above the YCSR RL standards at 0.3 m below original ground level in the area identified as having localized pockets of metal contamination (Subject Area 6) as identified in Figure 7.</td>
<td>Metal contaminated material has been remediated to below YCSR RL standards based on the Golder 1995 remediation report. Potentially remaining localized pockets of metal contaminated material were not identified in any samples analyzed by EBA in this area and are not considered to be a risk.</td>
</tr>
</tbody>
</table>
9.0 CLOSURE

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Sincerely,
EBA Engineering Consultants Ltd.

Prepared by:

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Don Wilson, B.Sc.
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TABLES

<table>
<thead>
<tr>
<th>Table</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Table 1</td>
<td>Summary of 2012 Soil Sampling Results above the YCSR RL Standards (in text)</td>
</tr>
<tr>
<td>Table 2</td>
<td>2012 EBA Waste Characterization Analytical Results for Disposal of Material at Tervita North Rockies Landfill</td>
</tr>
<tr>
<td>Table 3</td>
<td>2012 EBA Additional Soil Sampling Analytical Results Summary for Lots 27 &amp; 28 (Subject Area 3)</td>
</tr>
<tr>
<td>Table 4</td>
<td>Summary of Recommended Excavation Extents, Soil Volumes and Disposal Locations (in text)</td>
</tr>
<tr>
<td>Table 5</td>
<td>Summary of Environmental Concerns, Remedial Actions and Conclusions (in text)</td>
</tr>
</tbody>
</table>
### Table 2: 2012 EBA Waste Characterization Analytical Results from Disposal of Material at Tervita North Rockies Landfill, British Columbia

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>SA-3 E3 @0.3</th>
<th>SA-3 E3-E @0.3</th>
<th>BC Hazardous Waste Criteria¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sample Depth Below Original Ground (m)</td>
<td>0.3</td>
<td>0.3</td>
<td></td>
</tr>
<tr>
<td>Depth to Original Ground (m)</td>
<td>0.8</td>
<td>0.8</td>
<td></td>
</tr>
<tr>
<td>Date Sampled</td>
<td>6-Jun-12</td>
<td>12-Oct-12</td>
<td></td>
</tr>
<tr>
<td>pH</td>
<td>7.97</td>
<td>8.03</td>
<td>&lt;2 or &gt; 12.5</td>
</tr>
</tbody>
</table>

### Organics

<table>
<thead>
<tr>
<th></th>
<th>SA-3 E3 @0.3</th>
<th>SA-3 E3-E @0.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waste Oil Content</td>
<td>mg/kg</td>
<td>&lt;1000</td>
</tr>
<tr>
<td>Flash Point</td>
<td>deg C</td>
<td>&gt;75</td>
</tr>
<tr>
<td>Paint Filter Test</td>
<td>-</td>
<td>Pass</td>
</tr>
<tr>
<td>Benzene</td>
<td>ug/L</td>
<td>&lt;5.0</td>
</tr>
<tr>
<td>Toluene</td>
<td>ug/L</td>
<td>&lt;5.0</td>
</tr>
<tr>
<td>Ethylbenzene</td>
<td>ug/L</td>
<td>&lt;5.0</td>
</tr>
<tr>
<td>Xylenes</td>
<td>ug/L</td>
<td>&lt;5.0</td>
</tr>
</tbody>
</table>

### Nutrients

<table>
<thead>
<tr>
<th></th>
<th>SA-3 E3 @0.3</th>
<th>SA-3 E3-E @0.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cyanide, Weak Acid Diss</td>
<td>ug/L</td>
<td>&lt;2.0</td>
</tr>
<tr>
<td>Fluoride (F)</td>
<td>ug/L</td>
<td>&lt;10000</td>
</tr>
<tr>
<td>Nitrate (as N)</td>
<td>ug/L</td>
<td>&lt;5000</td>
</tr>
<tr>
<td>Nitrite (as N)</td>
<td>ug/L</td>
<td>&lt;5000</td>
</tr>
</tbody>
</table>

### Metals

<table>
<thead>
<tr>
<th></th>
<th>SA-3 E3 @0.3</th>
<th>SA-3 E3-E @0.3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antimony (Sb)</td>
<td>ug/L</td>
<td>&lt;5000</td>
</tr>
<tr>
<td>Arsenic (As)</td>
<td>ug/L</td>
<td>&lt;200</td>
</tr>
<tr>
<td>Barium (Ba)</td>
<td>ug/L</td>
<td>&lt;5000</td>
</tr>
<tr>
<td>Beryllium (Be)</td>
<td>ug/L</td>
<td>&lt;500</td>
</tr>
<tr>
<td>Boron (B)</td>
<td>ug/L</td>
<td>&lt;5000</td>
</tr>
<tr>
<td>Cadmium (Cd)</td>
<td>ug/L</td>
<td>&lt;50</td>
</tr>
<tr>
<td>Chromium (Cr)</td>
<td>ug/L</td>
<td>&lt;500</td>
</tr>
<tr>
<td>Cobalt (Co)</td>
<td>ug/L</td>
<td>&lt;5000</td>
</tr>
<tr>
<td>Copper (Cu)</td>
<td>ug/L</td>
<td>&lt;5000</td>
</tr>
<tr>
<td>Iron (Fe)</td>
<td>ug/L</td>
<td>&lt;5000</td>
</tr>
<tr>
<td>Lead (Pb)</td>
<td>ug/L</td>
<td>&lt;5000</td>
</tr>
<tr>
<td>Mercury (Hg)-Leachable</td>
<td>ug/L</td>
<td>&lt;10</td>
</tr>
<tr>
<td>Nickel (Ni)</td>
<td>ug/L</td>
<td>&lt;500</td>
</tr>
<tr>
<td>Selenium (Se)</td>
<td>ug/L</td>
<td>&lt;200</td>
</tr>
<tr>
<td>Silver (Ag)</td>
<td>ug/L</td>
<td>&lt;5000</td>
</tr>
<tr>
<td>Thallium (Tl)</td>
<td>ug/L</td>
<td>&lt;5000</td>
</tr>
<tr>
<td>Uranium (U)</td>
<td>ug/L</td>
<td>&lt;20000</td>
</tr>
<tr>
<td>Vanadium (V)</td>
<td>ug/L</td>
<td>&lt;5000</td>
</tr>
<tr>
<td>Zinc (Zn)</td>
<td>ug/L</td>
<td>&lt;500000</td>
</tr>
<tr>
<td>Zirconium (Zr)</td>
<td>ug/L</td>
<td>&lt;5000</td>
</tr>
</tbody>
</table>

**Notes:**
1. represents Hazardous Waste Classification Criteria for British Columbia
2. NS - No Standard Currently Established
3. BOLD - Indicates an exceedance of criteria
## Table 3: 2012 EBA Additional Soil Sampling Analytical Results Summary for Lots 27 & 28 (Subject Area 3)

<table>
<thead>
<tr>
<th>Sample ID</th>
<th>SA-3 E3-N @0.3</th>
<th>SA-3 E3-S @0.3</th>
<th>SA-3 E3-E @0.3</th>
<th>SA-3 E3-W @0.3</th>
<th>SA E3 N-EX @0.3</th>
<th>SA E3 E-EX @0.3</th>
<th>SA E3 S-EX @0.3</th>
<th>SA E3 W-EX @0.3</th>
<th>YCSR RL STANDARDS¹</th>
</tr>
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**Notes:**
- All units are in μg/g unless otherwise stated.
- *Yukon Contaminated Sites Regulation (YCSR) 2002. Yukon Territorial Government - Department of Environment (Residential Land Use Standards Schedule 1 and Schedule 2)
- **YCSR Schedule 2 matrix numerical Residential Land Use (RL) standard based on toxicity to soil invertabrates and plants
- ***YCSR Schedule 2 matrix numerical Residential Land Use (RL) standard based on groundwater flow to surface water for aquatic life
- BOLD - Indicates an exceedance of standard
- NS - No Standard Currently Established

¹Yukon Contaminated Sites Regulation (YCSR) 2002. Yukon Territorial Government - Department of Environment (Residential Land Use Standards Schedule 1 and Schedule 2)
²YCSR Schedule 2 matrix numerical Residential Land Use (RL) standard based on groundwater flow to surface water for aquatic life
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FIGURES

Figure 1  Site Plan Showing Historic and 2012 Remedial Activities at the Former Motorways Property
Figure 2  Site Plan Showing Historic and 2012 Remedial Activities on Lot 31 (Subject Area 1)
Figure 3  Site Plan Showing Historic and 2012 Remedial Activities on Lot 29 (Subject Area 2)
Figure 4  Site Plan Showing Historic and 2012 Remedial Activities on Lot 28 & 28 (Subject Area 3)
Figure 5  Site Plan Showing Historic and 2012 Remedial Activities on Lot 24 & 25 (Subject Area 4)
Figure 6  Site Plan Showing Historic and 2012 Remedial Activities on Lot 43 (Subject Area 5)
Figure 7  Site Plan Showing Historic and 2012 Remedial Activities on Lot 43 & 45 (Subject Area 6)
Figure 1

February 18, 2013

BY: BUCHAN, CAMERON

LEGEND
- EXISTING LOT BOUNDARY
- TRANSMISSION LINE EASEMENT
- AREA NOT SAMPLED DURING EBA 2012 SAMPLING PROGRAM
- AREAS OF REMEDIAL EXCAVATION OF HYDROCARBON CONTAMINATION TO BELOW YCSR RL STANDARDS (GOLDER, 1994/1995)
- SUBJECT AREA DESIGNATION
- AREAS OF REMEDIAL EXCAVATION OF METAL CONTAMINATED MATERIAL EXCEEDING YCSR RL STANDARDS DOWN TO SPECIFIED DEPTH BELOW ORIGINAL GROUND SURFACE (EBA 2012)
- APPROXIMATE AREAS CONTAINING LOCALIZED POCKETS OF HIGH METAL CONCENTRATION (GOLDER, 1995) - INVESTIGATED DURING EBA 2012 SAMPLING PROGRAM
- APPROXIMATE AREAS OF 1985 REMEDIAL EXCAVATION OF SHALLOW METAL CONTAMINATION IN SOIL (0.2m TO 0.4m BELOW GRADE - GOLDER, 1995)
- UTILITY LOCATIONS PROVIDED BY THE CITY OF WHITEHORSE
- YUKON CONTAMINATED SITES REGULATION (YCSR) RESIDENTIAL LAND USE (RL) STANDARDS WERE USED FOR COMPARISON OF ALL ANALYTICAL RESULTS
- AREAS OF REMEDIAL EXCAVATION OF HYDROCARBON CONTAMINATION TO BELOW YCSR RL STANDARDS (GOLDER, 1994/1995)

Figure 1

February 18, 2013

BY: BUCHAN, CAMERON

LEGEND
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Figure 1

February 18, 2013

BY: BUCHAN, CAMERON

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Figure 1

February 18, 2013

BY: BUCHAN, CAMERON

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- YUKON CONTAMINATED SITES REGULATION (YCSR) RESIDENTIAL LAND USE (RL) STANDARDS WERE USED FOR COMPARISON OF ALL ANALYTICAL RESULTS
Figure 2

February 18, 2013

BY: BUCHAN, CAMERON

LEGEND:
- EXISTING LOT BOUNDARY
- EBA 2012 SAMPLING GRID AND IDENTIFIER
- SUBJECT AREA DESIGNATION
- AREA NOT SAMPLED BY EBA (2012)
- APPROXIMATE AREA OF 1995 REMEDIAL EXCAVATION OF SHALLOW METAL CONTAMINATION IN SOIL (0.2m TO 0.4m BELOW GRADE - GOLDER, 1995)
- APPROXIMATE AREAS CONTAINING LOCALIZED POCKETS OF HIGH METAL CONCENTRATION (GOLDER, 1995) - INVESTIGATED DURING EBA 2012 SAMPLING PROGRAM

NOTE:
- NO METAL CONCENTRATIONS EXCEEDING YCSR RL STANDARDS WERE OBSERVED 0.3m BELOW ORIGINAL GROUND.
- AREA IN PROXIMITY OF CITY OF WHITEHORSE UTILITIES WAS NOT SAMPLED.

SITE PLAN SHOWING HISTORIC AND 2012 REMEDIAL ACTIVITIES ON LOT 31 (SUBJECT AREA 1)
SITE PLAN SHOWING HISTORIC AND 2012 REMEDIAL ACTIVITIES ON LOT 29 (SUBJECT AREA 2)

LEGEND:
- EXISTING LOT BOUNDARY
- EBA 2012 SAMPLING GRID AND IDENTIFIER
- SUBJECT AREA DESIGNATION
- AREA NOT SAMPLED BY EBA (2012)
- APPROXIMATE AREA OF 1995 REMEDIAL EXCAVATION OF SHALLOW METAL CONTAMINATION IN SOIL (0.2m TO 0.4m BELOW GRADE - GOLDER, 1995)
- APPROXIMATE AREAS CONTAINING LOCALIZED POCETS OF HIGH METAL CONCENTRATION (GOLDER, 1995) - INVESTIGATED DURING EBA 2012 SAMPLING PROGRAM

NOTE: - NO METAL CONCENTRATIONS EXCEEDING YCSR RL STANDARDS WERE OBSERVED 0.3m BELOW ORIGINAL GROUND.
- AREA UNDER BLACK STREET WAS NOT SAMPLED.

Figure 3

February 18, 2013 - 3:37:22 pm
(BY: BUCHAN, CAMERON)
SUSPECTED UST (NOT FOUND DURING EBA INVESTIGATIVE EXCAVATION)

AREA OF REMEDIAL EXCAVATION OF HYDROCARBON CONTAMINATION TO BELOW YCSR RL STANDARDS (GOLDER, 1995)

LEGEND:
- EXTENT OF SOIL TO BE REMOVED DOWN TO 0.6m BELOW ORIGINAL GROUND SURFACE
- METAL CONCENTRATIONS EXCEEDING YCSR RESIDENTIAL LAND USE STANDARD AT 0.3m BELOW ORIGINAL GROUND SURFACE (EBA 2012)
- APPROXIMATE AREA OF 1995 REMEDIAL EXCAVATION OF SHALLOW METAL CONTAMINATION IN SOIL (0.2m TO 0.4m BELOW GRADE - GOLDER, 1995)
- APPROXIMATE AREAS CONTAINING LOCALIZED POCKETS OF HIGH METAL CONCENTRATION (GOLDER, 1995) - INVESTIGATED DURING EBA 2012 SAMPLING PROGRAM

- EXISTING LOT BOUNDARY
- EBA 2012 SAMPLING GRID AND IDENTIFIER
- SUBJECT AREA DESIGNATION

EBA REMEDIATION COMPANY

REMEDICATION SUMMARY REPORT
FORMER MOTORWAYS PROPERTY - WHITEHORSE, YT

SITE PLAN SHOWING HISTORIC AND 2012 REMEDIAL ACTIVITIES ON LOTS 27 & 28 (SUBJECT AREA 3)

PROJECT NO. WZ3103059-01
OFFICE EBA-WHSE

Date: February 18, 2013

Figure 4
Figure 5

February 18, 2013

BY: BUCHAN, CAMERON

PROJECT NO. EBA-WHSE 0

DIP DPC

REV 0

CLIENT

REMEDIAL SUMMARY REPORT
FORMER MOTORWAYS PROPERTY - WHITEHORSE, YT

SITE PLAN SHOWING HISTORIC AND 2012 REMEDIAL ACTIVITIES ON LOTS 24 & 25 (SUBJECT AREA 4)

LEGEND:

- EXTENT OF SOIL TO BE REMOVED DOWN TO 0.9m BELOW ORIGINAL GROUND SURFACE
- METAL CONCENTRATIONS EXCEEDING YCSR RESIDENTIAL LAND USE STANDARD AT 0.6m BELOW ORIGINAL GROUND SURFACE (EBA 2012)
- APPROXIMATE AREA OF 1995 REMEDIAL EXCAVATION OF SHALLOW METAL CONTAMINATION IN SOIL (0.2m TO 0.4m BELOW GRADE - GOLDER, 1995)
- APPROXIMATE AREAS CONTAINING LOCALIZED POCKETS OF HIGH METAL CONCENTRATION (GOLDER, 1995) - INVESTIGATED DURING EBA 2012 SAMPLING PROGRAM

- EXISTING LOT BOUNDARY
- EBA 2012 SAMPLING GRID AND IDENTIFIER
- SUBJECT AREA DESIGNATION

Scale: 1: 300 (metres)

STATUS
ISSUED FOR USE

0 10

Figure 5
Figure 6
February 18, 2013 - 3:38:57 pm
(BY: BUCHAN, CAMERON)

SITE PLAN SHOWING HISTORIC AND 2012 REMEDIAL ACTIVITIES ON LOT 43 (SUBJECT AREA 5)

- EXTENT OF SOIL TO BE REMOVED DOWN TO 0.9m BELOW ORIGINAL GROUND SURFACE
- METAL CONCENTRATIONS EXCEEDING YCSR RESIDENTIAL LAND USE STANDARD AT 0.6m BELOW ORIGINAL GROUND SURFACE (EBA 2012)
- APPROXIMATE AREA OF 1995 REMEDIAL EXCAVATION OF SHALLOW METAL CONTAMINATION IN SOIL (0.2m TO 0.4m BELOW GRADE - GOLDER, 1995)
- APPROXIMATE AREAS CONTAINING LOCALIZED POCKETS OF HIGH METAL CONCENTRATION (GOLDER, 1995) - INVESTIGATED DURING EBA 2012 SAMPLING PROGRAM
- EXISTING LOT BOUNDARY
- EBA 2012 SAMPLING GRID AND IDENTIFIER
- SUBJECT AREA DESIGNATION
- APPROXIMATE AREAS CONTAINING LOCALIZED POCKETS OF HIGH METAL CONCENTRATION (GOLDER, 1995) - INVESTIGATED DURING EBA 2012 SAMPLING PROGRAM

Legend:

Scale: 1: 300 (metres)
LEGEND:
- EXISTING LOT BOUNDARY
- EBA 2012 SAMPLING GRID AND IDENTIFIER
- SUBJECT AREA DESIGNATION
- AREA NOT SAMPLED BY EBA (2012)
- APPROXIMATE AREA OF 1995 REMEDIAL EXCAVATION OF SHALLOW METAL CONTAMINATION IN SOIL (0.2m TO 0.4m BELOW GRADE - GOLDER, 1995)
- APPROXIMATE AREAS CONTAINING LOCALIZED POCKETS OF HIGH METAL CONCENTRATION (GOLDER, 1995) - INVESTIGATED DURING EBA 2012 SAMPLING PROGRAM

NOTE:
- NO METAL CONCENTRATIONS EXCEEDING YCSR RL STANDARDS WERE OBSERVED 0.3m BELOW ORIGINAL GROUND.
- AREA IN PROXIMITY OF TRANSMISSION LINE EASEMENT AND LOT 44 WAS NOT SAMPLED.

Figure 7

Scale: 1: 300 (metres)
APPENDIX A
EBA’S GENERAL CONDITIONS
GENERAL CONDITIONS

GEO-ENVIRONMENTAL REPORT

This report incorporates and is subject to these “General Conditions”.

1.0 USE OF REPORT AND OWNERSHIP

This report pertains to a specific site, a specific development, and a specific scope of work. It is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site or proposed development would necessitate a supplementary investigation and assessment.

This report and the assessments and recommendations contained in it are intended for the sole use of EBA’s client. EBA does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than EBA’s Client unless otherwise authorized in writing by EBA. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of EBA. Additional copies of the report, if required, may be obtained upon request.

2.0 ALTERNATE REPORT FORMAT

Where EBA submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed EBA’s instruments of professional service), only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by EBA shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of EBA’s instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except EBA. The Client warrants that EBA’s instruments of professional service will be used only and exactly as submitted by EBA.

Electronic files submitted by EBA have been prepared and submitted using specific software and hardware systems. EBA makes no representation about the compatibility of these files with the Client’s current or future software and hardware systems.

3.0 NOTIFICATION OF AUTHORITIES

In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by EBA in its reasonably exercised discretion.

4.0 INFORMATION PROVIDED TO EBA BY OTHERS

During the performance of the work and the preparation of the report, EBA may rely on information provided by persons other than the Client. While EBA endeavours to verify the accuracy of such information when instructed to do so by the Client, EBA accepts no responsibility for the accuracy or the reliability of such information which may affect the report.
APPENDIX B
ALS LABORATORIES ANALYTICAL RESULTS
Certificate of Analysis

Lab Work Order #: L1172617
Project P.O. #: NOT SUBMITTED
Job Reference: W23101552 FORMER MOTORWAYS PROPERTY
C of C Numbers: 1, 2, 3, 4, 5, 6
Legal Site Desc:

Comments: This report replaces the previously issued L1172617 and includes additionally requested analyses.

Brent Mack
Account Manager
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**Physical Tests**

- % Moisture (%)
  - 8.95
  - 8.55
  - 8.43
  - 8.69
  - 8.54

- pH (1:2 soil:water) (pH)
  - 9.37
  - 9.89
  - 9.43
  - 12.6
  - 12.3

**Metals**

- Antimony (Sb) (mg/kg)
  - 0.67
  - 1.05
  - 1.03
  - 0.63
  - 6.42

- Arsenic (As) (mg/kg)
  - 9.37
  - 9.89
  - 9.43
  - 12.6
  - 12.3

- Barium (Ba) (mg/kg)
  - 99.5
  - 123
  - 115
  - 123
  - 125

- Beryllium (Be) (mg/kg)
  - 0.28
  - 0.33
  - 0.31
  - 0.31
  - 0.30

- Cadmium (Cd) (mg/kg)
  - 0.345
  - 0.519
  - 0.426
  - 0.277
  - 3.83

- Chromium (Cr) (mg/kg)
  - 22.4
  - 36.6
  - 27.7
  - 25.8
  - 27.7

- Cobalt (Co) (mg/kg)
  - 8.71
  - 8.22
  - 9.07
  - 9.42
  - 7.67

- Copper (Cu) (mg/kg)
  - 38.0
  - 38.6
  - 37.3
  - 45.3
  - 93.4

- Lead (Pb) (mg/kg)
  - 24.5
  - 81.6
  - 44.2
  - 18.6
  - 429

- Mercury (Hg) (mg/kg)
  - <0.050
  - 0.065
  - <0.050
  - <0.050
  - 0.084

- Molybdenum (Mo) (mg/kg)
  - 0.67
  - 0.85
  - 1.10
  - 1.04
  - 1.45

- Nickel (Ni) (mg/kg)
  - 18.5
  - 22.3
  - 22.2
  - 18.7
  - 23.7

- Selenium (Se) (mg/kg)
  - <0.20
  - <0.20
  - <0.20
  - <0.20
  - <0.20

- Silver (Ag) (mg/kg)
  - 0.32
  - 0.61
  - 0.65
  - 0.25
  - 7.37

- Thallium (Tl) (mg/kg)
  - 0.096
  - 0.083
  - 0.084
  - 0.090
  - 0.089

- Tin (Sn) (mg/kg)
  - <2.0
  - <2.0
  - <2.0
  - <2.0
  - <2.0

- Uranium (U) (mg/kg)
  - 0.748
  - 0.951
  - 0.903
  - 0.785
  - 0.831

- Vanadium (V) (mg/kg)
  - 46.4
  - 46.7
  - 53.3
  - 54.9
  - 40.0

- Zinc (Zn) (mg/kg)
  - 53.8
  - 80.0
  - 64.1
  - 56.3
  - 333

**Speciated Metals**

- Chromium, Trivalent (mg/kg)
- Hexavalent Chromium (mg/kg)

* Please refer to the Reference Information section for an explanation of any qualifiers detected.
<table>
<thead>
<tr>
<th>Grouping</th>
<th>Analyte</th>
<th>Sample ID</th>
<th>Description</th>
<th>Sampled Date</th>
<th>Sampled Time</th>
<th>Client ID</th>
<th>Moisture (%), pH (1:2 soil:water), Metals, Speciated Metals</th>
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<td>&lt;0.050</td>
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<td>&lt;0.20</td>
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<td>Tin (Sn) (mg/kg)</td>
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* Please refer to the Reference Information section for an explanation of any qualifiers detected.
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**Grouping**

**Analyte**

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<th>pH (1:2 soil:water) (pH)</th>
<th>Antimony (Sb) (mg/kg)</th>
<th>Arsenic (As) (mg/kg)</th>
<th>Barium (Ba) (mg/kg)</th>
<th>Beryllium (Be) (mg/kg)</th>
<th>Cadmium (Cd) (mg/kg)</th>
<th>Chromium (Cr) (mg/kg)</th>
<th>Cobalt (Co) (mg/kg)</th>
<th>Copper (Cu) (mg/kg)</th>
<th>Lead (Pb) (mg/kg)</th>
<th>Mercury (Hg) (mg/kg)</th>
<th>Molybdenum (Mo) (mg/kg)</th>
<th>Nickel (Ni) (mg/kg)</th>
<th>Selenium (Se) (mg/kg)</th>
<th>Silver (Ag) (mg/kg)</th>
<th>Thallium (Tl) (mg/kg)</th>
<th>Tin (Sn) (mg/kg)</th>
<th>Uranium (U) (mg/kg)</th>
<th>Vanadium (V) (mg/kg)</th>
<th>Zinc (Zn) (mg/kg)</th>
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<tr>
<th>Sample ID</th>
<th>Description</th>
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<th>Sampled Time</th>
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**Grouping** | **Analyte** | **Physical Tests** | **Metals** | **Speciated Metals**  

% Moisture (%) | **Antimony (Sb) (mg/kg)** | **Arsenic (As) (mg/kg)** | **Barium (Ba) (mg/kg)** | **Beryllium (Be) (mg/kg)** | **Cadmium (Cd) (mg/kg)** | **Chromium (Cr) (mg/kg)** | **Cobalt (Co) (mg/kg)** | **Copper (Cu) (mg/kg)** | **Lead (Pb) (mg/kg)** | **Mercury (Hg) (mg/kg)** | **Molybdenum (Mo) (mg/kg)** | **Nickel (Ni) (mg/kg)** | **Selenium (Se) (mg/kg)** | **Silver (Ag) (mg/kg)** | **Thallium (TI) (mg/kg)** | **Tin (Sn) (mg/kg)** | **Uranium (U) (mg/kg)** | **Vanadium (V) (mg/kg)** | **Zinc (Zn) (mg/kg)** | **Chromium, Trivalent (mg/kg)** | **Hexavalent Chromium (mg/kg)** |
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<td>Arsenic (As) (mg/kg)</td>
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<td>Barium (Ba) (mg/kg)</td>
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<td>Cadmium (Cd) (mg/kg)</td>
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<td>Mercury (Hg) (mg/kg)</td>
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<td>Tin (Sn) (mg/kg)</td>
<td>&lt;2.0</td>
</tr>
<tr>
<td></td>
<td>Uranium (U) (mg/kg)</td>
<td>0.824</td>
</tr>
<tr>
<td></td>
<td>Vanadium (V) (mg/kg)</td>
<td>41.1</td>
</tr>
<tr>
<td></td>
<td>Zinc (Zn) (mg/kg)</td>
<td>81.6</td>
</tr>
<tr>
<td><strong>Speciated Metals</strong></td>
<td>Chromium, Trivalent (mg/kg)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Hexavalent Chromium (mg/kg)</td>
<td></td>
</tr>
</tbody>
</table>

* Please refer to the Reference Information section for an explanation of any qualifiers detected.
<table>
<thead>
<tr>
<th>Grouping</th>
<th>Analyte</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>WASTE</td>
<td>TCLP Extractables</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Cyanide, Weak Acid Diss (ug/L)</td>
<td>&lt;2.0</td>
</tr>
<tr>
<td></td>
<td>Fluoride (F) (ug/L)</td>
<td>&lt;10000</td>
</tr>
<tr>
<td></td>
<td>Nitrate (as N) (ug/L)</td>
<td>&lt;5000</td>
</tr>
<tr>
<td></td>
<td>Nitrite (as N) (ug/L)</td>
<td>&lt;5000</td>
</tr>
<tr>
<td></td>
<td>Antimony (Sb) (ug/L)</td>
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<tr>
<td></td>
<td>Arsenic (As) (ug/L)</td>
<td>&lt;200</td>
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<tr>
<td></td>
<td>Barium (Ba) (ug/L)</td>
<td>&lt;5000</td>
</tr>
<tr>
<td></td>
<td>Beryllium (Be) (ug/L)</td>
<td>&lt;500</td>
</tr>
<tr>
<td></td>
<td>Boron (B) (ug/L)</td>
<td>&lt;5000</td>
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<td></td>
<td>Cadmium (Cd) (ug/L)</td>
<td>&lt;50</td>
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<td></td>
<td>Chromium (Cr) (ug/L)</td>
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<tr>
<td></td>
<td>Cobalt (Co) (ug/L)</td>
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<td></td>
<td>Copper (Cu) (ug/L)</td>
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<td>Iron (Fe) (ug/L)</td>
<td>&lt;5000</td>
</tr>
<tr>
<td></td>
<td>Lead (Pb) (ug/L)</td>
<td>&lt;500</td>
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<tr>
<td></td>
<td>Mercury (Hg)-Leachable (ug/L)</td>
<td>&lt;10</td>
</tr>
<tr>
<td></td>
<td>Nickel (Ni) (ug/L)</td>
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<td>Selenium (Se) (ug/L)</td>
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<tr>
<td></td>
<td>Silver (Ag) (ug/L)</td>
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<td></td>
<td>Thallium (Tl) (ug/L)</td>
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</tr>
<tr>
<td></td>
<td>Uranium (U) (ug/L)</td>
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</tr>
<tr>
<td></td>
<td>Vanadium (V) (ug/L)</td>
<td>&lt;5000</td>
</tr>
<tr>
<td></td>
<td>Zinc (Zn) (ug/L)</td>
<td>&lt;5000</td>
</tr>
<tr>
<td></td>
<td>Zirconium (Zr) (ug/L)</td>
<td>&lt;5000</td>
</tr>
</tbody>
</table>

* Please refer to the Reference Information section for an explanation of any qualifiers detected.
**Reference Information**

### QC Samples with Qualifiers & Comments:

<table>
<thead>
<tr>
<th>QC Type Description</th>
<th>Parameter</th>
<th>Qualifier</th>
<th>Applies to Sample Number(s)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duplicate</td>
<td>Uranium (U)</td>
<td>DUP-H</td>
<td>L1172617-10, -22, -34, -56, -68, -70</td>
</tr>
<tr>
<td>Method Blank</td>
<td>Zinc (Zn)</td>
<td>MB-LOR</td>
<td>L1172617-10, -22, -34, -46, -58, -70</td>
</tr>
</tbody>
</table>

### Qualifiers for Individual Parameters Listed:

<table>
<thead>
<tr>
<th>Qualifier</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>DLA</td>
<td>Detection Limit Adjusted For required dilution</td>
</tr>
<tr>
<td>DUP-H</td>
<td>Duplicate results outside ALS DQO, due to sample heterogeneity.</td>
</tr>
<tr>
<td>MB-LOR</td>
<td>Method Blank exceeds ALS DQO. LORs adjusted for samples with positive hits below 5 times blank level. Please contact ALS if re-analysis is required.</td>
</tr>
</tbody>
</table>

### Test Method References:

<table>
<thead>
<tr>
<th>ALS Test Code</th>
<th>Matrix</th>
<th>Test Description</th>
<th>Method Reference**</th>
</tr>
</thead>
<tbody>
<tr>
<td>CN-TCLP-ED-WT</td>
<td>Waste</td>
<td>Cyanide (CN) (TCLP)</td>
<td>APHA 4500 CN G</td>
</tr>
<tr>
<td>CR-CR3-ED</td>
<td>Soil</td>
<td>Chromium, Trivalent (Cr +3)</td>
<td>Total Cr - Cr+(6)</td>
</tr>
<tr>
<td>CR-CR6-3060-ED</td>
<td>Soil</td>
<td>Chromium, Hexavalent (Cr +6)</td>
<td>APHA 3500-CR C, EPA 3060A ALKALINE</td>
</tr>
<tr>
<td>ETL-METAL-TCLP-ED</td>
<td>Waste</td>
<td>TCLP Leachable Metals</td>
<td>EPA SW846 Methods 1311 and 6020</td>
</tr>
<tr>
<td>F-TCLP-IC-ED</td>
<td>Waste</td>
<td>Fluoride (TCLP)</td>
<td>EPA 1311/300.1</td>
</tr>
<tr>
<td>HG-200.2-CVAF-VA</td>
<td>Soil</td>
<td>Mercury in Soil by CVAFS</td>
<td>EPA 200.2/245.7</td>
</tr>
<tr>
<td>MET-200.2-CCMS-VA</td>
<td>Soil</td>
<td>Metals in Soil by CRC ICPMS</td>
<td>EPA 200.2/6020A</td>
</tr>
</tbody>
</table>

This analysis is carried out using procedures from CSR Analytical Method: "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, 26 June 2009, and procedures adapted from EPA Method 200.2. The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve (this sieve step is omitted for international soil samples), and a representative subsample of the dry material is weighed. The sample is then digested at 95 degrees Celsius for 2 hours by block digester using concentrated nitric and hydrochloric acids. Instrumental analysis is by atomic fluorescence spectrophotometry (EPA Method 245.7).

**Method Limitation:** This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

<table>
<thead>
<tr>
<th>ALS Test Code</th>
<th>Matrix</th>
<th>Test Description</th>
<th>Method Reference**</th>
</tr>
</thead>
<tbody>
<tr>
<td>HG-TCLP-CVAA-ED</td>
<td>Waste</td>
<td>Leachable Mercury (Hg), TCLP</td>
<td>SW 846 -1311/245.1 CVAA ON TCLP LEACHATE</td>
</tr>
<tr>
<td>MET-200.2-CCMS-VA</td>
<td>Soil</td>
<td>Metals in Soil by CRC ICPMS</td>
<td>EPA 200.2/6020A</td>
</tr>
</tbody>
</table>

This analysis is carried out using procedures from CSR Analytical Method: "Strong Acid Leachable Metals (SALM) in Soil", BC Ministry of Environment, 26 June 2009, and procedures adapted from EPA Method 200.2. The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve (this sieve step is omitted for international soil samples), and a representative subsample of the dry material is weighed. The sample is then digested at 95 degrees Celsius for 2 hours by block digester using concentrated nitric and hydrochloric acids. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

**Method Limitation:** This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

<table>
<thead>
<tr>
<th>ALS Test Code</th>
<th>Matrix</th>
<th>Test Description</th>
<th>Method Reference**</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO2-TCLP-IC-ED</td>
<td>Waste</td>
<td>Nitrate as N (TCLP)</td>
<td>EPA 1311/300.1</td>
</tr>
<tr>
<td>NO3-TCLP-IC-ED</td>
<td>Waste</td>
<td>Nitrate as N (TCLP)</td>
<td>EPA 1311/300.1</td>
</tr>
<tr>
<td>PH-1:2-VA</td>
<td>Soil</td>
<td>pH in Soil (1:2 Soil:Water Extraction)</td>
<td>BC WLAP METHOD: PH, ELECTROMETRIC, SOIL</td>
</tr>
</tbody>
</table>

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60 C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

<table>
<thead>
<tr>
<th>ALS Test Code</th>
<th>Matrix</th>
<th>Test Description</th>
<th>Method Reference**</th>
</tr>
</thead>
<tbody>
<tr>
<td>PREP-MOISTURE-ED</td>
<td>Soil</td>
<td>% Moisture</td>
<td>Oven dry 105C-Gravimetric</td>
</tr>
</tbody>
</table>

**ALS test methods may incorporate modifications from specified reference methods to improve performance.**

*The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:*  

<table>
<thead>
<tr>
<th>Laboratory Definition Code</th>
<th>Laboratory Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>ED</td>
<td>ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA</td>
</tr>
<tr>
<td>WT</td>
<td>ALS ENVIRONMENTAL - WATERLOO, ONTARIO, CANADA</td>
</tr>
<tr>
<td>VA</td>
<td>ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA</td>
</tr>
</tbody>
</table>
Glossary of Report Terms

**Surrogate** - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

- **mg/kg** - milligrams per kilogram based on dry weight of sample.
- **mg/kg wwt** - milligrams per kilogram based on wet weight of sample.
- **mg/kg lwt** - milligrams per kilogram based on lipid-adjusted weight of sample.
- **mg/L** - milligrams per litre.

**<** - Less than.

**D.L.** - The reported Detection Limit, also known as the Limit of Reporting (LOR).

**N/A** - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.

Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.
### Chain of Custody / Analytical Request Form

**Canada Toll Free:** 1 800 668 9878

**www.alsglobal.com**

---

**Report To**
**Company:** EBA Engineering Consultants
**Contact:** Darryl Cann
**Address:** Unit 6, Calcite Business Center
151 Industrial Rd., Whitehorse, YT Y1A 2V3
**Phone:** 668-2071 ext 247
Fax: 367-668-4340

**Invoice To**
**Same as Report?** Yes

**Hardcopy of Invoice with Report?** Yes

---

**Report Format / Distribution**
- **Standard**
- **PDF**
- **Excel**
- **Digital**
- **Fax**

**Email 1:** dcann@eba.ca
**Email 2:** cschilder@eba.ca
**Email 3:**

---

**Service Requested**
- **Regular (Standard Turnaround Times - Business Days)**
- **Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT**
- **Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT**
- **Same Day or Weekend Emergency - Contact ALS to Confirm TAT**

**Client / Project Information**
**Job #:** W23101552 Former Motorways Property
**PO / AFE:**

---

**Analysis Request**
**Please indicate below Filtered, Preserved or both (F, P, F/P)**

---

**Sample Identification**
(This description will appear on the report)

<table>
<thead>
<tr>
<th>Sample #</th>
<th>Date</th>
<th>Time</th>
<th>Sample Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA-3 A1 @0.3 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td>x</td>
</tr>
<tr>
<td>SA-3 A1 @0.6 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td>x</td>
</tr>
<tr>
<td>SA-3 A1 @0.9 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td>x</td>
</tr>
<tr>
<td>SA-3 A2 @0.3 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td>x</td>
</tr>
<tr>
<td>SA-3 A2 @0.6 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td>x</td>
</tr>
<tr>
<td>SA-3 A2 @0.9 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td>x</td>
</tr>
<tr>
<td>SA-3 A3 @0.3 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td>x</td>
</tr>
<tr>
<td>SA-3 A3 @0.6 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td>x</td>
</tr>
<tr>
<td>SA-3 A3 @0.9 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td>x</td>
</tr>
<tr>
<td>SA-3 A4 @0.3 m</td>
<td>05-Jun-12</td>
<td>Soil</td>
<td>x</td>
</tr>
<tr>
<td>SA-3 A4 @0.6 m</td>
<td>05-Jun-12</td>
<td>Soil</td>
<td>x</td>
</tr>
<tr>
<td>SA-3 A4 @0.9 m</td>
<td>05-Jun-12</td>
<td>Soil</td>
<td>x</td>
</tr>
</tbody>
</table>

---

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details**

**Yukon CSR - Residential Land Use**

---

**Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.**

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.

Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

---

**SHIPMENT RELEASE (client use)**
**SHIPMENT RECEPTION (lab use only)**
**SHIPMENT VERIFICATION (lab use only)**

<table>
<thead>
<tr>
<th>Released by:</th>
<th>Received by:</th>
<th>Date (dd-mm-yy)</th>
<th>Time (hh-mm)</th>
<th>Date:</th>
<th>Time:</th>
<th>Temperature:</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>08-Jul-12</td>
<td>16:15</td>
<td>20 °C</td>
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</table>

**Verified by:**
**Date:**
**Time:**
**Observations:**
Yes / No?
If Yes add SHF

---

**GENF 18.01 Front**
**Chain of Custody / Analytical Request Form**

**Report To**
- Company: EBA Engineering Consultants
- Contact: Darryl Cann
- Address: Unit 6, Calcite Business Center, 151 Industrial Rd. Whitehorse, YT Y1A 2V3
- Phone: 668-2071 ext 247

**Invoice To**
- Same as Report: Yes

**Hardcopy of Invoice with Report?**
- Yes

**Client / Project Information**
- Job #: W23101552 Former Motorways Property
- PO / AFE:
- LSD:

**Service Requested**
- Regular (Standard Turnaround Times - Business Days)
- Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
- Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
- Same Day or Weekend Emergency - Contact ALS to Confirm TAT

**Analysis Request**
- Please indicate below Filtered, Preserved or both (F, P, F/P)

**Sample Identification**
- Sample #: SA-3 B1 @0.3 m
- Date: 06-Jun-12
- Time: Soil

<table>
<thead>
<tr>
<th>Sample</th>
<th>Date</th>
<th>Time</th>
<th>Sample Type</th>
<th>Hold for analysis</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA-3 B1 @0.3 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA-3 B1 @0.5 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA-3 B1 @0.9 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA-3 B2 @0.3 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA-3 B2 @0.6 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA-3 B2 @0.9 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA-3 B3 @0.3 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA-3 B3 @0.6 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA-3 B3 @0.9 m</td>
<td>05-Jun-12</td>
<td>Soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA-3 B4 @0.3 m</td>
<td>05-Jun-12</td>
<td>Soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA-3 B4 @0.6 m</td>
<td>05-Jun-12</td>
<td>Soil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SA-3 B4 @0.9 m</td>
<td>05-Jun-12</td>
<td>Soil</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Special Instructions / Regulations with water or land use**
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- Yukon CSR - Residential Land Use

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**SHIPPING RELEASE**
- Released by: [Data (dd-mm-yyyy)] [Time (h-m)]
- Received by: [Date] [Time] [Temperature: °C]
- Verified by: [Date] [Time]

**SHIPPING VERIFICATION**
- Observations: Yes / No?
- If Yes add SIF

GENF 18.01 Front
Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

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- Company: EBA Engineering Consultants
- Contact: Darryl Cann
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- Hardcopy of Invoice with Report: Yes

**Report Format / Distribution**
- Standard
- PDF
- Excel
- Digital
- Fax

**Service Requested**
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**Client / Project Information**
- Job #: W23101552 Former Motorways Property
- PO / AFE:
- LSD:
- Lab Work Order # (lab use only):
- ALS Contact:
- Quote #:
- Sample Identification

<table>
<thead>
<tr>
<th>Sample</th>
<th>Date (dd-mm-yy)</th>
<th>Time (hr:mm)</th>
<th>Sample Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA-3 C1 @0.3 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td></td>
</tr>
<tr>
<td>SA-3 C1 @0.6 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td></td>
</tr>
<tr>
<td>SA-3 C1 @0.9 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td></td>
</tr>
<tr>
<td>SA-3 C2 @0.3 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td></td>
</tr>
<tr>
<td>SA-3 C2 @0.6 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td></td>
</tr>
<tr>
<td>SA-3 C2 @0.9 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td></td>
</tr>
<tr>
<td>SA-3 C3 @0.3 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td></td>
</tr>
<tr>
<td>SA-3 C3 @0.6 m</td>
<td>06-Jun-12</td>
<td>Soil</td>
<td></td>
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</table>

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

Yukon CSR - Residential Land Use

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**SHIPEMENT RELEASE (client use)**
- Released by: [Date (dd-mm-yy)] [Time (hh-mm)]

**SHIPEMENT RECEPTION (lab use only)**
- Received by: [Date] [Time]

**SHIPEMENT VERIFICATION (lab use only)**
- Verified by: [Date] [Time]
- Temperature: [°C]

Observations: Yes / No?
If Yes add SIF

GENF 18.01 Front
### Chain of Custody / Analytical Request Form

**Company:** ALS Environmental

**Toll Free:** 1 800 668 9878

**Website:** www.alsglobal.com

### Report Information

**Report To:**
- **Company:** EBA Engineering Consultants
- **Contact:** Darryl Cann
- **Address:** Unit 6, Calcite Business Center, 151 Industrial Rd, Whitehorse, YT Y1A 2V3
- **Phone:** 668-2071 ext 247

**Invoice To:**
- **Same as Report?** Yes

**Invoice Information**
- **Company:** PO / AFE:
- **Contact:** LSD:
- **Address:**
- **Phone:** Fax:

### Sample Information

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### Special Instructions / Regulations

- **Yukon CSR - Residential Land Use**

**Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.**

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**SHIPMENT VERIFICATION (lab use only)**

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Chain of Custody / Analytical Request Form
Canada Toll Free: 1 800 668 9878
www.alsglobal.com

Report To
Company: EBA Engineering Consultants
Contact: Darryl Cann
Address: Unit 6, Calcite Business Center
151 Industrial Rd. Whitehorse, YT Y1A 2V3
Phone: 668-2071 ext 247

Invoice To
Same as Report? ☑ Yes ☐ No
Hardcopy of Invoice with Report? ☑ Yes ☐ No

Service Requested
☐ Regular (Standard Turnaround Times - Business Days)
☐ Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT
☐ Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT
☐ Same Day or Weekend Emergency - Contact ALS to Confirm TAT

Client / Project Information
Job #: W23101552 Former Motorways Property

PO / AFE:

Analysis Request
Please indicate below Filtered, Preserved or both (F, P, F/P)

Number of Containers

Sample Identification
(This description will appear on the report)

Date (dd-mm-yy) Time (hh:mm) Sample Type

SA-3 E1 @ 0.3 m 05-Jun-12 Soil x
SA-3 E1 @ 0.6 m 05-Jun-12 Soil x
SA-3 E1 @ 0.9 m 05-Jun-12 Soil x
SA-3 E2 @ 0.3 m 05-Jun-12 Soil x
SA-3 E2 @ 0.6 m 05-Jun-12 Soil x
SA-3 E2 @ 0.9 m 05-Jun-12 Soil x
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SA-3 E4 @ 0.3 m 05-Jun-12 Soil x
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SA-3 E4 @ 0.9 m 05-Jun-12 Soil x

Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details

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Released by: Date (dd-mm-yy) Time (hh:mm) Received by: Date: Time: Temperature: °C

Verified by: Date: Time:

Observations: Yes / No?

If Yes add SIF

GENF 18.01 Front
### Chain of Custody / Analytical Request Form

**Environmental**

**Report To**
- Company: EBA Engineering Consultants
- Contact: Darryl Cann
- Address: Unit 6, Calcite Business Center, 151 Industrial Rd, Whitehorse, YT Y1A 2V3
- Phone: 686-2071 ext 247
- Fax: 867-668-4349

**Invoice To**
- Same as Report: Yes

**HC copy of Invoice with report?**
- Yes

**Report Format / Distribution**
- [ ] Standard
- [ ] Other
- [ ] PDF
- [ ] Excel
- [ ] Digital
- [ ] Fax

**Service Requested**
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**Client / Project Information**
- Job #: W23101552 Former Motorways Property
- PO / AFE:
- LSD:

**Analysis Request**
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- Released by: [Name]
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- Time (hh-mm): [Time]

**SHIPPING RECEPTION (lab use only)***

- Received by: [Name]
- Date: [Date]
- Time: [Time]

**SHIPPING VERIFICATION (lab use only)***

- Verified by: [Name]
- Date: [Date]
- Time: [Time]

**Observations:**
- Yes / No?
- If Yes add SIF
EBA ENGINEERING CONSULTANTS LTD.
ATTN: Darryl Cann
Calcite Business Centre
Unit 6 - 151 Industrial Road
Whitehorse YT Y1A 2V3

Date Received: 15-OCT-12
Report Date: 19-OCT-12 19:00 (MT)
Version: FINAL

Client Phone: 867-668-3068

Certificate of Analysis

Lab Work Order #: L1223628
Project P.O. #: NOT SUBMITTED
Job Reference: W23101552 FORMER MOTORWAYS PROPERTY
C of C Numbers: 5
Legal Site Desc:

Brent Mack
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]
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<th>Analyte</th>
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<th>L1223628-2</th>
<th>L1223628-3</th>
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<td>SOIL</td>
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<td>Moisture (%)</td>
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<td>pH (1:2 soil:water) (pH)</td>
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<td>Metals</td>
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<td>Speciated Metals</td>
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<td>Hexavalent Chromium (mg/kg)</td>
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<td>Aggregate</td>
<td>Waste Oil Content - mg/Wkg (mg/kg wwt)</td>
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<td>&lt;1000</td>
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<td>Organics</td>
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<td>Waste Oil Content (HWR 41.1, mg/kg)</td>
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<td>&lt;1000</td>
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<td>Grouping</td>
<td>Analyte</td>
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<td>WASTE</td>
<td>Flash Point (Deg. C)</td>
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<td>Benzene (ug/L)</td>
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<td>Toluene (ug/L)</td>
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## Test Method References:

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<th>Matrix</th>
<th>Test Description</th>
<th>Method Reference**</th>
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<tbody>
<tr>
<td>BTEX-TCLP-CL</td>
<td>Waste</td>
<td>TCLP Leachable BTEX</td>
<td>EPA 5030/8015&amp; 8260-P&amp;T GC-MS/FID</td>
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<tr>
<td>CR-CR3-ED</td>
<td>Soil</td>
<td>Chromium, Trivalent (Cr +3)</td>
<td>Total Cr - Cr(+6)</td>
</tr>
<tr>
<td>CR-CR6-3060-ED</td>
<td>Soil</td>
<td>Chromium, Hexavalent (Cr +6)</td>
<td>APHA 3500-CR C, EPA 3060A ALKALINE</td>
</tr>
<tr>
<td>FLASH-PMCC-AUTO-CL</td>
<td>Waste</td>
<td>Pensky-Martens Closed Cup Flashpoint</td>
<td>ASTM D-93-Flash point tester</td>
</tr>
</tbody>
</table>

A brass cup of specified dimensions, filled to the inner mark with test sample and fitted with a cover, is heated and the sample stirred at specified rates, using one of 3 defined procedures (ASTM D93-10 A, ASTM D93-10 B, or a modified version of D93-10 A for solids). An ignition source is directed into the cup at regular intervals until a flash is detected. The flash point is the lowest temperature corrected for barometric pressure, at which the vapour of the sample ignites.

** MET-200.2-CCMS-ED **
Soil  Metals in Soil by CRC ICPMS  EPA 200.2/6020A

This analysis is carried out using procedures from CSR Analytical Method: “Strong Acid Leachable Metals (SALM) in Soil”, BC Ministry of Environment, 26 June 2009, and procedures adapted from EPA Method 200.2. The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve, and a representative subsample of the dry material is weighed. The sample is then digested at 95 degrees Celsius for 2 hours by block digester using concentrated nitric and hydrochloric acids. Instrumental analysis is by inductively coupled plasma - mass spectrometry (EPA Method 6020A).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

** MOISTURE-VA **
Soil  Moisture content  ASTM D2974-00 Method A

This analysis is carried out gravimetrically by drying the sample at 105 C for a minimum of six hours.

** OGG-SW-SOX-TOT-VA **
Soil  Waste Oil By Gravimetric  BCMELP 66000-03/SWR

Waste Oil Content in Solids and/or Liquids (Hazardous Waste Regulation)

This analysis is carried out according to the method "Determination of Waste Oil Content in Solids and Liquids for Hazardous Waste Regulation PBM", from the BC Environmental Laboratory Manual for the Analysis of Water, Wastewater, Sediment, and Biological Materials, 2005 edition. Use Waste Oil Content (as mg/Wet kg) to compare with the Hazardous Waste Regulation "waste oil" standard. Use Waste Oil Content (HWR 41.1, mg/kg) to compare with the Total Oil standard in section 41.1 of the Hazardous Waste Regulation.

Accuracy target values for Reference Materials used in this method are derived from averages of long-term method performance, as certified values do not exist for the reported parameters.

** PAINT FILTER-CL **
Waste  Paint Filter Test  EPA SW846-9095

** PH-WW-1:2-DI-MAN-VA **
Soil  pH in Soil (1:2 Soil:Water Ext.) (WET)  BC WLAP METHOD: PH, ELECTROMETRIC, SOIL

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the wet sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water, where the samples moisture is accounted for. The pH of the solution is then measured using a standard pH probe.

** PREP-MOISTURE-ED **
Soil  % Moisture  Oven dry 105C-Gravimetric

** ALS test methods may incorporate modifications from specified reference methods to improve performance.**

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

<table>
<thead>
<tr>
<th>Laboratory Definition Code</th>
<th>Laboratory Location</th>
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<tbody>
<tr>
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<td>ALS ENVIRONMENTAL - EDMONTON, ALBERTA, CANADA</td>
</tr>
<tr>
<td>CL</td>
<td>ALS ENVIRONMENTAL - CALGARY, ALBERTA, CANADA</td>
</tr>
<tr>
<td>VA</td>
<td>ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA</td>
</tr>
</tbody>
</table>

** Chain of Custody Numbers:**

5
GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.
### Chain of Custody / Analytical Request Form

**Company:** EBA Engineering Consultants  
**Contact:** Darryl Cann  
**Address:** Unit 6, Calcito Business Center  
151 Industrial Rd. Whitehorse, YT Y1A 2V3  
**Phone:** 668-2071 ext 247  
**Fax:** 867-688-4349

**Invoice To**  
**Hardcopy of Invoice with Report?**

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<td>Soil</td>
<td>12-Oct-12</td>
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<td>X X</td>
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</table>

**Service Requested**  
- Regular (Standard Turnaround Times - Business Days)  
- Priority (2-4 Business Days) - 50% Surcharge - Contact ALS to Confirm TAT  
- Emergency (1-2 Bus. Days) - 100% Surcharge - Contact ALS to Confirm TAT  
- Same Day or Weekend Emergency - Contact ALS to Confirm TAT

**Analysis Request**

**Special Instructions / Regulations with water or land use (CCME-Freshwater Aquatic Life/BC CSR - Commercial/AB Tier 1 - Natural, etc) / Hazardous Details**

**Yukon CSR - Residential Land Use and additional analytical for BC landfill non-hazardous waste**

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.

By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab. Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.
Certificate of Analysis

Lab Work Order #: L1262091
Project P.O. #: NOT SUBMITTED
Job Reference: W23101552
C of C Numbers: 10-152514
Legal Site Desc:

Brent Mack
Account Manager

[This report shall not be reproduced except in full without the written authority of the Laboratory.]
# ALS ENVIRONMENTAL ANALYTICAL REPORT

<table>
<thead>
<tr>
<th>Grouping</th>
<th>Analyte</th>
<th>Sampled Date</th>
<th>Sampled Time</th>
<th>Client ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>SOIL</td>
<td>pH (1:2 soil:water) (pH)</td>
<td>03-NOV-12</td>
<td>12:00</td>
<td>L1262091-1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>L1262091-2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>L1262091-3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>L1262091-4</td>
</tr>
<tr>
<td>Metals</td>
<td>Tin (Sn) (mg/kg)</td>
<td></td>
<td></td>
<td>8.22</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>&lt;2.0</td>
</tr>
</tbody>
</table>
This analysis is carried out using procedures from CSR Analytical Method: “Strong Acid Leachable Metals (SALM) in Soil”, BC Ministry of Environment, 26 June 2009, and procedures adapted from EPA Method 200.2. The sample is manually homogenized, dried at 60 degrees Celsius, sieved through a 2 mm (10 mesh) sieve (this sieve step is omitted for international soil samples), and a representative subsample of the dry material is weighed. The sample is then digested at 95 degrees Celsius for 2 hours by block digester using concentrated nitric and hydrochloric acids. Instrumental analysis of the digested extract is by collision cell inductively coupled plasma - mass spectrometry (modified from EPA Method 6020A).

Method Limitation: This method is not a total digestion technique. It is a very strong acid digestion that is intended to dissolve those metals that may be environmentally available. By design, elements bound in silicate structures are not normally dissolved by this procedure as they are not usually mobile in the environment.

This analysis is carried out in accordance with procedures described in the pH, Electrometric in Soil and Sediment method - Section B Physical/Inorganic and Misc. Constituents, BC Environmental Laboratory Manual 2007. The procedure involves mixing the dried (at <60°C) and sieved (No. 10 / 2mm) sample with deionized/distilled water at a 1:2 ratio of sediment to water. The pH of the solution is then measured using a standard pH probe.

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

The last two letters of the above test code(s) indicate the laboratory that performed analytical analysis for that test. Refer to the list below:

<table>
<thead>
<tr>
<th>Laboratory Definition Code</th>
<th>Laboratory Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>VA</td>
<td>ALS ENVIRONMENTAL - VANCOUVER, BRITISH COLUMBIA, CANADA</td>
</tr>
</tbody>
</table>

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

GLOSSARY OF REPORT TERMS

Surrogate - A compound that is similar in behaviour to target analyte(s), but that does not occur naturally in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery.

mg/kg - milligrams per kilogram based on dry weight of sample.
mg/kg wwt - milligrams per kilogram based on wet weight of sample.
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight of sample.
mg/L - milligrams per litre.
< - Less than.

D.L. - The reported Detection Limit, also known as the Limit of Reporting (LOR).
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.

UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.
**Chain of Custody / Analytical Request Form**

**Company:** EBA

**Contact:** [Name Redacted]

**Address:** 151 Industrial Rd

**Phone:** 867-768-2071

**Fax:** 867-768-2071

**Job #:** W2310155/2

**Sample Identification**

<table>
<thead>
<tr>
<th>Sample #</th>
<th>Date (dd-mm-yy)</th>
<th>Time (hh:mm)</th>
<th>Sample Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>SA E3</td>
<td>N-Ex @ 0.3m</td>
<td>May 3, 2020</td>
<td>Sa1</td>
</tr>
<tr>
<td>SA E3</td>
<td>E-Ex @ 0.3m</td>
<td></td>
<td>Sa1</td>
</tr>
<tr>
<td>SA E3</td>
<td>S-Ex @ 0.3m</td>
<td></td>
<td>Sa1</td>
</tr>
<tr>
<td>SA E3</td>
<td>W-Ex @ 0.3m</td>
<td></td>
<td>Sa1</td>
</tr>
</tbody>
</table>

**Special Instructions / Regulation with water or land use:**

- Rush Analysis, Hold for additional analysis

**Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.**

**By the use of this form the user acknowledges and agrees with the Terms and Conditions as specified on the back page of the white - report copy.**