



**Elsa Reclamation and Development Company**  
**Keno Hill Mine**  
**Site Investigation and Improvements, Special Projects**  
**Landfill Requirements**

**Date:**

**March 31, 2009**

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## 1.0 INTRODUCTION

Tasks identified in the Landfill Requirements work plan were conducted in correlation with tasks under the Hazardous Waste work plan. There are a number of old buildings, structures and related construction materials that are located throughout the Keno Hill Mine property. The property buildings and structures were inspected and waste types, volumes and non-hazardous materials were documented and reported below for the Keno Hill Mine property. Wastes were divided into either *hazardous waste* or *landfill waste*. The mitigation work is different for each waste category; therefore, there were two work plans for dealing with each type of waste generated. This work plan assessed potential non-hazardous waste landfill sites based on estimates of the types and volumes of waste expected.

There is a historic landfill on the Keno Hill Mine property near the town of Elsa that has been deemed “*out of commission*”. As part of this work plan, the existing landfill was assessed and characterized and will eventually undergo remediation and closure. A new landfill location for additional waste will be identified.

The objective of this assessment was to identify materials requiring disposal, to differentiate those materials into separate hazardous and landfillable waste streams and to develop estimates for quantities of each category. The identification of a suitable location for a closure landfill was also required. In addition, the old historic landfill required an assessment to determine if contaminants are leaching from the site and to develop final closure approaches.

### 1.1 SCOPE

The following tasks were involved within the scope of this assessment:

### **Task 1 – Building Inventory and Waste Volume Assessment**

Field personnel conducted a field investigation of each building and structure based on a review of historic and current information on site infrastructures and buildings (SRK Baseline Environmental Report, 2007, Public Works and Government Services Canada Assessment report, and Keno Hill Closure plan and Site Characterization report). A building inventory list guided personnel with the site inspection. All wastes were confirmed and identified by type, location and volume. This work was coordinated with the building hazardous waste assessment.

### **Task 2 – Landfill Location Assessment**

Building waste volumes, types and estimates gathered from the field investigation will help guide the landfill assessment. The potential landfill location must be sufficient to store the waste generated and will have to meet criteria in accordance with Yukon Government (YG) *Solid Waste Regulations*. The significant determining factors in choosing a landfill location are listed as follows:

- Location: ease of access, YG requirements, type of construction (i.e. mound, pit or canyon);
- Stability: geology of area, location of nearby rivers and streams, water table;
- Capacity: volume of waste, thickness of capping, construction of lining and drainage layers;
- Soil and water protection: installation of liner, collection systems, leachate management, gas management; and
- Costs: transportation of wastes, site remediation, feasibility of multiple landfills at either end of the district - Elsa and Keno Hill area.

The field work involved in assessing the above considerations required test pitting for geotechnical considerations, water course flow delineation, and waste volume estimates. This field research was conducted at several potential locations; the results of the assessment determined which would make the most practical landfill sites. Recommended landfill sites were documented with the aim of obtaining Commercial Dump authorizations so building demolition and waste deposit can proceed.

### **Task 3 – Historic Elsa Dump Site Assessment**

The old historic Elsa landfill underwent an assessment to determine if contaminants are leaching from the site and to determine potential closure options. The most important aspects of this assessment were verification of any potential leachate and/or soil contamination along the toe of the dump site. This involved a physical inspection of the site for seepages and sampling water and soils for hydrocarbon and metals contamination. Elsa Reclamation and Development Company (ERDC) will evaluate the landfill closure options, based on the results from this physical inspection and determine a recommended closure option.

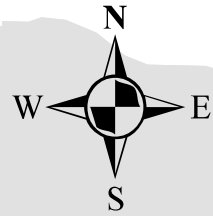
## **2.0 PHYSICAL SETTING**

### **2.1 OVERALL SITE DESCRIPTION**

The Keno Hill Mining District is located in the vicinity of Keno City (63° 55'N, 135° 29'W), in central Yukon Territory, 354 km (by air) due north of Whitehorse. Access to the property is via a paved, two-lane highway from Whitehorse to Mayo (407 km) and an all-weather gravel road northeast from Mayo to Elsa (45 km); a total distance of 452 km. The property lies along the broad McQuesten River valley with three prominent hills to the south of the valley. Figure 1 shows the general project location within the Yukon Territory while Figure 2 shows the site location, including the historic Elsa dump site.

The Elsa Village is located on the northwestern toe of Galena Hill. The village was built on several flat terraces (essentially cut/fill areas connected by roadways). The village of Elsa originated in association with the 1929 opening of the Elsa mine. Since its opening the population of the village has fluctuated and at the peak over 400 people lived in Elsa just before the recent mine shutdown of 1989. There are several bone yards near the village but the historic Elsa dumpsite was the main disposal area. The historic Elsa dumpsite consists predominantly of metal, wood and residential wastes.

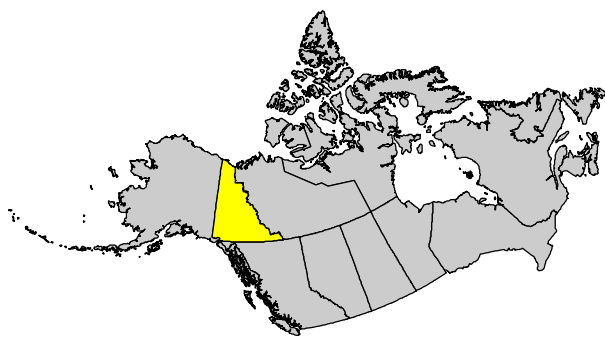
Areas selected for potential Landfill locations are predominantly previously disturbed and relatively flat sites (less than 6% grade). Minimal work on the approaches and access to these potential locations will be required. The potential Landfill locations are not within 100 m of the high water mark of any waterway or within 50 m of any highway. There are no residential properties or buildings that are being used within the immediate areas of the possible Landfill locations. Three proposed landfill locations are within the Elsa Village due to the large amount of building debris in the immediate area and one proposed landfill is located near Keno 700.



# General Location Map of the Yukon Territory

Scale 1 : 6 000 000  
50 0 50 100 150 200 250 300km

**Project Location**

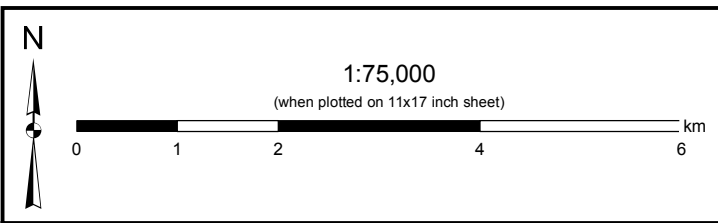
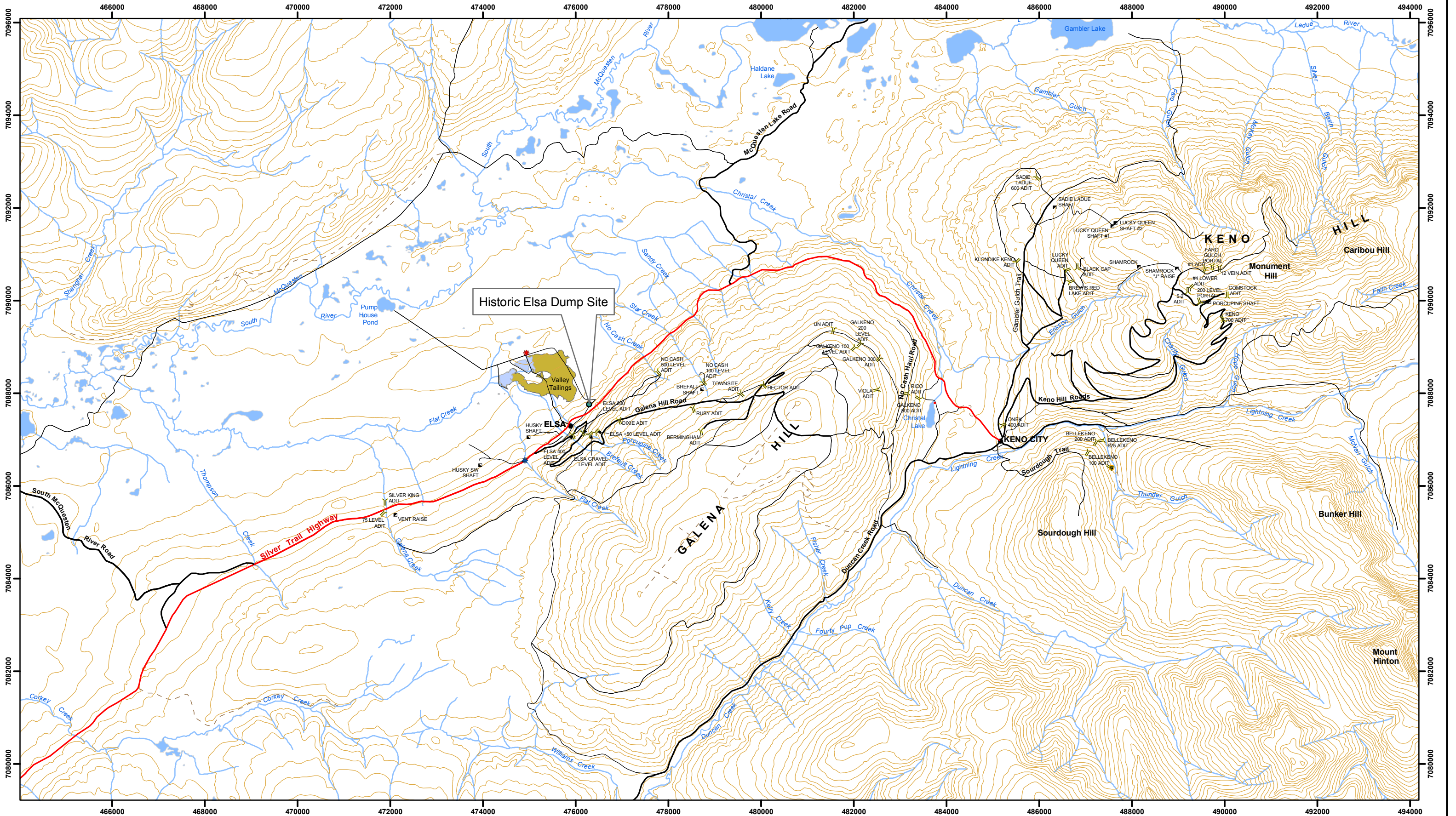


**ELSA RECLAMATION AND DEVELOPMENT COMPANY LTD.**  
**KENO HILL SILVER DISTRICT**  
**SITE LOCATION MAP**



Drawn By: EA	<b>FIGURE 1</b>
Checked By: KN	DATE: 3/31/2009

FILE: \\dawson\project\all\projects\alex-05-01\2008 contract special projects\fig1\_1\_genloc1.mxd



Legend	
<b>Topography</b>	<b>Mine Workings</b>
● Town	Valley Tailings
— Silver Trail	Adit
— Secondary Road	Shaft (to surface - connection to underground not determined)
— Limited-use road	
--- Trail	
— Watercourse	
■ Waterbody	

Notes:  
 This map is for illustrative purposes only.  
 This is not a legal document.  
 National Topographic Data Base (NTDB) compiled by Natural Resources Canada at a scale of 1:50,000. Cadastral data compiled by Natural Resources Canada. Reproduced under license from Her Majesty the Queen in Right of Canada. Department of Natural Resources Canada. All rights reserved. Quartz claim boundaries are current as of November 21, 2008. Data source: <http://geomatix.yukon.ca>.  
 Ownership is current as of November 26, Claim status report obtained from the Mining Recorder (Mayo).  
 Projection: UTM Zone 8 NAD83  
 NTS Sheet 105M/13 and 105M/14



ELSA RECLAMATION AND DEVELOPMENT COMPANY LTD. LANDFILL ASSESSMENT KENO HILL SILVER DISTRICT <b>PROPERTY OVERVIEW AND SITE LOCATION MAP</b>		
Drawn By: EA Checked by: KN	DATE: 3/31/2009	<b>FIGURE 2</b>

### 3.0 PREVIOUS ASSESSMENTS

A previous site assessment entitled “*Keno Valley/Dublin Gulch Environmental Baseline Assessment Volumes I to V*” was completed by Environmental Services Public Works and Government Services Canada in March, 2000. The assessment was prepared for Waste Management Program of Indian and Northern Affairs Canada (INAC). The five volume report described current baseline environmental conditions, including identifying hazardous and non-hazardous waste throughout the Keno Valley and Dublin Gulch area. Three samples were collected at the historic Elsa dump: the analytical results did not exceed criteria. This report was referenced while conducting this assessment.

A baseline report entitled “*Baseline Environmental Report United Keno Hill Mines Property*” was prepared for ERDC , a wholly owned subsidiary of Alexco Resource Corp., in April 2007 by SRK Consulting Engineers and Scientists. Access Consulting Group (ACG) observed and documented (in Appendix G of SRK report) areas where evidence of building contamination was visible while conducting the field inspections with SRK Consulting. The SRK report confirms and updates areas of contamination identified by the March 2000 site assessment. Its purpose was to delineate the known environmental conditions and to serve as a basis for the development of closure and reclamation plans. It was recommended that further sampling be carried out in conjunction with closure planning studies. Information gathered in this baseline report was referenced while conducting the current landfill requirements assessment.

A copy of the ACG Building Contamination inventory and report completed in 2007 (Appendix G of SRK report) is attached in Appendix C of this report.

As part of the site investigations and improvements, a Hazardous Waste Assessment report dated March 31, 2009 was completed by Access Consulting Group. The report contained Table 1: Building Contamination Inventory. The Table 1 is attached in this report in Appendix D.

## **4.0 SITE INVESTIGATION**

### **4.1 METHODOLOGY**

The landfill assessment was undertaken as per the Yukon *Contaminated Sites Regulations* (CSR) with particular attention to Section 8: *Site investigations* and Section 9: *Site Assessments*; and associated Protocols, particularly: Protocol No. 2 *Analysis of Samples Taken in Relation to the Contaminated Sites Regulation*; Protocol No. 3 *Soil Sampling Procedures at Contaminated Sites*; Protocol No. 5 *Petroleum Hydrocarbon Analytical Methods and Standards* and Protocol No. 9: *Determining Background Soil Quality*.

The Yukon Environment Act Solid Waste Regulations will be followed and outline the general requirements, permitting, construction, operations and closure of a dump site. Particular attention will be given to Schedule 1 Operating Standards for Dumps.

To determine the volume of waste to be buried in Elsa as well as throughout the Keno Hill Silver District, a building inventory was completed along with determining the length and width of each building to calculate the square meter of buildings (Appendix F). The square meters were then multiplied by 1.5, which is a bulking factor used by demolition companies (John Holland, PHH ARC Environmental Ltd.) to determine the volume of rubble and waste that requires disposal.

### **4.2 FIELD PROGRAM**

ACG conducted the landfill assessment over three separate investigations. The first assessment was conducted by K. Neunherz and P. Inglis of ACG from August 25 – 28, 2008 and concentrated on conducting the building inventory assessment (coordinated with the hazardous waste assessment), the landfill location assessment and the Historic Elsa Dump Site Assessment. Test pits were excavated using a Kubota KX080-3 excavator during the field program as part of the landfill site selection process. Five test pits were also excavated at the base of the Historic Elsa Dump to identify any potential leachate and/or soil contamination along the toe of the dump.

The second assessment was conducted by K. Neunherz of ACG from September 29 to October 2, 2008 and focused primarily on the landfill location assessment throughout the Elsa town site. It was coordinated with the hydrocarbon assessment, and test pits were excavated using a Hitachi 270 LC track hoe owned and operated by ERDC.

The third assessment was conducted by K. Neunherz and D. Cornett from January 30 - February 4, 2009. It was coordinated with the hazardous waste assessment and focused on the building inventory and waste volume assessment.

Figures 3 and 4 illustrate the test pit locations completed to conduct the historic Elsa landfill and the new landfill locations assessments.

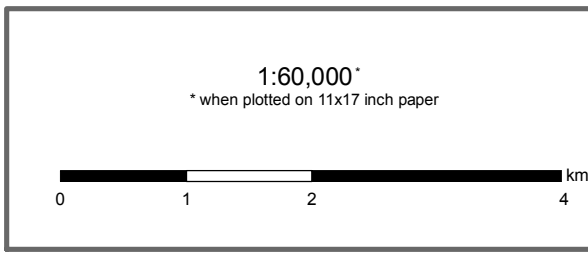
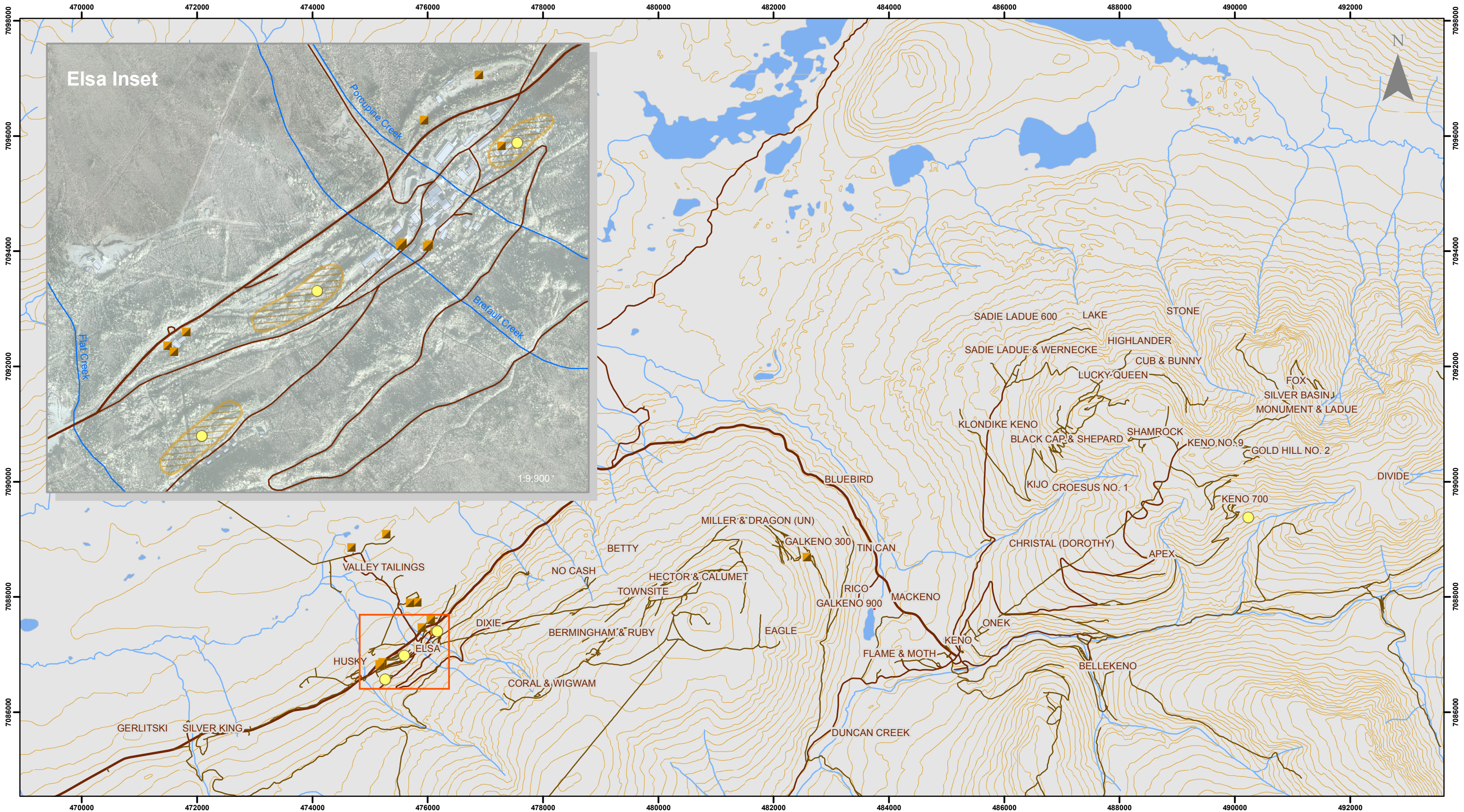
#### **4.3 QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC)**

Quality assurance and quality control (QA/QC) practices were employed during the collection, storing, and shipping of soil samples. These practices include:

- ACG field screened samples using a calibrated Photo Ionization Detector (PID);
- Changed nitrile gloves between collection of samples, logging, and/or monitoring;
- Use of clean, laboratory supplied containers for sample collection;
- Filling of the jars completely to eliminate sample headspace and contaminant volatilization;
- Transportation/storage of samples in ice-packed, insulated coolers, with chain of custody documentation; and,
- Using a Certified and accredited laboratory.

#### **4.4 SOIL SAMPLING AND FIELD SCREENING**

Soil samples were collected as per the CSR, Protocol No. 3 *Soil Sampling Procedures* in the test pits below the historic Elsa dump. Soil samples collected from the test pits throughout the Elsa town were collected for the purposes of the hydrocarbon assessment. Soil was collected from the Test Pits at intervals of 0.5 m to a maximum depth of 4.1 m. Soils were logged and examined for the presence of staining, and field screened for headspace vapour concentrations.



- Potential Landfill Locations
- Test Pit Location

Proposed Landfill Locations in Elsa



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National Topographic Data Base (NTDB), compiled by Natural Resources Canada at a scale of 1:50,000. Cadastral data compiled by Natural Resources Canada. Reproduced under license from © Her Majesty the Queen in Right of Canada, Department of Natural Resources Canada. All rights reserved. Quartz claim boundaries are current as of November 21, 2008. Data source: <http://geomatics.yukon.ca>. Ownership is current as of November 26. Claim status report obtained from the Mining Recorder (Mayo).  
Projection: UTM Zone 8 NAD83  
NTS Sheet 105M/13 and 105M/14

**FIGURE 3**  
**POTENTIAL LANDFILL LOCATIONS AND TEST PIT LOCATIONS**

Drawn By: MD	Checked by: KN	DATE: JUNE 2009
D:\MapData\KenoHillSilverDistrict\ProjectData\ClosurePlan\Closure_Reports\2008\Figure3_LandfillLocations.mxd		



50 m



**Figure 4 - Historic Elsa Landfill**  
Layout and Test Pit Location

Draw by MD

Verified by DC

June 2009

A PID was used to obtain field screening results of volatile organic compounds (VOC) produced by grab samples of potentially contaminated soil. This was conducted by obtaining a sample of the soil in question and sealing it in a plastic bag for more than five minutes to allow VOC gases to develop in the headspace of the sealed bag. The pump probe of the PID was then inserted into the bag and a reading was taken. This method measures soil hydrocarbon headspace vapour concentrations of the samples to provide a quantitative indication of hydrocarbon vapours present at the time of screening and is dependent on temperature, soil type, sitting time and soil moisture content. PID readings are indicative of hydrocarbon contamination levels for the purpose of field screening and planning. All soil samples were sealed in laboratory prepared jars and bags, labeled and stored in ice packed, insulated coolers.

Samples were collected according to Protocol No. 3: "Soil Sampling Procedures". A standard sampling procedure was used as outlined under the CSR and the applicable American Society for Testing and Materials (ASTM) standards (D 4547-031). All soil samples were obtained with nitrile gloves and placed in sterile glass jars and plastic bags provided by the laboratory.

Soil sampling and field screening were not conducted as part of the new landfill locations assessment.

#### **4.5 LABORATORY ANALYTICAL PROGRAM**

Six soil samples (five from the historic dump test pits and one background sample) were submitted to Bodycote Testing Group in Surrey, British Columbia, a CAEAL certified laboratory as per CSR Protocol No. 2. Based on field observations and VOC readings, the following analyses were conducted:

- Five soil samples (one sample from each of the five test pits below the Elsa dump) were analyzed for Extractable Petroleum Hydrocarbons (EPH) - Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

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<sup>1</sup> Standard Guide for Sampling Waste and Soils for Volatile Organic Compounds

- The five samples as well as one background sample (from above the Elsa dump) were analyzed for Total Metals using strong acid digestion.

All the remaining soils samples were stored in ice packed insulated coolers. Soil samples collected from the test pits throughout the Elsa town were collected, analyzed and reported by ACG in the document entitled Site Investigation and Improvements, Special Projects Hydrocarbon Contamination dated March 31, 2009.

Laboratory soil sampling was not conducted as part of the new landfill locations assessment.

## 5.0 REGULATORY CRITERIA APPLICABLE TO THE SITE

Parameters analyzed were compared to the CSR “*Schedule 1 – Generic Numerical Soil Standards and Schedule 2 – Matrix Numerical*” Soil Standards under the Industrial land use (IL) listing.

Applicable industrial land use standards were applied to the site. This included:

- Human Health Protection Standards: *Intake of contaminated soil*, and
- Environmental Protection Standards: *Groundwater flow to surface water used by aquatic life – freshwater* (as majority of the samples collected were within one (1) km of a surface water body); and *Toxicity to soil invertebrates and plants*.

Human health protection standards for groundwater used for drinking water was not used as a standard since there were no wells used for drinking water within 1.5 km of the sample locations.

### 5.1 SUMMARY OF APPLICABLE SITE CRITERIA

Petroleum Hydrocarbons: CSR Schedule 1 and 2 for industrial land use; and

Metals: CSR Schedule 1 and 2 for industrial land use;

## **6.0 FINDINGS OF THE SITE ASSESSMENT**

### **6.1 STRATIGRAPHY**

The soil encountered during the historic Elsa dump assessment generally consisted of coarse grained silty sand with gravel and cobbles. Table 1 and photos in Appendix B outline typical soil stratigraphy encountered during the historical Elsa dump assessment. The test pit field logs from the historic dump assessment are attached in Appendix E.

The soil profile observed during the new landfill locations assessment generally consisted of coarse grained material. Soil within the test pits predominantly consisted of silty sand with gravel and cobbles. Two test pits excavated within the Valley Tailings Area identified tailings to between 1.6 m and 2.9 m below surface grade (bsg). Bedrock was encountered in three test pits ranging from 2.3 m to 2.9 m bsg. Table 1 contains the test pit summary of the stratigraphy encountered during the new landfill locations assessment. Photos in Appendix B show the typical soil identified during the test pit program. The test pit field logs are attached in Appendix E.

### **6.2 GROUNDWATER**

There was no evidence of groundwater during the excavation of test pits below the historic Elsa dump. The maximum depth of the test pits were 4.1 m. The test pits were left open for 4 weeks in an attempt to collect groundwater but remained dry.

Groundwater was not encountered in any of the potential new landfill locations except in one test pit near the CBC tower. It was excavated in a disturbed area (previous test pit) and the water looked to be trapped from surface run off. The test pit was abandoned and an adjacent test pit was excavated with no indication of ground water. No groundwater was encountered in any of the other test pits during the new landfill locations study indicating that the groundwater table depth is below 3 m.

### 6.3 FIELD SCREENING RESULTS

The maximum soil headspace vapour concentration identified during soil sampling of the Historic Elsa Dump was 7.2 part per million (ppm) from Test Pit 1 at 1 m. Soil headspace vapour concentrations of all other soil samples from below the historic dump ranged between 2.9 ppm and 6.4 ppm. Table 1 under “*PID Readings*” contains a summary of PID readings from the field investigation.

Field screening was not conducted as part of the new landfill locations assessment as no visible hydrocarbons were noted at the test pit location.

Table 1: Test Pit Summary for Historic Elsa Landfill and potential Landfill Locations

Historical Working	Location Description	Test Pit Soil Description	PID Readings (ppm)				Total Depth of Test Pit	Water Table	Sample Collected	Comments
			1m	2m	3m	4m				
<b>Historic Elsa Dump</b>	TP1 - NW of the toe of dump	grey cobbles, sand and gravel	4.9	5.7	2.9	3.7	4.1 m	Left to stand for 4 weeks, none	Yes	Historic Elsa Landfill Assessment
	TP2 - North - NW of the toe of Dump	heavy gravels, fractured shale at 3 m	7.2	4.4	4.7	3.6	4.0 m	Left to stand for 4 weeks, none	Yes	Historic Elsa Landfill Assessment
	TP3 - North of the toe of the dump	gravel and cobbles, Bedrock at 2.9 m	3.8	4.8	6.4	na	3.0 m	Left to stand for 4 weeks, none	Yes	Historic Elsa Landfill Assessment
	TP4 - North -NE of the toe of the Dump	cobbles, sand, fractured shale	nt	nt	nt	4.5	4.0 m	Left to stand for 4 weeks, none	Yes	Historic Elsa Landfill Assessment
	TP5 - NE of the toe of the Dump	cobbles, boulders, gravel and sand	5.9	3.8	3.8	5.4	3.0 m	Left to stand for 4 weeks, none	Yes	Historic Elsa Landfill Assessment
<b>Old Elsa School Yard</b>	West End of School Yard	Fill to 2.2 m, fractured Bedrock at 2.3m			na		2.3 m	Left to stand for 24 hrs, none	No	Potential Landfill location
	Ball Diamond	Fill: clay, gravel and cobbles			na		3.0 m	Left to stand for 24 hrs, none	No	Potential Landfill location
	West End	Fill and organics			na		3.05 m	Left to stand for 24 hrs, none	No	Potential Landfill location
<b>Framing/ Carpentry Yard</b>	Far East End	Fill: clay, gravel, sand, organics			na		3.0 m	No	No	Potential Landfill location
	West End near Access Rd	Large Cobbles and Boulders			na		3.0 m	No	No	Potential Landfill location
<b>CBC Tower</b>	Same location as SRK TP, SE of Tower	Loosened Soil			na		2.5 m	1.2 m, trapped	No	Potential Landfill location, water due to loose soil
	East of Tower	hard rock, bedrock at 2.4m			na		3.0 m	No	No	Potential Landfill location
<b>Valley Tailings Area</b>	Near Current Sludge Ponds	tailings, bedrock at 2.9 m			na		3.2 m	No	No	Potential Landfill location
	In SW empty pond	tailings to 1.6 m, cobbles/gravel to 2.4 m			na		2.4 m	No	No	Potential Landfill location
<b>Galkeno 300</b>	Near Quonset	Silty sand with some gravel, cobbles			na		3.4 m	No	No	Potential Landfill location
<b>Bunkhouse 1</b>	In front of Entrance	Sandy silt, some gravel and cobbles			na		3.6 m	No	No	Potential Landfill location
<b>Fuel Storage Area 4 TP1</b>	In front of Tank	Gravel and cobbles	Highest reading: 8854				3 m	Yes	Yes	Hydrocarbon impact, no shallow groundwater
<b>Fuel Storage Area 4 TP2</b>	15 m from TP1 towards Fire Hall	Gravel and cobbles	Highest reading: 162				3 m	No	No	
<b>Fuel Storage Area 3 TP1</b>	In front of Tank	Gravel and cobbles	Highest reading: 2214				3 m	Yes	Yes	Hydrocarbon impact, no shallow groundwater
<b>Fuel Storage Area 3 TP2</b>	10 m away from Tank	Gravel and cobbles	Highest reading: 106				2 m	No	Yes	

nt = not tested  
na = not applicable  
TP = Test Pit  
ppm = Part Per Million  
PID = Photo-ionization Detector

## 6.4 LABORATORY ANALYTICAL RESULTS

The following sections presents the analytical results from samples collected during the historic Elsa dump assessment. No samples were collected during the new landfill locations assessment.

Complete laboratory analytical result reports are presented in Appendix A.

### 6.4.1 Soil Hydrocarbon Parameters

Laboratory analysis on soil samples collected below the historic Elsa dump submitted for hydrocarbon analysis returned no results that exceeded CSR standards for Light and Heavy Extractable Petroleum Hydrocarbons (LEPH/HEPH).

Hydrocarbon analytical results are summarized in Table 2. Laboratory analysis reports are included in Appendix A.

### 6.4.2 Soil Metal Parameters

Laboratory analytical results for metal analysis from one control soil sample submitted indicated that background metal levels did not exceed CSR criteria for any metals except for arsenic concentrations.

All soil samples collected below the historic Elsa dump submitted for metal analysis exceeded CSR standards for arsenic, but were below the background concentration levels. Cadmium concentrations from test pit 3 at 3 m slightly exceeded the CSR criteria. All other metal concentrations at all sampling sites below the historic dump were did not exceed CSR criteria. Capping the dump with a soil cover will minimize leachate infiltration to the dump and contain metals within the site.

Metal analytical results are summarized in Table 2. Laboratory analysis reports are included in Appendix A.

Table 2: Soil Sample Results from Below the Historic Elsa Dump

	Units	Old Dump TP1 -1M	Old Dump TP2 -2M	Old Dump TP3 -3M	Old Dump TP4 -4M	Old Dump TP5 -1M	Control from Landfill	Detection Limits	Contamination Standards (Industrial) <sup>a</sup>
<b>Extractable Petroleum Hydrocarbons - Soil</b>									
EPHs 10-19	ug/g	<20	<20	<20	<20	27	nt	20	2000
EPHs 19-32	ug/g	65	53	<20	<20	129	nt	20	5000
<b>Hot Water Soluble</b>									
Boron	mg/kg	<0.2	1.1	1.5	0.8	0.5	<0.2	0.1	ns
<b>Metals Strong Acid Digestion</b>									
Mercury	mg/kg	0.05	0.05	0.02	0.02	0.04	0.15	0.01	150
Antimony	mg/kg	0.3	0.3	0.4	0.3	0.6	4.8	0.2	40
Arsenic	mg/kg	<b>36.7</b>	<b>31</b>	<b>35</b>	<b>41.3</b>	<b>35</b>	<b>107</b>	0.2	20
Barium	mg/kg	246	388	390	449	642	78	1	2,000
Beryllium	mg/kg	0.3	0.2	0.2	0.2	0.3	0.2	0.1	8
Cadmium	mg/kg	0.72	0.6	<b>10</b>	5.33	1.34	2.08	0.01	2-150 <sup>b</sup>
Chromium	mg/kg	23.2	23.8	22.5	20.5	24	15.5	0.5	60
Cobalt	mg/kg	11.7	15.8	17.3	21.1	12.6	5.1	0.1	300
Copper	mg/kg	47	40	54	76	46	38	1	250
Lead	mg/kg	17.6	16.2	26.8	28.7	54.8	788	0.1	2000
Molybdenum	mg/kg	1	2	2	5	3	2	1	40
Nickel	mg/kg	31.6	33.5	44.7	58.2	32.4	21.2	0.5	500
Selenium	mg/kg	0.6	0.6	0.5	0.6	0.5	0.8	0.3	10
Silver	mg/kg	0.4	0.4	0.5	0.3	1.4	18.5	0.1	40
Thallium	mg/kg	0.13	0.14	0.11	0.11	0.18	0.6	0.05	ns
Tin	mg/kg	2	2	2	2	2	3	1	300
Uranium	mg/kg	0.6	0.7	0.7	0.7	1	0.7	0.5	ns
Vanadium	mg/kg	37.5	32.9	27.2	19.2	32.4	18	0.1	ns
Zinc	mg/kg	92	98	480	275	157	192	1	600 <sup>b</sup>
pH		nt	nt	7.4	7.6	7.2	8.1	nt	

<sup>a</sup> Industrial Land Use Standards, from Schedule 1 and Schedule 2 of the *Yukon Contaminated Sites Regulations*.

<sup>b</sup> pH influenced soil standards under the *Contaminated Sites Regulations*

\* Groundwater used for drinking water is not within 1.5 km of any sites sampled. It is assumed the sites are within 1 km of surface water.

**Peach = Value** exceeds *Contaminated Site Regulations*

ns = not specified

nt = not tested

## 6.5 ESTIMATED WASTE VOLUME

There are approximately 159 buildings throughout the Keno Hill Silver District and an additional 57 buildings in the Elsa town site. The square meter of buildings that require being land filled within the Keno Hill Silver District (not including Elsa) is estimated to be approximately 10,494 m<sup>2</sup>. The square meter is then multiplied by a 1.5 bulking factor to get the volume of waste to be buried. It is estimated that 15,741 m<sup>3</sup> of building waste is required to be buried throughout the Keno Hill Silver District. The estimated square meter foot print of buildings within Elsa is 18,829 m<sup>2</sup> and the estimated volume of building waste to be buried within Elsa is 28,244 m<sup>3</sup>.

Appendix F includes a spreadsheet that was used to calculate the approximate square meter of each building.

## 6.6 Potential Landfill Locations

Test pits in eight potential landfill locations were excavated during the field inspections. Groundwater results are summarized in the previous Section 6.2. Previous Table 2 summarizes the potential Landfill locations as well as the test pits that were excavated during the field inspection of the Historic Elsa dump. The specific location(s) will be selected once discussions are completed with local government. Optimal locations based on the concentration of the majority of the buildings include but not limited to: near the old Elsa school yard, near the houses, near the bunkhouses and on the flat terraces (essentially cut/fill areas). With the high concentration of buildings requiring demolition and disposal being in Elsa, more than one landfill will be required throughout the town site to dispose of the buildings, pending YG approval.

It is estimated that 3 landfills will be required in the village of Elsa and one at Keno 700. Keno 700 will be assessed prior to demolition of the buildings in the area. The landfills will be constructed in accordance with the YG *Environment Act Solid Waste Regulations* and will follow any stipulations laid out in the permits issued. Special attention will be paid to Schedule 1 Operating Standards for Dumps under the *Solid Waste Regulations*. The buildings will be demolished as per the Yukon Workers' Compensation Health and Safety Board recommendations and the ACG demolition plan (Appendix G) will be followed. The

demolition plan includes the handling of the hazardous waste identified in the Hazardous Waste Assessment report dated March 31, 2009 which was completed by Access Consulting Group.

Figure 3 illustrates the test pit locations completed to conduct the new landfill locations assessment as well as the optimal proposed landfill locations.

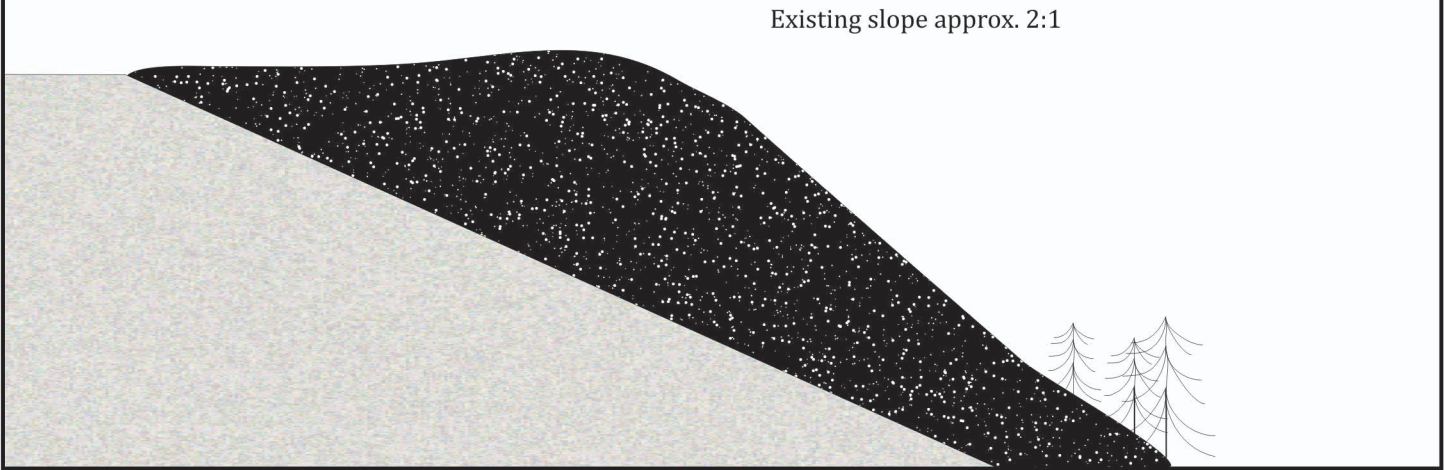
## **6.7 HISTORIC ELSA DUMP CLOSURE OPTION**

The Historic Elsa dump will be decommissioned as per the appropriate YG *Environment Act Solid Waste Regulations*. Specifically, Schedule 1 Operating Standards for Dumps #4 (Closure and Abandonment of the dump) will be followed. Decommissioning of the old Elsa dump will include:

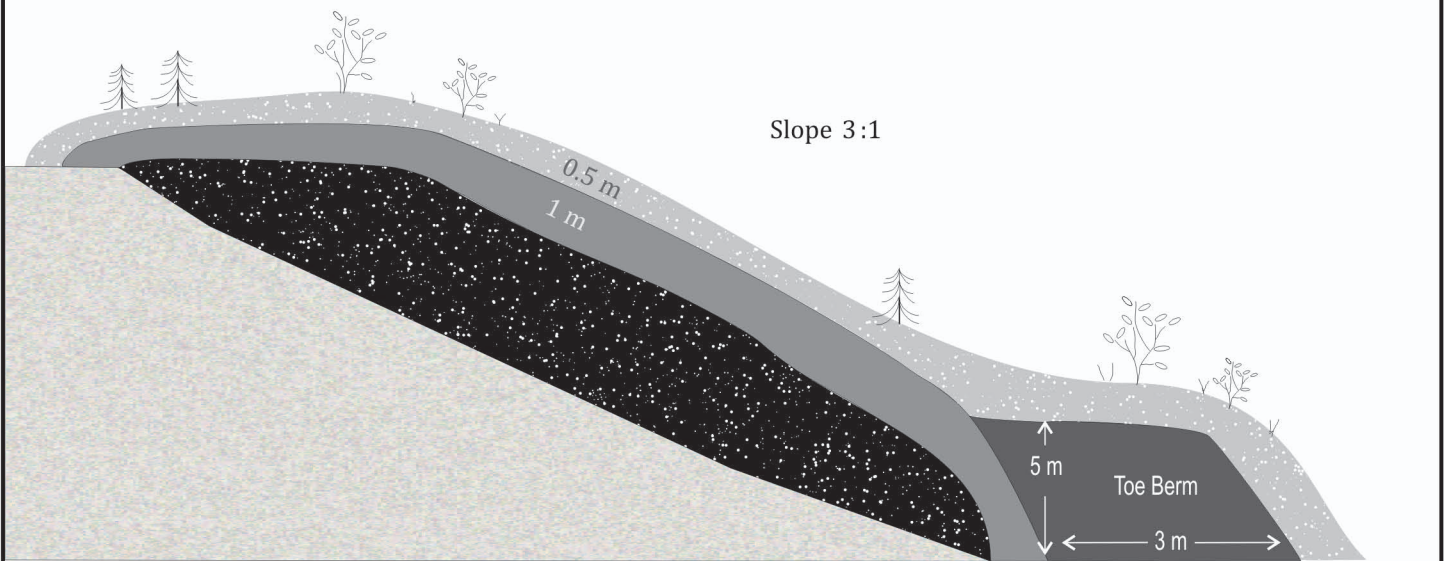
- Pulling any scattered waste back to the pile;
- Removal of stockpiled metal;
- Pull back the crest of the refuse pile to flatten the dump face to enable cover placement;
- Compact the waste on surface with an excavator;
- Capping the dump with 1 m of compacted soil followed by 0.25 m of organic soil;
- Putting a 3 m wide and 5 m high toe berm along the base of the dump to prevent slumping; and
- Revegetate the area similar to the surrounding area.





Figure 5 illustrates a conceptual design of the closure plan for the historic Elsa dump site.

Elsa Landfill Original Ground Profile  
Cross Section



Proposed Closure Plan  
Cross Section



-  Compacted cap material
-  Organic soil
-  Garbage / Debris
-  Existing mineral soil



**Figure 5 Historic Elsa Landfill  
Proposed Closure Option**

Draw by MD

Verified by DC

June 2009

## 7.0 CONCLUSIONS

In August, September/October 2008 and January/February 2009, ACG conducted landfill field assessments throughout the Keno Hill Silver District. The field program consisted of a building inventory and waste volume estimation, new landfill locations assessment and an assessment of the historic Elsa dump site.

The building inventory and waste volume estimation was completed in conjunction with the hazardous waste assessment. It identified a total of 211 buildings ranging in size throughout the Keno Hill Silver District. It is estimated that 43,985 m<sup>3</sup> of building waste is required to be buried throughout the district, including Elsa.

The landfill location assessment identified some potential candidate locations for construction of new landfills. The actual location(s) will be selected once discussions are completed with appropriate government agencies. Candidate locations based on the concentrations of the buildings requiring demolition/disposal include but not limited to: near the old Elsa school yard, near the current houses, near the bunkhouses and on the flat terraces (essentially cut/fill areas). It is estimated that 3 landfills will be required in the village of Elsa and one at Keno 700. The buildings will be demolished as per the demolition plan (Appendix G) and includes the handling of the hazardous waste identified in the Hazardous Waste Assessment report dated March 31, 2009 which was completed by ACG.

The Historic Elsa Dump was assessed for leachate and/or soil contamination along the toe of the dump. Based on field observations and VOC readings, soil samples were submitted for laboratory hydrocarbon and metal analyses. All hydrocarbon concentrations met CSR standards. All samples from the toe of the dump exceeded CSR standards for arsenic, but were below the background soil concentrations. Cadmium concentrations from test pit 3 at 3 m slightly exceeded the CSR criteria. Capping the dump with a soil cover will minimize leachate infiltration to the dump and contain metals within the site.

The Historic Elsa dump will be decommissioned as per the YG Environment Act Regulations including *Schedule 1 Operating Standards for Dumps, Closure and Abandonment*. Figure 5 illustrates a conceptual closure option design for the historic Elsa dump.

All the objectives and tasks outlined in the landfill work plan were assessed and completed. In conjunction with the hazardous waste assessment a building inventory and waste volume was estimated, potential landfill locations were selected and the historic Elsa dump site was assessed.

## 8.0 REFERENCES

Access Mining Consultants Ltd., June 3, 1996. “*United Keno Hill Mines Limited, Site Characterization Report, Report No. UKH96/01.*”

Environment Services, Public Works and Government Services Canada, March, 2000. “*Keno Valley/Dublin Gulch Environmental Baseline Assessment.*” Prepared for Indian and Northern Affairs Canada.

SRK Consulting (Canada) Inc., January 2007. “*Draft Baseline Environmental Report, United Keno Hill Mines Property*”. Prepared for Alexco Resource Corp.

## **9.0 REPORT LIMITATIONS**

This report was prepared for the exclusive use of Elsa Reclamation and Development Company, and is based on data and information collected during the Environmental Site Assessment sampling events completed in August, September/October 2008 and January/February 2009. Access Consulting Group has followed standard professional procedures in conducting the assessment and in preparing the contents of this report. The material in this report reflects Access Consulting Group's best judgment in light of the information available at the time of the preparation of this report. Any use that a third party makes of this report, or any reliance on decisions to be made based on it, is the responsibility of the third parties. Access Consulting Group accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on this report. Access Consulting Group believes that the contents of this report are substantively correct.

The information and data contained in this report, including without limitation, the results of any sampling and analyses conducted by Access Consulting Group, are based solely on the conditions observed at the time of the field assessment and have been developed or obtained through the exercise of Access Consulting Group's professional judgment and are set to the best of Access Consulting Group's knowledge, information, and belief. Although every effort has been made to confirm that all such information and data is factual, complete and accurate, Access Consulting Group offers no guarantees or warranties, either expressed or implied, with respect to such information or data.

Access Consulting Group shall not by the act of issuing this report be deemed to have represented that any sampling and analyses conducted by it have been exhaustive or will identify all contaminants or contamination of the site, and persons relying on the results thereof do so at their own risk.

Should you have any questions regarding this report, or require further information, please contact the undersigned at Access Consulting Group in Whitehorse, Yukon.

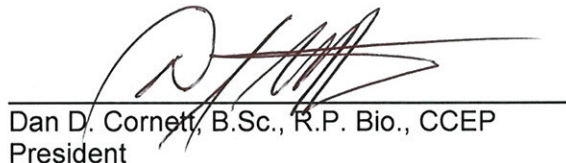
Respectfully submitted,

**ACCESS CONSULTING GROUP**

A registered trade name for Access Mining Consultants Ltd.



Kurt Neunherz, BIE (Applied)  
Environmental Scientist



Dan D. Cornett, B.Sc., R.P. Bio., CCEP  
President

## **Appendix A**

### **Laboratory Analytical Results**



NOTE: Proper completion of this form is required in order to proceed with analysis  
See reverse for your nearest Bodycote location and proper sampling protocol

<b>Billing Address:</b> Company: Address: <span style="float: right;">QA/QC Report <input type="checkbox"/></span> <i>Landfill Control - ZIP</i> Attention: <i>Bella Keno Brookfill</i> Phone: Fax: <i>Hector - Coluntract</i> Cell: <i>Shamrock</i> e-mail:	<b>Copy of Report To:</b> Company: Address: Attention: Phone: Fax: Cell: e-mail:	<b>Copy of Invoice:</b> <input type="checkbox"/> Mail Invoice to this address for approval <input type="checkbox"/> <b>Report Results:</b> Fax <input type="checkbox"/> Mail <input type="checkbox"/> Courier <input type="checkbox"/> e-mail <input type="checkbox"/> e-Service <input type="checkbox"/>
--	---	--

<b>Information to be included on Report and Invoice</b>  Project ID: Project Name: Project Location: Legal Location: PO#: Proj. Acct. Code: Agreement ID:	<b>Rush</b> Please contact the laboratory to confirm rush dates and times before submitting samples.  Upon filling out this section, client accepts that surcharges will be attached to this analysis  RUSH All analysis As indicated required on: <input type="checkbox"/> <b>or</b> <input type="checkbox"/>  Date Required: _____ Signature: _____ Bodycote Authorization: _____	<b>Sample Custody (Please Print)</b> Sampled by: Company _____ Signature _____ I authorize Bodycote to proceed with the work indicated on this form: Date: _____ Initial: _____ Received by: _____ Sample Temp. _____ °C Waybill # _____ Date _____ Company _____ Time _____
---	--	---

<b>Special Instructions / Comments</b>  <i>Keno Landfill Assessment</i>	<b>FOR LAB USE ONLY</b> Condition of containers / coolers upon arrival at lab  <input type="checkbox"/> Check here if Bodycote is required to report results directly to a regulatory body (Please include contact information) <input type="checkbox"/> Check here if you're testing POTABLE WATER for <b>HUMAN CONSUMPTION</b> .
---	--

Please indicate which regulations you are required to meet: \_\_\_\_\_

Sample Identification	Location	Depth			Date/Time Sampled	Matrix	Sampling Method	Number of Containers	Enter tests above (✓ relevant samples below)					
		IN	CM	M					1	2	3	4	5	6
1								2						
2								2						
3								2						
4								+						
5								1						
6								2						
7								2						
8								2						
9								2						
10								2						
11								2						
12								2						
13								2						
14								2						
15								2						

*TP1 @ 3m) ZIP*

NOTE: All hazardous samples must be labeled according to WHMIS guidelines.

Bill To: Access Mining Consultants Ltd.	Project:	Lot ID: <b>640129</b>
Report To: Access Mining Consultants Ltd.	ID: Keno Landfill Assessment	Approval Status: Approved
#3 Calcite Business Centre	Name:	Invoice Frequency: by Lot
151 Industrial Road	Location: UKHM	COD Status:
Whitehorse, YT, Canada	LSD:	Control Number: E 213383
Y1A 2V3	P.O.:	Date Received: Sep 2, 2008
Attn: Kurt Neunherz	Acct code:	Date Reported: Sep 8, 2008
Sampled By: P.Inglis		Report Number: 1146784
Company:		

Contact	Company	Address
Paul Inglis	Access Mining Consultants Ltd.	# 3 Calcite Business Centre, 151 Industrial Road Whitehorse, YT Y1A 2V3 Phone: (867) 668-6463 Fax: (867) 667-6680 Email: paul@accessconsulting.ca

Copies	Delivery	Format
1	Email - Single Report	PDF
1	Email - Single Report	Standard Crosstab

Contact	Company	Address
Kurt Neunherz	Access Mining Consultants Ltd.	#3 Calcite Business Centre, 151 Industrial Road Whitehorse, YT Y1A 2V3 Phone: (867) 668-6463 Fax: (867) 667-6680 Email: kurt@accessconsulting.ca

Copies	Delivery	Format
1	Email - Single Report	PDF
1	Email - Single Report	Standard Crosstab

\_\_\_\_\_ PAGES IN THIS TRANSMISSION

**Notes To Clients:**

**Reports associated with this Lot**

<u>Id/Format/Report Date</u>	<u>Id/Format/Report Date</u>	<u>Id/Format/Report Date</u>
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**Sample Custody**

Bill To: Access Mining Consultants Ltd.	Project:	Lot ID: <b>640129</b>
Report To: Access Mining Consultants Ltd.	ID: Keno Landfill Assessment	Control Number: E 213383
#3 Calcite Business Centre	Name:	Date Received: Sep 2, 2008
151 Industrial Road	Location: UKHM	Date Reported: Sep 8, 2008
Whitehorse, YT, Canada	LSD:	Report Number: 1146784
Y1A 2V3	P.O.:	
Attn: Kurt Neunherz	Acct code:	
Sampled By: P.Inglis		
Company:		

**Sample Disposal Date: October 08, 2008**

All samples will be stored until this date unless other instructions are received. Please indicate other requirements below and return this form to the address or fax number on the bottom of this page.

Extend Sample Storage Until \_\_\_\_\_ (MM/DD/YY)

The following charges apply to extended sample storage:

Storage for 1 to 5 samples per month	\$ 10.00
Storage for 6 to 20 samples per month	\$ 15.00
Storage for 21 to 50 samples per month	\$ 30.00
Storage for 51 to 200 samples per month	\$ 60.00
Storage for more than 200 samples per month	\$ 110.00

Return Sample, collect, to the address below via:

Greyhound

Loomis

Purolator

Other (specify) \_\_\_\_\_

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

Fax \_\_\_\_\_

Signature \_\_\_\_\_

## Analytical Report

Bill To: Access Mining Consultants Ltd.	Project: Keno Landfill Assessment	Lot ID: <b>640129</b>
Report To: Access Mining Consultants Ltd.	ID: #3 Calcite Business Centre	Control Number: E 213383
151 Industrial Road	Name: Whitehorse, YT, Canada	Date Received: Sep 2, 2008
Y1A 2V3	Location: UKHM	Date Reported: Sep 8, 2008
Attn: Kurt Neunherz	LSD: P.O.:	Report Number: 1146784
Sampled By: P.Inglis	Acct code:	
Company:		

	Reference Number	640129-1	640129-2	640129-3		
	Sample Date	Aug 26, 2008	Aug 26, 2008	Aug 26, 2008		
	Sample Location					
	Sample Description	Old Dump - TP1 - 1m	Old Dump - TP2 - 2m	Old Dump - TP3 - 3m		
	Matrix	Soil	Soil	Soil		
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
<b>Hot Water Soluble</b>						
Boron	Water Soluble	mg/kg	<0.2	1.1	1.5	0.1
<b>Metals Strong Acid Digestion</b>						
Mercury	Strong Acid Extractable	mg/kg	0.05	0.05	0.02	0.01
Antimony	Strong Acid Extractable	mg/kg	0.3	0.3	0.4	0.2
Arsenic	Strong Acid Extractable	mg/kg	36.7	31.0	35.0	0.2
Barium	Strong Acid Extractable	mg/kg	246	388	390	1
Beryllium	Strong Acid Extractable	mg/kg	0.3	0.2	0.2	0.1
Cadmium	Strong Acid Extractable	mg/kg	0.72	0.60	10.0	0.01
Chromium	Strong Acid Extractable	mg/kg	23.2	23.8	22.5	0.5
Cobalt	Strong Acid Extractable	mg/kg	11.7	15.8	17.3	0.1
Copper	Strong Acid Extractable	mg/kg	47	40	54	1
Lead	Strong Acid Extractable	mg/kg	17.6	16.2	26.8	0.1
Molybdenum	Strong Acid Extractable	mg/kg	1	2	2	1
Nickel	Strong Acid Extractable	mg/kg	31.6	33.5	44.7	0.5
Selenium	Strong Acid Extractable	mg/kg	0.6	0.6	0.5	0.3
Silver	Strong Acid Extractable	mg/kg	0.4	0.4	0.5	0.1
Thallium	Strong Acid Extractable	mg/kg	0.13	0.14	0.11	0.05
Tin	Strong Acid Extractable	mg/kg	2	2	2	1
Uranium	Strong Acid Extractable	mg/kg	0.6	0.7	0.7	0.5
Vanadium	Strong Acid Extractable	mg/kg	37.5	32.9	27.2	0.1
Zinc	Strong Acid Extractable	mg/kg	92	98	480	1
<b>Extractable Petroleum Hydrocarbons - Soil</b>						
EPHs10-19	Dry Weight	ug/g	<20	<20	<20	20
EPHs19-32	Dry Weight	ug/g	65	53	<20	20
<b>Moisture</b>						
Moisture	Soil % Moisture	%	14.80	14.30	7.32	

**Analytical Report**

Bill To: Access Mining Consultants Ltd.	Project:	Lot ID: <b>640129</b>
Report To: Access Mining Consultants Ltd.	ID: Keno Landfill Assessment	Control Number: E 213383
#3 Calcite Business Centre	Name:	Date Received: Sep 2, 2008
151 Industrial Road	Location: UKHM	Date Reported: Sep 8, 2008
Whitehorse, YT, Canada	LSD:	Report Number: 1146784
Y1A 2V3	P.O.:	
Attn: Kurt Neunherz	Acct code:	
Sampled By: P.Inglis		
Company:		

<b>Reference Number</b>	640129-4	640129-5
<b>Sample Date</b>	Aug 26, 2008	Aug 26, 2008
<b>Sample Location</b>		
<b>Sample Description</b>	Old Dump - TP4 - 4m	Old Dump - TP5 - 1m
<b>Matrix</b>	Soil	Soil

Analyte	Units	Results	Results	Results	Nominal Detection Limit
<b>Hot Water Soluble</b>					
Boron	Water Soluble	mg/kg	0.8	0.5	0.1
<b>Metals Strong Acid Digestion</b>					
Mercury	Strong Acid Extractable	mg/kg	0.02	0.04	0.01
Antimony	Strong Acid Extractable	mg/kg	0.3	0.6	0.2
Arsenic	Strong Acid Extractable	mg/kg	41.3	35.0	0.2
Barium	Strong Acid Extractable	mg/kg	449	642	1
Beryllium	Strong Acid Extractable	mg/kg	0.2	0.3	0.1
Cadmium	Strong Acid Extractable	mg/kg	5.33	1.34	0.01
Chromium	Strong Acid Extractable	mg/kg	20.5	24.0	0.5
Cobalt	Strong Acid Extractable	mg/kg	21.1	12.6	0.1
Copper	Strong Acid Extractable	mg/kg	76	46	1
Lead	Strong Acid Extractable	mg/kg	28.7	54.8	0.1
Molybdenum	Strong Acid Extractable	mg/kg	5	3	1
Nickel	Strong Acid Extractable	mg/kg	58.2	32.4	0.5
Selenium	Strong Acid Extractable	mg/kg	0.6	0.5	0.3
Silver	Strong Acid Extractable	mg/kg	0.3	1.4	0.1
Thallium	Strong Acid Extractable	mg/kg	0.11	0.18	0.05
Tin	Strong Acid Extractable	mg/kg	2	2	1
Uranium	Strong Acid Extractable	mg/kg	0.7	1	0.5
Vanadium	Strong Acid Extractable	mg/kg	19.2	32.4	0.1
Zinc	Strong Acid Extractable	mg/kg	275	157	1
<b>Extractable Petroleum Hydrocarbons - Soil</b>					
EPHs10-19	Dry Weight	ug/g	<20	27	20
EPHs19-32	Dry Weight	ug/g	<20	129	20
<b>Moisture</b>					
Moisture	Soil % Moisture	%	9.02	15.80	

Approved by:   
 Andrew Garrard, BSc  
 Operations Manager

**Quality Control**

Bill To: Access Mining Consultants Ltd. Project:  
 Report To: Access Mining Consultants Ltd. ID: Keno Landfill Assessment  
 #3 Calcite Business Centre Name:  
 151 Industrial Road Location: UKHM  
 Whitehorse, YT, Canada LSD:  
 Y1A 2V3 P.O.:  
 Attn: Kurt Neunherz Acct code:  
 Sampled By: P.Inglis  
 Company:

Lot ID: **640129**  
 Control Number: E 213383  
 Date Received: Sep 2, 2008  
 Date Reported: Sep 8, 2008  
 Report Number: 1146784

**Hot Water Soluble**

Blanks	Units	Measured	Mean	Lower Limit	Upper Limit	Passed QC
Boron	mg/kg	<0.2	0.0	-0.1	0.2	yes
Material Used:	Method Blank					
Date Acquired:	September 08, 2008					
Acquired By:	Edward Mojica					

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Boron	mg/kg	1.1	1.1	10.0	0.1	yes
Material Used:	Duplicate					
Date Acquired:	September 08, 2008					
Acquired By:	Edward Mojica					

Control Sample	Units	Measured	Mean	Lower Limit	Upper Limit	Passed QC
Boron	mg/kg	1.5	1.3	1.0	1.7	yes
Material Used:	2007 Farnsoil Standard					
Date Acquired:	September 08, 2008					
Acquired By:	Edward Mojica					
Boron	mg/kg	0.1	0.1	0.0	0.2	yes
Material Used:	Calibration Check					
Date Acquired:	September 08, 2008					
Acquired By:	Edward Mojica					

**Metals Strong Acid Digestion**

Blanks	Units	Measured	Mean	Lower Limit	Upper Limit	Passed QC
Mercury	mg/kg	<0.01	0.01	-0.07	0.09	yes
Antimony	mg/kg	<0.2	0.0	-0.2	0.2	yes
Arsenic	mg/kg	<0.2	0.0	-0.1	0.2	yes
Barium	mg/kg	<1	0	-0	1	yes
Beryllium	mg/kg	<0.1	0.0	-0.1	0.1	yes
Cadmium	mg/kg	<0.01	0.00	-0.01	0.01	yes
Chromium	mg/kg	<0.5	0.0	-0.4	0.5	yes
Cobalt	mg/kg	<0.1	0.0	-0.1	0.1	yes
Copper	mg/kg	<1	0	-1	1	yes
Lead	mg/kg	<0.1	0.0	-0.1	0.1	yes
Molybdenum	mg/kg	<1	0	-1	1	yes
Nickel	mg/kg	<0.5	0.0	-0.5	0.5	yes
Selenium	mg/kg	<0.3	0.0	-0.2	0.2	yes
Silver	mg/kg	<0.1	0.0	-0.1	0.1	yes
Thallium	mg/kg	<0.05	0.00	-0.04	0.05	yes
Tin	mg/kg	4	4	1	6	yes
Vanadium	mg/kg	<0.1	0.0	-0.1	0.1	yes
Zinc	mg/kg	<1	0	-1	1	yes

## Quality Control

Bill To: Access Mining Consultants Ltd. Project:  
 Report To: Access Mining Consultants Ltd. ID: Keno Landfill Assessment  
 #3 Calcite Business Centre Name:  
 151 Industrial Road Location: UKHM  
 Whitehorse, YT, Canada LSD:  
 Y1A 2V3 P.O.:  
 Attn: Kurt Neunherz Acct code:  
 Sampled By: P.Inglis  
 Company:

Lot ID: **640129**  
 Control Number: E 213383  
 Date Received: Sep 2, 2008  
 Date Reported: Sep 8, 2008  
 Report Number: 1146784

### Metals Strong Acid Digestion - Continued

Blanks	Units	Measured	Mean	Lower Limit	Upper Limit	Passed QC
Material Used:	Method Blank					
Date Acquired:	September 08, 2008					
Acquired By:	Alexsandra Robert					

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
Mercury	mg/kg	0.08	0.09	9.99	0.03	yes
Antimony	mg/kg	0.3	0.3	20.0	0.4	yes
Arsenic	mg/kg	36.7	33.0	20.0	0.4	yes
Barium	mg/kg	246	212	20	2	yes
Beryllium	mg/kg	0.3	0.2	20.0	0.2	yes
Cadmium	mg/kg	0.72	0.60	20.01	0.02	yes
Chromium	mg/kg	23.2	21.7	20.0	1.1	yes
Cobalt	mg/kg	11.7	10.6	20.0	0.2	yes
Copper	mg/kg	47	42	20	2	yes
Lead	mg/kg	17.6	15.2	20.0	0.2	yes
Molybdenum	mg/kg	1	1	20	2	yes
Nickel	mg/kg	31.6	29.3	20.0	1.1	yes
Selenium	mg/kg	0.6	0.5	20.0	0.7	yes
Silver	mg/kg	0.4	0.3	20.0	0.2	yes
Thallium	mg/kg	0.13	0.12	20.01	0.11	yes
Tin	mg/kg	2	2	20	2	yes
Uranium	mg/kg	0.6	0.6	20.0	1.1	yes
Vanadium	mg/kg	37.5	35.0	20.0	0.2	yes
Zinc	mg/kg	92	84	20	2	yes
Material Used:	Duplicate					
Date Acquired:	September 08, 2008					
Acquired By:	Alexsandra Robert					

Control Sample	Units	Measured	Mean	Lower Limit	Upper Limit	Passed QC
Mercury	mg/kg	0.27	0.29	0.24	0.34	yes
Antimony	mg/kg	0.6	0.6	0.2	1.1	yes
Arsenic	mg/kg	80.8	91.1	61.4	120.8	yes
Barium	mg/kg	266	262	188	336	yes
Beryllium	mg/kg	0.9	0.9	0.6	1.2	yes
Cadmium	mg/kg	2.03	2.09	1.28	2.90	yes
Chromium	mg/kg	46.6	45.4	29.8	61.0	yes
Cobalt	mg/kg	13.9	14.2	9.8	18.6	yes
Copper	mg/kg	192	205	147	262	yes
Lead	mg/kg	119	123.3	84.9	161.7	yes
Molybdenum	mg/kg	3	3	2	4	yes
Nickel	mg/kg	61.7	65.1	42.9	87.3	yes
Selenium	mg/kg	0.6	0.7	0.3	1.1	yes
Silver	mg/kg	0.9	1.0	0.6	1.5	yes

## Quality Control

Bill To: Access Mining Consultants Ltd. Project:  
 Report To: Access Mining Consultants Ltd. ID: Keno Landfill Assessment  
 #3 Calcite Business Centre Name:  
 151 Industrial Road Location: UKHM  
 Whitehorse, YT, Canada LSD:  
 Y1A 2V3 P.O.:  
 Attn: Kurt Neunherz Acct code:  
 Sampled By: P.Inglis  
 Company:

Lot ID: **640129**  
 Control Number: E 213383  
 Date Received: Sep 2, 2008  
 Date Reported: Sep 8, 2008  
 Report Number: 1146784

### Metals Strong Acid Digestion - Continued

Control Sample	Units	Measured	Mean	Lower Limit	Upper Limit	Passed QC
Thallium	mg/kg	0.38	0.38	0.26	0.50	yes
Tin	mg/kg	3	4	1	7	yes
Vanadium	mg/kg	48.4	48.0	32.6	63.4	yes
Zinc	mg/kg	450	523	331	715	yes

Material Used: Metals Soil SS-2  
 Date Acquired: September 08, 2008  
 Acquired By: Alexandra Robert

### Extractable Petroleum Hydrocarbons - Soil

Blanks	Units	Measured	Mean	Lower Limit	Upper Limit	Passed QC
EPHs10-19	ug/g	<20	0	-20	20	yes
EPHs19-32	ug/g	<20	0	-20	20	yes

Material Used: Method Blank - EPH  
 Date Acquired: September 04, 2008  
 Acquired By: Craig Stehr

Calibration Check	Units	Measured	Target	% Recovery	Criteria (%)	Passed QC
EPHs10-19	ug/mL	51.9	53	98	85 - 115	yes
EPHs19-32	ug/mL	51.9	53	98	85 - 115	yes

Material Used: Calibration Check - EPH  
 Date Acquired: September 04, 2008  
 Acquired By: Craig Stehr

Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
EPHs10-19	ug/g	3440	2500	1750	3250	yes
EPHs19-32	ug/g	4350	3140	2390	3890	yes

Material Used: BCRM2005-EPH  
 Date Acquired: September 04, 2008  
 Acquired By: Craig Stehr

Replicates	Units	Replicate1	Replicate2	% RSD Criteria	Absolute Criteria	Passed QC
EPHs10-19	ug/g	140	135	60	100	yes
EPHs19-32	ug/g	1140	1260	60	100	yes

Material Used: Matrix Spike Duplicate 2 - EPH  
 Date Acquired: September 04, 2008  
 Acquired By: Craig Stehr

Matrix Spike	Units	Measured	Actual	% Recovery	Criteria (%)	Passed QC
EPHs10-19	ug/g	29	25.3	63	73 - 113	yes
EPHs19-32	ug/g	30	26.42	96	75 - 115	yes

Material Used: Matrix Spike - EPH  
 Date Acquired: September 04, 2008  
 Acquired By: Craig Stehr

**Quality Control**

Bill To: Access Mining Consultants Ltd.	Project:	Lot ID: <b>640129</b>
Report To: Access Mining Consultants Ltd.	ID: Keno Landfill Assessment	Control Number: E 213383
#3 Calcite Business Centre	Name:	Date Received: Sep 2, 2008
151 Industrial Road	Location: UKHM	Date Reported: Sep 8, 2008
Whitehorse, YT, Canada	LSD:	Report Number: 1146784
Y1A 2V3	P.O.:	
Attn: Kurt Neunherz	Acct code:	
Sampled By: P.Inglis		
Company:		

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**Extractable Petroleum Hydrocarbons -  
Soil - Continued**

Matrix Spike	Units	Measured	Actual	% Recovery	Criteria (%)	Passed QC
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## Methodology and Notes

Bill To: Access Mining Consultants Ltd.	Project:	Lot ID: <b>640129</b>
Report To: Access Mining Consultants Ltd.	ID: Keno Landfill Assessment	Control Number: E 213383
#3 Calcite Business Centre	Name:	Date Received: Sep 2, 2008
151 Industrial Road	Location: UKHM	Date Reported: Sep 8, 2008
Whitehorse, YT, Canada	LSD:	Report Number: 1146784
Y1A 2V3	P.O.:	
Attn: Kurt Neunherz	Acct code:	
Sampled By: P.Inglis		
Company:		

### Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Boron in general soil	McKeague	* Hot Water Soluble Boron - Azomethine -H Method, 4.61	06-Sep-08	BTG Edmonton
EPH - Soil	BCELM	* Extractable Petroleum Hydrocarbons (EPH) in Solids by GC/FID, EPH Solids	04-Sep-08	BTG Surrey
Mercury (Hot Block) in Soil	US EPA	* Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	08-Sep-08	BTG Edmonton
Metals ICP-MS (Hot Block) in soil	SW-846	* Acid Digestion of Sediments, Sludges, and Soils, EPA 3050B	08-Sep-08	BTG Edmonton

*\* Bodycote method(s) based on reference method*

### References

BCELM	B.C. Environmental Laboratory Manual
McKeague	Manual on Soil Sampling and Methods of Analysis
SW-846	Test Methods for Evaluating Solid Waste
US EPA	US Environmental Protection Agency Test Methods

### Comments:

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

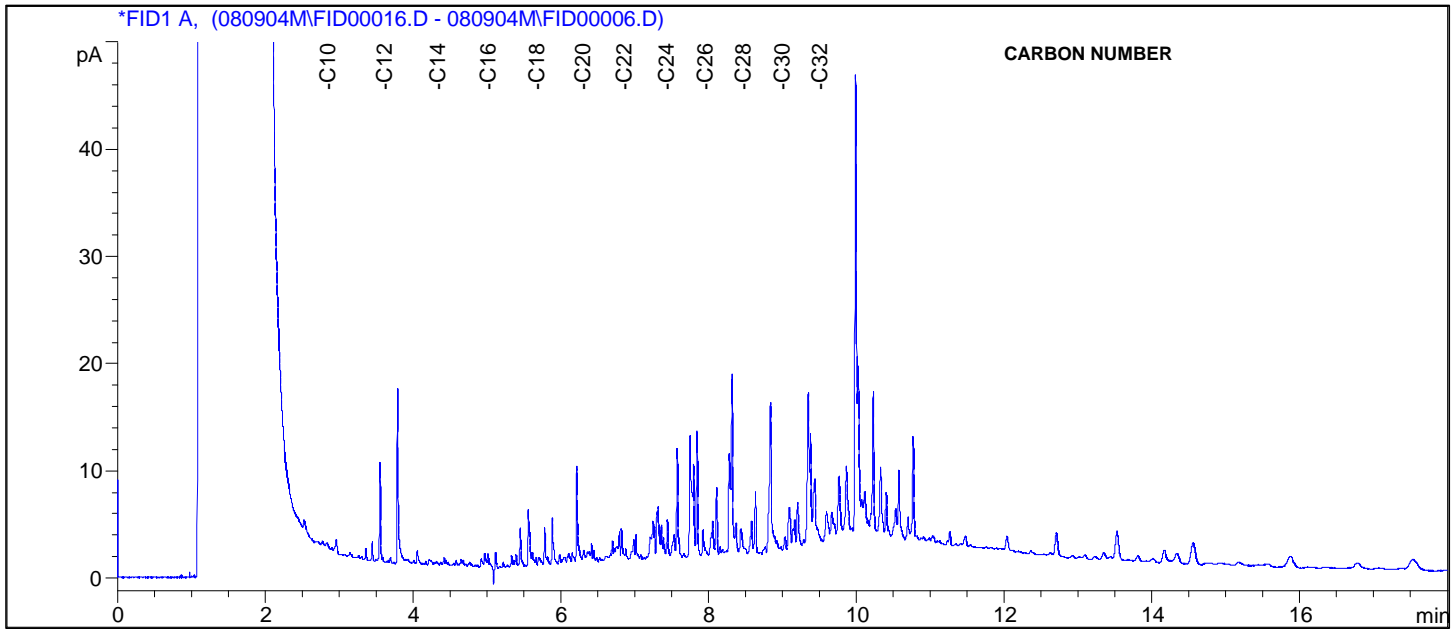
### Hydrocarbon Chromatogram

Bill To: Access Mining Consultants Ltd.  
 Report To: Access Mining Consultants Ltd.  
 #3 Calcite Business Centre  
 151 Industrial Road  
 Whitehorse, YT, Canada  
 Y1A 2V3  
 Attn: Kurt Neunherz  
 Sampled by: P.Inglis  
 Company:

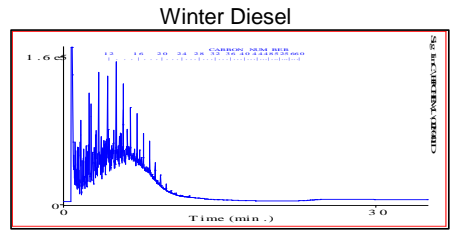
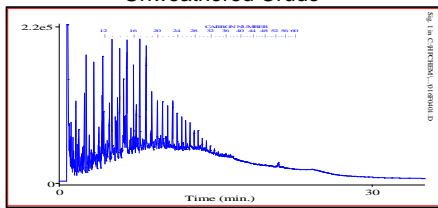
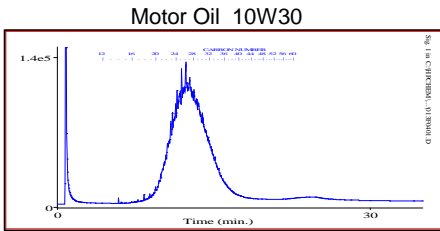
Project ID: Keno Landfill Assessment  
 Name:  
 Location: UKHM  
 LSD:  
 P.O.:

Lot ID: **640129**  
 Control Number: E 213383  
 Date Received: Sep 2, 2008  
 Date Reported:  
 Report Number:

NWL Number: 640129-1      Sample Description: Old Dump - TP1 - 1m  
 Sample Date: Aug 26, 2008



**TYPICAL PRODUCT CHROMATOGRAMS**



**Product Carbon Number Ranges**

Gasoline	C4-C12	Kerosene	C7-C16	Lubricating Oils	C20-C40
Varsol	C8-C12	Diesel	C8-C22	Crude Oils	C3-C60+

### Hydrocarbon Chromatogram

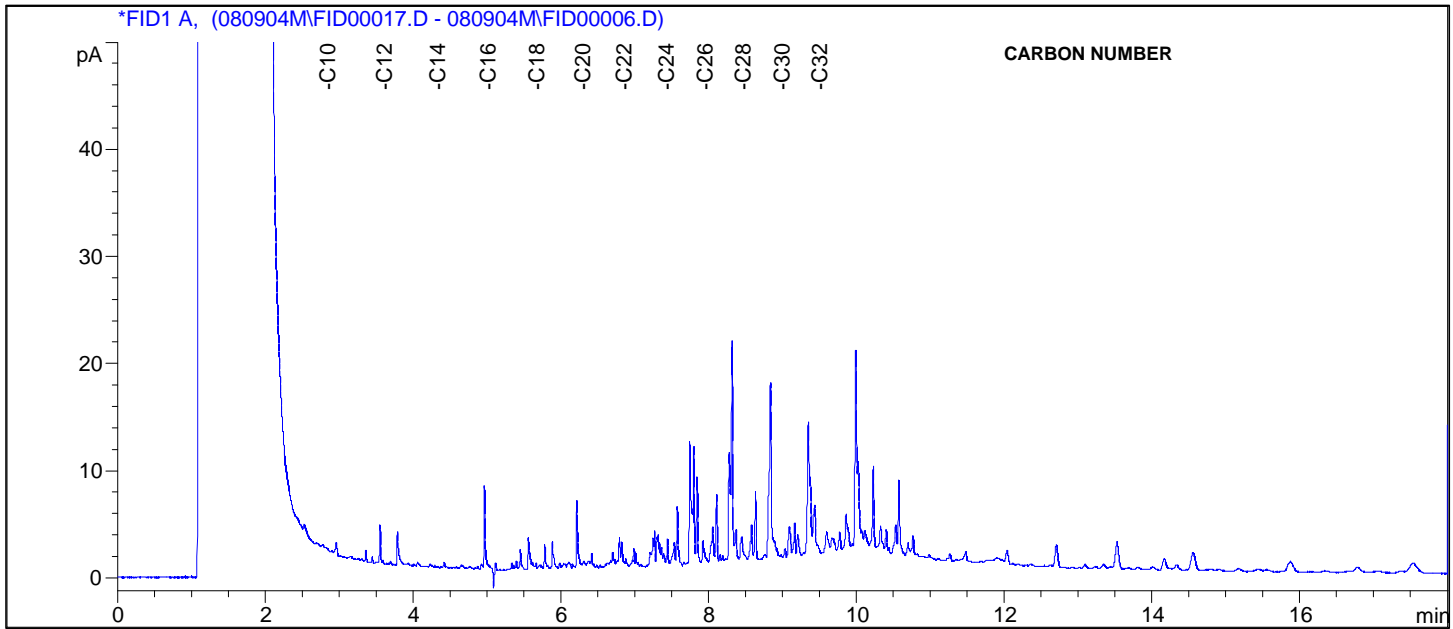
Bill To: Access Mining Consultants Ltd.  
 Report To: Access Mining Consultants Ltd.  
 #3 Calcite Business Centre  
 151 Industrial Road  
 Whitehorse, YT, Canada  
 Y1A 2V3  
 Attn: Kurt Neunherz  
 Sampled by: P.Inglis  
 Company:

Project ID: Keno Landfill Assessment  
 Name:  
 Location: UKHM  
 LSD:  
 P.O.:

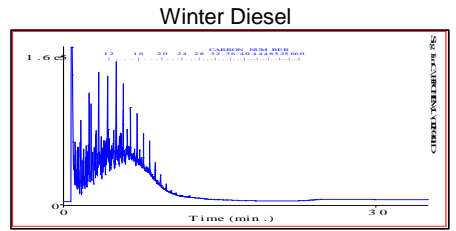
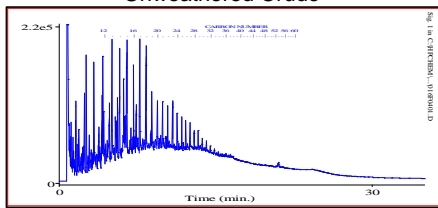
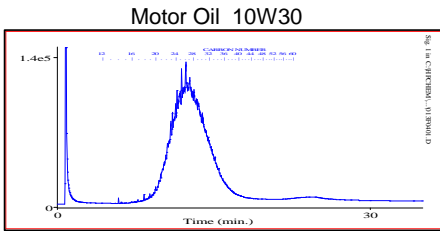
Lot ID: **640129**  
 Control Number: E 213383  
 Date Received: Sep 2, 2008  
 Date Reported:  
 Report Number:

NWL Number: 640129-2  
 Sample Date: Aug 26, 2008

Sample Description: Old Dump - TP2 - 2m



**TYPICAL PRODUCT CHROMATOGRAMS**



**Product Carbon Number Ranges**

Gasoline	C4-C12	Kerosene	C7-C16	Lubricating Oils	C20-C40
Varsol	C8-C12	Diesel	C8-C22	Crude Oils	C3-C60+

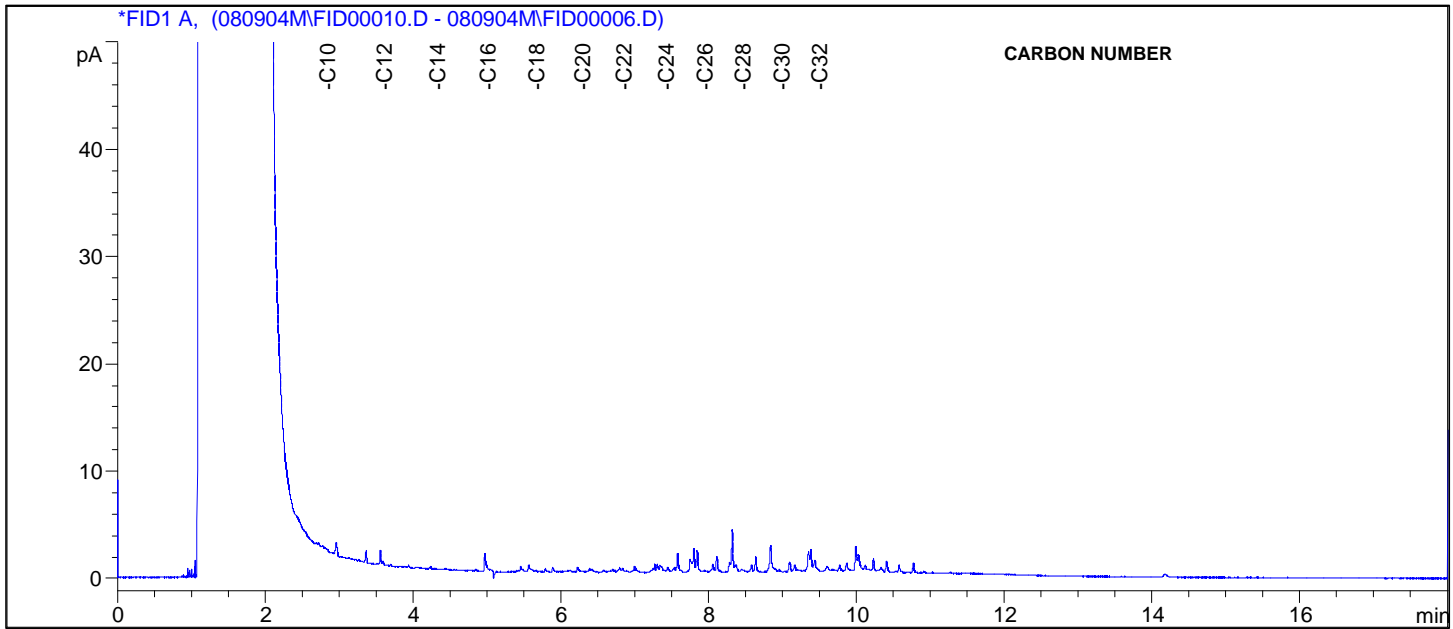
**Hydrocarbon Chromatogram**

Bill To: Access Mining Consultants Ltd.  
 Report To: Access Mining Consultants Ltd.  
 #3 Calcite Business Centre  
 151 Industrial Road  
 Whitehorse, YT, Canada  
 Y1A 2V3  
 Attn: Kurt Neunherz  
 Sampled by: P.Inglis  
 Company:

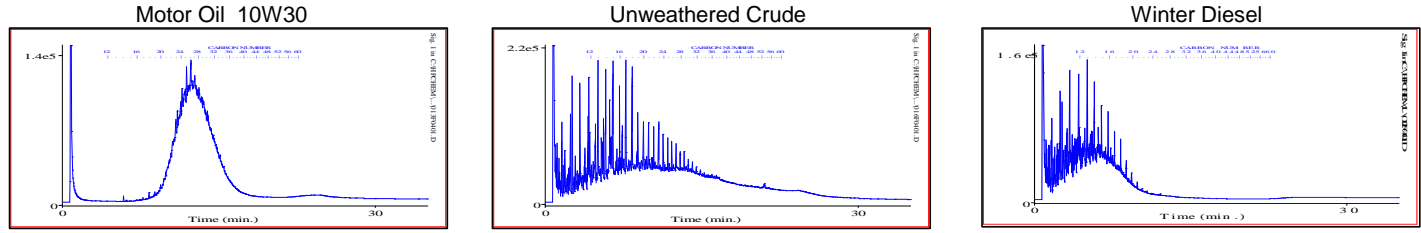
Project ID: Keno Landfill Assessment  
 Name:  
 Location: UKHM  
 LSD:  
 P.O.:

Lot ID: **640129**  
 Control Number: E 213383  
 Date Received: Sep 2, 2008  
 Date Reported:  
 Report Number:

NWL Number: 640129-3      Sample Description: Old Dump - TP3 - 3m  
 Sample Date: Aug 26, 2008



**TYPICAL PRODUCT CHROMATOGRAMS**



**Product Carbon Number Ranges**

Gasoline	C4-C12	Kerosene	C7-C16	Lubricating Oils	C20-C40
Varsol	C8-C12	Diesel	C8-C22	Crude Oils	C3-C60+

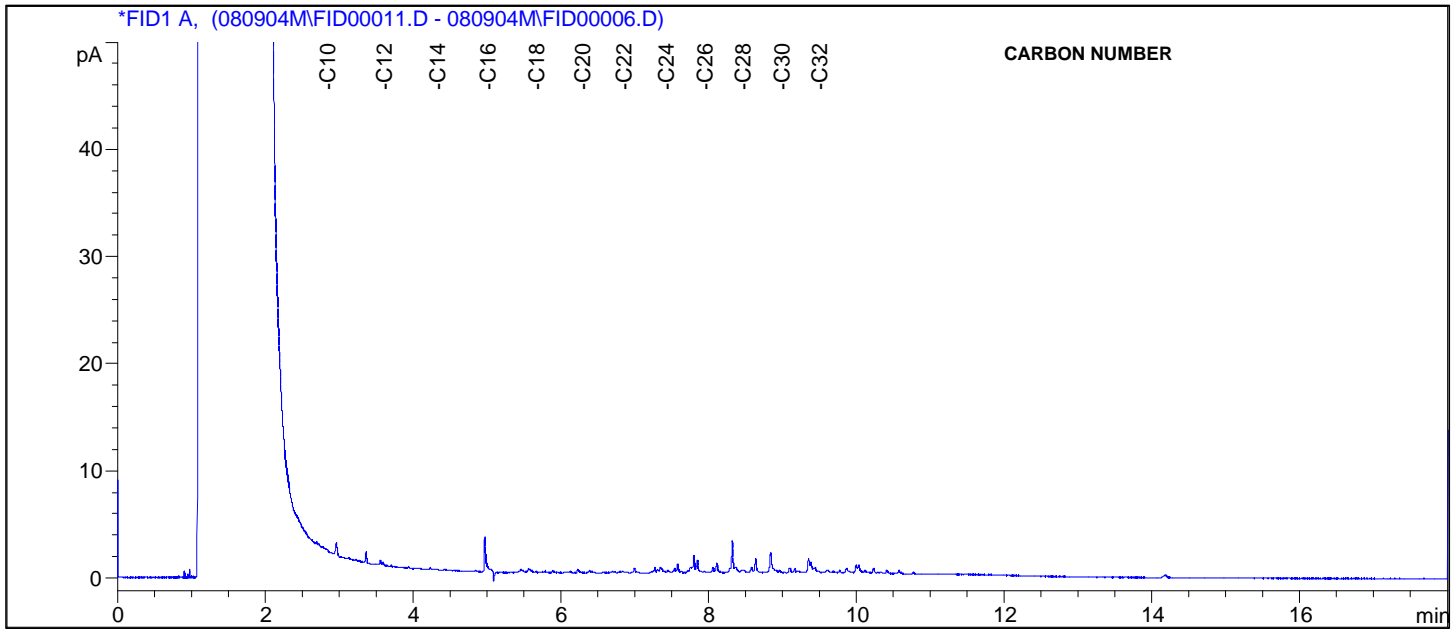
### Hydrocarbon Chromatogram

Bill To: Access Mining Consultants Ltd.  
 Report To: Access Mining Consultants Ltd.  
 #3 Calcite Business Centre  
 151 Industrial Road  
 Whitehorse, YT, Canada  
 Y1A 2V3  
 Attn: Kurt Neunherz  
 Sampled by: P.Inglis  
 Company:

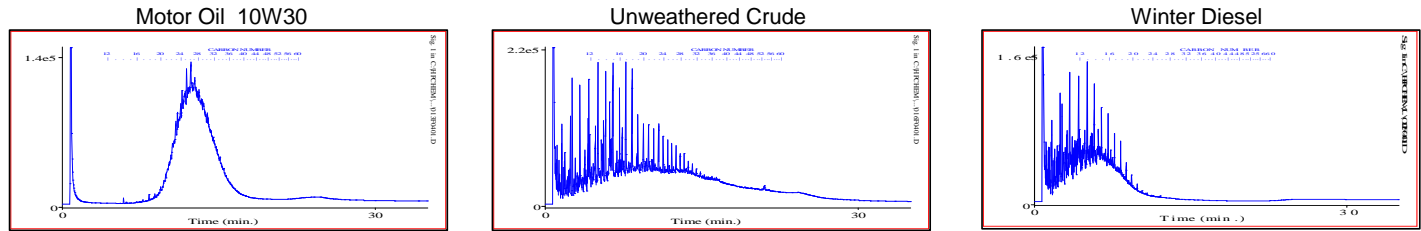
Project ID: Keno Landfill Assessment  
 Name:  
 Location: UKHM  
 LSD:  
 P.O.:

Lot ID: **640129**  
 Control Number: E 213383  
 Date Received: Sep 2, 2008  
 Date Reported:  
 Report Number:

NWL Number: 640129-4      Sample Description: Old Dump - TP4 - 4m  
 Sample Date: Aug 26, 2008



**TYPICAL PRODUCT CHROMATOGRAMS**



**Product Carbon Number Ranges**

Gasoline	C4-C12	Kerosene	C7-C16	Lubricating Oils	C20-C40
Varsol	C8-C12	Diesel	C8-C22	Crude Oils	C3-C60+

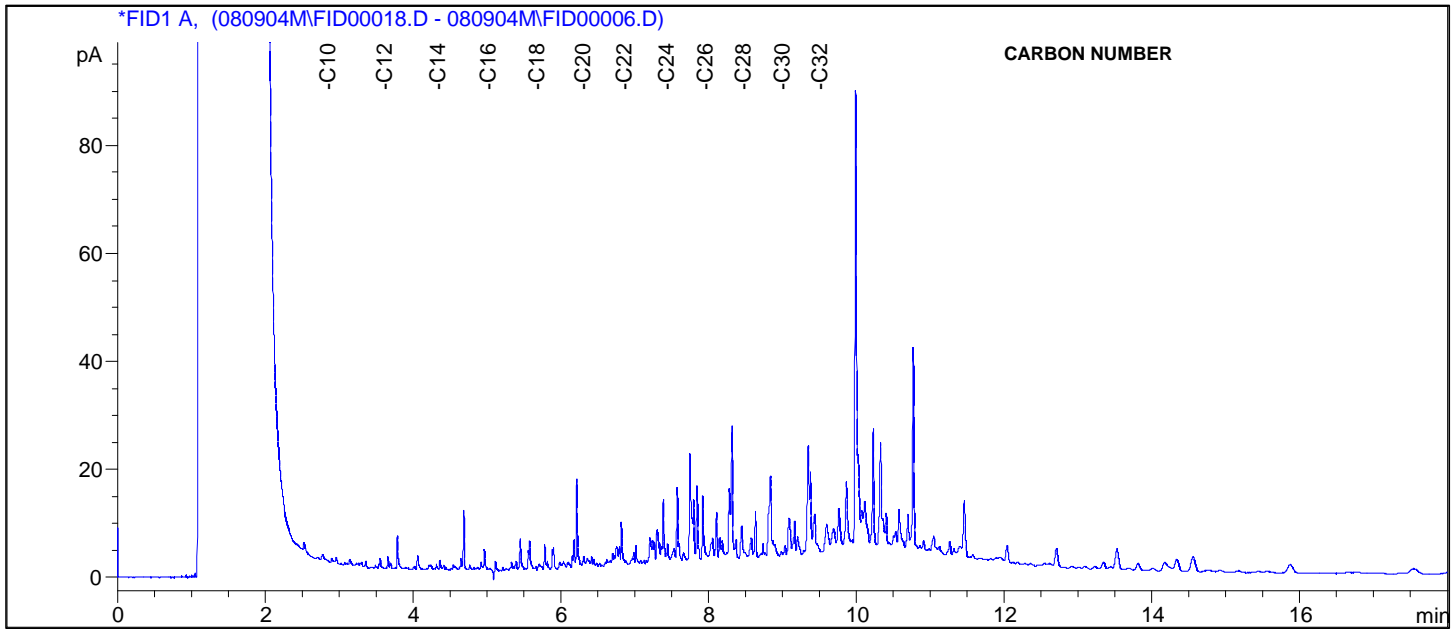
### Hydrocarbon Chromatogram

Bill To: Access Mining Consultants Ltd.  
 Report To: Access Mining Consultants Ltd.  
 #3 Calcite Business Centre  
 151 Industrial Road  
 Whitehorse, YT, Canada  
 Y1A 2V3  
 Attn: Kurt Neunherz  
 Sampled by: P.Inglis  
 Company:

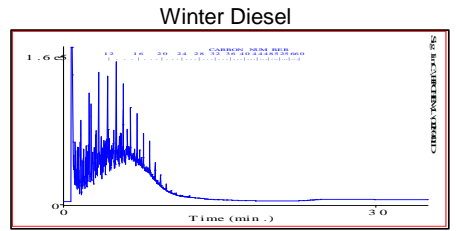
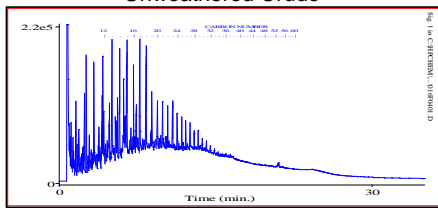
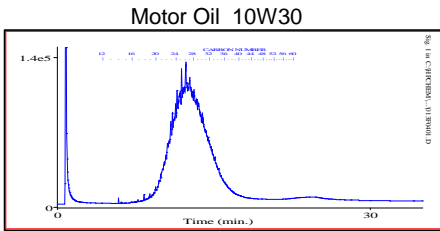
Project ID: Keno Landfill Assessment  
 Name:  
 Location: UKHM  
 LSD:  
 P.O.:

Lot ID: **640129**  
 Control Number: E 213383  
 Date Received: Sep 2, 2008  
 Date Reported:  
 Report Number:

NWL Number: 640129-5      Sample Description: Old Dump - TP5 - 1m  
 Sample Date: Aug 26, 2008



**TYPICAL PRODUCT CHROMATOGRAMS**



**Product Carbon Number Ranges**

Gasoline	C4-C12	Kerosene	C7-C16	Lubricating Oils	C20-C40
Varsol	C8-C12	Diesel	C8-C22	Crude Oils	C3-C60+



NOTE: Proper completion of this form is required in order to proceed with analysis  
See reverse for your nearest Bodycote location and proper sampling protocol

<b>Billing Address:</b> Company: Address: <span style="float: right;">QA/QC Report <input type="checkbox"/></span> <i>Landfill Control - ZIP</i> Attention: <i>Bella Keno Brookfill</i> Phone: Fax: <i>Hector - Coluntract</i> Cell: <i>Shamrock</i> e-mail:	<b>Copy of Report To:</b> Company: Address: Attention: Phone: Fax: Cell: e-mail:	<b>Copy of Invoice:</b> <input type="checkbox"/> Mail Invoice to this address for approval <input type="checkbox"/>  <b>Report Results:</b> Fax <input type="checkbox"/> Mail <input type="checkbox"/> Courier <input type="checkbox"/> e-mail <input type="checkbox"/> e-Service <input type="checkbox"/>
--	---	--

<b>Information to be included on Report and Invoice</b>  Project ID: Project Name: Project Location: Legal Location: PO#: Proj. Acct. Code: Agreement ID:	<b>Rush</b> Please contact the laboratory to confirm rush dates and times before submitting samples.  Upon filling out this section, client accepts that surcharges will be attached to this analysis  RUSH All analysis As indicated required on: <input type="checkbox"/> <b>or</b> <input type="checkbox"/>  Date Required: _____ Signature: _____ Bodycote Authorization: _____	<b>Sample Custody (Please Print)</b> Sampled by: Company _____ Signature _____ I authorize Bodycote to proceed with the work indicated on this form: Date: _____ Initial: _____ Received by: _____ Sample Temp. _____ °C Waybill # _____ Date _____ Company _____ Time _____
---	--	---

<b>Special Instructions / Comments</b>  <i>Keno Landfill Assessment</i>	<b>FOR LAB USE ONLY</b> Condition of containers / coolers upon arrival at lab  <input type="checkbox"/> Check here if Bodycote is required to report results directly to a regulatory body (Please include contact information) <input type="checkbox"/> Check here if you're testing POTABLE WATER for <b>HUMAN CONSUMPTION</b> .
---	--

Please indicate which regulations you are required to meet: \_\_\_\_\_

Sample ID	Sample Identification	Location	Depth			Date/Time Sampled	Matrix	Sampling Method	Number of Containers	Enter tests above (✓ relevant samples below)								
			IN	CM	M					1	2	3	4	5	6			
1	TP 1 @ 2m, 3m, 4m		-						2									
2	TP 2 @ 1m, 3m, 4m		-						2									
3	TP 3 @ 1m, 2m		-						2									
4	<del>TP 4</del>		-						+									
5	TP 5 @ 2m, 4m;		-						1									
6	<del>TP 6</del>	<i>Ripped off</i>							2									
7	<del>TP 7</del>		-						2									
8	<del>TP 8</del>		-						2									
9	<del>TP 9</del>		-						2									
10	<del>TP 10</del>		-						2									
11	<del>TP 11</del>		-						2									
12																		
13																		
14																		
15																		

Form No. 0006 (Rev. 04/07)

Bill To: Access Mining Consultants Ltd.	Project:	Lot ID: <b>640129</b>
Report To: Access Mining Consultants Ltd.	ID: Keno Landfill Assessment	Approval Status: Approved
#3 Calcite Business Centre	Name:	Invoice Frequency: by Lot
151 Industrial Road	Location: UKHM	COD Status:
Whitehorse, YT, Canada	LSD:	Control Number: E 213383
Y1A 2V3	P.O.:	Date Received: Sep 2, 2008
Attn: Kurt Neunherz	Acct code: (Additional)	Date Reported: Sep 26, 2008
Sampled By: P.Inglis		Report Number: 1152420
Company:		

Contact	Company	Address
Kurt Neunherz	Access Mining Consultants Ltd.	#3 Calcite Business Centre, 151 Industrial Road Whitehorse, YT Y1A 2V3
		Phone: (867) 668-6463 Fax: (867) 667-6680
		Email: kurt@accessconsulting.ca

Copies	Delivery	Format
1	Email - Single Report	PDF
1	Email - Single Report	Standard Crosstab

\_\_\_\_\_ PAGES IN THIS TRANSMISSION

**Notes To Clients:**

- This report was issued to include addition of PH analysis on samples #3, 4 and 5 requested by Kurt Neunherz of Access Mining Consultants Ltd. on September 23, 2008. Report 1152420 is an addendum to report 1146784.

**Reports associated with this Lot**

<u>Id/Format/Report Date</u>	<u>Id/Format/Report Date</u>	<u>Id/Format/Report Date</u>
1146784 Env2QC 3 Smp & DL 08-Sep-08		

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**Sample Custody**

Bill To: Access Mining Consultants Ltd.	Project:	Lot ID: <b>640129</b>
Report To: Access Mining Consultants Ltd.	ID: Keno Landfill Assessment	Control Number: E 213383
#3 Calcite Business Centre	Name:	Date Received: Sep 2, 2008
151 Industrial Road	Location: UKHM	Date Reported: Sep 26, 2008
Whitehorse, YT, Canada	LSD:	Report Number: 1152420
Y1A 2V3	P.O.:	
Attn: Kurt Neunherz	Acct code: (Additional)	
Sampled By: P.Inglis		
Company:		

**Sample Disposal Date: October 08, 2008**

All samples will be stored until this date unless other instructions are received. Please indicate other requirements below and return this form to the address or fax number on the bottom of this page.

Extend Sample Storage Until \_\_\_\_\_ (MM/DD/YY)

The following charges apply to extended sample storage:

Storage for 1 to 5 samples per month	\$ 10.00
Storage for 6 to 20 samples per month	\$ 15.00
Storage for 21 to 50 samples per month	\$ 30.00
Storage for 51 to 200 samples per month	\$ 60.00
Storage for more than 200 samples per month	\$ 110.00

Return Sample, collect, to the address below via:

Greyhound

Loomis

Purolator

Other (specify) \_\_\_\_\_

Name \_\_\_\_\_

Company \_\_\_\_\_

Address \_\_\_\_\_

Phone \_\_\_\_\_

Fax \_\_\_\_\_

Signature \_\_\_\_\_

**Analytical Report**

Bill To: Access Mining Consultants Ltd.	Project:	Lot ID: <b>640129</b>
Report To: Access Mining Consultants Ltd.	ID: Keno Landfill Assessment	Control Number: E 213383
#3 Calcite Business Centre	Name:	Date Received: Sep 2, 2008
151 Industrial Road	Location: UKHM	Date Reported: Sep 26, 2008
Whitehorse, YT, Canada	LSD:	Report Number: 1152420
Y1A 2V3	P.O.:	
Attn: Kurt Neunherz	Acct code: (Additional)	
Sampled By: P.Inglis		
Company:		

		Reference Number	640129-3	640129-4	640129-5	
		Sample Date	Aug 26, 2008	Aug 26, 2008	Aug 26, 2008	
		Sample Location				
		Sample Description	Old Dump - TP3 - 3m	Old Dump - TP4 - 4m	Old Dump - TP5 - 1m	
		Matrix	Soil	Soil	Soil	
Analyte	Units	Results	Results	Results	Nominal Detection Limit	
<b>Hot Water Soluble</b>						
Boron	Water Soluble	mg/kg	1.5	0.8	0.5	0.1
<b>Metals Strong Acid Digestion</b>						
Mercury	Strong Acid Extractable	mg/kg	0.02	0.02	0.04	0.01
Antimony	Strong Acid Extractable	mg/kg	0.4	0.3	0.6	0.2
Arsenic	Strong Acid Extractable	mg/kg	35.0	41.3	35.0	0.2
Barium	Strong Acid Extractable	mg/kg	390	449	642	1
Beryllium	Strong Acid Extractable	mg/kg	0.2	0.2	0.3	0.1
Cadmium	Strong Acid Extractable	mg/kg	10.0	5.33	1.34	0.01
Chromium	Strong Acid Extractable	mg/kg	22.5	20.5	24.0	0.5
Cobalt	Strong Acid Extractable	mg/kg	17.3	21.1	12.6	0.1
Copper	Strong Acid Extractable	mg/kg	54	76	46	1
Lead	Strong Acid Extractable	mg/kg	26.8	28.7	54.8	0.1
Molybdenum	Strong Acid Extractable	mg/kg	2	5	3	1
Nickel	Strong Acid Extractable	mg/kg	44.7	58.2	32.4	0.5
Selenium	Strong Acid Extractable	mg/kg	0.5	0.6	0.5	0.3
Silver	Strong Acid Extractable	mg/kg	0.5	0.3	1.4	0.1
Thallium	Strong Acid Extractable	mg/kg	0.11	0.11	0.18	0.05
Tin	Strong Acid Extractable	mg/kg	2	2	2	1
Uranium	Strong Acid Extractable	mg/kg	0.7	0.7	1	0.5
Vanadium	Strong Acid Extractable	mg/kg	27.2	19.2	32.4	0.1
Zinc	Strong Acid Extractable	mg/kg	480	275	157	1
<b>Soil Acidity</b>						
pH	1:2 Soil:Water	pH	7.4	7.6	7.2	
<b>Extractable Petroleum Hydrocarbons - Soil</b>						
EPHs10-19	Dry Weight	ug/g	<20	<20	27	20
EPHs19-32	Dry Weight	ug/g	<20	<20	129	20
<b>Moisture</b>						
Moisture	Soil % Moisture	%	7.32	9.02	15.80	

Approved by:   
 Marie England  
 Consulting Scientist

## Quality Control

Bill To: Access Mining Consultants Ltd.	Project: Keno Landfill Assessment	
Report To: Access Mining Consultants Ltd.	ID: #3 Calcite Business Centre	Lot ID: <b>640129</b>
151 Industrial Road	Name: Whitehorse, YT, Canada	Control Number: E 213383
Y1A 2V3	Location: UKHM	Date Received: Sep 2, 2008
Attn: Kurt Neunherz	LSD: P.O.:	Date Reported: Sep 26, 2008
Sampled By: P.Inglis	Acct code: (Additional)	Report Number: 1152420
Company:		

### Hot Water Soluble

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Boron	mg/kg	<0.2	-0.1	0.2	yes
Date Acquired: September 08, 2008					

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Boron	mg/kg	1.1	1.1	10	0.1	yes
Date Acquired: September 08, 2008						

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Boron	mg/kg	1.5	1.0	1.7	yes
Date Acquired: September 08, 2008					
Boron	mg/kg	0.1	0.0	0.2	yes
Date Acquired: September 08, 2008					

### Metals Strong Acid Digestion

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
Mercury	mg/kg	<0.01	-0.07	0.09	yes
Antimony	mg/kg	<0.2	-0.2	0.2	yes
Arsenic	mg/kg	<0.2	-0.1	0.2	yes
Barium	mg/kg	<1	-0	1	yes
Beryllium	mg/kg	<0.1	-0.1	0.1	yes
Cadmium	mg/kg	<0.01	-0.01	0.01	yes
Chromium	mg/kg	<0.5	-0.4	0.5	yes
Cobalt	mg/kg	<0.1	-0.1	0.1	yes
Copper	mg/kg	<1	-1	1	yes
Lead	mg/kg	<0.1	-0.1	0.1	yes
Molybdenum	mg/kg	<1	-1	1	yes
Nickel	mg/kg	<0.5	-0.5	0.5	yes
Selenium	mg/kg	<0.3	-0.2	0.2	yes
Silver	mg/kg	<0.1	-0.1	0.1	yes
Thallium	mg/kg	<0.05	-0.04	0.05	yes
Tin	mg/kg	4	1	6	yes
Vanadium	mg/kg	<0.1	-0.1	0.1	yes
Zinc	mg/kg	<1	-1	1	yes
Date Acquired: September 08, 2008					

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Mercury	mg/kg	0.08	0.09	10	0.03	yes
Antimony	mg/kg	0.3	0.3	20	0.4	yes
Arsenic	mg/kg	36.7	33.0	20	0.4	yes
Barium	mg/kg	246	212	20	2	yes
Beryllium	mg/kg	0.3	0.2	20	0.2	yes

## Quality Control

Bill To: Access Mining Consultants Ltd. Project:  
 Report To: Access Mining Consultants Ltd. ID: Keno Landfill Assessment  
 #3 Calcite Business Centre Name:  
 151 Industrial Road Location: UKHM  
 Whitehorse, YT, Canada LSD:  
 Y1A 2V3 P.O.:  
 Attn: Kurt Neunherz Acct code: (Additional)  
 Sampled By: P.Inglis  
 Company:

Lot ID: **640129**  
 Control Number: E 213383  
 Date Received: Sep 2, 2008  
 Date Reported: Sep 26, 2008  
 Report Number: 1152420

### Metals Strong Acid Digestion - Continued

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
Cadmium	mg/kg	0.72	0.60	20	0.02	yes
Chromium	mg/kg	23.2	21.7	20	1.1	yes
Cobalt	mg/kg	11.7	10.6	20	0.2	yes
Copper	mg/kg	47	42	20	2	yes
Lead	mg/kg	17.6	15.2	20	0.2	yes
Molybdenum	mg/kg	1	1	20	2	yes
Nickel	mg/kg	31.6	29.3	20	1.1	yes
Selenium	mg/kg	0.6	0.5	20	0.7	yes
Silver	mg/kg	0.4	0.3	20	0.2	yes
Thallium	mg/kg	0.13	0.12	20	0.11	yes
Tin	mg/kg	2	2	20	2	yes
Uranium	mg/kg	0.6	0.6	20	1.1	yes
Vanadium	mg/kg	37.5	35.0	20	0.2	yes
Zinc	mg/kg	92	84	20	2	yes

Date Acquired: September 08, 2008

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
Mercury	mg/kg	0.27	0.24	0.34	yes
Antimony	mg/kg	0.6	0.2	1.1	yes
Arsenic	mg/kg	80.8	61.4	120.8	yes
Barium	mg/kg	266	188	336	yes
Beryllium	mg/kg	0.9	0.6	1.2	yes
Cadmium	mg/kg	2.03	1.28	2.90	yes
Chromium	mg/kg	46.6	29.8	61.0	yes
Cobalt	mg/kg	13.9	9.8	18.6	yes
Copper	mg/kg	192	147	262	yes
Lead	mg/kg	119	84.9	161.7	yes
Molybdenum	mg/kg	3	2	4	yes
Nickel	mg/kg	61.7	42.9	87.3	yes
Selenium	mg/kg	0.6	0.3	1.1	yes
Silver	mg/kg	0.9	0.6	1.5	yes
Thallium	mg/kg	0.38	0.26	0.50	yes
Tin	mg/kg	3	1	7	yes
Vanadium	mg/kg	48.4	32.6	63.4	yes
Zinc	mg/kg	450	331	715	yes

Date Acquired: September 08, 2008

### Soil Acidity

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
pH	pH	5.9	5.6	7.4	yes

Date Acquired: September 24, 2008

## Quality Control

Bill To: Access Mining Consultants Ltd.	Project: Keno Landfill Assessment	
Report To: Access Mining Consultants Ltd. #3 Calcite Business Centre 151 Industrial Road Whitehorse, YT, Canada Y1A 2V3	ID: UKHM Name: UKHM Location: UKHM LSD: P.O.:	Lot ID: <b>640129</b> Control Number: E 213383 Date Received: Sep 2, 2008 Date Reported: Sep 26, 2008 Report Number: 1152420
Attn: Kurt Neunherz	Acct code: (Additional)	
Sampled By: P.Inglis		
Company:		

### Soil Acidity - Continued

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
pH	pH	7.6	7.7	0	0.3	yes

Date Acquired: September 24, 2008

Control Sample	Units	Measured	Lower Limit	Upper Limit	Passed QC
pH	pH	6.3	6.1	6.7	yes

Date Acquired: September 24, 2008

### Extractable Petroleum Hydrocarbons - Soil

Blanks	Units	Measured	Lower Limit	Upper Limit	Passed QC
EPHs10-19	ug/g	<20	-20	20	yes
EPHs19-32	ug/g	<20	-20	20	yes

Date Acquired: September 04, 2008

Calibration Check	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
EPHs10-19	ug/mL	98.26	85	115	yes
EPHs19-32	ug/mL	98.26	85	115	yes

Date Acquired: September 04, 2008

Certified Reference Material	Units	Measured	Target	Lower Limit	Upper Limit	Passed QC
EPHs10-19	ug/g	3440	2500	1750	3250	yes
EPHs19-32	ug/g	4350	3140	2390	3890	yes

Date Acquired: September 04, 2008

Replicates	Units	Replicate 1	Replicate 2	% RSD Criteria	Absolute Criteria	Passed QC
EPHs10-19	ug/g	140	135	60	100	yes
EPHs19-32	ug/g	1140	1260	60	100	yes

Date Acquired: September 04, 2008

Matrix Spike	Units	% Recovery	Lower Limit	Upper Limit	Passed QC
EPHs10-19	ug/g	63	73	113	yes
EPHs19-32	ug/g	96	75	115	yes

Date Acquired: September 04, 2008

## Methodology and Notes

Bill To: Access Mining Consultants Ltd.	Project:	Lot ID: <b>640129</b>
Report To: Access Mining Consultants Ltd.	ID: Keno Landfill Assessment	Control Number: E 213383
#3 Calcite Business Centre	Name:	Date Received: Sep 2, 2008
151 Industrial Road	Location: UKHM	Date Reported: Sep 26, 2008
Whitehorse, YT, Canada	LSD:	Report Number: 1152420
Y1A 2V3	P.O.:	
Attn: Kurt Neunherz	Acct code: (Additional)	
Sampled By: P.Inglis		
Company:		

### Method of Analysis

Method Name	Reference	Method	Date Analysis Started	Location
Boron in general soil	McKeague	* Hot Water Soluble Boron - Azomethine -H Method, 4.61	06-Sep-08	BTG Edmonton
EPH - Soil	BCELM	* Extractable Petroleum Hydrocarbons (EPH) in Solids by GC/FID, EPH Solids	04-Sep-08	BTG Surrey
Mercury (Hot Block) in Soil	US EPA	* Determination of Hg in Sediment by Cold Vapor Atomic Absorption Spec, 245.5	08-Sep-08	BTG Edmonton
Metals ICP-MS (Hot Block) in soil	SW-846	* Acid Digestion of Sediments, Sludges, and Soils, EPA 3050B	08-Sep-08	BTG Edmonton
pH and Conductivity in general soil 1:2	McKeague	* 1:2 Soil:Water Ratio, 4.12	24-Sep-08	BTG Edmonton

\* Bodycote method(s) based on reference method

### References

BCELM	B.C. Environmental Laboratory Manual
McKeague	Manual on Soil Sampling and Methods of Analysis
SW-846	Test Methods for Evaluating Solid Waste
US EPA	US Environmental Protection Agency Test Methods

### Comments:

- This report was issued to include addition of PH analysis on samples #3, 4 and 5 requested by Kurt Neunherz of Access Mining Consultants Ltd. on September 23, 2008. Report 1152420 is an addendum to report 1146784.

Please direct any inquiries regarding this report to our Client Services group.

Results relate only to samples as submitted.

The test report shall not be reproduced except in full, without the written approval of the laboratory.

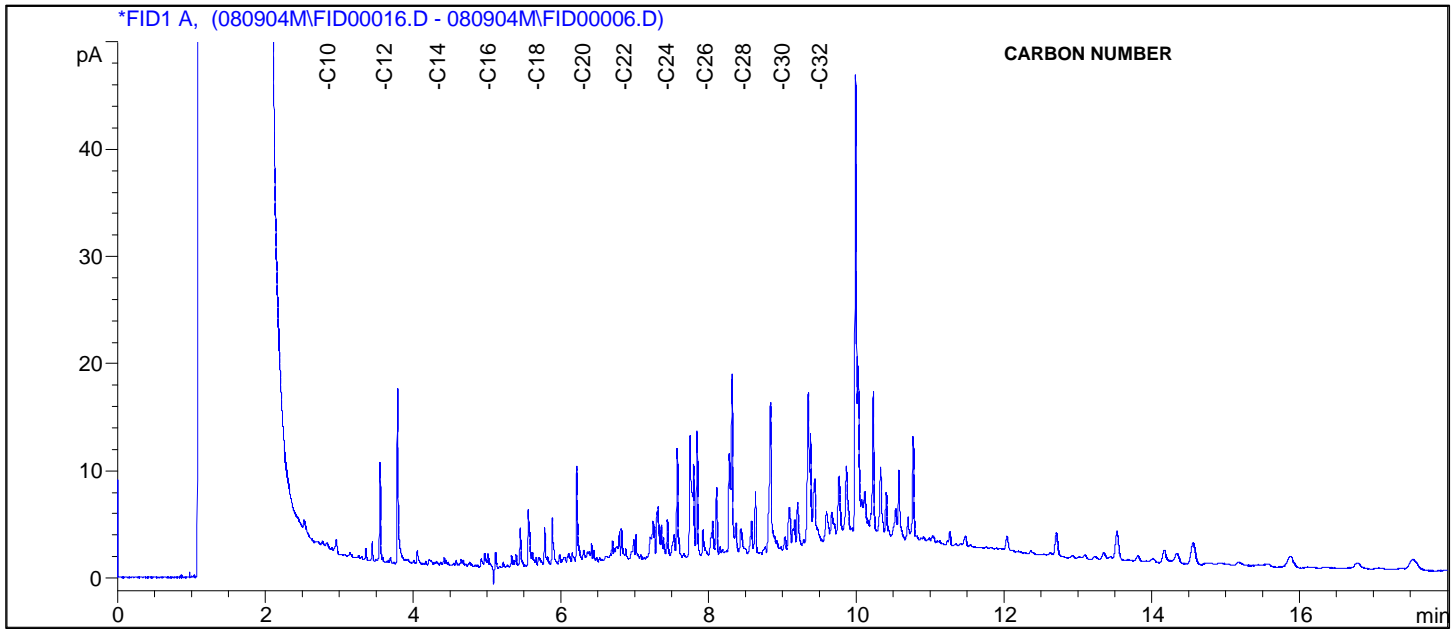
### Hydrocarbon Chromatogram

Bill To: Access Mining Consultants Ltd.  
 Report To: Access Mining Consultants Ltd.  
 #3 Calcite Business Centre  
 151 Industrial Road  
 Whitehorse, YT, Canada  
 Y1A 2V3  
 Attn: Kurt Neunherz  
 Sampled by: P.Inglis  
 Company:

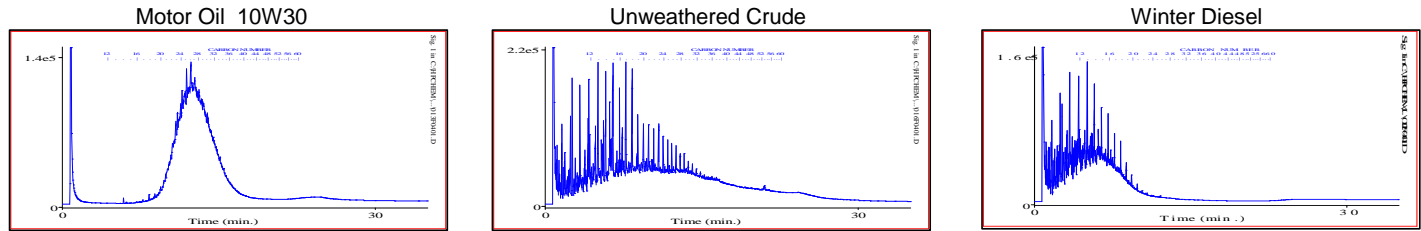
Project ID: Keno Landfill Assessment  
 Name:  
 Location: UKHM  
 LSD:  
 P.O.:

Lot ID: **640129**  
 Control Number: E 213383  
 Date Received: Sep 2, 2008  
 Date Reported:  
 Report Number:

NWL Number: 640129-1      Sample Description: Old Dump - TP1 - 1m  
 Sample Date: Aug 26, 2008



**TYPICAL PRODUCT CHROMATOGRAMS**



**Product Carbon Number Ranges**

Gasoline	C4-C12	Kerosene	C7-C16	Lubricating Oils	C20-C40
Varsol	C8-C12	Diesel	C8-C22	Crude Oils	C3-C60+

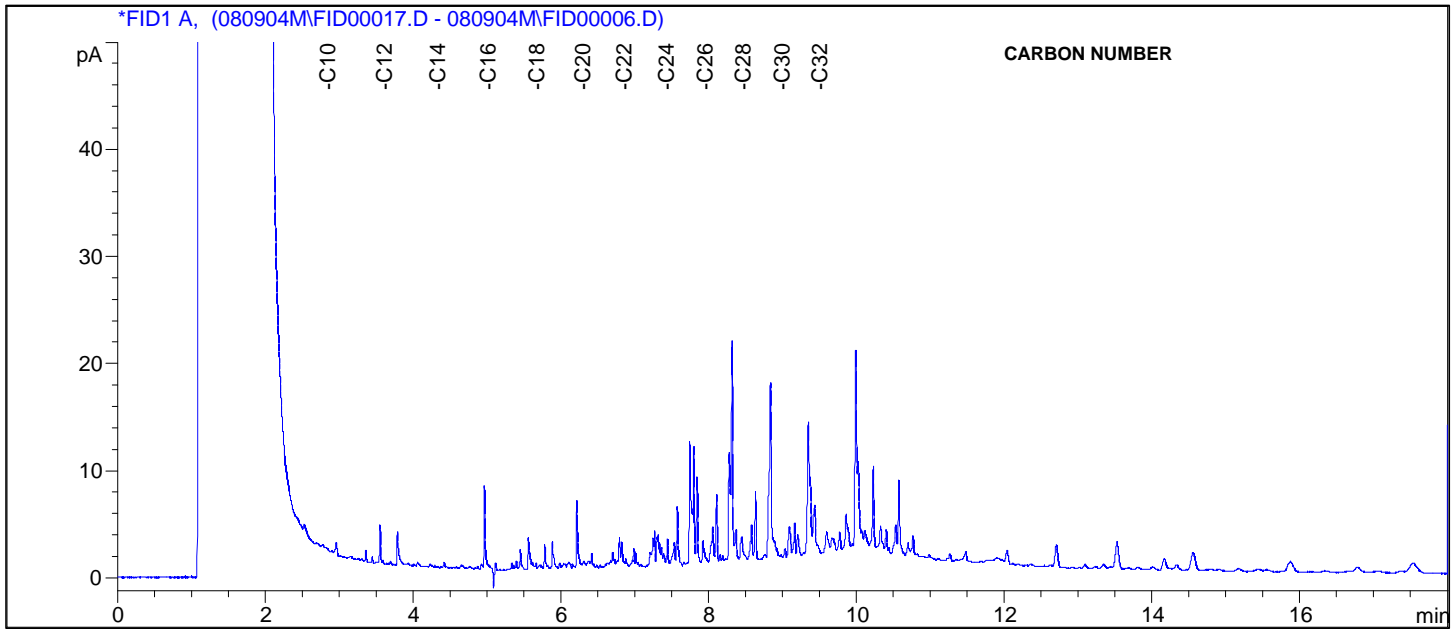
### Hydrocarbon Chromatogram

Bill To: Access Mining Consultants Ltd.  
 Report To: Access Mining Consultants Ltd.  
 #3 Calcite Business Centre  
 151 Industrial Road  
 Whitehorse, YT, Canada  
 Y1A 2V3  
 Attn: Kurt Neunherz  
 Sampled by: P.Inglis  
 Company:

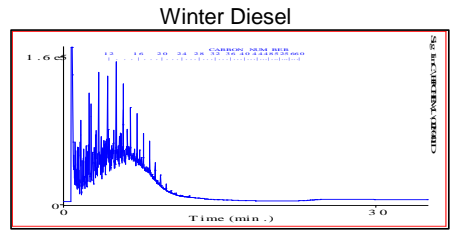
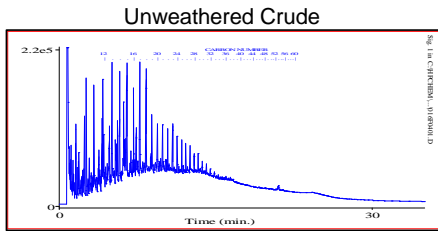
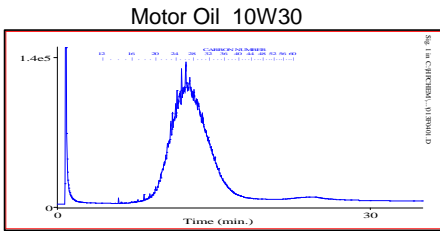
Project ID: Keno Landfill Assessment  
 Name:  
 Location: UKHM  
 LSD:  
 P.O.:

Lot ID: **640129**  
 Control Number: E 213383  
 Date Received: Sep 2, 2008  
 Date Reported:  
 Report Number:

NWL Number: 640129-2      Sample Description: Old Dump - TP2 - 2m  
 Sample Date: Aug 26, 2008



**TYPICAL PRODUCT CHROMATOGRAMS**



**Product Carbon Number Ranges**

Gasoline	C4-C12	Kerosene	C7-C16	Lubricating Oils	C20-C40
Varsol	C8-C12	Diesel	C8-C22	Crude Oils	C3-C60+

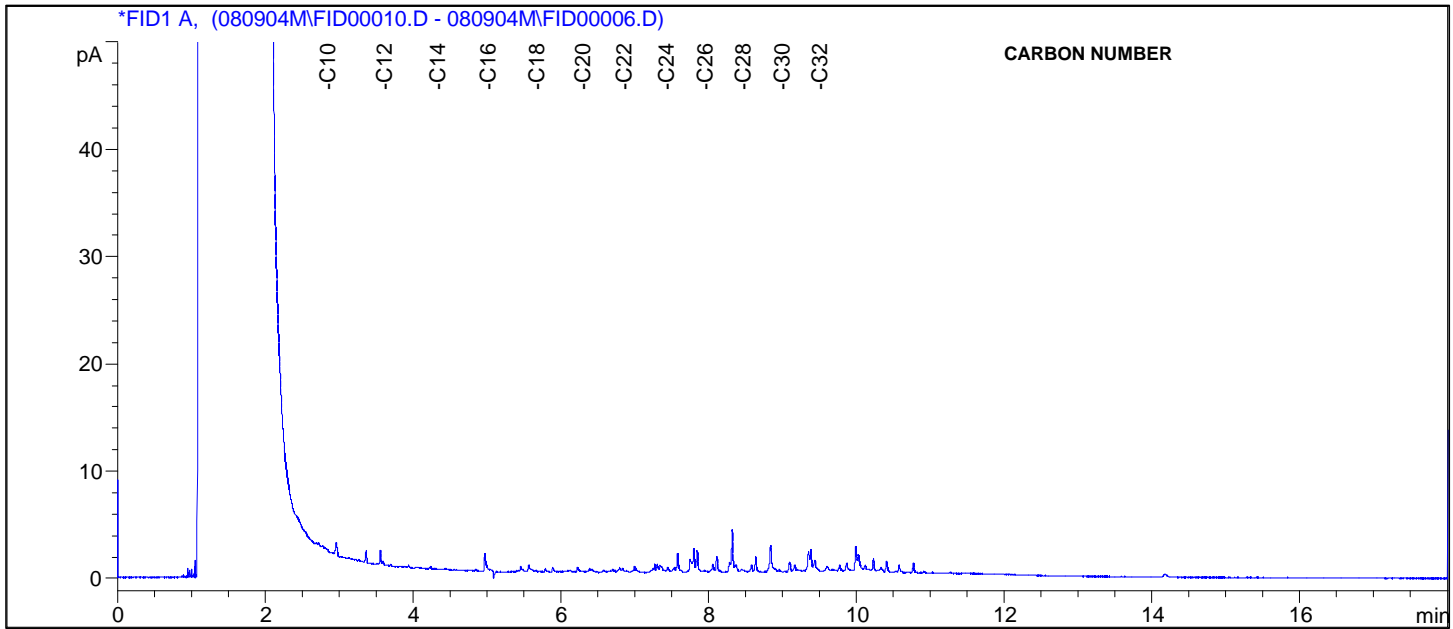
## Hydrocarbon Chromatogram

Bill To: Access Mining Consultants Ltd.  
 Report To: Access Mining Consultants Ltd.  
 #3 Calcite Business Centre  
 151 Industrial Road  
 Whitehorse, YT, Canada  
 Y1A 2V3  
 Attn: Kurt Neunherz  
 Sampled by: P.Inglis  
 Company:

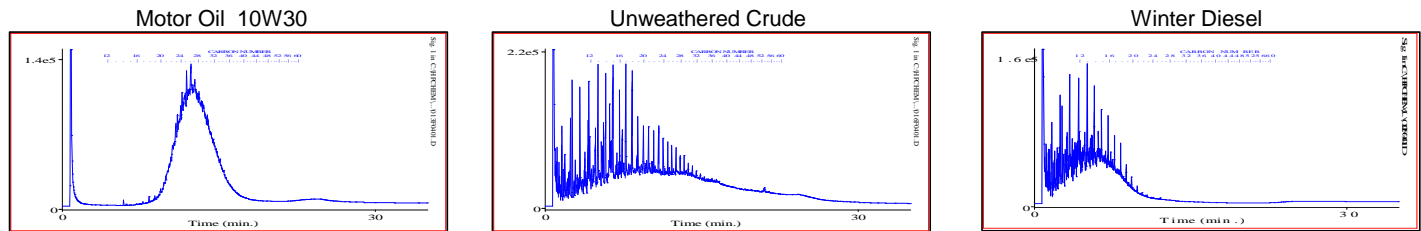
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 Name:  
 Location: UKHM  
 LSD:  
 P.O.:

Lot ID: **640129**  
 Control Number: E 213383  
 Date Received: Sep 2, 2008  
 Date Reported:  
 Report Number:

NWL Number: 640129-3      Sample Description: Old Dump - TP3 - 3m  
 Sample Date: Aug 26, 2008



### TYPICAL PRODUCT CHROMATOGRAMS



### Product Carbon Number Ranges

Gasoline	C4-C12	Kerosene	C7-C16	Lubricating Oils	C20-C40
Varsol	C8-C12	Diesel	C8-C22	Crude Oils	C3-C60+

### Hydrocarbon Chromatogram

Bill To: Access Mining Consultants Ltd.  
 Report To: Access Mining Consultants Ltd.  
 #3 Calcite Business Centre  
 151 Industrial Road  
 Whitehorse, YT, Canada  
 Y1A 2V3  
 Attn: Kurt Neunherz  
 Sampled by: P.Inglis  
 Company:

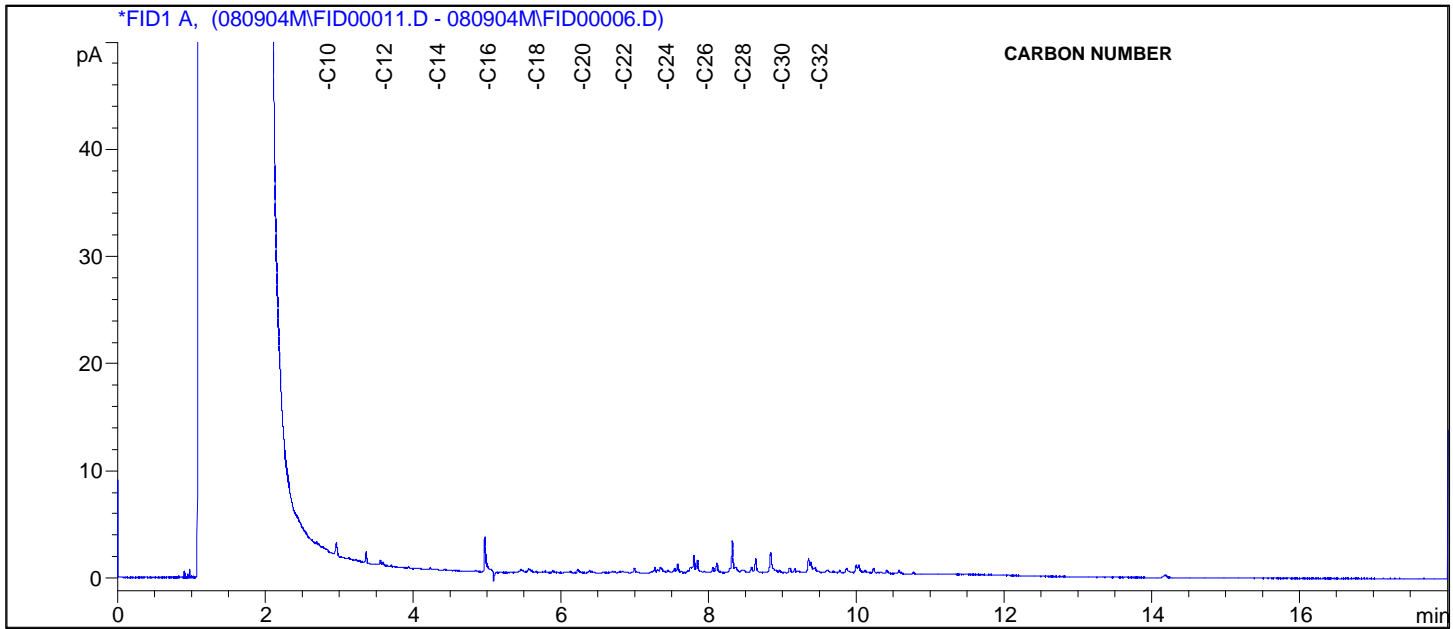
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 Name:  
 Location: UKHM  
 LSD:  
 P.O.:

Lot ID: **640129**  
 Control Number: E 213383  
 Date Received: Sep 2, 2008  
 Date Reported:  
 Report Number:

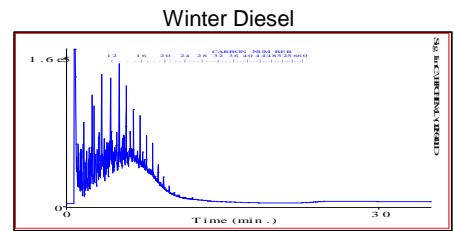
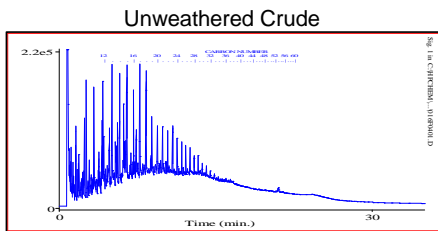
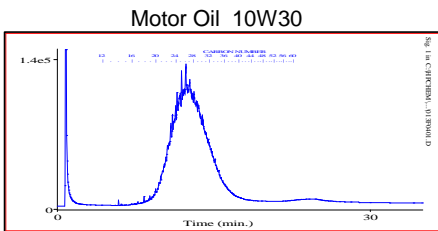
NWL Number: 640129-4

Sample Description: Old Dump - TP4 - 4m

Sample Date: Aug 26, 2008



**TYPICAL PRODUCT CHROMATOGRAMS**



Product Carbon Number Ranges			
Gasoline	C4-C12	Kerosene	C7-C16
Varsol	C8-C12	Diesel	C8-C22
		Lubricating Oils	C20-C40
		Crude Oils	C3-C60+

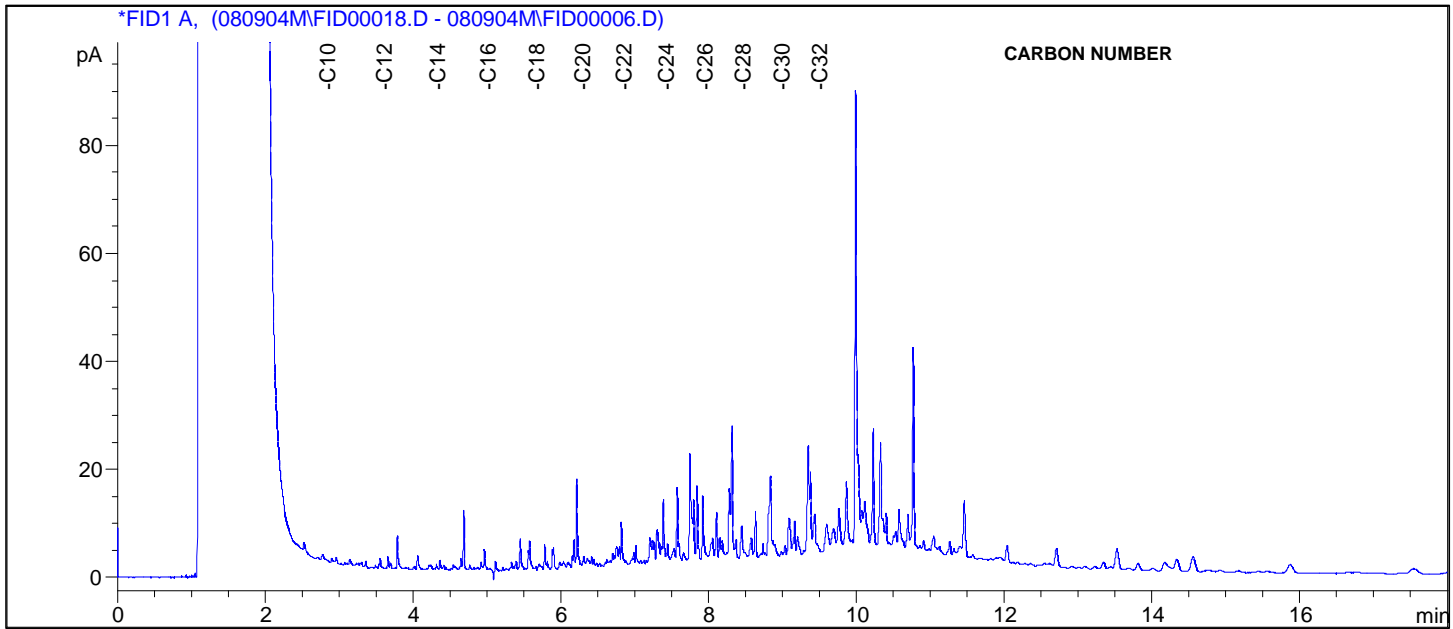
### Hydrocarbon Chromatogram

Bill To: Access Mining Consultants Ltd.  
 Report To: Access Mining Consultants Ltd.  
 #3 Calcite Business Centre  
 151 Industrial Road  
 Whitehorse, YT, Canada  
 Y1A 2V3  
 Attn: Kurt Neunherz  
 Sampled by: P.Inglis  
 Company:

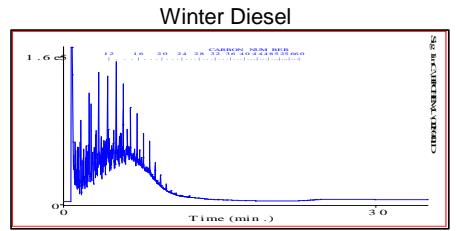
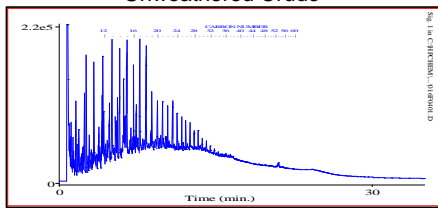
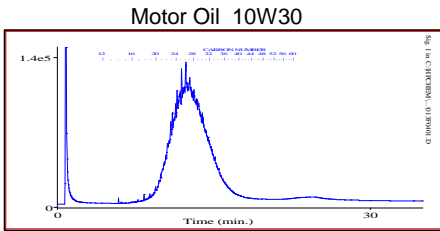
Project ID: Keno Landfill Assessment  
 Name:  
 Location: UKHM  
 LSD:  
 P.O.:

Lot ID: **640129**  
 Control Number: E 213383  
 Date Received: Sep 2, 2008  
 Date Reported:  
 Report Number:

NWL Number: 640129-5      Sample Description: Old Dump - TP5 - 1m  
 Sample Date: Aug 26, 2008



**TYPICAL PRODUCT CHROMATOGRAMS**



Product Carbon Number Ranges			
Gasoline	C4-C12	Kerosene	C7-C16
Varsol	C8-C12	Diesel	C8-C22
		Lubricating Oils	C20-C40
		Crude Oils	C3-C60+

**Analytical Report**

Bill To: Access Mining Consultants Ltd. Project:  
 Report To: Access Mining Consultants Ltd. ID: Keno Hydrocarbon  
 #3 Calcite Business Centre Name:  
 151 Industrial Road Location:  
 Whitehorse, YT, Canada LSD: Keno Valley  
 Y1A 2V3 P.O.:  
 Attn: Kurt Neunherz Acct code: (Additional)  
 Sampled By: K.Neunherz  
 Company: ACG

Lot ID: **640016**  
 Control Number: E 01695  
 Date Received: Sep 2, 2008  
 Date Reported: Sep 26, 2008  
 Report Number: 1152425

**Reference Number** 640016-14  
**Sample Date**  
**Sample Location**  
**Sample Description** Landfill Control  
**Matrix** Soil

Analyte	Units	Results	Results	Results	Nominal Detection Limit
<b>Hot Water Soluble</b>					
Boron	Water Soluble	mg/kg	<0.2		0.1
<b>Metals Strong Acid Digestion</b>					
Mercury	Strong Acid Extractable	mg/kg	0.15		0.01
Antimony	Strong Acid Extractable	mg/kg	4.8		0.2
Arsenic	Strong Acid Extractable	mg/kg	107		0.2
Barium	Strong Acid Extractable	mg/kg	78		1
Beryllium	Strong Acid Extractable	mg/kg	0.2		0.1
Cadmium	Strong Acid Extractable	mg/kg	2.08		0.01
Chromium	Strong Acid Extractable	mg/kg	15.5		0.5
Cobalt	Strong Acid Extractable	mg/kg	5.1		0.1
Copper	Strong Acid Extractable	mg/kg	38		1
Lead	Strong Acid Extractable	mg/kg	788		0.1
Molybdenum	Strong Acid Extractable	mg/kg	2		1
Nickel	Strong Acid Extractable	mg/kg	21.2		0.5
Selenium	Strong Acid Extractable	mg/kg	0.8		0.3
Silver	Strong Acid Extractable	mg/kg	18.5		0.1
Thallium	Strong Acid Extractable	mg/kg	0.60		0.05
Tin	Strong Acid Extractable	mg/kg	3		1
Uranium	Strong Acid Extractable	mg/kg	0.7		0.5
Vanadium	Strong Acid Extractable	mg/kg	18.0		0.1
Zinc	Strong Acid Extractable	mg/kg	192		1
<b>Soil Acidity</b>					
pH	1:2 Soil:Water	pH	8.1		

Approved by:   
 Marie England  
 Consulting Scientist

## **Appendix B**

### **Selected Photographs**



**Photo #1: Elsa old dump site**



**Photo #2: Elsa old dump site looking down**



**Photo #3: Test pit excavation below Elsa old dump site**



**Photo #4: Test pit excavation below the Elsa old dump site**



**Photo #5: Test pit excavation 4 m deep below Elsa old dump site**



**Photo #6: Coarse grained test pit material from below Elsa old dump site**



**Photo #7: Base of test pit below Elsa old dump site**



**Photo #8: Test pit a hoe below Elsa old dump site viewed from above**



**Photo #9: Test pit excavation for potential landfill near CBC tower**



**Photo #10: Soil profile of test pit near CBC tower**

**Appendix C**

**Access Consulting Group  
Building Contamination Inventory**



- Access Mining Consultants Ltd.
- Access Oil & Gas Services

# 3 Calcite Business Centre, 151 Industrial Road  
Whitehorse, Yukon Y1A 2V3  
PHONE (867) 668-6463 FAX (867) 667-6680  
[www.accessconsulting.ca](http://www.accessconsulting.ca)

Memorandum

---

To: File

January 11, 2007

CC:

From: Corey Fernets, C.E.T., Access Consulting Group

**Re: Building Contamination**

The following is a descriptive summary of the extent of the building contamination documentation to date. All known UKHM sites were inspected with specific attention paid to any evidence of building contamination, which includes contaminants such as lead based paints or the presence of asbestos in or on site buildings. The PWGSC Environmental Baseline Assessment was also reviewed in order to compile a comprehensive list of all suspect UKHM properties.

Although a thorough field survey was carried out on the Keno Hill Property, the potential remains for additional areas of contamination to exist on-site. Additional buildings may be hidden in the dense bush areas or in locations that are not clearly visible either from the roadways or aerial views, and were never staked as claims or reported by locals in the vicinity. However, the field investigation and PWGSC documentation is thought to capture the majority of the sites known to be located on or near the Keno Hill Property.

Thank you.

Access Consulting Group

Corey Fernets, C.E.T.

## **Building Contamination**

Access Consulting observed and documented sites where asbestos or lead laden materials were found while conducting the inspections of the remaining sites with SRK Consulting. Where possible, samples of potential asbestos containing materials were retained by Access Consulting in the event that lab analysis was necessary to confirm the presence of asbestos fibres. Sites with evidence of lead or asbestos bearing materials were compiled and correlated with sites documented the previous year and with areas reported in the March 2000 Environmental Baseline Assessment performed by Public Works. This information was sorted into the following Building Contamination Inventory list which included Site Name, Contamination Location, Description of Contamination, and whether samples were taken. Note that only UKHM sites with suspect contamination were included in the table.



**Possible building contamination at Main Fault & Nabob site.**



# UKHM Claim Package Building Contamination Inventory - September 2006

Assigned Site No.	Site Name	Location	Hazard Identified By	Description of Contamination Suspect	Samples Taken/Results
1	Silver King	100 Level Shifters Office/Lunch Room	PWGSC Baseline Assessment	Paint	None
2	Husky & Husky SW	Boiler House	PWGSC Baseline Assessment	Possible asbestos exterior and interior siding, vinyl and asbestos floor tile.	None
		ATCO Trailer	PWGSC Baseline Assessment	Exterior is painted yellow and brown.	None
3	Elsa	50 Level Shack	PWGSC Baseline Assessment	Blue paint	None
		400 Level Portal	PWGSC Baseline Assessment	Insulated wood frame with asbestos siding.	None
4	Dixie	Garage/Office	PWGSC Baseline Assessment	Asbestos board in the office area.	None
			PWGSC Baseline Assessment	Floor tile	Yes - 1-10% chrysotile
7	No Cash	100 Level Garage	PWGSC Baseline Assessment	Bay doors are painted	None
		100 Level Lunchroom	PWGSC Baseline Assessment	Floor and partial wall sheathed with 2cm thick asbestos board.	None
			PWGSC Baseline Assessment	Foundation consists of wood plank flooring on grade covered with asbestos.	None
11	Galkeno 300	Residence (Building 11G)	PWGSC Baseline Assessment	Contains paint on interior	None
12	Galkeno 900	Storage Building	PWGSC Baseline Assessment	1m2 oil stain in the dirt	None
14	Bluebird	Cabin	ACG 2006 Site Inspection	Some paint on windows and doors.	None
			ACG 2006 Site Inspection	Asbestos fibre board in northeast corner	None
19	Onek	Building 19A	PWGSC Baseline Assessment	Weathered green paint exterior	None
		Building 19B	PWGSC Baseline Assessment	Weathered green paint exterior	None
		Building 19C	PWGSC Baseline Assessment	Weathered green paint exterior	None
		Building 19D	PWGSC Baseline Assessment	Yellow painted exterior; painted interior walls	None
		Building 19E	PWGSC Baseline Assessment	Asbestos tar paper on entire exterior of building	None
		Buildings 19J to 19M	PWGSC Baseline Assessment	Portion of one building still has asbestos tarpaper cladding	None
20	Klondike-Keno	Collapsed buildings	ACG 2006 Site Inspection	A number of collapsed buildings contain evidence of asbestos on them.	None
		Drill shack	ACG 2006 Site Inspection	Asbestos lining on the walls	None
22	Bellekeno	Powder magazine at 200 Level Adit	PWGSC Baseline Assessment	Interior walls lined with asbestos board.	None
		Wash house at 200 Level Adit	PWGSC Baseline Assessment	Lined with asbestos paper on exterior.	None
28	Shamrock	Main Site Building	PWGSC Baseline Assessment	Paint on interior walls	None
31	Stone	Dry building	ACG 2006 Site Inspection	Exterior of building is painted white.	Yes - sample not yet run
		Outhouse near middle adit	ACG 2006 Site Inspection	Possible asbestos on walls	Yes - sample not yet run
		Building 31C	ACG 2006 Site Inspection	The roof and wall panel are likely constructed with an asbestos-containing material.	Yes - sample not yet run
		Building 31D	ACG 2006 Site Inspection	Possible asbestos on walls	Yes - sample not yet run
32	Keno 700	Mess Hall	PWGSC Baseline Assessment	Exterior asbestos-board insulation siding.	Yes - 60-80% chrysotile
			PWGSC Baseline Assessment	Paint on exterior walls.	Yes - sample taken by Public Works but never analysed
		Bunkhouse	PWGSC Baseline Assessment	Exterior asbestos-board insulation siding.	Yes - 60-80% chrysotile
			PWGSC Baseline Assessment	Interior paint	None
		Manager's accomodation bulding and storage sheds	PWGSC Baseline Assessment	Interior paint	None
		Boiler Room and Water Supply Building	PWGSC Baseline Assessment	Insulation around boiler and lying in a pile on the floor	Yes - tested negative for asbestos.



# UKHM Claim Package Building Contamination Inventory - September 2006

Assigned Site No.	Site Name	Location	Hazard Identified By	Description of Contamination Suspect	Samples Taken/Results
76	Townsite Mine	Office/Workshop	PWGSC Baseline Assessment	Possible that floor tiles contain 1-10% chrysotile as they are similar in appearance to the tile sampled at the Dixie site.	None
			PWGSC Baseline Assessment	White paint was applied to the interior, however, most of the paint had worn off.	
78	Elsa Village	Shack #2 beside the Sawmill	PWGSC Baseline Assessment	Exterior is clad with asbestos wallboard	None
		Wood Storage Building	PWGSC Baseline Assessment	Exterior is clad with asbestos wallboard	None
		Pink and white bunkhouse	PWGSC Baseline Assessment	Exterior is clad with asbestos wallboard	None
		Union Shop	PWGSC Baseline Assessment	Exterior is clad with asbestos wallboard	None
		Snack bar	PWGSC Baseline Assessment	Exterior cladding containing asbestos was found along the base of the building.	None
		Flotation Mill/Crusher House	PWGSC Baseline Assessment	Exterior walls are clad with approximately 1600m2 of asbestos shingles.	None
		No. 2 Garage	PWGSC Baseline Assessment	Three of the exterior walls and the ceiling are covered with an asbestos material.	None
		Light Vehicle Shop	PWGSC Baseline Assessment	Exterior walls are clad with an asbestos material.	None
		Yellow Exploration Building	PWGSC Baseline Assessment	Exterior walls clad in asbestos.	None
		Elsa Market	PWGSC Baseline Assessment	Asbestos tiles are suspected to be beneath the linoleum flooring.	None
		Fire Hall	PWGSC Baseline Assessment	Approximately 30m2 of asbestos sheet cladding exists beneath the metal siding.	None
		Building #34 (east of the Fire Hall)	PWGSC Baseline Assessment	Asbestos wallboard present underneath the metal siding.	None
		Administration Building	PWGSC Baseline Assessment	All four exterior walls are clad in asbestos wallboard	None
			PWGSC Baseline Assessment	Asbestos wallboard is painted yellow.	None
			PWGSC Baseline Assessment	Suspect asbestos tiles were observed on the roof and inside the kitchen (25m3) and bathroom (15m3). Exterior walls are clad in asbestos.	None.
	PWGSC Baseline Assessment	Interior floors, exterior walls, and tar roof all contain suspect asbestos.	None		
	PWGSC Baseline Assessment	Exterior walls are clad in asbestos and the floor is covered in asbestos tile.	None		
	PWGSC Baseline Assessment	Residence has asbestos siding on the exterior walls.	None		
79	Elsa Tailings	Transmission Building 79A	PWGSC Baseline Assessment	Door is painted green	None
		Transmission Building 79B	PWGSC Baseline Assessment	Building is painted entirely green.	None
81	Mackeno	Pumphouse	PWGSC Baseline Assessment	Asbestos-impregnated tar paper present on the building exterior and asbestos wallboard is present on the interior walls. Asbestos is considered non-friable in both of these forms.	None
		Debris noted on the surface of the site	PWGSC Baseline Assessment	Non-friable asbestos wallboard.	None

**Appendix D**

**Table 1 from 2008 Hazardous  
Waste Assessment**

**Table 1 Building Contamination Inventory**

Location				Description of Contamination Suspect				
Site No. <sup>1</sup>	Site Name <sup>1</sup>	Building Number <sup>1</sup>	Site Name	Ballasts	Asbestos	Construction	Other	Samples/Results
78	Elsa	1	Green Shack	None	Asbestos tar paper exterior	Wood frame construction	Small building; almost collapsed	—
		2	Shack #2 beside the Sawmill	None	Asbestos tar paper exterior	Wood frame construction	Small building	—
		3	Shack #1 beside the Sawmill	None	Asbestos tar paper exterior	Wood frame construction	—	—
		4	Sawmill	~5-7 Ballasts; Advance Ballasts; PCB's unknown.	None	Aluminium exterior; painted wood interior	—	—
		5	Carpentry Shop	~10-13 Ballasts. PCB's unknown	None	Metal sheeting on exterior	—	—
		6	Wood Storage	None	Asbestos tar paper exterior	Wood frame construction	—	Samples taken - 75-80% Chrysotile Asbestos
		7	New Bunkhouse	Ballasts Present; No PCB's	None	Aluminium exterior and dry wall fibers	—	Samples taken - No asbestos detected
		8	Geology and Engineering Office	~41 Ballasts, 21 with PCB's and 20 with PCB's unknown	None	Exterior wood construction	—	—
		10	No.5 Bunkhouse	None	Potential exterior asbestos tiles	Potential lead paint	—	—
		12	Pink and White Bunkhouse	None	Asbestos fibers on exterior walls	Potential lead paint	—	Samples taken - 75-80% Chrysotile Asbestos
		13	No.1 Bunkhouse	None	None	Lead pain on interior wood	—	Samples taken - Lead
		14	Union Shop	~17-20 Ballasts; type unknown; PCB's unknown	None	Wood construction and metal siding ; potential lead paint on interior wood	—	—
		15	Snack Bar	~7 Ballasts; No PCB's	Asbestos tar paper along foundation	Wood construction with metal roof	—	—
		16	Dining Hall	None	None	Potential lead paint; wood frame with vinyl	—	—
		17	Dry/Change Building	~30 Ballasts ; Advance Ballast; unknown PCB's	None	Wood and metal construction	—	—
		19	Fire Assay Office	~20 Ballasts; unknown PCB's	None	Lead paint	—	Sample taken- Lead
		20	Floatation Mill/Crusher House	15-20 Ballasts; unknown PCB's	Abesots fibres	Wood and metal construction	—	Samples taken- 75-80% Asbestos fibres; metal swabs
		21	Boiler Plant	~15 Ballasts; PCB's unknown	Piping coated in asbestos; asbestos in building insulation	Aluminum metal exterior and scrap metal	—	Samples taken- 60-65% Amosite Asbestos; metal swabs
		22	No. 1 Garage/Truck Garage	~14 Ballasts in use	Asbestos tar paper exterior	Wood frame and metal siding	—	Samples taken- 70-75% Chrysotile Asbestos Fibres
		23	No. 2 Garage	None	Asbestos tar paper exterior	Wood frame and siding	—	—
		24	Machine Shop	—	—	—	Demolished	—
		25	Light Vehicle Shop	None	Asbestos tar paper exterior	Wood frame construction	—	Samples taken
		26	Rescue Building	None	None	Aluminum exterior	—	—
		30	Yellow Exploration Building	None	Asbestos tar paper exterior	—	—	—
31	Medical Building	1 Ballast; No PCB's	None	Metal exterior	—	—		
32	Elsa Market	2 Ballasts; General Canadian Electric; presence of PCB's.	None	Wood frame construction and exterior vinyl	—	Samples taken - Asbestos fibres not detected		
33	Fire Hall	New Ballasts	Asbestos tar paper exterior	Potential lead paint	Building used as a gym	Samples taken- 70-75% Chrysotile Asbestos Fibres		
34	Building #34	1 Ballast; PCB's unknown	Asbestos tar paper exterior	Wood frame with metal siding	—	—		
35	Generator Building	2 Ballasts; PCB's unknown	Pipe wrapped in asbestos insulation	Wood frame and metal siding	—	Sample taken- 60-65% Amosite Asbestos Fibres; metal swabs		
36	Vehicle and Heavy Equipment Warehouse	None	None	Wood frame and metal siding	—	Samples taken - Abestos Fibres not detected		
38	Administration Building	~30 Ballasts with PCB's	Asbestos interior	Potential lead paint; wood framed construction	—	Samples taken - 50-55% Chrysotile Asbestos Fibres		
39	Men's Staffhouse	None	Asbestos tar paper exterior	Potential lead paint; wood framed construction	—	Samples taken - 55-60% Chrysotile Asbestos Fibres		
41	Apartment Building	None	Asbestos tar paper exterior	Potential lead paint; wood framed construction	—	—		
42	Garage	None	Asbestos tar paper	Potential lead paint; wood framed construction	—	—		
1	Silver King		Silver King	None	None	Wood frame and metal siding	—	
2	Husky		Husky	~15 large, ~2 smaller Ballasts; No PCB's	None	Wood frame with metal siding; potential lead paint	Lots of electrical equipment present	—
4	Dixie		Dixie	None	4x12 asbestos board and asbestos tiles	Wood frame with metal siding; potential lead paint	—	Samples taken - 50-55% Chrysotile Asbestos Fibres
6	Birmingham (Ruby)		Birmingham	None	Potential exterior asbestos tiles	Wood frame and metal siding	—	—
7	No Cash 100		No Cash 100	None	Asbestos board in storage shed beside boiler shack	Wood frame and metal siding	—	—
7	No Cash 500		No Cash 500	None	Asbestos tar paper	Wood frame and metal siding	—	—
11	Galkeno 300		Galkeno 300	None	Asbestos Board (Hard) insulation/asbestos sheeting	Wood frame and aluminum exterior	—	Samples taken - 50-55% Chrysotile Asbestos Fibres
19	Onek		Onek	None	Asbestos tar paper exterior with wood frame construction	Metal machinery (engines, boiler)	Piles of rubble and debris; some buildings are unstable, one building has collapsed	—
22	Bellekeno 625		Bellokeno 625	None	None	Wood and steel construction and aluminum siding	—	—
22	Bellekeno 200		Bellokeno 200	None	None	Wood frame construction	—	—
28	Shamrock		Shamrock	None	None	Wood frame construction	—	—
32	Keno 700		Keno 700	None	Two buildings with asbestos tiling	Aluminum and asbestos exterior, painted wood interior;	Boiler componets present	Samples taken- Lead
55	Runer		Runer	None	None	Wood frame construction	Three partially filled drums; one partially filled bucket, 2 batteries and wiper fluid	—
76	Townsite		Townsite	None	None	Wood frame construction	—	Samples taken- No Asbestos Fibres detected
77	Sadie Ladue		Sadie Ladue	No Buildings	None	—	—	—

<sup>1</sup> Site and Building Numbers Correspond to the 'Keno Valley/Dublin Gulch Environmental Baseline Assessment' by Environmental Services Public Works and Government Services Canada, May 2000

**Appendix E**

**Access Consulting Group  
Field Assessment Test  
Pit Logs**



# TEST PIT LOG

Pit No: TP1

Date: Aug. 26/08

Project: Kenoclosure Studies

Total Depth: 41m

Location: Old dump assessment.

Pit Dimensions: 1m x 3m x 4.1m

Logged by: P. Inglis, K. Nuenhere

Sampling Method: Grab

Contractor: ERDC

Equipment Type: Hoe

Comments: Historic Dump

4.1m

Depth Log (ft/m)	Material Description	Ground Water (m)	Vapours Sample No. (ppm)	Remarks
0.1m	Organics			-sampled @ 1.0, 2.0, 3.0, 4.0m depths
1.3m	dark brown rich soils			
2	grey-cobbles / gravel / sands 20% 50% 30%	1m	4.9	
2	dark rich soils	2m	6.7	
3	sand / gravel 60% / 40%	3m	2.9	
4		4m	3.7 ppm	
6	Ground water not encountered			
6	2			EPH: 4.1m
8				
10	3			
12				
12	4			



ALEXCO

# TEST PIT LOG

Pit No: TPZ  
Date: Aug. 26/08

Project: Keno Closure Studies

Total Depth: 4.0m

Location: Old Pump Assessment Historic Dump

Pit Dimensions: 1m x 2m x 4m

Logged by: P. Inglis, K. Neunhert

Sampling Method: Grab

Contractor: ERDC

Equipment Type: Hoe

Comments: - Samples @ 1.0, 2.0, 3.0, 4.0m depths

4.0m ↑

Depth Log (ft/m)	Material Description	Ground Water (m)	Vapours Sample No. (ppm)	Remarks
0.3m	- organics			
0.8m	- nitric leaching visible - brown / dark	1m	7.2 ppm	
1.4m	- gravels	2m	4.4	
1.1m	- v. fractured shale / clay / sand	3m	4.7	
0.7m	- fractured shale / cobbles / sand.	4m	3.6	
	Ground water not encountered			
6	Est. 4m			
2				
8				
3				
10				
4				



ALEXCO

# TEST PIT LOG

Pit No: TP3

Date: Aug. 26 108

Project: Keno Closure studies

Total Depth: 3.0m

Location: Old dump Assessment Historic Dump

Pit Dimensions: 1x3x3m

Logged by: P. Inglis, K. Neunhertz

Sampling Method: Grob

Contractor: EROC

Equipment Type: Vib

Comments: sampled @ 1.0, 2.0, 3.0 depths.

3.0m

Depth Log (ft/m)	Material Description	Ground Water	Vapours Sample No. ppm	Remarks
0.1m	-organics/rich brown soil			
0.5m	-sandy loam light brown			
1.4m	gravelly / cobbles	1m	3.8	
2	small fractured schale soil	2m	4.8	
1.0m	hard bedrock Hoe could not dig deeper	3m	6.4	
4	Groundwater not encountered			
6	2m			
8				
10	3			
12	4			



ALEXCO

# TEST PIT LOG

Pit No: **TP4**

Date: **Aug. 26/08**

Project: **Keno Closure Studies**

Total Depth: **4.0m**

Location: **Old dump Assessment TP4 Historic Pump**

Pit Dimensions: **1 x 3 x 4m**

Logged by: **P. Inglis & K. Neunherz**

Sampling Method: **Grab**

Contractor: **EROC**

Equipment Type: **Probe**

Comments: **sampled @ 4.0m → Lab, metals.**

4.0m

Depth Log (ft/m)	Material Description	Ground Water (m)	Vapours Sample No. (ppm)	Remarks
0.2m	organic			
1.2m	buried tires in top 1.0m rich brown silty loam			
2.0m	fractured shale			
3.0m	cobbles/sand/fractured shale			
4.0m	1m Past Test 0.2 to 4m EDM: 4m	4m	4.5	
6.0m	no groundwater encountered			
8.0m				
10.0m				
12.0m				



ALEXCO

# TEST PIT LOG

Pit No: TP5

Date: Aug. 26/08

Project: Keno Closure Studies

Total Depth: 4.0m

Location: Old dump Assessment Historic Dump

Pit Dimensions: 1.5x4

Logged by: P. Inaki, K. Nkurakeza

Sampling Method: grab

Contractor: EROC

Equipment Type: HSC

Comments: -sampled @ 1.0m for metals

3m ↑

Depth Log (ft/m)	Material Description	Ground Water m	Vapours Sample No. ppm	Remarks
0.1m	-organics			
0.7m	-dark brown sandy loam	1	5.9	
1.3m	-cobbles / boulders / gravel / sandy 20%      20%      40%      20%	2	3.8	
0.9m	-fractured shales / cobbles / sands 25%      50%      25%	3	3.8	
4	Groundwater not encountered EOL: 4m	4	5.4	
6	2			
8				
10	3			
12	4			



ALEXCO

# TEST PIT LOG

Pit No: TP-CBC-01

Date: Aug. 27 108

Project: KENO Closure Studies / HC Contamination

Total Depth: 2.5m

Location: TP-CBC-01 - in depression SE of main tower

Pit Dimensions: 1x4x2.5m

Logged by: P. Inglis, K. Neunherz - same spot as previous SRK TP

Sampling Method: Grab

Contractor: ERDC

Equipment Type: Hoop

Comments: -water @ 1.2m depth - possibly : of loose soil from previous TPing. - surface ponding

at TP location

2.5m

Depth Log (ft/m)	Material Description	Ground Water	Sample No.	Remarks
2	-packed gravel & sand/silt from surface to max depth dug @ 2.5m ↳ 1.2m possible trapped water	1.2m 40mg/L H <sub>2</sub> O		in Disturbed soil
1				
4	Test pit in disturbed soil EWH: 2.5m			
6				
8				
10				
12				



# TEST PIT LOG

Pit No: CBC-TP-02.  
 Date: Aug 27 108

Project: Keno Closure Studies

Total Depth: 3.0 m.

Location: CBC-TP-02 - pit east of main CBC Tower

Pit Dimensions: 1x3x3

Logged by: P. Inglis, K. Neunherz.

Sampling Method: Grab

Contractor: ERDC

Equipment Type: Hoe

Comments: -new pit, no water

3.0m ↑

Depth Log (ft / m)	Material Description	Ground Water	Sample No.	Remarks
	packed gravel & sand/silt	no	/	- potential 30x100m area - no water.
2				
2.4m	very hard rock @ 2.4m -> fractured bedrock			
1				
4	no evidence of groundwater Est. 3m			
6				
2				
8				
3				
10				
12				
4				



# TEST PIT LOG

Pit No:  
VTPO1

Date:  
Aug. 27/08

Project: Keno Closure Studies.

Total Depth:  
3.2m.

Location: VTPO1 - (H LTK) tailings in area of sludge ponds.

Pit Dimensions:  
1x3x3.2

Logged by: P. Inghis, R. Neunherz.

Sampling Method:  
Grab

Contractor: ERDC

Equipment Type:  
ICE

Comments: - tailings from top to depth of 2.3m. - potential 30m x 30m area - with 10% expansion

32m ↑

Depth Log (ft/m)	Material Description	Ground Water	Sample No.	Remarks
0.2m	- oxidized black tailings			
0.1m	- red/brown tailings.	no	none	- no water
2.3m	- yellow/brown tailings			
2.6m	- rich brown soil			
3.3m	- fractured bedrock.			
	no evidence of groundwater			
	EOH: 3.2m			
2				
6				
8				
10				
12				



# TEST PIT LOG

Pit No:  
VT-TPO2  
Date:  
Aug. 27 108.

Project: Keno Closure Studies

Total Depth: 2.1m.

Location: VT-TPO2 - SW pond @ bottom

Pit Dimensions:  
1x3x2.1m

Logged by: P. Inglis, K. Neunherz.

Sampling Method:  
Grab

Contractor: ERDC

Equipment Type:  
HOB

Comments: - no water. - tailings to depth of 1.6m

2.1m ↑

Depth Log (ft/m)	Material Description	Ground Water	Sample No.	Remarks
1.6m	tailings	none	none	
2	-organics (with cobbles/gravel)			
1	EOM: 2.1m			
4	no groundwater			
6				
2				
8				
3				
10				
4				
12				



ALEXCO

# TEST PIT LOG

Pit No: Test Pit #1

Date: Aug 26, 2008

Project: Keno Valley Contaminated Sites Closure Studies

Total Depth: 2.30m

Location: Elsa School / West End of School Yard / ball diamond.

Pit Dimensions: 1x3x2.3

Logged by: P. Inglis & K. Neunherz

Sampling Method: Grab

Contractor: EROC

Equipment Type: Kubota KX080-3

Comments: fill from surface to 2.20m, fractured bedrock 2.20m - unable to dig below 2.30m

2.30m

Depth Log (ft/m)	Material Description	Ground Water	Sample No.	Remarks
0.1m	fill & organics dark brown			
0.1m	fill & organics light brown			
2.0m	fill dark brown			
2.2m	fractured bedrock	none	none	
2.3m	depth of hole.			
4	- looking for GW for LTP or land fill no ground water encountered			- moved hole 2 m S E same results.
6	EAU: 2.3m could not dig below - too hard.			- no water. - potential landfill site.
8				
10				
12				



# TEST PIT LOG

Pit No: TP2  
 Date: Aug. 26/08

Project: Keno Valley Cont. Site Closure Studies

Total Depth: 3.1m

Location: Elsa school - ball diamond 3m from fence.

Pit Dimensions: 1.2 x 1.1m

Logged by: Paul Inaylis, K. Neunherz

Sampling Method: Grab

Contractor: ERDC

Equipment Type: Kubota P106

Comments: moved from TP1 LTP of last fill

3.1m

Depth Log (ft/m)	Material Description	Ground Water	Sample No.	Remarks
0.1m	light brown fill	no	none	- soil at bottom was very moist - left open to allow GW seepage. - UST at school - no water after 24hrs.
3.0m	fill: clay / gravel / cobble 30% 60% 10%			
2	dark brown clay			
1				
4	fractured bedrock			
	no groundwater encountered est. 3.1m			
6				
2				
8				
3				
10				
4				



# TEST PIT LOG

Pit No: TP3  
 Date: Aug. 26/08

Project: Keno Valley Cont Sites Closure Studies

Total Depth: 3.55 m

Location: W. end of school in flsa

Pit Dimensions: 1.3 x 3.1

Logged by: P. Inglis, R. Naubert

Sampling Method: Grab

Contractor: EROC LTF on Landfill

Equipment Type: Hoe

Comments: -no water visible, -no water after 24 hrs.

3.55m

Depth Log (ft/m)	Material Description	Ground Water	Sample No.	Remarks
0.5m	organics fill	no	none	
2	fill gravel/cobbles			
3.05m	no evidence of groundwater			
4	left open for 24hrs no water collected			
6	EOL: 3.1m			
8				
10				
12				



ALEXCO

# TEST PIT LOG

Pit No: TP4

Date: Aug. 26/08

Project: Keno Closure

Total Depth: 3.0m.

Location: framing mill / carpentry yard - far east end post

Pit Dimensions: 1x3x3

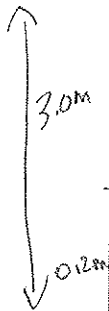
Logged by: P. Inglis & K. Neunherz  
surround on rd. edge

Sampling Method: Grabs

Contractor: EROZ

Equipment Type: Hoe

Comments: Looking for LTP on bedrock



Depth Log (ft/m)	Material Description	Ground Water	Sample No.	Remarks
0.12m				
2.0m	fill: gravel / clay / cobble / sand 50% 15% 20% 15% black / grey	none	none	
2.8m	organics: dark brown 2 sand dust cobbles			
4.0m	EOH: 3m no groundwater encountered			
6.0m				
8.0m				
10.0m				
12.0m				



ALEXCO

# TEST PIT LOG

Pit No: TPS

Date: Aug. 26/08

Project: Keno Closure

Total Depth: 3.0m

Location: LTF - Framing Mill/carpenters Yard - west end near access

Pit Dimensions: 1x3x3

Logged by: P. Inglis, K. Neunherz

Sampling Method: Grnd

Contractor: EROC

Equipment Type: hoe

Comments: - extensive boulder/cobble input - difficult digging - broken thumb on hoe bucket

3.0m

Depth Log (ft/m)	Material Description	Ground Water	Sample No.	Remarks
0.1	organics / A horizon / slightly mineralized			
2.9	large cobble / boulder / grey sand	none	none	
1	no groundwater encountered			
4	possible LTF + bedrock			
6				
8				
10				
12				



ALEXCO

# TEST PIT LOG

Pit No: TPI

Date: Oct. 2108

Project: KONO Closure

Total Depth: 3.6m

Location: Landfill test pit in front of Bunkhouse 1

Pit Dimensions: 1x3x3.6

Logged by: K.N.

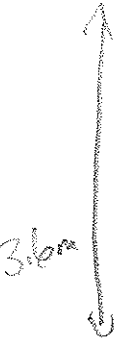
Sampling Method: Grab

Contractor: ERDC

Equipment Type: Hoe

Comments: LTR or landfill location

Depth Log (ft/m)	Material Description	Ground Water	Vapors Sample No. ppm	Remarks
0-0.30m	DK greyish brown sandy s.H.	None	174	
0.5-1m	gravel, larger cobbles		276	
2				
3.6m	no groundwater encountered Bot 3.6m			
4				
6				
8				
10				
12				





# TEST PIT LOG

Pit No: VP1

Date: Oct. 1/08

Project: KENO Closure

Total Depth: 3.4m

Location: Galkens 300 near Quonset - GPS: 08V0482563 UTM 7088802

Pit Dimensions: 1x3x3.4

Logged by: K. Neunherz

Sampling Method: grab

Contractor: EROC

Equipment Type: HOC

Comments: LTP or low bit location

3.4m ↑

Depth Log (ft/m)	Material Description	Ground Water	Sample No.	Remarks
	Dk olive brown silty sand, with gravel, some cobbles	none	none	-no evidence of groundwater just minor surface run off
2				
1	no ground water encountered EOL: 3.4m			
4				
6				
2				
8				
3				
10				
4				



ALEXCO

# TEST PIT LOG

Pit No: TPI

Date: Oct. 2108

Project: Keno Closure

Total Depth: 3m

Location: 08 V 047 5907  
Fuel Storage Area #4 UTM 7087100

Pit Dimensions: 1x3x3

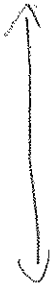
Logged by: K. Neunhertz

Sampling Method: Grab

Contractor: EROC

Equipment Type: Hoe

Comments: LIF location?



Depth Log (ft/m)	Material Description	Ground Water	Vapours Sample No.	Remarks
0-0.5m	DK brown, silty sand, gravel, cobbles	none	6254	Sample
0.5-1m	gray hydrocarbon staining throughout		8854	
1-1.5m			8483	
2	no evidence of groundwater		-	
2-2.5m			7164	
3m	Hoe could not excavate past 3m		5238	
4				
6				
8				
10				
12				



# TEST PIT LOG

Pit No: TP2  
 Date: Oct. 21 08

Project: KENO CLOSURE.

Total Depth: 3m

Location: Fuel Storage Area #4 - 08V047589B  
 UTM 7087084

Pit Dimensions: 1x3x3

Logged by: K. N

Sampling Method: Gmb

Contractor: ERDC

Equipment Type: H02

Comments: LTK location?

3m ↑

Depth Log (ft/m)	Material Description	Ground Water	Vapour Sample No. ppm	Remarks
0-1m	Grey sand / gravel / cobbles no HC staining no evidence of groundwater		16.2	Re-route TP 1 10m away
2-3m	200-500		46.3	
4				
6				
8				
10				
12				



# TEST PIT LOG

Pit No: **TP1**  
 Date: **Oct 2 108**

Project: **Keno Closure**

Total Depth: **3m**

Location: **Fuel Storage Area #3**    **OBV 0475825**  
**UTM 7087100**

Pit Dimensions:  
**1x3x3**

Logged by: **K.N**

Sampling Method:  
**Grab**

Contractor: **ERDC**

Equipment Type:  
**UBE**

Comments:



Depth Log (ft/m)	Material Description	Ground Water	Vapours Sample No.	Remarks
0-0.5m	Gravel, sand, cobble grey	None	2214	Sample
0.5-1m	Grey MC staining 0.2m no evidence of GW		1885	
2	2-2.5m		251	
4	Bottom: 3m			
6				
8				
10				
12				



# TEST PIT LOG

Pit No: TP2

Date: Oct. 21 08

Project: KERO Closure

Total Depth: 2m.

Location: Fuel Storage area #3 -TP2 08V 0475830  
UTM 7087105

Pit Dimensions: 1 x 3 x 2

Logged by: K.W.

Sampling Method: Gmb

Contractor: EROC

Equipment Type: Hbe

Comments: LTF ?

Depth Log (ft/m)	Material Description	Ground Water	Vapours Sample No. ppm	Remarks
0.5	Coarse grained sand / gravel / cobbles grey color		106	10 m from TP1 to delimitate
2	no HC staining no evidence of GW			
1	BOM: 2m			
4				
6				
2				
8				
3				
10				
4				

2.0m

**Appendix F**

**Spreadsheet of the Buildings  
Square Meters**

Site Surrounding Area	Building	Size L x W x H (m)	Square Meters
Silver King	100 Portal Shed	100 x 4 x 4	400
	Shifters Office	5 x 4 x 4	20
	Compressor	8 x 4 x 4	32
	Storage Shed	9 x 5 x 6	45
	Ventilation	4 x 3 x 4	12
Husky 2	2A Shaft Headframe	17 x 18 x 25	306
	2B Hoist House	24 x 12.5 x 10	300
	2C Boiler	10 x 7 x 6	70
	2D Storage	2.5 x 4 x 4	10
	2E Storage	16 x 5 x 4	80
Elsa Mine 3	3a Shack	4 x 4 x 2.5	16
Dixie 4	4a Garage	3 x 6 x 3	18
Birmingham 6	6A Shafthouse	15 x 6 x 12	90
	6B Explosive House	6 x 4 x 4	24
	6C Residential	6 x 10 x 4	60
	6d water shack	4 x 2 x 3	8
	6E Residential	6 x 4 x 4	24
	6F Residential	6 x 4 x 4	24
No Cash 100	7a Tramway	26 x 6 x 5	156
	7b garage	14 x 14x 10	196
	7c shaft house	12 x 7 x 4	84
	7d lunch room	4 x 8 x 8	32
Ruby 400	garage	12 x 10 x 8	120
No Cash 500	7F Garage	6 x 6.5 x 5	36
	7G Adit	4 x 3 x 2.5	12
Hector/Calumet	Shacks	1.5 x 1.5 x 2	3
	Bunk House	10 x 3 x ?	30
	Wtaer Storage	2 x 2 x 2.5	4
Galkeno mine 11	11a Quonset	19 x 10 x 6	190
	11b loading	6 x 8 x 20	48
	11c residence	12 x 10 x 10	120
	11f storage	2 x 2 x 6	4
	11g residence	10 x 8 x 10	80
	11h residence	8 x 6 x 8	48
Galkeno 900	12a storage	8 x 4 x 3	24
	12b cabin	5 x 5 x 1	25
	12c outhouse	1.5 x 1.5 x 2	2
Blue Bird	14 A CABIN	7 x 5 x 4	35
Rico	16A CABIN	5 x 3 x 2	15

Site Surrounding Area	Building	Size L x W x H (m)	Square Meters	
Onek Minesite	19a	7 x 2 x 3	14	
	19B	3 x 2 x 3	6	
	19c	6 x 2 x 3	12	
	19d	10 x 3 x 3	30	
	19e	14 x 7 x 3	98	
	19f	10 x 7 x ?	70	
	19g	13 x 10 x ?	130	
	19h	3 x 2 x 3	6	
	19i	1 x 1.5 x 2.5	2	
	19m	25 x 5 x ?	125	
	19n	12 x 10 x ?	120	
	19o	15 x 12 x ?	180	
	Wernecke	21a	20 x 12	240
		21b	4.5 x 3.5	15
21c		4 x 4	16	
21d		4 x 3	12	
21e		3 x 2	6	
21f		12 x 10	120	
21g		15 x 10	150	
21h		6 x 5	30	
21i		7 x 5 x 4	35	
21j		3 x 2.5	9	
21k		16 x 10	160	
Bellekeno 22		22a	30 x 5	150
	22b	30 x 5	150	
	22c	10 x 6	60	
	22d	10 x 5	50	
	22e	3.5 x 2.5	8	
	22f	4 x 3.5	12	
	22g	3 x 2.5	6	
	22h	4 x 3	12	
	22i	6 x 3.5	24	
	22j	6 x 3.5	24	
	22k	2.5 x 2.5	9	
	22m	2 x 2	4	
	22n	5 x 3	15	
	Black cap, shepard, lucky queen #25	Load out	31 x 9	279
Load out		42 x 5	210	
workshop		24 x 10	240	
Lucky Queen 26	26a	13 x 5 x 5	65	
Lake 27	27a	15 x 8 x 3	120	

Site Surrounding Area	Building	Size L x W x H (m)	Square Meters
Shamrock 28	28a main	12 x 6 x 6	72
	28b generator	3 x 5 x 2	15
	28c shed	2 x 4 x 2	8
	28d shack	3 x 3 x 3	9
Highlander	29a	6 x 7	42
	29b	10 x 6	60
	29c	10 x 6	60
Stone	31a	7 x 4	28
	31b	5 x 3	15
	31c	24 x 15	360
	31d	20 x 15	300
Keno 700 #32	32a mess hall	15 x 30 x ?	450
	32b bunkhouse	40 x 20 x ?	800
	32c bunkhouse	30 x 6 x ?	180
	32d managers	8 x 5 x ?	40
	32e garage	8 x 3 x 6	24
	32f post office	20 x 12 x ?	240
	32g generator	28 x 7 x ?	196
	32h shop	4 x 5 x ?	20
	32i geo office	10 x 10 x ?	100
	32j boiler room	12 x 12 x ?	144
Main fault	old collapsed portal	1.5 x 1.5 x ?	2
Lake view	cabin collapsed	5 x 5 x ?	25
Nabob #2 site 35	cabin collapsed	4 x 3 x ?	12
Keno 9	32a	15 x 10 x 4	150
Divide #40	40a	6 x 6 x 8	36
Devon	cabin	4 x 3 x 4	12
Faith	tent frame structure	3 x 3 x 2	9
Duncan	43a	10 x 10 x ?	10
Apex	48a cabin	3.5 x 2.5 x 2.5	12
Vanguard	cabin	5 x 4 x 2	20
Homestake	50a	17 x 4 x 3	68
	50b	3.5 x 3.5 x 3	16
MO #52	52A wooden shack	5 x 3 x 3	15
Mayburn	53a	2.5 x 2 x 2.5	6
Runer #55	55a garage	11 x 5 x 4	55
	55b storage	5 x 3 x 3	15
	55c water tower	5 x 5 x 5	25
Formo #57	57a core shack	11 x 6 x 5	66
	57b wood shack	5 x 4 x 4	20
	57c adit	5 x 3 x 3	15
	57d wood cabin	7 x 6 x 8	42
	57e outhouse	4 x 3 x 4	12

Site Surrounding Area	Building	Size L x W x H (m)	Square Meters
Paddy #58	storage building	4 x 3 x 3	12
Eagle	cabin	2 x 1.5 x 1.5	4
Cream and Jean	61a headframe	4 x 6 x 8	24
	61b bunkhouse	11 x 4 x ?	44
moon	66a	6 x 3 x 2.5	18
	66b	4.5 x 4.5 x 4	25
	66c	6 x 3 x 3	18
Christal	collapsed shed	10 x 10 x ?	100
Gambler	73a cabin	6 x 5 x 3	30
	73b shed	5 x 5 x 2	25
	73c wood tent frame	3 x 3	9
Townsite	76a office/shop	3 x 3 x 3	9
sadie ladue	cabin	4 x 3 x 3	12
Elas tailings	79a b transmission	4 x 4 x 3	16
	79c sat building	3 x 2 x 3	6
	79d pcb storage	8 x 5 x 3	40
	79e, f explosive	7 x 2 x 3	14
Mackeno	81a pumphouse	2 x 3 x 1.5	6
	81b weigh scale	10 x 7 x ?	70
	81c shack	3 x 2 x 3	6
Dublin Gulch #88	88a	9 x 10	90
	88b	5 x 5	25
	88c	3 x 2	6
	88d	5 x 8	40
	88f	3 x 12	36
	88g	5 x 10	50
	88h	2 x 2	4
	88i	3 x 6	18
	88j	3 x 7	21
	88k	3 x 13	39
	88l	4 x 5	20
	88m	3 x 8	24
		Total volume:	10494

Site Surrounding Area	Building	Size L x W x H (m)	Square Meters
Elsa Village	1	6 x 6	36
	2	2 x 3	6
	3	7 x 5	35
	4	40 x 7	280
	5	23 x 17	391
	6	11 x 7	77
	7	25 x 15	375
	8	46 x 9	414
	9	73 x 23	0
	10	8 x 45	360
	11	10 x 10	100
	12	24 x 9	216
	13	44 x 9	396
	14	15 x 8	120
	15	8 x 30	240
	16	36 x 24	864
	17	24 x 32	768
	18	5 x 5	25
	19	10 x 10	10
	20	70 x 80	5600
	21	23 x 20	460
	22	20 x 15	300
	23	15 x 15	0
	24	22 x 12	264
	25	27 x 10	270
	26	40 x 7	280
	27	54 x 20	0
	28		0
	29	20 x 10	200
	30	5 x 4	20
	31	19 x 12	228
	32	35 x 14	490
	33	19 x 12	228
	34	10 x 10	100
	35	30 x 10	300
	36	40 x 10	400
	37	10 x 10	100
	38	10 x 15	150
	39	20 x 10	200

Site Surrounding Area	Building	Size L x W x H (m)	Square Meters
Elsa Village	40	3 x 7	21
	41	15 x 10	150
	42	9 x 5	45
	43	10 x 10	100
	44	10 x 15	150
	45	10 x 15	150
	46	10 x 15	150
	47	10 x 15	150
	48	10 x 15	150
	49	10 x 15	150
	50	10 x 15	150
	51	10 x 15	150
	52	5 x 3	15
	53	7 x 5	35
	54	80 x 35	2800
	55	4 x 3	12
	56	10 x 10	100
	57	8 x 6	48
		Total:	18829

## **Appendix G**

### **Demolition Plan**



**Elsa Reclamation and Development Company**  
**Keno Hill Mine**  
**Site Investigation and Improvements, Special Projects**  
**Demolition Plan**

**Date:**

**June 3, 2009**

*Prepared for:*

**Elsa Reclamation & Development Company**  
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*Prepared by:*



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## 1.0 PROJECT DESCRIPTION

Approximately 211 buildings ranging in various sizes and building construction type reside throughout the Keno Hill Silver District and require demolition as part of the Existing State of Mine Closure Plan. It is estimated that 43,985 m<sup>3</sup> of building waste is required to be buried throughout the district, including within the Elsa town site. The report completed by Access Consulting Group titled: "*Elsa Reclamation and Development Company, Keno Hill Mine, Site Investigation and Improvements, Special Projects, Hazardous Waste Assessment*", March 31, 2009 outlines the various hazardous waste identified in the buildings during the field assessment. As part of the physical hazard assessment plan, heritage consultation will be conducted with Indian and Northern Affairs Canada (INAC), Yukon Government Heritage, Keno City residents and First Nation of Nă Cho N'yak Dun (NNDFN) to determine if the buildings can be demolished or if they will be designated as a historical heritage site.

The hazardous waste assessment was completed in August 2008 and January/February 2009. Hazardous waste including batteries, partially full drums with unknown material, asbestos, PCB lamp ballasts, lead paint and containers with unknown chemicals were identified in the buildings throughout the district. Previous hazardous waste removal programs were completed throughout the district and included the collection, storage and removal of PCB, laboratory and mill chemicals. Hazardous waste will be removed as per the special waste permit with the exception of lead paint and asbestos prior to demolition.

The demolition plan will be completed over the next two to five years. The buildings are one to four stories high and were built anywhere from 1920 to 1990. The buildings mostly consisted of bunk houses, mess halls, grocery stores, mechanic and maintenance shops, storage sheds, utility/boiler rooms and geology/engineering buildings. A sawmill and a large floatation mill/crusher house is located in the Elsa town site. Most of the buildings are wood framed and sheeted construction, but there are a few steel framed structures located throughout the district. The majority of the buildings are wrapped in an asbestos tar paper or have asbestos tiles as siding.

An excavator will be used to demolish the buildings and a dump truck will be used, if required, to move the rubble to an approved disposal location. Elsa Reclamation and Development Company (ERDC), a wholly owned subsidiary of Alexco Resource Corp., has a commercial dump permit in place. A demolition plan outlining worker health and safety is required due to the asbestos building materials.

### 1.1 Objective

The objective of this demolition plan is to outline safe work procedures for the protection and safety of the workers, the public and the environment.

## 1.2 Tasks

The following tasks are involved within the demolition plan:

- 1) The buildings will be inspected as part of the heritage consultation and will be conducted with INAC, Yukon Government Heritage, Keno City residents and First Nation of Nă Cho N'yak Dun (NNDFN) to determine if the buildings can be demolished or if they will be designated as a historical heritage site. Items of interest will be salvaged and saved;
- 2) One supervisor will be available and onsite at all times and will be trained in asbestos awareness and removal;
- 3) All workers will be required to read, understand and follow the onsite 2008 Alexco Resource Corp. safety manual;
- 4) A pre job meeting for everyone involved will be conducted with WCB present onsite;
- 5) Daily tailgate safety meetings will be conducted by the onsite supervisor and a Safety Checklist will be completed;
- 6) Designated work areas will be clearly marked using warning signs, barricades and caution tape. Only authorized workers may enter the work area;
- 7) Smoking is not permitted in the work area, only after proper decontamination procedures for breaks have been followed;
- 8) The entrance and exit of the designated work area will be controlled;
- 9) Workers will wear proper personal protective equipment (PPE). Proper PPE includes:
  - a) Impervious disposable coveralls with hoods that resist asbestos fibre penetration. Gaps will be taped shut;
  - b) CSA steel toed rubber boots;
  - c) Rubber gloves;
  - d) Safety eye wear;
  - e) Hardhat;
  - f) Visible safety vests; and
  - g) Fitted respirators with a "100" HEPA filter.
- 10) Workers will be clean shaven and required to perform a fit test with the respirator. Three powered air purifying units will be made available to the workers if needed;
- 11) Compressed air will not be used to clean up or to remove dust from work areas or clothing;
- 12) Dry sweeping will not be permitted;
- 13) Prior to demolition, the building will be inspected again to ensure the utilities are disconnected. This will be a component of the safety checklist. Any hazardous waste such as batteries, partially full drums with unknown material, PCB lamp ballasts and containers with unknown chemicals; unknown containers will be removed, stored and handled as per the special waste permit. The buildings will be then given approval for demolition;
- 14) Large volumes of water will be available at the demolition site and the disposal area. Water will be applied to the work areas (depending on the specific situation and building) using either a 1 ½ inch fire hose with an adjustable nozzle or spray bottles with a surfactant. All work areas with potential Asbestos Containing Material (ACM) will be kept wet;

- 15) The air will be continually misted near workers who are removing asbestos or cleaning up waste materials;
- 16) Wearing PPE, any uncontaminated (free of ACM or paint) metal, wood and building contents that can be easily collected will be segregated and salvaged, the work area will be kept misted;
- 17) If asbestos is being segregated and removed from a building, either a hose or spray bottle (depending on what works better) will be used to apply water to the work area during the manual removal of asbestos tar paper or asbestos cement tiles. The asbestos will be either bagged right away or kept wet until it is disposed of in the landfill. The wood under the asbestos will not be salvaged or reused, only burned;
- 18) Friable piping asbestos will be removed where possible using the glove bag system or covered in poly then cut and "capped". If the glove bags or poly are not practical, the piping will be soaked using the fire hose or spray bottle with a surfactant during removal. Pipe with ACM will not be salvaged or reused only buried in the approved landfill onsite;
- 19) If there are no uncontaminated materials in a building to be segregated, the inside and outside of the building will be soaked with water using at least a 1 ½ inch fire hose with an adjustable nozzle prior to demolition. As the excavator pushes the building down, a water mist will be applied to knock down any dust particles. Water is critical to prevent workers from being exposed to potentially hazardous dust;
- 20) Workers and equipment will be positioned as best as possible upwind from the buildings and work areas;
- 21) All workers in the designated work area will follow a decontamination protocol if leaving the work site;
- 22) If waste material is required to be moved using a dump truck, loads will be soaked and then covered. Waste material will be assessed daily;
- 23) Water will be used at the disposal location to knock the dust down while the dump truck is unloading and while the material is being moved into the waste cell. The dump trucks will be rinsed out once they are emptied. Residual waste will be collected in a small pond, allowed to evaporate, then covered;
- 24) The waste that can not be burned will be disposed of as per the commercial dump/solid waste permit;
- 25) The disposal sites will be decommissioned as per the appropriate Yukon Government *Environment Act Regulations*. Specifically, Schedule 1 Operating Standards for Dumps #4 (Closure and Abandonment of the dump). Decommissioning will include capping the disposal area with 1 m of compacted soil; if necessary a toe berm will be placed along the base of the disposal area to prevent slumping and the area will be revegetated similar to the surrounding area;
- 26) Burning of uncontaminated wood (free of ACM and paint) will be done in accordance with the air emissions and/or burning permit;
- 27) Uncontaminated metal (free of ACM) will be stockpiled in a designated area. Disposal options will be evaluated;
- 28) The disposal areas will be minimized and will be staked with a steel stake, marked using a GPS and mapped.

### **1.3 Decontamination Protocol:**

- 1) A three stage decontamination trailer will be used. Partitions between rooms in the decontamination trailer will be self-closing so that each room can function as an air lock. They will be constructed of overlapping sheets of heavyweight poly to form a curtain;

#### **Entering the contaminated work area:**

- 2) Enter the clean room, remove all street clothes and personal belongings, and leave them in the clean room. Store clean, unused disposable coveralls in this room.
- 3) If the worker is not going to wear warm clothing underneath the coveralls, the disposable coveralls can be put on. If designated warm clothing is going to be worn, skip to step 4 and carry disposable coveralls to the transfer room;
- 4) Put on respirator and ensure that it fits and works properly;
- 5) Pass through shower room;
- 6) In the personal transfer room if the worker is already wearing the disposable coveralls, finish putting on any other PPE required, including gloves, steel toes rubber boots and safety head gear. If designated warm clothing is being worn, put on clothing, followed by the disposable coveralls then the remaining PPE; and
- 7) Enter the contaminated work area.

#### **Leaving the Contaminated Work Area:**

- 8) Before entering the personnel transfer room, remove all gross asbestos using wet rags or a vacuum cleaner equipped with a HEPA-filtered exhaust.
- 9) In the personnel transfer room, remove all protective clothing and equipment except the respirator. Hang designated warm clothing and place disposable protective clothing and any waste materials in a poly bag for disposal.
- 10) Enter the shower room and shower while wearing the respirator. After having an initial shower and thoroughly rinsing respirator face piece and its harness, remove the respirator and finish showering. (Adequate supply of tempered water and soap must be provided).
- 11) Enter the clean room and dress in street clothes. Thoroughly clean and disinfect the respirator, then store it in the clean room until its next use. Wet filters are not normally reused.

#### **Decontamination continued:**

- 12) A vacuum cleaner equipped with a HEPA-filtered exhaust will be used to clean up any dust or waste during work. The vacuums will be used to clean the cab of any equipment used during demolition. Where possible, vehicles will be rinsed out and wiped clean using wet rags at the end of the project;
- 13) Vehicles will be designated for the project and "clean" workers will not use equipment or trucks until the vehicles are cleaned. Workers cleaning vehicles will where applicable PPE and follow decontamination protocol;

- 14) For lunch and for any breaks during the day Workers will be required at minimum to decontaminate using vacuums and water around their faces and hands (hood may be pulled back). Breaks will be taken a safe distance away from the designated work area;
- 15) The WCHSB safety officer will be notified when the work is completed.

The safety manual outlines all environmental, workplace, safety and accident reporting and drug/alcohol substance abuse policies. Emergency contact information as well as emergency procedures are outlined in the manual. All workers onsite will be expected to read, understand, follow and enforce the policies. Following the demolition plan, No 14 Demolition Code of Practice and the safety manual will be critical in the protection of workers, the public and the environment.