

# Anvil Range Mine 2005 Investigation of Hydrocarbon- Contaminated Soils



Prepared for  
**Deloitte & Touche Inc.** (in its capacity as Interim  
Receiver of Anvil Range Mining Corp.)

Submitted by  
**Gartner Lee Limited**

June 2006



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Range Mining Corp.)

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**6 Faro Mine Closure Office**

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Gartner Lee



Gartner Lee Limited



June 30, 2006

Mr. Doug Sedgwick  
Deloitte & Touche Inc.  
Suite 1900  
79 Wellington Street, TD Centre  
Toronto, ON M5K 1B9

Dear Mr. Sedgwick:

**Re: Anvil Range Mine, 2005 Investigation of Hydrocarbon-Contaminated Soils**

We are pleased to provide the report referenced above. This is a final report that has considered comments received from yourself, the Faro Mine Closure Planning Office, Environment Canada and the Government of Yukon Department of Environment.

Please do not hesitate to contact us should you have any questions. We thank you for the opportunity to work on this project.

Yours very truly,  
GARTNER LEE LIMITED

Eric Denholm  
Senior Mining Consultant

cc: Faro Mine Closure Planning Office

# Table of Contents

Letter of Transmittal  
Executive Summary

	Page
Executive Summary .....	i
<b>1. Introduction.....</b>	<b>1</b>
1.1 Project Background and Purpose .....	1
1.2 Background to the Environmental Site Assessment .....	2
1.3 Scope of Work .....	3
1.4 Areas of Environmental Concern.....	3
1.4.1 Faro Mine Site .....	3
1.4.2 Vangorda Plateau Mine Site .....	4
1.5 Regulatory Framework .....	4
1.5.1 Approach to Using CCME and Territorial Soil Quality Objectives .....	4
1.5.2 Metals in Soil.....	5
1.5.3 Hydrocarbons in Soil .....	5
<b>2. Investigation Methods .....</b>	<b>7</b>
2.1 Collection of Soil Samples .....	7
2.2 Selection of Soil Samples for Analysis.....	8
2.3 QA/QC Procedures and Evaluation .....	9
2.3.1 Field QA/QC Methods.....	9
2.3.2 Laboratory QA/QC Procedures .....	10
<b>3. Results .....</b>	<b>11</b>
3.1 Overview of Drilling and Sample Collection .....	11
3.2 Site Stratigraphy .....	12
3.2.1 Faro Mine Site .....	12
3.2.2 Vangorda Mine Site.....	13
3.3 Soil Analytical Results – Faro Mine Site.....	13
3.3.1 Lube Shack .....	14
3.3.2 Tank Farm.....	15
3.3.3 Mill Diesel Tank/Emergency Generator Yard.....	16
3.3.4 Waste Oil Tanks.....	16
3.3.5 Maintenance Bays.....	17
3.4 Soil Analytical Results – Vangorda Plateau Site .....	18
3.4.1 Lube Shack .....	19
3.4.2 Tank Farm.....	20
<b>4. Observations and Recommendations.....</b>	<b>22</b>
4.1 Hydrocarbon Concentrations in Soil.....	22
4.2 Summary of Areas of Concern .....	22
4.3 Recommendations.....	23
<b>5. Closure .....</b>	<b>24</b>

## List of Tables (In Text)

Table A.	PHC CWS Receptors/Pathways .....	6
Table B.	Locations and Numbers of Samples Collected.....	11
Table C.	Soil Analyses Undertaken .....	12
Table D.	Estimated Soil Volumes for Faro Lube Shack .....	15
Table E.	Estimated Soil Volumes for Faro Tank Farm.....	15
Table F.	Estimated Soil Volumes for the Faro Waste Oil Tank Area .....	17
Table G.	Estimated Soil Volumes for the Faro Maintenance Bays Area .....	18
Table H.	Estimated Soil Volumes for the Vangorda Plateau Lube Shack .....	19
Table I.	Estimated Soil Volumes for the Vangorda Plateau Tank Farm.....	21
Table J.	Summary of Observed F1-F4 Hydrocarbon Concentrations .....	22
Table K.	Summary of Observations .....	23

## List of Figures (Back of Report)

Figure 1.	Site Overview – Vangorda and Faro Mine Site
Figure 2.	Sample Location Plan – Faro Mine Site
Figure 3.	Sample Location Plan – Vangorda Plateau Mine Site
Figure 4.	Faro Lube Shack and Tank Farm
Figure 5.	Waste Oil and Fuel Tank Area
Figure 6.	Maintenance Shop Area
Figure 7.	Grum Lube Shack and Tank Farm

## List of Tables (Back of Report)

### Faro Mine Site

Table 1.	Lube Shack – Soil Analysis Results
Table 2.	Tank Farm – Soil Analysis Results
Table 3.	Mill Diesel Tank – Soil Analysis Results
Table 4.	Waste Oil Tank – Soil Analysis Results
Table 5.	Maintenance Bays – Soil Analysis Results

### Vangorda Plateau Mine Site

Table 6.	Lube Shack – Soil Analysis Results
Table 7.	Tank Farm – Soil Analysis Results

## Appendices

A.	Tier 1 Objectives – Canada Wide Standards
B.	Borehole Logs
C.	Photographs
D.	Analytical Reports

## **Executive Summary**

The age of the Anvil Range Mine and the expansive historical operations resulted in the contamination of soils on the site with hydrocarbons. This is acknowledged in the 2003 Water Licence renewal process as well as in numerous other references. In recent years, the Interim Receiver has excavated surficial soils in work areas, such as the (ex) ore-haul contractor yard, where surficial staining or odour was present and where dispersion of hydrocarbons on footwear and vehicle tires was a risk. This soil is stored within the mine-disturbed area for future remediation. Estimates of the remaining volumes of hydrocarbon-contaminated soil and identification of the dominant types of hydrocarbons present is information that will be required for remediation of the site.

A two-part field study has been carried out in 2004/2005 to begin the compilation of this information on hydrocarbon-contaminated soils. In 2004, an initial test pit investigation was conducted and this was followed in 2005 with drilling program. The 2005 program was designed specifically to follow up on the results of the 2004 program. It should be recognized that not all areas of the mine site are accessible (under buildings for example) or safe (Emergency Generator Yard for example) to investigate at this time.

Soil quality guidelines and Standards published by the Canadian Council of Ministers of the Environment were used to evaluate the data and, thereby, outline “contaminated” areas. A first-order minimum estimate of the volume of hydrocarbon-contaminated soil outlined through these investigations is 90,000 m<sup>3</sup>. For comparison, a preliminary ballpark volume of 15-25,000 m<sup>3</sup> was suggested for discussion purposes in the 2003 Water Licence Renewal process prior to any investigations (i.e., without the benefit of any field studies). This clearly confirms the benefit of having conducted the 2004/2005 investigations in providing a more realistic planning estimate.

The nature of hydrocarbon products present in the soil tested range from light volatiles (i.e., F1 fraction) to thicker oils and greases (i.e., F3 fraction). The information suggests that the dominant products lie within the F2 fraction, generally representative of constituents of gasoline and diesel.

This information should be helpful to the development of the Final Closure and Reclamation Plan. For example, the types of hydrocarbons present should be generally amenable to active evaporative techniques such as biocells. However, this is somewhat counteracted by the large volumes of soil which could require prohibitively large remediation cells and/or prohibitively lengthy remediation timeframes (for batching soil through a set of smaller cells).

As a general recommendation for the closure planning process, we suggest that various means of soil remediation continue to be researched, based on the 2004/2005 information. A related report by Gartner Lee Limited, *Anvil Range Mine, Soil Remedial Options Report, May 2005*, may be helpful in these

**Anvil Range Mine  
2005 Investigation of Hydrocarbon-Contaminated Soils**

considerations. Also, additional areas of the site should undergo investigation as they become accessible and safe.

# **1. Introduction**

## **1.1 Project Background and Purpose**

The Anvil Range Mine was a base metal (zinc-lead-silver) open pit mine located near the Town of Faro, Yukon that operated from 1969 to 1998, with several interruptions for changes of ownership and other events. The mine complex is a Yukon Type II Contaminated Site per the Devolution Transfer Agreement (“DTA”). In 1998, the mine complex and its facilities were placed under the management of a court-appointed interim receiver, and it has remained under the direct management of Deloitte & Touche Inc. (in its capacity as Interim Receiver of Anvil Range Mining Corp.) (the “Interim Receiver”) since that time.

The age of the Anvil Range Mine and the expansive historical operations resulted in the contamination of soils on the site with hydrocarbons. This is acknowledged in the 2003 Water Licence renewal process as well as in numerous other references. In recent years, the Interim Receiver has excavated surficial soils in work areas, such as the (ex) ore-haul contractor yard, where surficial staining or odour was present and where dispersion of hydrocarbons on footwear and vehicle tires was a high risk. This soil is stored within the mine-disturbed area for future remediation.

The mine complex consists of two mine sites (Faro and Vangorda Plateau) and a heavy haul road that connects the two (Figure 1). The initial ore processing rate was 13,500 tonnes per day and the total material mined rate in the latter years of operations was in the order of 90,000 tonnes per day. The site is expansive and incorporates three large open pits, three water treatment facilities, numerous large rock piles, tailings impoundments, ore processing facilities and all related buildings and facilities.

As part of a series of mine reclamation studies, the initiation of an Environmental Site Assessment (“ESA”) program, following established protocols, was discussed in 2004. In 2004, an investigation was conducted that could be considered the initiation of a larger, multi-year ESA program. The 2004 investigation focused on identifying areas of potential concern for hydrocarbon-contaminated soils and providing a preliminary investigation of those areas through a test pitting program. Some areas of potential concern could not be investigated due to safety concerns regarding electrical wires. The 2004 investigation provided a general verification and preliminary information regarding the areas of concern.

In 2005, Gartner Lee continued with this work to further investigate areas identified during the 2004 field program. Eight areas were identified for follow up investigation using a vibrasonic drilling technique to determine the depth of contamination and to improve the first-order estimates of hydrocarbon contaminated soil volumes.

**Anvil Range Mine**  
**2005 Investigation of Hydrocarbon-Contaminated Soils**

The goals of the investigations were expressed in the approved 2005 work plan (July 15, 2005) as follows:

*The overall goal of the combined 2004/2005 investigations is to provide a basic characterization of the types and areas of hydrocarbon-contamination in soil in areas where it is safe to conduct such investigations.*

*The specific goal of the 2005 investigation is to extend soil sampling to deeper depths at all or most of the eight target areas and to report on the findings, within the resources provided for the project.*

The eight areas that were targeted for investigation in 2005 and that are reported herein are as follows:

1. Faro Emergency Generator Yard – if deemed safe by site management;
2. Faro Mill Diesel Tank – if deemed safe by site management;
3. Faro Waste Oil Tank;
4. Faro Maintenance Bays Area;
5. Faro Lube Shack;
6. Faro Tank Farm;
7. Vangorda Plateau Lube Shack; and
8. Vangorda Plateau Tank Farm.

Gartner Lee conducted the 2005 field investigations in August 2005 and has prepared this report to present the data and preliminary interpretations of the results. For the purposes of this report, the “Tier 1” guidelines for soil quality published by the Canadian Council of Ministers of the Environment, including the 2001 Canada Wide Standards for Petroleum Hydrocarbons in Soil, have been used as the interim soil quality guidelines.

The areas investigated in 2004/2005 represent the key identified areas of concern that were safe and accessible to investigate. Readers should recognize that there are likely additional areas of the site that will be identified in future as they become accessible and safe for investigation.

## **1.2 Background to the Environmental Site Assessment**

Environmental Site Assessments (ESAs) are generally performed according to a Phase I, II and III staging of an investigation. A Phase I ESA is a preliminary study that is intended to identify areas and contaminants of potential environmental concern but does not provide the level of investigation necessary for the development of a remedial plan. A Phase II or III ESA focuses on surface and subsurface

**Anvil Range Mine**  
**2005 Investigation of Hydrocarbon-Contaminated Soils**

sampling through intrusive investigations such as test pit investigations and drilling and delineates contaminated areas such that soil remediation plans may be developed.

A Phase I ESA of the Anvil Range site was conducted in 1999 by GLL in partnership with the Ross River Dena Council (RRDC) for DIAND, Contaminants Program. That report, and the large body of information available for the Anvil Range site provided the basis for discussion of initiating a Phase II level of investigation in 2004. In addition to the 1999 Phase 1 ESA Report prepared by Gartner Lee, another important reference document for the ESA program is the Gartner Lee report “*Anvil Range Mine Complex, 2002 Baseline Environmental Information*”, Volume 2 of 2 of the Project Description for Renewal of the Water Licence dated May 2002 (the “Baseline Report”). The Baseline Report provides a compiled summary of the available environmental information and details of the Anvil Range Mine complex history, development and operation.

### **1.3 Scope of Work**

The scope of work for the 2005 investigation, per the approved workplan (July 15), consisted of:

- Task 1: Confirmation of Approach;
- Task 2: Field activities;
- Task 3: Analytical program;
- Task 4: Compilation and analysis of information; and
- Task 5: Reporting.

### **1.4 Areas of Environmental Concern**

Eight Areas of Environmental Concern for hydrocarbons in soil (AECs) were targeted for follow up investigations from the 2004 investigation. The identified AECs are summarized in the following paragraphs.

#### **1.4.1 Faro Mine Site**

Faro mine site AECs targeted for the 2005 investigation (Figure 2) include:

- a) Lube Shack (Figure 4);
- b) Tank Farm (Figure 4);
- c) Waste Oil Tank (Figure 5);
- d) Mill Diesel Tank (Figure 5);

**Anvil Range Mine**  
**2005 Investigation of Hydrocarbon-Contaminated Soils**

- e) Emergency Generator Yard (Figure 5); and
- f) Maintenance Bays (Figure 6).

In addition to the above, diesel odour in drill cuttings was identified by others during a separate drill program in the Emergency Tailings Area, located south of the mill building as identified on Figure 2 (SRK Consulting, pers. comm.). The drill hole(s) referenced passed through tailings and into the underlying native soil. This area is downgradient of the mill in a flowpath to the Rose Creek Tailings Facility where, historically, it is known that tailings and other contaminants were discharged. Therefore, it is reasonable that there may be hydrocarbon-contamination within and, possibly, underlying the tailings and this area is considered to be an additional area of concern. In consultation with Deloitte & Touche, this area was not investigated in 2005 pending a decision regarding possible removal of the tailings (and likely some of the upper native soils) from this area, which would then allow for a detailed test pit investigation of the native soils. This would provide for a more efficient and effective examination of the area than drill holes through the overlying tailings (up to 8 m thick).

## **1.4.2 Vangorda Plateau Mine Site**

Vangorda Plateau mine site AECs targeted for the 2005 investigation (Figure 3) include:

- a) Lube Shack (Figure 7); and
- b) Tank Farm (Figure 7).

## **1.5 Regulatory Framework**

### **1.5.1 Approach to Using CCME and Territorial Soil Quality Objectives**

Considerable discussion has been undertaken by the various project team member organizations regarding the most appropriate guidelines for contaminants in soil. The discussions led to the use of the CCME guidelines described below for assessment of metal and hydrocarbons in soil. This is consistent with the approach taken by Deloitte & Touche and Gartner Lee for assessment and cleanup of one small area of the mine complex, the (former) Copper Sulphate and Bulk Explosives Plants.

The Yukon Government provides Territorial soil quality standards in the Yukon Contaminated Sites Regulation (“YCSR”). For metals and some hydrocarbon parameters, the Standards of the YCSR are referenced throughout this report for additional context in the assessment of results. For certain hydrocarbon parameters, however, the YCSR provides soil quality Standards in a different chemical form than the CCME guidelines (e.g., hydrocarbon fractions F1 to F4) to the degree where different laboratory analyses of the soil are required. Therefore, reference is not made in this report to the YCSR Standards

**Anvil Range Mine**  
**2005 Investigation of Hydrocarbon-Contaminated Soils**

for those hydrocarbon parameters because the analyses required to enable this comparison were not conducted. This provided for a more focused and cost-effective analytical program.

### **1.5.2 Metals in Soil**

Mine sites exist because of natural concentrations of metals in the environment. When these metal concentrations become high enough, a mineral deposit is defined and is the target of the mining activity. Therefore, it is expected that naturally elevated concentrations of metals in soil will be found in the vicinity of the mineral occurrence or deposit. However, mining activities often exacerbate the distribution and mobility of the metals in the surrounding environment. Given this context, generic soil quality objectives are not always applicable at a mine site.

The assessment standard used for this investigation for metals in soil is the CCME Canadian Environmental Quality Guidelines for Contaminated Sites (“CEQG”) developed and published by the Canadian Council of Ministers of the Environment (“CCME”). We understand that Soil Quality Remediation Objectives (CCME Tier 2 or Tier 3) may be derived in the future to determine the most appropriate standards for concentrations of metals in the environment at this site. However, for current purposes, metal concentrations in soil have been compared to the CCME Tier 1 Soil Quality Guidelines (2002).

The Yukon Contaminated Sites Regulation Soil Standards are also referenced for comparative purposes (Department of Environment 2002) throughout this report.

The soil quality guidelines and standards used in this assessment are summarized on the analytical results Tables 1 through 7.

### **1.5.3 Hydrocarbons in Soil**

For Hydrocarbons in soil, the CCME 2001 Canada Wide Standards for Petroleum Hydrocarbons in Soil (“CWS”) have been used. The Industrial Land Use (IL) criteria were used. The Tier 1 CWS objectives are presented in Appendix A. The soil quality Standards used in this assessment are summarized in Table 1 through 7.

The CWS provide criteria for various receptors and exposure pathways such that the user may select those that are applicable to the site under investigation. The exposure pathways that are provided are listed in Table A. Those receptors/pathways that are considered appropriate for application at the Anvil Range site, and that have been used in this report, are also identified on Table A.

**Anvil Range Mine  
2005 Investigation of Hydrocarbon-Contaminated Soils**

**Table A. PHC CWS Receptors/Pathways**

<b>Exposure Pathway</b>	<b>Applied at Anvil Range Site</b>
Soil Ingestion	No
Dermal Soil Contact	No
Vapour Inhalation (indoor)	No
Protection of Potable groundwater	No
Protection of groundwater for Aquatic Life	No
Nutrient Cycling	<b>Yes</b>
Ecological Soil Contact	<b>Yes</b>
Produce	No

The CWS is a CCME soil quality guideline for petroleum hydrocarbons impacted soil and has been used to assess soil quality for hydrocarbons at the Anvil Range site. In this guideline, petroleum hydrocarbons are subdivided according to ranges of equivalent carbon number as specified in the CWS as follows:

- PHC CWS fraction F1 encompasses the range of equivalent carbon number from C<sub>6</sub> to C<sub>10</sub>. Constituents of fraction F1 include the volatile fraction of most hydrocarbons mixtures (including gasoline) such as benzene, ethylbenzene, toluene and xylene (BTEX);
- PHC CWS fraction F2 encompasses the range of equivalent carbon number from C<sub>11</sub> through C<sub>16</sub>. Constituents of fraction F2 are semi-volatile petroleum hydrocarbons and include constituents of gasoline and diesel fuels;
- PHC CWS fraction F3 encompasses the range of equivalent carbon number from C<sub>17</sub> through C<sub>34</sub>. Constituents of fraction F3 include typical lubricating oils and greases, heavy fuel oils, road oils and asphalts; and
- PHC CWS fraction F4 encompasses ranges of equivalent carbon number from C<sub>35</sub> through C<sub>50+</sub>. PHC within this fraction often make up a significant proportion of crude oils.

The CWS also includes consideration of fine grained versus coarse grained soils as well as depth below ground in the determination of guideline values. In general, finer-grained soils (defined as greater than 50% by dry weight having a grain size of less than 75 um) provide a higher guideline value due to the (assumed) reduced risk of hydrocarbon migration. The soils that have been encountered at the Anvil Range site generally fall within the CWS definition of “coarse-grained” soil. Samples with hydrocarbon concentrations that fell between the two standards were dried and sieved with a 75 um screen to confirm that greater than 50% of the material was sand size (coarse grained).

## **2. Investigation Methods**

The site investigation involved the drilling of 21 boreholes (Figure 2 and 3). Soil samples were collected at all of the borehole locations. In order to fulfill the objectives of the investigation, boreholes were completed in areas where the 2004 ESA identified hydrocarbon exceedances. During the drilling, soil types and stratigraphy were described and photographs taken. The samples were selected for chemical analyses based on analytical results from previous sampling locations, the requirement of site and stratigraphic coverage, the presence of organic vapours using a Photovac PID, and field visual and olfactory observations. The location of each borehole was recorded using a hand-held GPS and staked with the name of the borehole. Borehole logs are provided in Appendix B. A photographic record is found in Appendix C.

### **2.1 Collection of Soil Samples**

The sampling plan for the site was designed to achieve the goals for the program. All soil samples collected in 2005 were from drill core samples.

The boreholes were advanced by SDS Drilling of Calgary, AB using a track-mounted vibratory sonic drill rig which used 100 mm drill rods and 150 mm outer diameter steel casing. A total of twenty-one boreholes were drilled.

Boreholes for this investigation were completed between August 8 and 10, 2005. The locations of the boreholes are shown in Figures 4 through 7. Use of the vibrasonic drilling technique allowed for the collection of continuous, 100 mm diameter undisturbed soil samples from each borehole. At each location, soil samples were collected from each stratigraphic unit and the type and nature of the soil material was recorded and photographed. Representative borehole logs and Photographs are found in Appendix B and C respectively.

The boreholes were advanced to a maximum depth of 10.7 m below ground surface, in areas where soil contamination had previously been found. Careful field observations were made and samples were collected in the suspected contaminant zone, and in the strata above and below. Soil samples were collected directly from the vibrasonic core. GLL personnel monitored the drilling activities, logged and recorded soil conditions encountered, and noted any visual/olfactory evidence of potential contamination.

Following collection of the soil sample, a portion was immediately placed into a glass jar for possible chemical analysis. A second portion of each sample was examined for indications of potential chemical impact before being placed in a ziplock bag.

**Anvil Range Mine**  
**2005 Investigation of Hydrocarbon-Contaminated Soils**

Samples were commonly collected at 0.5 m intervals in the upper 1 m and at 1 m intervals at greater depths with additional samples collected to represent changes in stratigraphic units and suspect intervals. The sampling intervals were selected to cover the units encountered in the holes, rather than following a specific depth measure. This method provided flexibility as well as good coverage.

## **2.2 Selection of Soil Samples for Analysis**

The environmental investigation process is iterative and typically involves multiple phases of investigation and analyses. For most remote sites such as the Anvil Range site, emphasis is placed on conducting an intense initial stage of sample collection because of the difficult logistics and costs of implementing a series of small sampling programs. Therefore, not all of the soil samples that are collected as part of the field investigations are analysed. This common approach provides for the initial collection of a large number of samples of which a subset is initially analysed and the remainder are placed into storage for possible future analyses.

The guiding objective for the selection of samples for laboratory analysis for the Anvil Range 2005 Soils Investigation was to achieve the goals of the program.

The methods employed for the screening of samples for analysis included:

- The observations and judgment of the field investigator including: understanding of the basic mine development and operational history, observed surface staining; observed ground disturbances, material or particle size anomalies and olfactory (odour) indications of hydrocarbons; and
- The indications from field testing instruments of hydrocarbon vapours (i.e., photoionization detector (PID)).

In the case of the Anvil Range 2005 investigation, some soil samples remain in cold storage. These samples may continue to be used in the future to augment the existing data. However, chemical analysis of soil samples for hydrocarbon content must be conducted within specific, short timeframes that typically preclude any opportunity to conduct repeat or additional analyses after the initial sample submission. This is due to the chemically volatile nature of the compounds. Chemical analysis of soil samples for metal concentrations can commonly be conducted for substantial timeframes after sample collection.

Soil samples were selected for chemical analysis based on visual observations, odours, staining and/or sheens noted during field investigations, as well as on field measurements of soil vapour concentrations. Soil vapour concentrations were measured by a Photoionization Detector, (PID) using the soil vapour headspace analysis method. Soil samples were transferred to an area with a temperature of 10°C, and

**Anvil Range Mine**  
**2005 Investigation of Hydrocarbon-Contaminated Soils**

allowed to stand for ten minutes prior to soil vapour headspace readings being taken. The PID was calibrated using 100 ppm isobutylene gas. Soil vapour readings are presented on the borehole logs.

Based on the results of visual/olfactory indications and the field-screening headspace readings, at least one of the soil samples from each borehole was submitted to ALS Environmental of Vancouver, B.C. (“ALS”) for chemical analyses of at least one of the parameters listed below. Samples with the highest PID reading were usually selected for analysis. If PID readings were similar, a sample from near the water table was chosen.

Selected soil samples were analyzed for some or all of the following parameters:

- Benzene, Toluene, Ethylbenzene, Xylene, (BTEX) compounds;
- CCME Hydrocarbon Fractions F1 (C<sub>6</sub> to C<sub>10</sub>), F2 (C<sub>10</sub> to C<sub>16</sub>), F3 (C<sub>16</sub> to C<sub>34</sub>), F4 (C<sub>34</sub> to C<sub>50</sub>);
- Polycyclic Aromatic Hydrocarbons (PAHs); and
- Metals.

## **2.3 QA/QC Procedures and Evaluation**

To ensure that the sampling and analytical data are reliable and reproducible; conformance to a Quality Assurance and Quality Control (QA/QC) program was implemented. This involved using QA/QC measures in both the collection (field program) and analysis (laboratory) of environmental samples. The following discussion describes the QA/QC measures implemented during the field program and during our review of the data, as well as the QA/QC measures implemented by the analytical laboratory.

### **2.3.1 Field QA/QC Methods**

Quality Control (QC) measures used in the collection, preservation and shipment of samples included the following measures:

- Field notes were recorded during all stages of the investigation and can be made available to the client upon request. In addition, all borehole logs are included in Appendix B.
- The geographic locations of all samples collected were recorded to allow for revisiting of the sample location.
- Samples were assigned unique sample identification and transported under standard chain-of-custody procedures.
- Quality Assurance (QA) measures established for the field program included the submission of replicate samples. A field replicate sample is a second sample collected immediately following the

**Anvil Range Mine  
2005 Investigation of Hydrocarbon-Contaminated Soils**

initial sample. The field replicate is a measure of the variability, or heterogeneity of the contaminant in the environment, and the repeatability of sampling.

### **2.3.2 Laboratory QA/QC Procedures**

The following laboratory QA/QC procedures were used for the laboratory analytical program:

- The analytical laboratory is certified for the analyses completed, by the Canadian Association of Environmental Analytical Laboratories (CAEAL).
- Each batch should include one laboratory duplicate sample, one analytical blank, and one reference sample (a certified reference standard, spike or control standard). Reported concentrations should not exceed the instrument calibration range.

ALS analyzed all the soil samples for this investigation. ALS is certified by CAEAL for all analytical methods used for this program.

All reports from ALS are internally reviewed prior to submission to GLL. If any internal QA/QC problems are encountered, the field samples and internal QA/QC samples are re-analysed. No samples required re-analysis for this field investigation. The results are included in the analytical reports (Appendix D).

### 3. Results

#### 3.1 Overview of Drilling and Sample Collection

Boreholes were drilled with a sonic drill rig operated by SDS Drilling Ltd. of Calgary, AB at locations illustrated on Figure 2 (Faro mine site) and Figure 3 (Vangorda Plateau mine site). The depth of drilling was based on the extent of hydrocarbon contamination or where contamination was not present the depth was based on the judgment of the field investigator. Soil samples were collected at various depths, as described in Section 2.1, and borehole logs were recorded and are provided in Appendix B. In total, 21 boreholes were drilled and 92 samples were collected in 2005.

A select subset of the samples collected were selected for analysis based on the approach described in Section 2.2. The results of these analyses are summarized with the selected soil quality objectives in Tables 1 through 7 and are provided in their entirety as received from the laboratory in Appendix D. In total, 44 samples were analysed for hydrocarbon parameters and 4 samples were analysed for metal concentrations.

The locations and numbers of samples collected according to the AECs described in Section 1.4 and the general expectations going into the field investigations are listed in Table B. The comparison to expectations is consistent with the goals of the program.

**Table B. Locations and Numbers of Samples Collected**

Area	Anticipated # Boreholes	Actual # Boreholes	Anticipated # Samples Analyzed	Actual # Samples Analyzed
<i>Faro Site</i>				
Lube Shack	3	3	6	6
Tank Farm	2-3	2	4	3
Waste Oil Tank	2-3	3	6	6
Maintenance Yard	3	6	6	13
Mill Diesel Tank <sup>1</sup>	1	1	2	2
Emergency Generator Yard <sup>1</sup>	unknown	0	unknown	0
<i>Vangorda Plateau Site</i>				
Lube Shack	3	3	6	7
Large Tank Farm	3	3	6	7
<b>Totals</b>	<b>17-19</b>	<b>21</b>	<b>36</b>	<b>44</b>

*Notes: 1. Scope of investigation in this area was limited or prevented by the presence of known electrical cables.*

**Anvil Range Mine  
2005 Investigation of Hydrocarbon-Contaminated Soils**

The sample analyses undertaken to date based on the approach to selecting samples for analysis described in Section 2.2 is outlined in Table C.

**Table C. Soil Analyses Undertaken**

<b>Parameters</b>	<b># of Analyses</b>
Metals	4
F1 + BTEX hydrocarbons	43
F2-F4 hydrocarbons	43
F2-F4 + PAH hydrocarbons	5
<b>Totals</b>	<b>95</b>

## **3.2 Site Stratigraphy**

The assessment of soil stratigraphy is based on the information obtained from the drilling investigation, as well as a review of the available geological information.

### **3.2.1 Faro Mine Site**

North of the Maintenance buildings, the stratigraphy consisted of:

- fill material consisting of sand with some gravel extending to between 1.2 m and 7 m;
- up to 0.5 m of native material consisting of topsoil (peat and silty sand) was beneath the fill material in some locations;
- this was followed by silt till extending to the maximum depth investigated (10.7 m);
- frozen soils were encountered at BH05-4 and BH05-14 below 3 m depth (see Figure 6 for borehole locations);
- groundwater was encountered at 6.0 m depth at BH05-4, and at 2.7 m depth at BH05-15; and
- bedrock consisting of schist was encountered in BH05-15 at 5.8 m depth.

In the area of the waste oil tanks and the mill diesel tank, the stratigraphy consisted of:

- silt and fine sand Fill to between 2 and 4.5 m depth;
- underlain by Silt Till;
- the till extended to the schist bedrock, which was encountered between 4.6 and 6.4 m depth; and
- groundwater was encountered near the till – bedrock interface.

**Anvil Range Mine**  
**2005 Investigation of Hydrocarbon-Contaminated Soils**

In the area of the lube shack, the stratigraphy consisted of:

- silt and Sand Till;
- groundwater was encountered in BH05-8 at 7 m depth (see Figure 4 for borehole locations); and
- shale bedrock was encountered in BH05-10 at 7.2 m depth.

In the area of the upper tank farm, the stratigraphy consisted of:

- sand and silt fill material to between 5.8 and 6.7 m depth; and,
- underlain by waste rock consisting of gravel and cobbles.

### **3.2.2 Vangorda Mine Site**

At the Vangorda/Grum lube shack the stratigraphy consisted of:

- silt Till which was encountered from surface to between 2.3 and 4.6 m depth;
- underlain by a schist bedrock; and
- Groundwater was not encountered.

At the adjacent tank farm the stratigraphy consisted of:

- silt till from surface to between 4.7 m and 5.5 m depth;
- underlain by a schist bedrock; and
- groundwater was not encountered.

Borehole logs are provided in Appendix B.

### **3.3 Soil Analytical Results – Faro Mine Site**

The complete results of the 2004 and 2005 soil analytical program for the Faro mine are presented in Tables 1 through 5. The analytical results are divided into Areas of Environmental Concern (“AECs”). For each AEC the results are divided into metals, polycyclic aromatic hydrocarbons, CCME Hydrocarbon Fractions, non-halogenated hydrocarbons, and halogenated volatiles. The original analytical reports are provided in Appendix D.

Based on the soil results from this borehole investigation and the 2004 test pit investigation, a first order estimate of the quantity of hydrocarbon contaminated soil is provided in the descriptive sections below. In some areas, the extent of hydrocarbon contamination was not fully delineated such that a volume

**Anvil Range Mine**  
**2005 Investigation of Hydrocarbon-Contaminated Soils**

estimate is only approximate at this time. A bulk contingency factor of 50% is typically used for planning purposes to allow for the practicalities of field conditions and soil excavation methods. This is based on general industry experience and is also shown in the results along with the “best preliminary estimate” of soil volumes.

### **3.3.1 Lube Shack**

The Lube Shack is located to the east of the Faro ore processing plant/office area (Figure 4). The building was torn down at the time of the 2004 test pit investigation. The shallow soils collected during the 2004 test pitting program found the following:

- four of the nine samples submitted contained F2 and F3 concentrations greater than the CWS guidelines;
- one of the samples (TP2-S1) also contained concentrations of Toluene greater than the CCME guideline, and VPH concentrations greater than the YCSR standard; and
- one surface sample (TP85-S2 at 1.5 m depth) was submitted for analysis of total metals concentrations. This sample contained concentrations of arsenic, copper, lead and zinc greater than the CCME guidelines and YCSR Standards.

From the subsoils sampled during the 2005 drilling investigation:

- one of the six samples (BH05-8-5) submitted contained an F1 concentration greater than the CWS guideline;
- three of the six samples contained F2 concentrations greater than the CWS guideline;
- two samples contained concentrations of xylenes greater than the CCME guideline; and
- elevated hydrocarbon concentrations were measured to 4.3 m depth at BH05-8 and BH05-10.

The analytical results are presented in Table 1.

Based on the test pit and borehole locations and respective soil concentrations, the area of hydrocarbon contaminated soil is currently estimated to be approximately 2700 m<sup>2</sup>, to a depth of approximately 6 m, resulting in a volume of approximately 16,200 m<sup>3</sup> (or 24,300 m<sup>3</sup> allowing for a contingency of 50%) of Industrial Waste soil. Note that the lateral extent of contamination to the north and to the southwest (at depth) was not completely delineated at this time and therefore, represents a possible increase or slight decrease to this first-order estimate. These volumes are summarized in Table D.

**Anvil Range Mine  
2005 Investigation of Hydrocarbon-Contaminated Soils**

**Table D. Estimated Soil Volumes for Faro Lube Shack**

Location	Contaminant	Estimated Area (m <sup>2</sup> )	Estimated Depth (m)	Estimated Volume (m <sup>3</sup> )	Total with 50% Contingency (m <sup>3</sup> )
Lube Shack (>IL)	HC – F1, F2, F3	>2700	6.0	>16,200	>24,300

### 3.3.2 Tank Farm

The Tank Farm is located above the Lube Shack to the northwest (Figure 4). There are two above ground cylindrical diesel tanks that we understand are not currently used. Six test pits were completed in 2004 in this area; one within the bermed area, and five outside of the berm. In 2005 two boreholes were drilled outside of the berm.

At the location within the berm (TP8) a sample collected from 2.3 m depth contained a concentration of F2 hydrocarbons greater than the CWS guideline. Samples from the borehole located adjacent to this location on the outside of the berm (BH05-11) did not contain elevated hydrocarbon concentrations.

At the location (TP9) adjacent to the pump, a sample collected from 0.6 m depth contained concentrations of xylenes greater than the CCME guideline and F1, F2 and F3 greater than the CWS. The concentration of VPH was also greater than the YCSR standard. A sample collected from this test pit at the maximum depth of investigation (2.6 m depth) contained a concentration of F2 greater than the CWS guideline. A borehole was drilled adjacent to this location (BH05-12) and samples were analyzed at 3.8 and 4.8 m depth. Neither sample contained elevated hydrocarbon concentrations. The analytical results are presented in Table 2.

Based on the information to date, the area of hydrocarbon contaminated soil is estimated to be approximately 900 m<sup>2</sup>, extending to a depth of 4 m resulting in a contaminated soil volume of approximately 3,600 m<sup>3</sup> (or 5,400 m<sup>3</sup> allowing for a contingency of 50%) of Industrial Waste soil. These volumes are summarized in Table E. Note that the potential lateral extent of deep hydrocarbon contamination to the southwest was not completely delineated at this time and, therefore, represents a possible increase or slight decrease to this first-order estimate.

**Table E. Estimated Soil Volumes for Faro Tank Farm**

Location	Contaminant	Estimated Area (m <sup>2</sup> )	Estimated Depth (m)	Estimated Volume (m <sup>3</sup> )	Total with 50% Contingency (m <sup>3</sup> )
Tank Farm (>IL)	HC – F2, F3	≥ 900	4	≥ 3,600	≥ 5,400

### **3.3.3 Mill Diesel Tank/Emergency Generator Yard**

The Mill Diesel tank is located on the southwest side of the main Faro plant area. Only one test pit and one borehole could be completed in this area due to the presence of numerous underground lines and piping. This was also the reason no test pits could be completed at the Emergency Generator Yard, which is located adjacent to the Mill Diesel Tank and is an area known to have had hydrocarbon spills. The site electrician and site manager were consulted and requested that no test pits or boreholes be completed in this area.

Adjacent to the Mill Diesel tank, at TP16:

- One sample was analyzed for hydrocarbons and PAHs and concentrations were less than the applicable standards and guidelines; and
- Two samples were analyzed for metals, collected from 0.7 m and 2.3 m depth. Both samples contained arsenic, copper, lead and zinc greater than the YCSR and CCME standards and guidelines. The deeper sample (2.3 m) also contained a concentration of nickel greater than the CCME guideline.

In 2005, a borehole was drilled (BH05-13) adjacent to the test pit location. Two samples were analyzed for hydrocarbon parameters. One sample collected from 0.9 m depth contained a F2 concentration greater than the CWS. A soil volume for this location could not be estimated due to the limited area available to investigate. The analytical results are presented in Table 3.

### **3.3.4 Waste Oil Tanks**

A waste oil tank is located on the west side of the mill (Figure 5). In 2004 six test pits were completed adjacent to the western-most tank and two test pits were completed adjacent to the two tanks located on the east side of the mill.

- two of the six test pits adjacent to the west side tank contained concentrations of toluene, F2 and F3 in soil greater than the CWS guidelines. The test pits were located within the berm, to the north of the tank (TP17) and outside of the berm on the southwest side (TP19);
- one of the samples also contained a F1 hydrocarbon concentration greater than the CWS guideline;
- the two samples also both contained VPH concentrations greater than the YCSR standard;
- samples from step-out test pits contained concentrations of hydrocarbons less than the applicable standards and guidelines; and,
- one sample (TP19-S2) was submitted for metals analysis. Concentrations of arsenic, cadmium, copper, lead and zinc were greater than the CCME and YCSR guidelines and standards.

**Anvil Range Mine  
2005 Investigation of Hydrocarbon-Contaminated Soils**

In 2005 three boreholes were drilled outside of the berm on the north and south sides of the tank.

- The boreholes located to the southeast and southwest (BH05-6 and BH05-7 respectively) contained concentrations of F2 hydrocarbons greater than the CWS. The depth of contamination was measured at 4.6 and 5.8 m below grade; and,
- One sample was analyzed for metals and contained concentrations of nickel and zinc greater than the CCME guidelines.

The analytical results are presented in Table 4.

The hydrocarbon contamination adjacent to the waste oil tank is estimated (based on the information to date) to cover an area of 1,550 m<sup>2</sup> extending to bedrock at a depth of 6.0 m, resulting in a volume estimate of 9,300 m<sup>3</sup> (or 14,000 m<sup>3</sup> allowing for a contingency of 50%). Note that the potential lateral extent of deep hydrocarbon contamination to the southeast was not completely delineated at this time, and therefore, represents a possible increase to this first-order estimate. This volume is summarized in Table F.

**Table F. Estimated Soil Volumes for the Faro Waste Oil Tank Area**

Location	Contaminant	Estimated Area (m <sup>2</sup> )	Estimated Depth (m)	Estimated Volume (m <sup>3</sup> )	Total with 50% Contingency (m <sup>3</sup> )
Waste Oil Tank (>IL)	HC – Toluene, F2, F3, VPH	≥1,550	6	≥9,300	≥ 14,000

### 3.3.5 Maintenance Bays

In 2004, eleven test pits were completed around the maintenance bays located on the north side of the mill site (Figure 6). At four locations samples contained concentrations of F2 hydrocarbons greater than the CWS. All four locations are surrounding the western-most end of the building complex. At six locations, samples were analyzed for metals concentrations. All six samples exceeded the CCME guideline and/or the YCSR Standard for arsenic. Other metals that exceeded these guidelines and standards included antimony, cadmium, copper, lead, nickel, and zinc.

In 2005, six boreholes were drilled in this area to estimate the lateral and vertical extent of hydrocarbon contamination.

- one sample from each of BH05-1, BH05-3, and BH05-4 contained F1 and F2 hydrocarbon concentrations greater than the CWS;

**Anvil Range Mine  
2005 Investigation of Hydrocarbon-Contaminated Soils**

- one sample from BH05-2 contained a F2 concentration greater than the CWS;
- one sample from BH05-1 also contained xylenes greater than the CCME guideline and a F3 concentration greater than the CWS; and,
- the elevated samples ranged in depth from 1.9 m to 2.7 m below grade.

The analytical results are presented in Table 5.

Based on the test pit and borehole locations and respective soil concentrations, the area of hydrocarbon contaminated soil is estimated to be approximately 8,200 m<sup>2</sup>, to a depth of approximately 3.5 m, resulting in a volume of approximately 28,700 m<sup>3</sup> (or 43,000 m<sup>3</sup> allowing for a contingency of 50%) of Industrial Waste soil. Note that the lateral extent to the northwest was not completely delineated at this time and therefore, represents a possible increase or slight decrease to this first-order estimate. These volumes are summarized in Table G.

**Table G. Estimated Soil Volumes for the Faro Maintenance Bays Area**

<b>Location</b>	<b>Contaminant</b>	<b>Estimated Area (m<sup>2</sup>)</b>	<b>Estimated Depth (m)</b>	<b>Estimated Volume (m<sup>3</sup>)</b>	<b>Total with 50% Contingency (m<sup>3</sup>)</b>
Maintenance Bays (>IL)	HC – xylenes, F1, F2, F3	8,200	3.5	28,700	43,000

### **3.4 Soil Analytical Results – Vangorda Plateau Site**

The complete results of the soil analytical program for the Vangorda Plateau mine are presented in Tables 6 and 7. The analytical results are grouped into Areas of Environmental Concern (“AECs”). For each AEC the results are divided into metals, polycyclic aromatic hydrocarbons, CCME Hydrocarbon Fractions, non-halogenated hydrocarbons, and halogenated volatiles. The original analytical reports are provided in Appendix D.

Where possible, a preliminary estimate for the quantity of hydrocarbon contaminated soil is provided in the descriptive sections below. A bulk contingency factor of 50% is typically used for planning purposes to allow for the practicalities of field conditions and soil excavation methods. This is based on general industry experience and is also shown in the results along with the best first order estimate of soil volumes.

**Anvil Range Mine  
2005 Investigation of Hydrocarbon-Contaminated Soils**

**3.4.1 Lube Shack**

The Vangorda/Grum Lube Shack was located across from the Grum pit and adjacent to the Vangorda Haul Road. The facilities were removed prior to the start of the 2004 investigation. At the time of the investigations, all that remained was a concrete pad of the former building. In 2004, eight test pits were completed around the concrete pad and in the surrounding yard. The results were as follows:

- One sample (TP56-S1) collected to the north of the former building contained concentrations of F1, F2 and F3 hydrocarbons greater than the CWS guidelines, and a concentration of VPH greater than the YCSR standard. The elevated concentrations extended vertically to less than 2.5 m depth;
- A sample from TP59 on the southeast side contained a concentration of F2 hydrocarbons greater than the CWS guideline at 0.5 m depth. The remaining eight samples submitted for hydrocarbons contained concentrations less than the applicable guidelines and standards; and
- Two samples were submitted for metals analysis. Both samples contained concentrations of arsenic greater the CCME guideline.

In 2005, three boreholes were drilled in this area.

- One sample (BH05-17-1) contained a F1 hydrocarbon concentration greater than the CWS;
- Three samples contained F2 hydrocarbon concentrations greater than the CWS. The samples with elevated hydrocarbon concentrations were collected from depths ranging between 1.2 and 2.4 m depth; and
- One sample contained an arsenic concentration greater than the CCME guideline. The analytical results are presented in Table 6.

The hydrocarbon contamination in the area of the Vangorda/Grum lube shack is estimated, based on the current investigation to cover an area of approximately 1,350 m<sup>2</sup> and extend to a depth of approximately 3.0 m, resulting in a volume estimate of 4,050 m<sup>3</sup> (or 6,100 m<sup>3</sup> allowing for a contingency of 50%) Industrial Waste soil. Note that the southern extent of contamination at this AEC was not completely delineated at this time and, therefore, represents a possible increase or slight decrease to this first-order estimate. This volume is summarized in Table H.

**Table H. Estimated Soil Volumes for the Vangorda Plateau Lube Shack**

Location	Contaminant	Estimated Area (m <sup>2</sup> )	Estimated Depth (m)	Estimated Volume (m <sup>3</sup> )	Total with 50% Contingency (m <sup>3</sup> )
Lube Shack (>IL)	HC – F1, F2, F3, VPH	>1350	3.0	>4,050	> 6,100

**Anvil Range Mine**  
**2005 Investigation of Hydrocarbon-Contaminated Soils**

### **3.4.2 Tank Farm**

The Vangorda/Grum tank farm is located to the south of the Lube Shack. There are presently two above ground cylindrical diesel tanks, and two glycol tanks. In 2004, two test pits (TP64 and TP65) were completed adjacent to the fuel tanks within the bermed area, and four test pits were completed on the outside of the berm; one on each side. Test pit TP64 was completed within the berm on the east side of the northern most tank.

- The shallow sample from TP64 (0.6 m depth) contained concentrations of toluene, F1 and F2 hydrocarbons greater than the CCME guidelines and CWS, and VPH greater than the YCSR standard;
- The deeper sample (3.1 m) contained a concentration of toluene and xylenes greater than the CCME guidelines and a F2 concentration greater than the CWS. The contamination in TP64 extended beyond the reach of the backhoe;
- The second test pit (TP65) was completed within the berm on the northwest side of the tank. A sample from 3.0 m depth contained a VPH concentration greater than the YCSR standard but did not exceed any of the CCME/CWS soil quality objectives; and
- The samples submitted from the test pits located on the outside of the berm contained concentrations of hydrocarbons less than the applicable standards.

In 2005, three boreholes were drilled – two within the berm (BH05-20 and BH05-21) and one to the northeast of the diesel tanks (BH05-19).

- Concentrations of F1 and F2 hydrocarbons were greater than the CWS, and the concentration of toluene and xylenes was greater than the CCME guideline in samples from the two boreholes within the berm. The xylene concentrations were also greater than the YCSR standard;
- One of the samples (BH05-20-1) also contained a naphthalene concentration marginally greater than the CCME guideline; and
- At BH05-19, one sample at 0.9m depth contained F2 and F3 concentrations greater than the CWS.

The analytical results are presented in Table 7.

The hydrocarbon contamination in the area of the tank farm, based on the information to date, is estimated to cover an area of approximately 2,100 m<sup>2</sup> and extend to a depth of approximately 3.5 m, resulting in a volume estimate of 7,350 m<sup>3</sup> (or 11,000 m<sup>3</sup> allowing for a contingency of 50%) of Industrial Waste soil. Note that the lateral extent of contamination to the southeast of the areas shown was not completely delineated at this time and, therefore, represents a possible increase or slight decrease to this first-order estimate. This volume is summarized in Table I.

**Anvil Range Mine  
2005 Investigation of Hydrocarbon-Contaminated Soils**

**Table I. Estimated Soil Volumes for the Vangorda Plateau Tank Farm**

<b>Location</b>	<b>Contaminant</b>	<b>Estimated Area (m<sup>2</sup>)</b>	<b>Estimated Depth (m)</b>	<b>Estimated Volume (m<sup>3</sup>)</b>	<b>Total with 50% Contingency (m<sup>3</sup>)</b>
Tank Farm (>IL)	HC – toluene, xylenes, F1, F2, F3, naph.	≥ 2100	3.5	≥ 7,350	≥ 11,000

## 4. Observations and Recommendations

### 4.1 Hydrocarbon Concentrations in Soil

The observed ranges in the CWS carbon-ranges of hydrocarbons in soil in the samples from both the 2004 and 2005 investigations are listed in Table J. These concentrations provide an overview indication of the types of hydrocarbons present (i.e., gasoline, diesel, heavy oil, etc.) and an overview indication of the concentrations of each.

**Table J. Summary of Observed F1-F4 Hydrocarbon Concentrations**

Hydrocarbon Fraction	CWS Tier 1 Guideline (surficial soils)	CWS Tier 1 Guideline (subsoils >1.5m)	Minimum Observed	Maximum Observed (surficial soils)	Maximum Observed (subsoils)	# of Samples Exceeding : # of Samples Analyzed
F1 (C6-C10)	330	700	<10	2340	1160	11:61
F2 (C10-C16)	760	2000	<30	15600	7990	37:101
F3 (C16-C34)	1700	3500	<50	7450	2390	11:101
F4 (C34-C50)	3300	10000	<50	2920	499	0:101

*Note: Concentrations mg/kg.*

### 4.2 Summary of Areas of Concern

Table K lists the areas of concern that were investigated in 2005, a summary of where exceedances of the guidelines were observed and a summary of the first-order estimated volumes of contaminated soil, where an estimate was possible. This summary is based on the combined results of the 2004 and 2005 investigations.

The first-order estimates of soil volumes listed in Table K total about 90,000 m<sup>3</sup>, as a minimum estimate. This is without any estimate of the areas not investigated. For comparison, a preliminary ballpark volume of 15-25,000 m<sup>3</sup> was suggested for discussion purposes as part of the 2003 Water Licence Renewal process prior to any physical investigations (i.e., without the benefit of any field studies). This clearly confirms the benefit of having conducted the 2004/2005 investigations in providing a more realistic planning estimate.

**Anvil Range Mine  
2005 Investigation of Hydrocarbon-Contaminated Soils**

**Table K. Summary of Observations**

Area	Exceedances for Hydrocarbons	First-Order Estimated Volume <sup>1</sup> (m <sup>3</sup> )
<u>Faro Site</u>		
Lube Shack	Yes	> 24,300
“Old” Tank Farm	Yes	≥ 5,400
Mill Diesel Tank	Yes	- <sup>2,3</sup>
Emergency Generator Yard	Likely	- <sup>2,3</sup>
Maintenance Bays	Yes	43,000
Emergency Tailings Area (new area identified 2005)	Unknown	- <sup>2</sup>
<u>Vangorda Plateau Site</u>		
Lube Shack	Yes	> 6,100
Large Tank Farm	Yes	≥ 11,000

Notes: 1. First-Order estimated volume as m<sup>3</sup> including the suggested 50% contingency.  
 2. First-Order volume estimate cannot be prepared at this time because contamination was not delineated.  
 3. Sampling limited or not conducted due to safety concerns.

### 4.3 Recommendations

As per the goals of the program, the combined 2004/2005 investigations provide a basic characterization of the types and areas of hydrocarbon-contamination in soil in areas where it was safe to conduct such investigations. Additional areas of the site, such as the Emergency Tailings Area, should undergo investigation as they become accessible and safe.

This information should be helpful to the development of the Final Closure and Reclamation Plan. As a general recommendation for the closure planning process, we suggest that various means of soil remediation continue to be researched, based on the 2004/2005 information. A related report by Gartner Lee Limited, *Anvil Range Mine, Soil Remedial Options Report, May 2005*, may be helpful in these considerations.

## **5. Closure**

This report was prepared for the exclusive use of Deloitte & Touche Inc. The report, which specifically includes all tables and figures, is based on data and information collected during the investigations conducted by Gartner Lee Limited, and is based solely on the conditions of the site at the time of the investigation, supplemented by historical information and data obtained by Gartner Lee Limited, as described in this report.

The investigations and designs described in this report, were conducted in a manner consistent with that level of care and skill normally exercised by other members of the engineering and science professions currently practicing under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.

Any use which a third party makes of this report, or any reliance on, or decisions to be made based on it, are the responsibility of such third parties. Gartner Lee Limited accepts no responsibility for damages, if any, suffered by any third party as a result of decisions made or actions based on the information contained in this report.

**Report Prepared By:**

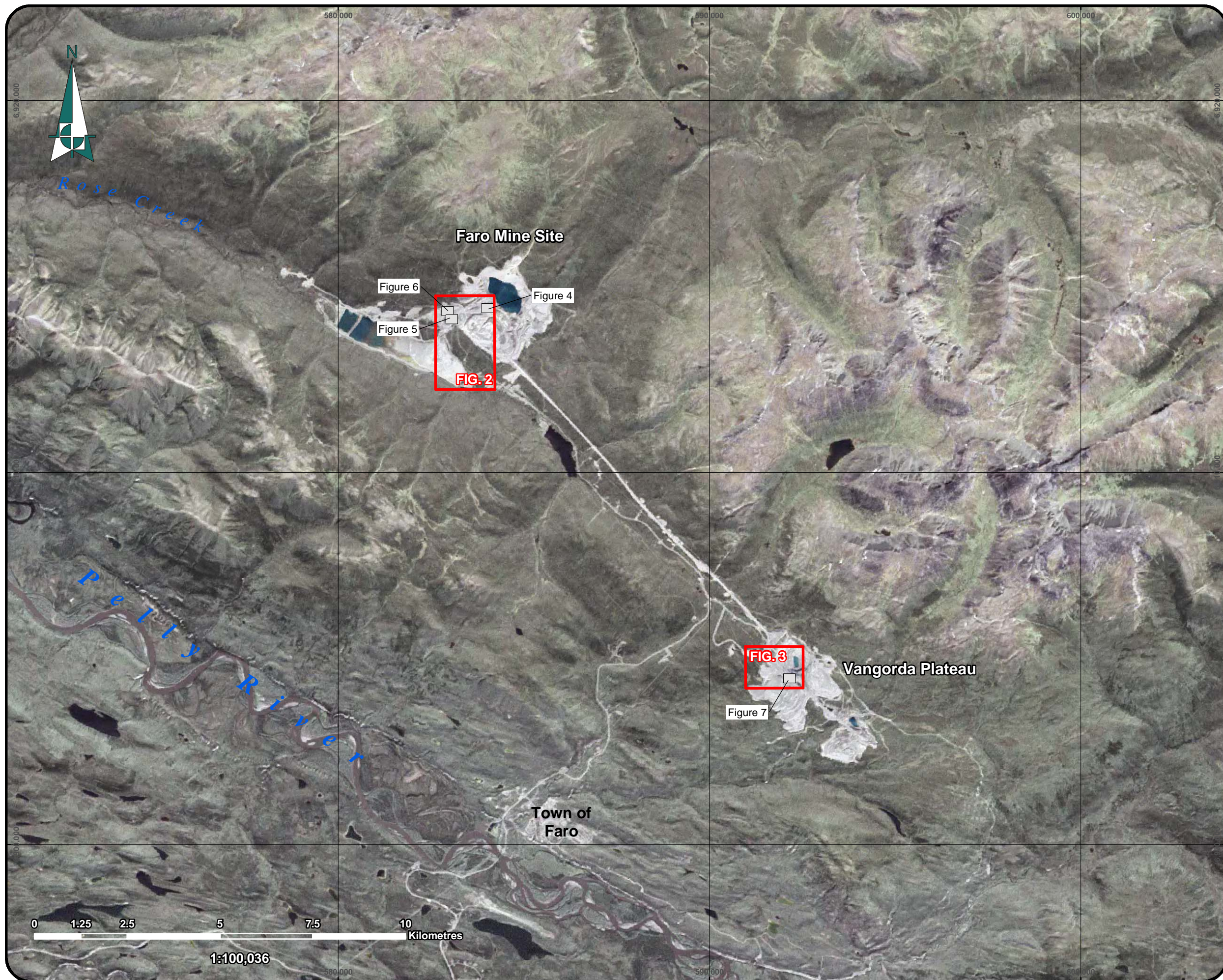
Tamra J. Reynolds, M.Sc., P.Geo  
Hydrogeologist

**Report Reviewed By:**



Eric Denholm, P.Eng.  
Senior Mining Consultant

# Figures



Data Sources:

Fused LandSat 7 True Colour image, prepared by Government of Yukon, 2003

Projection: UTM NAD27 Zone 8

Reviewed By: TR/FKP

Prepared By: GS/FKP

Date Issued: 1 November, 2005

Project No.: 40-436

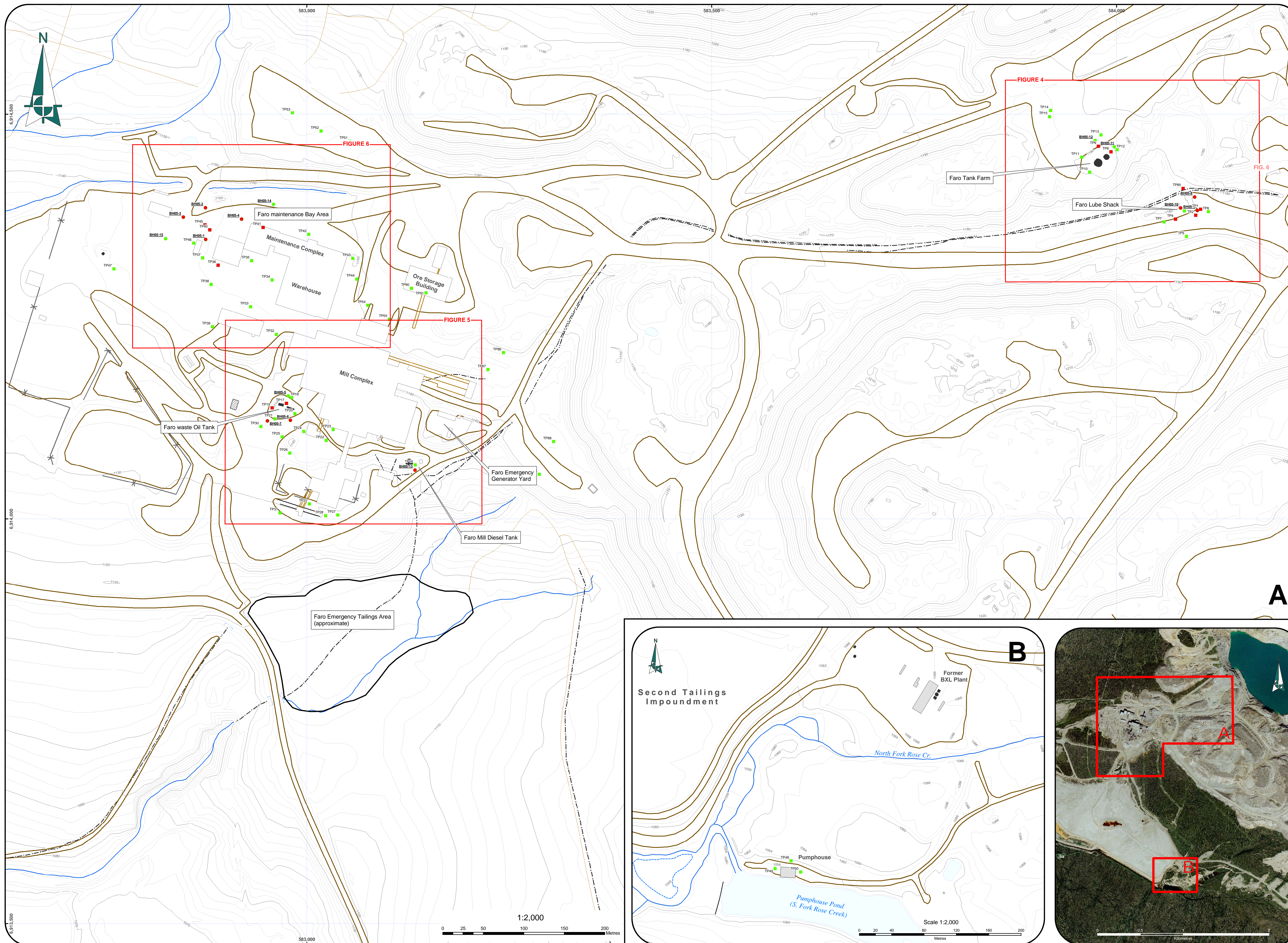
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Revision: 0

Project: 2005 Hydrocarbon-Contaminated Soils Investigation

Location: Anvil Range Mine, Faro, Yukon Territory  
Client: Deloitte and Touche

**Site Overview – Vangorda & Faro Mine Site**

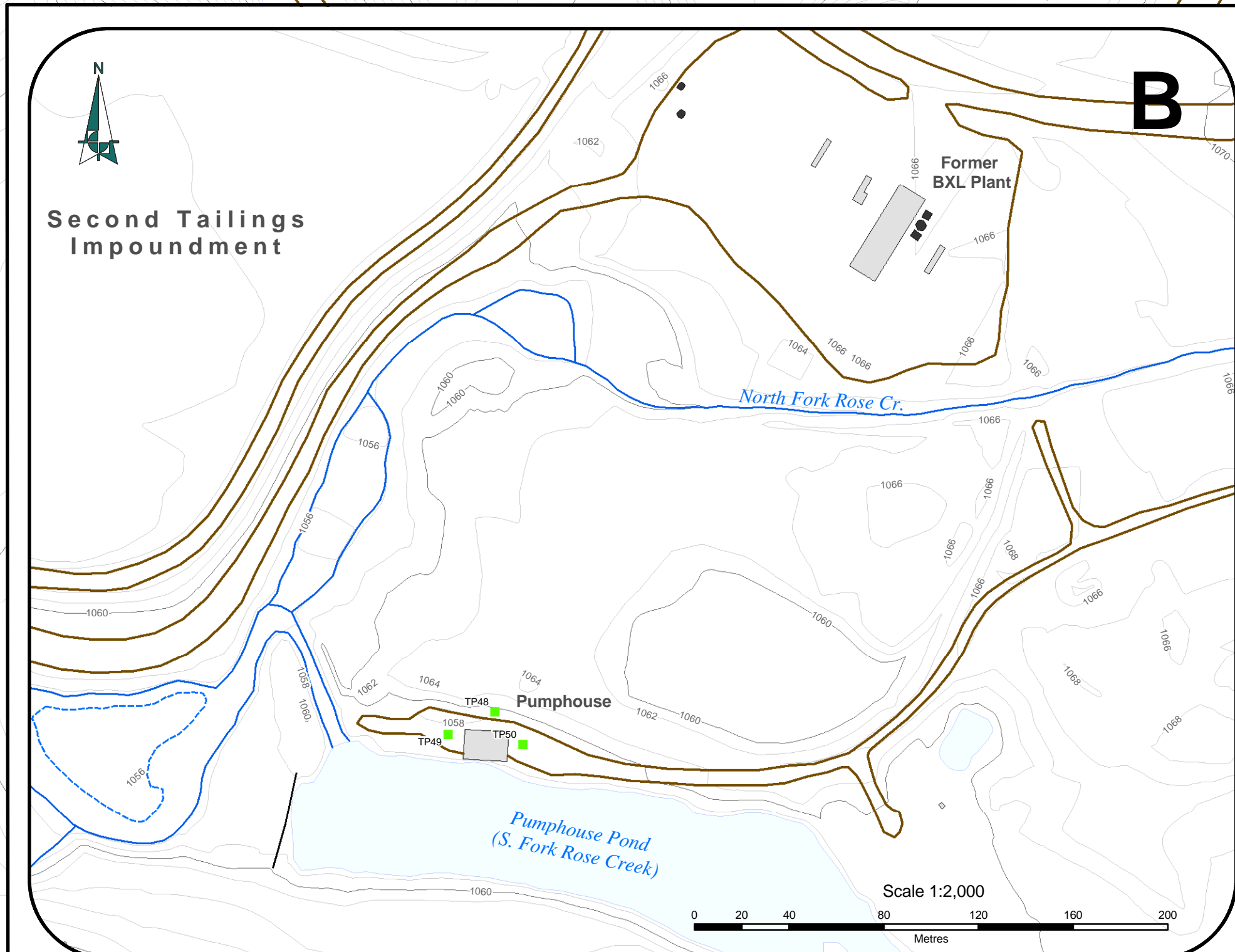


**LEGEND:**

- Borehole (2005)
- Test Pit (2004)
- Sample Exceeds Soil Quality Objective(s)
- No Exceedences Detected

**TOPOGRAPHIC LEGEND**

- Edge of Road
- Index Contour (10m)
- Intermediate Contour (2m)
- Pipeline
- Waterbody
- Buildings
- Watercourse
- Fuel Tanks



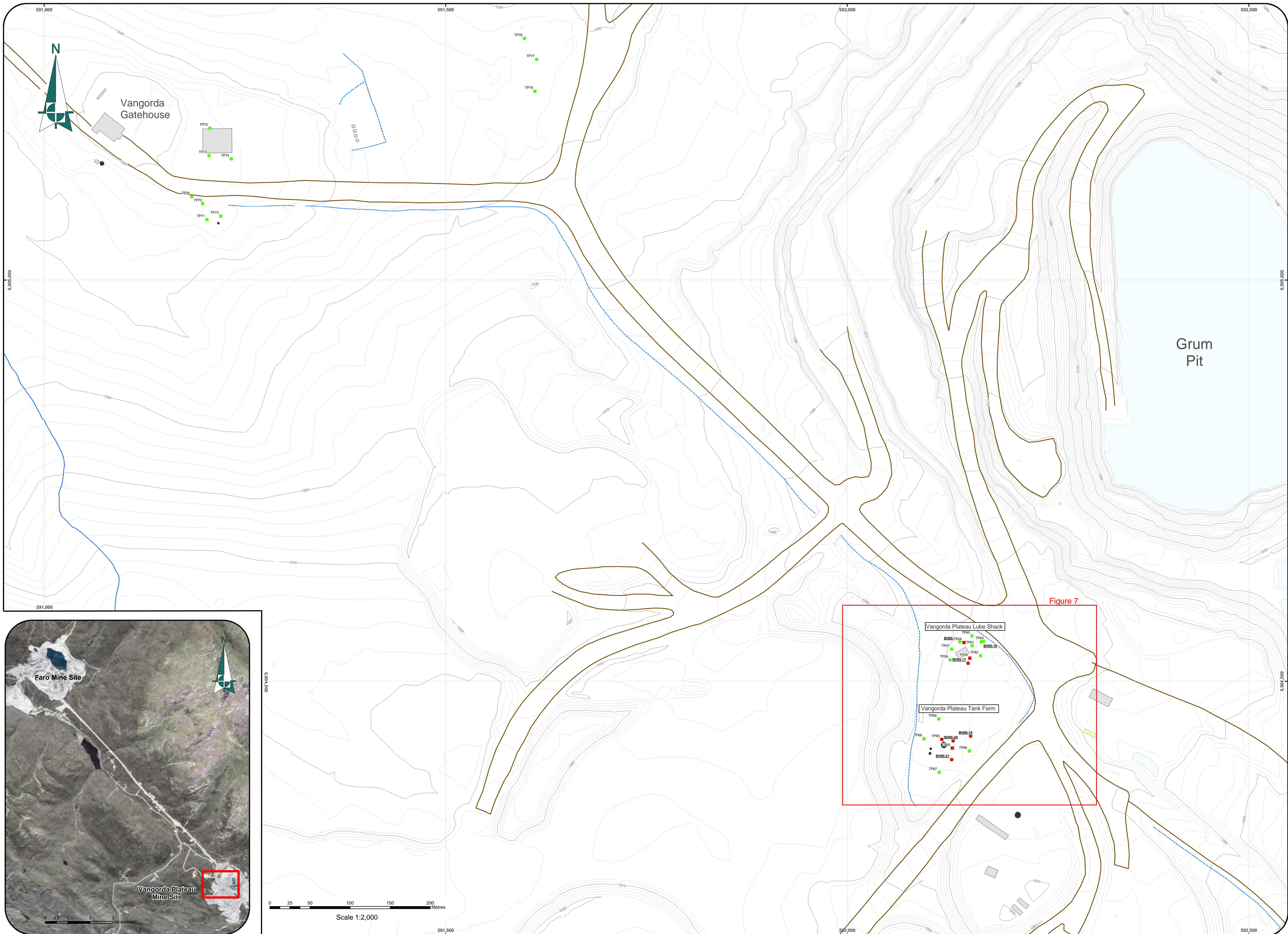
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**Reviewed By:** TR/FKP  
**Prepared By:** GS/FKP  
**Date Issued:** 1 November, 2005  
**Project No.:** 40-436  
**File Name:** P40436\_W1\_05k02\_Fig2\_Dsize.MXD  
**Revision:** 0

**Project:** 2005 Hydrocarbon-Contaminated Soils Investigation  
**Location:** Anvil Range Mine, Faro, Yukon Territory  
**Client:** Deloitte & Touche Inc.

**Sample Location Plan**  
**Faro Mine Site**

**Gartner Lee** Figure No. **2**

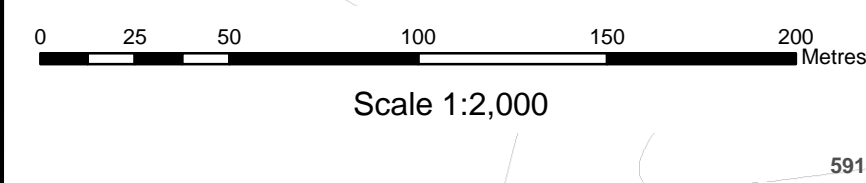
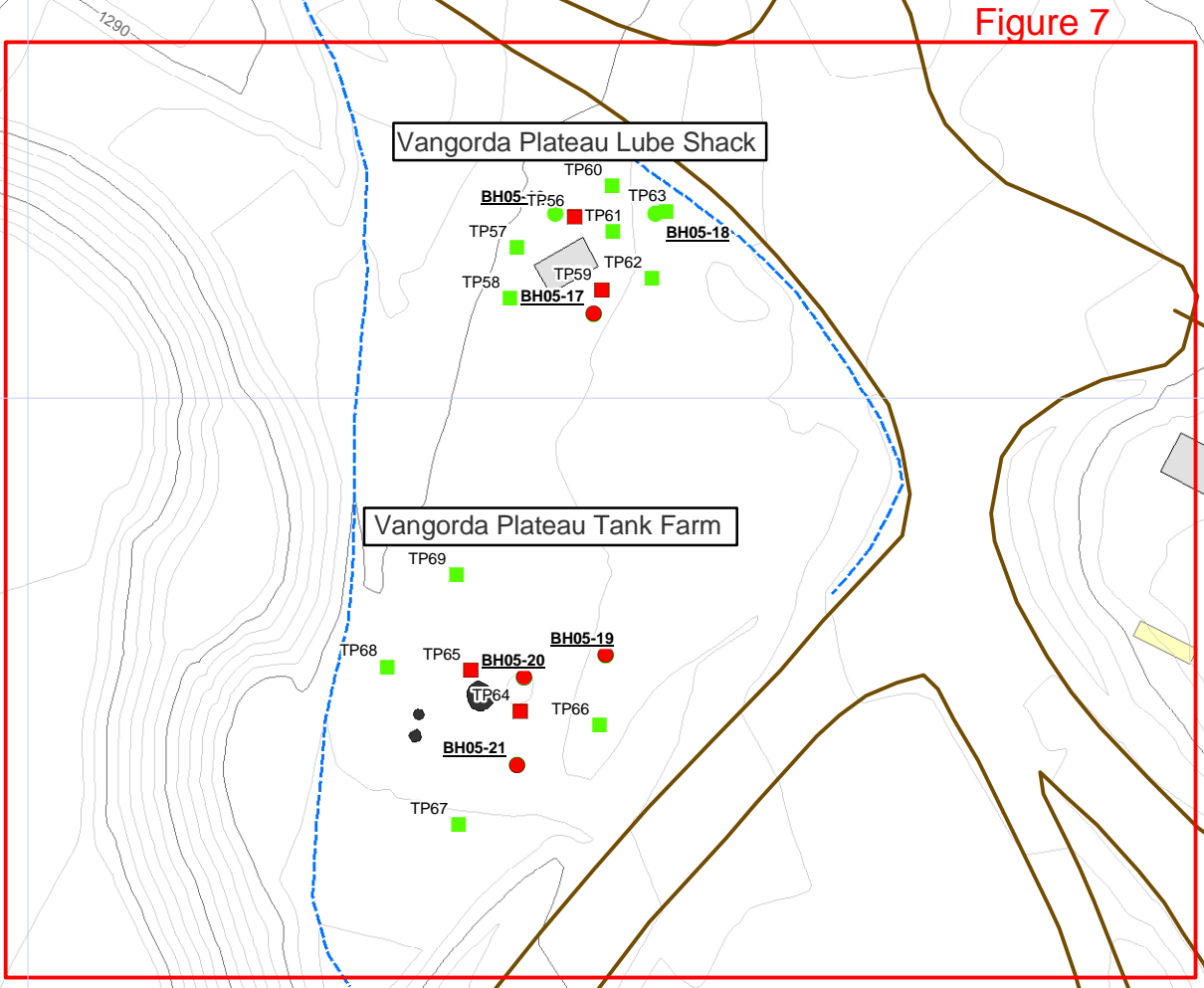


**LEGEND:**

- Borehole (2005)
- Tank Pit (2004)
- Sample Exceeds Soil Quality Objective(s)
- No Exceedences Detected

**TOPOGRAPHIC LEGEND**

- Edge of Road
- Pipeline
- Buildings
- Fuel Tanks
- Index Contour (10m)
- Intermediate Contour (2m)
- Waterbody
- Watercourse



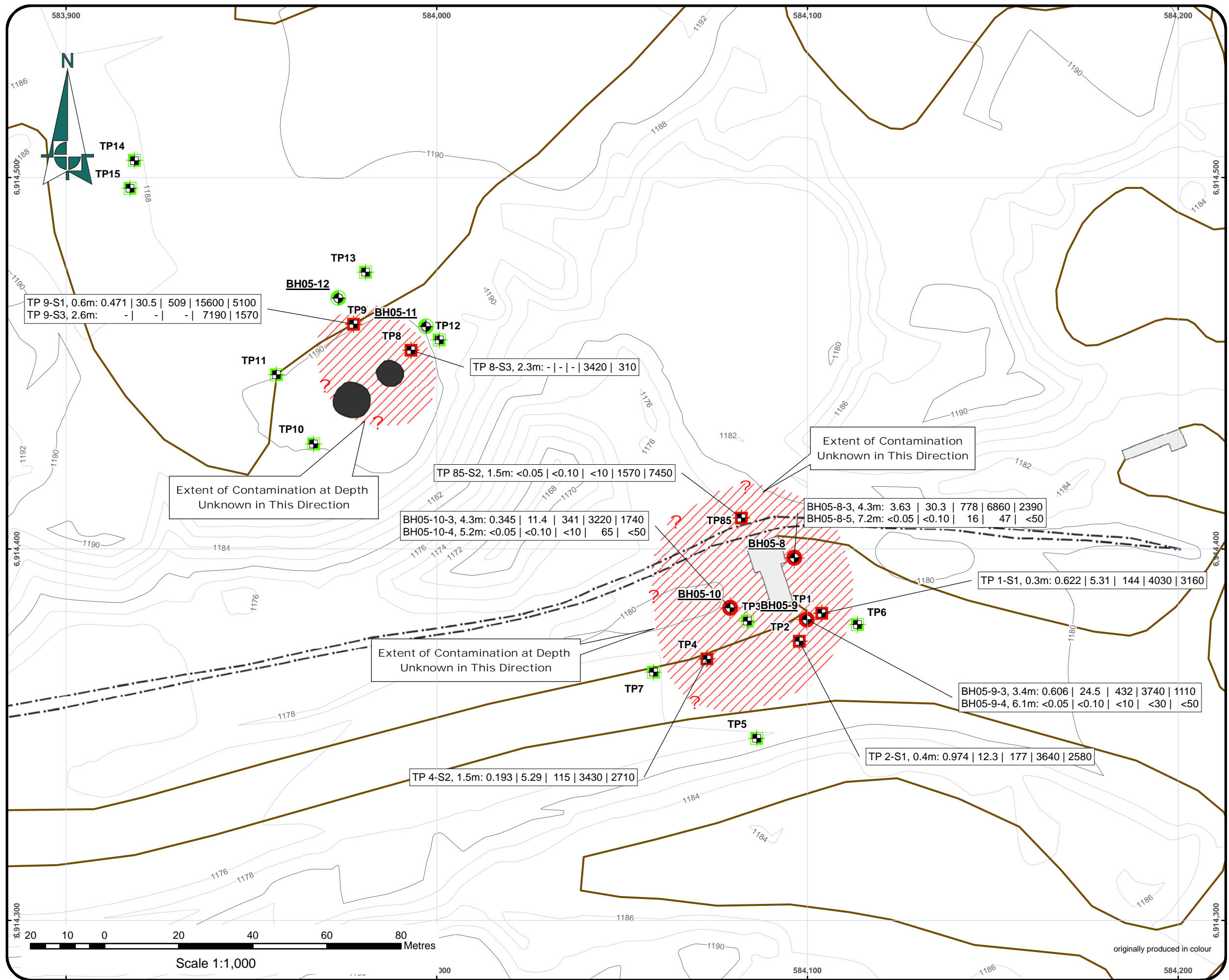
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Projection: UTM NAD27 Zone 8  
 Contour Interval: 2 m (ASL)  
 Reviewed By: TR/FKP  
 Prepared By: GS/FKP  
 Date Issued: 1 November 2005  
 Project No: 40-436  
 File Name: P40436\_W1\_05k02\_Fig3\_Dsize.MXD  
 Revision: 0

Project: 2005 Hydrocarbon-Contaminated Soils Investigation  
 Location: Anvil Range Mine, Faro, Yukon Territory  
 Client: Deloitte and Touche

**Sample Location Plan**  
**Vangorda Plateau Mine Site**

Gartner Lee Figure No. 3



**LEGEND:**

- Borehole (2005)
- Test Pit (2004)
- Sample Exceeds Soil Quality Objective(s)
- No Exceedences Detected
- Estimated Extent of Hydrocarbon Contamination of Soil

**Soil Quality Objectives & Example Label:**

Sample ID	Depth of Sample	Toluene <sup>1</sup>	Xylenes <sup>1</sup>	F1 <sup>2</sup>	F2 <sup>2</sup>	F3 <sup>2</sup>
BH05-4-2, 1.3m:	0.08	20	330	760	1700	
BH05-4-3, 2.5m:	0.08	20	700	2000	3500	

**Notes:**

- only locations with at least one sample exceeding the guidelines are labeled.
- all units are in mg/kg.
- subsurface soil objectives are applied below 1.5 m.

<sup>1</sup> CCME Industrial Land Use Guideline (2001)

<sup>2</sup> Canada Wide Standard for Petroleum Hydrocarbons (CWS-PHC) for Coarse Grained Soils, Industrial Land Use. Governing Pathway is Ecological Soil Contact.

**TOPOGRAPHIC LEGEND**

- Edge of Road
- Pipeline
- Buildings
- Fuel Tanks
- Index Contour (10m)
- Intermediate Contour (2m)
- Waterbody
- Watercourse

**Data Sources:**

Orthophoto, ground contours and surface features generated by the Orthoshop from aerial photography flown in August, 2003. Data supplied by SRK

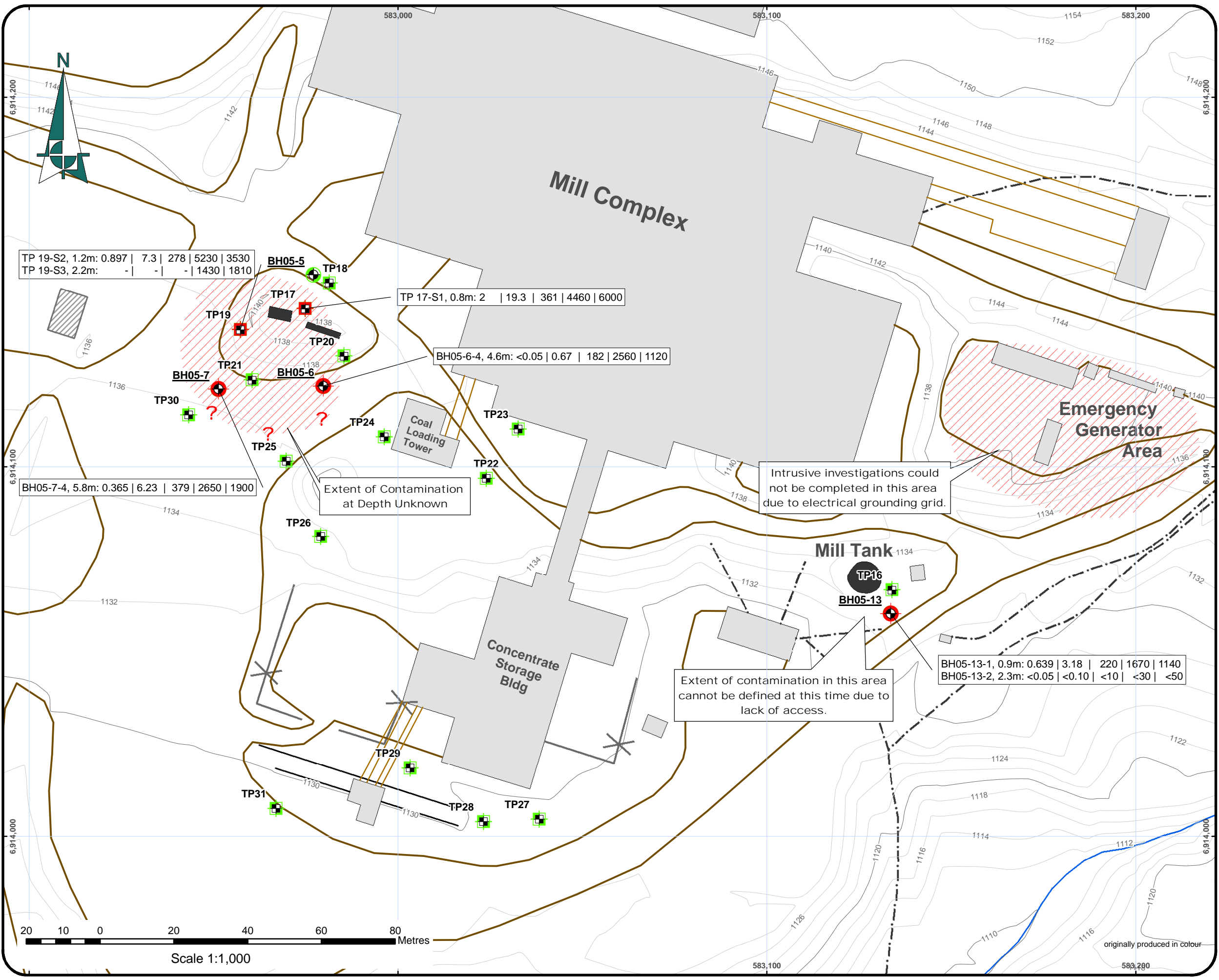
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 Contour Interval: 2 m (ASL)

Reviewed By: TR/FKP  
 Prepared By: GS/FKP  
 Date Issued: 1 November, 2005  
 Project No.: 40-436  
 File Name: P40436\_W1\_05k02\_Fig4\_11X17.MXD  
 Revision: 0

Project: 2005 Hydrocarbon-Contaminated Soils Investigation  
 Location: Anvil Range Mine, Faro, Yukon Territory  
 Client: Deloitte and Touche

**Faro Lube Shack & Tank Farm**

Gartner Lee | Figure No. 4



TP 19-S2, 1.2m: 0.897 | 7.3 | 278 | 5230 | 3530  
 TP 19-S3, 2.2m: - | - | - | 1430 | 1810

BH05-5 TP18

TP 17-S1, 0.8m: 2 | 19.3 | 361 | 4460 | 6000

TP19 TP17 TP20

BH05-6-4, 4.6m: <0.05 | 0.67 | 182 | 2560 | 1120

BH05-7 TP21 BH05-6

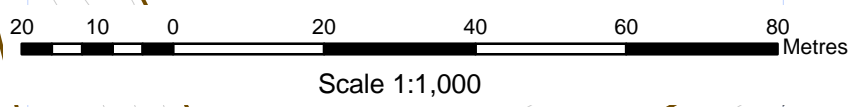
BH05-7-4, 5.8m: 0.365 | 6.23 | 379 | 2650 | 1900

Extent of Contamination at Depth Unknown

Intrusive investigations could not be completed in this area due to electrical grounding grid.

BH05-13-1, 0.9m: 0.639 | 3.18 | 220 | 1670 | 1140  
 BH05-13-2, 2.3m: <0.05 | <0.10 | <10 | <30 | <50

Extent of contamination in this area cannot be defined at this time due to lack of access.



**LEGEND:**

- Borehole (2005)
- Test Pit (2004)
- Sample Exceeds Soil Quality Objective(s)
- No Exceedences Detected
- Estimated Extent of Hydrocarbon Contamination of Soil

**Soil Quality Objectives & Example Label:**

Sample ID	Depth of Sample	Toluene <sup>1</sup>	Xylenes <sup>1</sup>	F1 <sup>2</sup>	F2 <sup>2</sup>	F3 <sup>2</sup>
BH05-4-2, 1.3m:	0.08	20	330	760	1700	
BH05-4-3, 2.5m:	0.08	20	700	2000	3500	

**Notes:**

- only locations with at least one sample exceeding the guidelines are labeled.
- all units are in mg/kg.
- subsurface soil objectives are applied below 1.5 m.

<sup>1</sup> CCME Industrial Land Use Guideline (2001)  
<sup>2</sup> Canada Wide Standard for Petroleum Hydrocarbons (CWS-PHC) for Coarse Grained Soils, Industrial Land Use. Governing Pathway is Ecological Soil Contact.

**TOPOGRAPHIC LEGEND**

- Edge of Road
- Pipeline
- Buildings
- Fuel Tanks
- Index Contour (10m)
- Intermediate Contour (2m)
- Waterbody
- Watercourse

**Data Sources:**

Orthophoto, ground contours and surface features generated by the Orthoshop from aerial photography flown in August, 2003. Data supplied by SRK

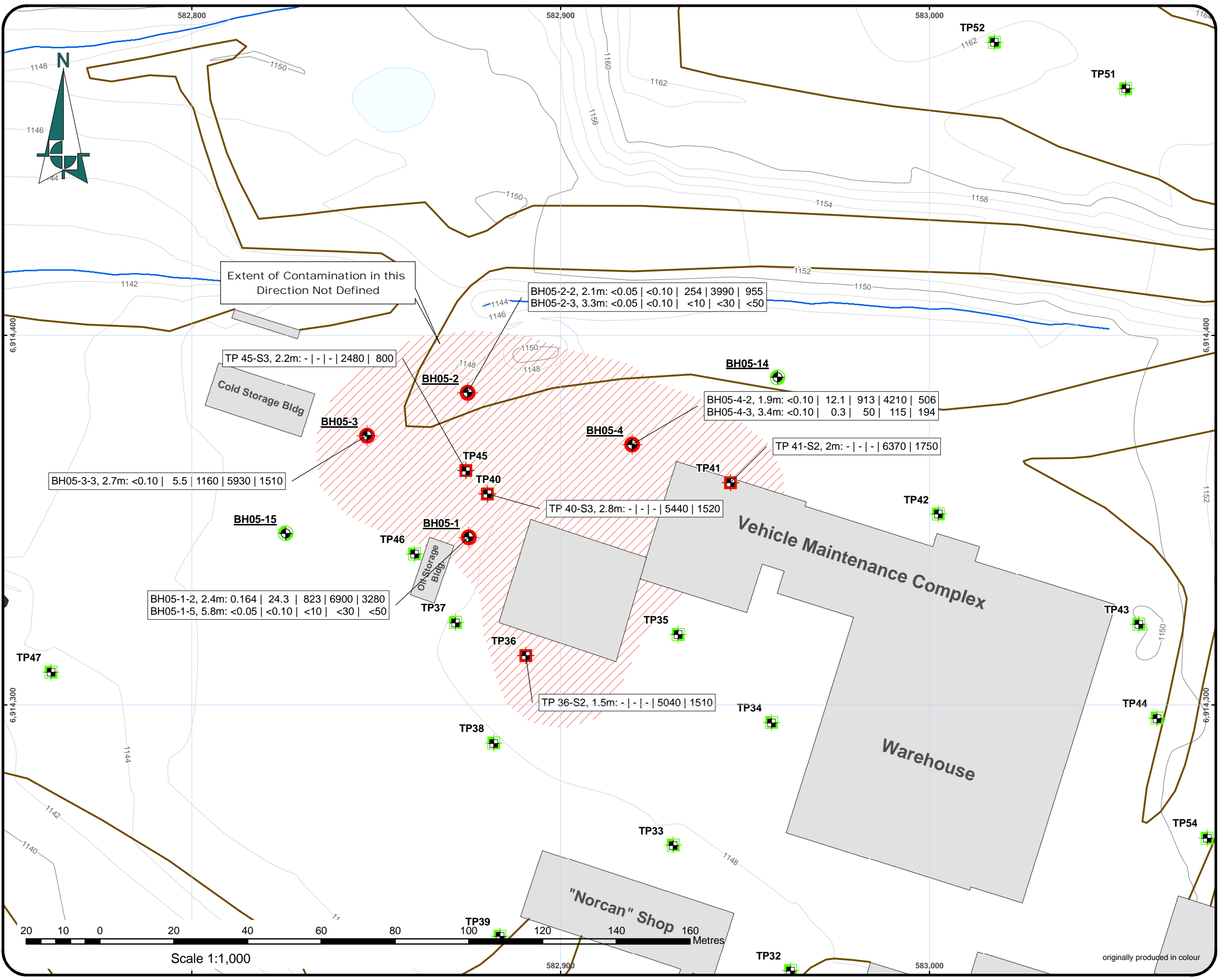
Projection: UTM NAD27 Zone 8  
 Contour Interval: 2 m (ASL)

Reviewed By: TR/FKP  
 Prepared By: GS/FKP  
 Date Issued: 1 November, 2005  
 Project No.: 40-436  
 File Name: P40436\_W1\_05k02\_Fig5\_11X17.MXD  
 Revision: 0

Project: 2005 Hydrocarbon-Contaminated Soils Investigation  
 Location: Anvil Range Mine, Faro, Yukon Territory  
 Client: Deloitte and Touche

**Faro Waste Oil & Fuel Tank Area**

Gartner Lee | Figure No. 5



**LEGEND:**

- Borehole (2005)
- Test Pit (2004)
- Sample Exceeds Soil Quality Objective(s)
- No Exceedences Detected
- Estimated Extent of Hydrocarbon Contamination of Soil

**Soil Quality Objectives & Example Label:**

Sample ID	Depth of Sample	Toluene <sup>1</sup>	Xylenes <sup>1</sup>	F1 <sup>2</sup>	F2 <sup>2</sup>	F3 <sup>2</sup>
BH05-4-2, 1.3m:	0.08	20	330	760	1700	
BH05-4-3, 2.5m:	0.08	20	700	2000	3500	

**Notes:**

- only locations with at least one sample exceeding the guidelines are labeled.
- all units are in mg/kg.
- subsurface soil objectives are applied below 1.5 m.

**TOPOGRAPHIC LEGEND**

- Edge of Road
- Pipeline
- Buildings
- Fuel Tanks
- Index Contour (10m)
- Intermediate Contour (2m)
- Waterbody
- Watercourse

**Data Sources:**

Orthophoto, ground contours and surface features generated by the Orthoshop from aerial photography flown in August, 2003. Data supplied by SRK

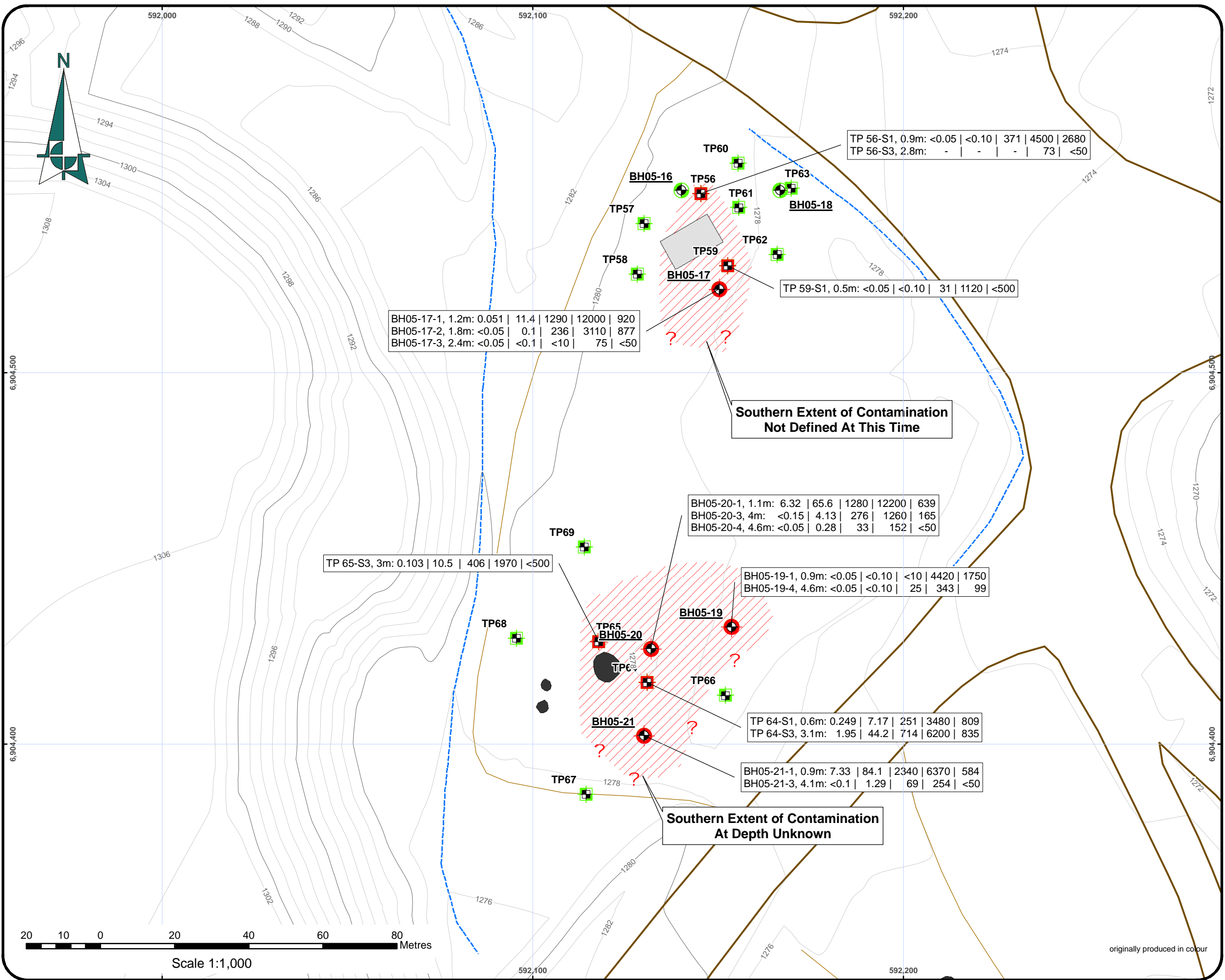
**Projection:** UTM NAD27 Zone 8  
**Contour Interval:** 2 m (ASL)

**Reviewed By:** TR/FKP  
**Prepared By:** GS/FKP  
**Date Issued:** 1 November, 2005  
**Project No.:** 40-436  
**File Name:** P40436\_W1\_05k02\_Fig6\_11X17.MXD  
**Revision:** 0

**Project:** 2005 Hydrocarbon-Contaminated Soils Investigation  
**Location:** Anvil Range Mine, Faro, Yukon Territory  
**Client:** Deloitte and Touche

**Faro Maintenance Shop Area**

Gartner Lee | Figure No. 6



**LEGEND:**

- Borehole (2005)
- Test Pit (2004)
- Sample Exceeds Soil Quality Objective(s)
- No Exceedences Detected
- Estimated Extent of Hydrocarbon Contamination of Soil

**Soil Quality Objectives & Example Label:**

Sample ID	Depth of Sample	Toluene <sup>1</sup>	Xylenes <sup>1</sup>	F1 <sup>2</sup>	F2 <sup>2</sup>	F3 <sup>2</sup>
BH05-4-2, 1.3m:	0.08	20	330	760	1700	
BH05-4-3, 2.5m:	0.08	20	700	2000	3500	

**Notes:**

- only locations with at least one sample exceeding the guidelines are labeled.
- all units are in mg/kg.
- subsurface soil objectives are applied below 1.5 m.

<sup>1</sup> CCME Industrial Land Use Guideline (2001)

<sup>2</sup> Canada Wide Standard for Petroleum Hydrocarbons (CWS-PHC) for Coarse Grained Soils, Industrial Land Use. Governing Pathway is Ecological Soil Contact.

**TOPOGRAPHIC LEGEND**

- Edge of Road
- Pipeline
- Buildings
- Fuel Tanks
- Index Contour (10m)
- Intermediate Contour (2m)
- Waterbody
- Watercourse

**Data Sources:**

Orthophoto, ground contours and surface features generated by the Orthoshop from aerial photography flown in August, 2003. Data supplied by SRK

Projection: UTM NAD27 Zone 8  
Contour Interval: 2 m (ASL)

Reviewed By: TR/FKP  
Prepared By: GS/FKP  
Date Issued: 1 November, 2005  
Project No.: 40-436  
File Name: P40436\_W1\_05k02\_Fig7\_11X17.MXD  
Revision: 0

Project: 2005 Hydrocarbon-Contaminated Soils Investigation  
Location: Anvil Range Mine, Faro, Yukon Territory  
Client: Deloitte and Touche

**Vangorda Plateau Lube Shack & Tank Farm**

Scale 1:1,000

originally produced in colour

Gartner Lee | Figure No. 7

# Tables



Table 1: Lube Shack, Anvil Range Mine, Faro, YT

Location	Guideline/Standard		Soil Analysis Results (mg/kg)																
	Date	CCME/CWS <sup>a</sup> Industrial	YCSR <sup>b</sup>	TP 1-S1	TP 1-S4	TP 2-S1	TP 3-S3	TP 4-S2	TP 5-S2	TP 6-S1	TP 7-S2	TP 8-S2	BH05-8-3	BH05-8-5	BH05-9-3	BH05-9-4	BH05-10-3	BH05-10-4	
	Depth (m)	surface f/c	subsoils <sup>c</sup> f/c	Industrial	0.35	1.9	0.4	1.9	1.5	1.6	0.6	2.4	1.50	4.30	7.20	3.40	6.10	4.30	5.20
<b>Physical Tests</b>																			
Moisture %				6.32	8.35	2.68	9.80	7.82	12.2	5.12	6.23	12.7	5.75	17.0	6.16	8.08	6.47	13.7	
pH				-	-	-	-	-	-	-	-	3.02	-	-	-	-	-	-	-
<b>Total Metals</b>																			
Antimony T-Sb			40	-	-	-	-	-	-	-	-	13	-	-	-	-	-	-	-
Arsenic T-As	12	12	100	-	-	-	-	-	-	-	-	464	-	-	-	-	-	-	-
Barium T-Ba	2000	2000	2000	-	-	-	-	-	-	-	-	39.9	-	-	-	-	-	-	-
Beryllium T-Be	-	-	8	-	-	-	-	-	-	-	-	0.74	-	-	-	-	-	-	-
Cadmium T-Cd	22	22	500	-	-	-	-	-	-	-	-	8.04	-	-	-	-	-	-	-
Chromium T-Cr	87	87	700	-	-	-	-	-	-	-	-	32.3	-	-	-	-	-	-	-
Cobalt T-Co	-	-	300	-	-	-	-	-	-	-	-	46.4	-	-	-	-	-	-	-
Copper T-Cu	91	91	250	-	-	-	-	-	-	-	-	788	-	-	-	-	-	-	-
Lead T-Pb	600	600	2000	-	-	-	-	-	-	-	-	5110	-	-	-	-	-	-	-
Mercury T-Hg	50	50	150	-	-	-	-	-	-	-	-	3.84	-	-	-	-	-	-	-
Molybdenum T-Mo	-	-	40	-	-	-	-	-	-	-	-	4.2	-	-	-	-	-	-	-
Nickel T-Ni	50	50	500	-	-	-	-	-	-	-	-	26.3	-	-	-	-	-	-	-
Selenium T-Se	3.9	3.9	10	-	-	-	-	-	-	-	-	<2.0	-	-	-	-	-	-	-
Silver T-Ag	-	-	40	-	-	-	-	-	-	-	-	6.2	-	-	-	-	-	-	-
Tin T-Sn	-	-	300	-	-	-	-	-	-	-	-	55.0	-	-	-	-	-	-	-
Vanadium T-V	130	130	-	-	-	-	-	-	-	-	-	41.5	-	-	-	-	-	-	-
Zinc T-Zn	360	360	600	-	-	-	-	-	-	-	-	5320	-	-	-	-	-	-	-
<b>Non-Halogenated Volatiles</b>																			
Benzene	5	5	150	<0.040	-	<0.040	<0.040	<0.040	-	-	-	<0.040	0.197	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040
Ethylbenzene	20	20	20	0.596	-	1.39	<0.050	0.388	-	-	-	<0.050	5.59	<0.050	1.63	<0.050	0.780	<0.050	<0.050
Methyl t-butyl ether (MTBE)	-	-	-	-	-	<0.20	-	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Styrene	-	-	50	<0.050	-	<0.050	<0.050	<0.050	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050
Toluene	0.8	0.8	25	0.622	-	0.974	<0.050	0.193	-	-	-	<0.050	3.63	<0.050	0.606	<0.050	0.345	<0.050	<0.050
meta- & para-Xylene	-	-	-	2.68	-	7.84	<0.050	3.11	-	-	-	0.055	19.5	<0.050	14.9	<0.050	6.28	0.051	<0.050
ortho-Xylene	-	-	-	2.63	-	4.50	<0.050	2.18	-	-	-	<0.050	10.8	0.052	9.59	<0.050	5.09	<0.050	<0.050
Total Xylenes	20	20	50	5.31	-	12.3	<0.10	5.29	-	-	-	<0.10	30.3	<0.10	24.5	<0.10	11.4	<0.10	<0.10
TVHS-10	-	-	-	350	-	470	<100	140	-	-	-	<100	-	-	-	-	-	-	-
VPH	-	-	200	340	-	460	<100	130	-	-	-	<100	-	-	-	-	-	-	-
<b>CCME Hydrocarbon Fractions</b>																			
F1 (C6-C10)	660/330	1000/700	-	144	-	177	13	115	-	-	-	<10	778	16	432	<10	341	<10	<10
F1-BTEX	-	-	-	138	-	163	13	109	-	-	-	<10	738	16	405	<10	329	<10	<10
F2 (C10-C16)	1500/760	3000/2000	-	4030	45	3640	109	3430	64	62	<30	1570	6860	47	3740	<30	3220	65	65
F2-PAH	-	-	-	4030	-	3640	109	-	-	-	-	1570	-	-	-	-	-	-	-
F3 (C16-C34)	2500/1700	5000/3500	-	3160	<50	2580	62	2710	<50	141	<50	7450	2390	<50	1110	<50	1740	<50	<50
F3-PAH	-	-	-	3160	-	2580	62	-	-	-	-	7450	-	-	-	-	-	-	-
F4 (C34-C50)	6600/3300	10000	-	<500	<50	88	<55	106	<50	<50	<50	1900	<50	<50	<50	<50	117	<50	<50
F4G-ss	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
F4G-SG Required (yes/no)	-	-	-	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	no
<b>Glycols</b>																			
Diethylene Glycol	-	-	-	-	-	<10	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene Glycol	-	-	20000	-	-	<10	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Propylene Glycol	-	-	-	-	-	<10	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Polycyclic Aromatic Hydrocarbons</b>																			
Acenaphthene	-	-	-	<0.60	-	1.11	<0.040	-	-	-	-	<0.040	-	-	-	-	-	-	-
Acenaphthylene	-	-	-	<0.20	-	0.808	<0.050	-	-	-	-	<0.060	-	-	-	-	-	-	-
Anthracene	-	-	-	<0.20	-	2.5	<0.050	-	-	-	-	<0.080	-	-	-	-	-	-	-
Benzo(a)anthracene	0.7	0.7	10	<0.050	-	0.056	<0.050	-	-	-	-	<0.050	-	-	-	-	-	-	-
Benzo(a)pyrene	-	-	10	<0.050	-	<0.050	<0.050	-	-	-	-	<0.050	-	-	-	-	-	-	-
Benzo(b)fluoranthene	-	-	10	<0.050	-	<0.050	<0.050	-	-	-	-	<0.050	-	-	-	-	-	-	-
Benzo(k)fluoranthene	-	-	10	<0.050	-	<0.050	<0.050	-	-	-	-	<0.050	-	-	-	-	-	-	-
Benzo(e)pyrene	-	-	10	<0.050	-	<0.050	<0.050	-	-	-	-	<0.050	-	-	-	-	-	-	-
Chrysene	-	-	10	<0.050	-	0.077	<0.050	-	-	-	-	<0.050	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	-	-	10	<0.050	-	<0.050	<0.050	-	-	-	-	<0.050	-	-	-	-	-	-	-
Fluoranthene	-	-	10	<0.050	-	0.138	<0.050	-	-	-	-	<0.050	-	-	-	-	-	-	-
Fluorene	-	-	10	0.904	-	2.5	<0.050	-	-	-	-	<0.060	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	-	-	10	<0.050	-	<0.050	<0.050	-	-	-	-	<0.050	-	-	-	-	-	-	-
2-Methylnaphthalene	22	22	50	12.8	-	23.3	<0.050	-	-	-	-	0.641	-	-	-	-	-	-	-
Naphthalene	-	-	50	2.83	-	8.7	<0.050	-	-	-	-	0.255	-	-	-	-	-	-	-
Phenanthrene	-	-	50	1.98	-	3.9	<0.050	-	-	-	-	0.176	-	-	-	-	-	-	-
Pyrene	100	100	255	<0.050	-	<0.050	<0.050	-	-	-	-	0.135	-	-	-	-	-	-	-

<sup>a</sup> CCME Canadian Council of Ministers of the Environment - Canadian Environmental Quality Guidelines, 1999 (updated 2001)

<sup>b</sup> Yukon Territory Environment, Contaminated Sites Regulations, 2002/171

<sup>c</sup> field duplicate sample

<sup>d</sup> Subsoils are below 1.5 m depth, coarse grained soils are >50% of particles by weight >75 um diameter

**Italic** results exceeding YCSR Industrial Land Use standards

**Bold** results exceeding CWS or CCME Industrial land use guidelines

-/- not analyzed

< < less than detection limit



Table 2: Tank Farm, Anvil Range Mine, Faro, YT

Soil Analysis Results (mg/kg)

Location	Guideline/Standard			TP 8-S3	TP 9-S1	TP 9-S3	TP 10-S1	TP 11-S2	TP 12-S2	TP 13-S3	TP 14-S1	TP 15-S2	BH05-11-3	BH05-12-2	BH05-12-4
	Date	CCME/CWS <sup>a</sup> Industrial	YCSR <sup>b</sup>	9/9/2004	9/9/2004	9/9/2004	9/9/2004	9/9/2004	9/9/2004	9/9/2004	9/9/2004	9/9/2004	8/9/2005	8/9/2005	8/9/2005
Depth (m)	surface f/c	subsoils <sup>d</sup> f/c	Industrial	2.3	0.6	2.6	0.9	1.6	1.9	2.8	0.8	1.8	3.4	2.7	4.9
<b>Physical Tests</b>															
Moisture %				9.80	8.85	5.14	5.48	6.73	6.80	4.76	7.77	7.94	6.15	6.70	4.04
pH				-	-	-	-	-	-	-	-	-	-	-	-
<b>Non-Halogenated Volatiles</b>															
Benzene	5	5	150	-	<0.040	-	-	-	-	-	-	-	<0.040	<0.040	<0.040
Ethylbenzene	20	20	20	-	0.325	-	-	-	-	-	-	-	<0.050	<0.050	<0.050
Methyl t-butyl ether (MTBE)				-	-	-	-	-	-	-	-	-	<0.20	<0.20	<0.20
Styrene			50	-	<0.050	-	-	-	-	-	-	-	<0.050	<0.050	<0.050
Toluene	0.8	0.8	25	-	0.471	-	-	-	-	-	-	-	<0.050	<0.050	<0.050
meta- & para-Xylene				-	13.5	-	-	-	-	-	-	-	<0.050	<0.050	<0.050
ortho-Xylene				-	17.0	-	-	-	-	-	-	-	<0.050	<0.050	<0.050
Total Xylenes	20	20	50	-	<b>30.5</b>	-	-	-	-	-	-	-	<0.10	<0.10	<0.10
TVHS-10				-	1850	-	-	-	-	-	-	-	-	-	-
VPH			200	-	<b>1820</b>	-	-	-	-	-	-	-	-	-	-
<b>CCME Hydrocarbon Fraction<sup>c</sup></b>															
F1 (C6-C10)	660/330	1000/700		-	<b>509</b>	-	-	-	-	-	-	-	<10	<10	<10
F1-BTEX				-	478	-	-	-	-	-	-	-	<10	<10	<10
F2 (C10-C16)	1500/760	3000/2000		<b>3420</b>	<b>15600</b>	<b>7190</b>	<30	61	<30	<30	<30	<30	63	<30	45
F2-PAH				-	15600	-	-	-	-	-	-	-	-	-	-
F3 (C16-C34)	2500/1700	5000/3500		310	<b>5100</b>	1570	<50	474	<50	<50	646	<50	<50	<50	80
F3-PAH				-	5100	-	-	-	-	-	-	-	-	-	-
F4 (C34-C50)	6600/3300	10000		<100	<100	<100	<50	86	<50	<50	111	<50	<50	<50	<50
F4G-Sg				-	-	-	-	-	-	-	-	-	-	-	-
F4G-SG Required (yes/no)				no	no	no	no	no	no	no	no	no	no	no	no
<b>Polycyclic Aromatic Hydrocarbons</b>															
Acenaphthene				-	<0.80	-	-	-	-	-	-	-	-	-	-
Acenaphthylene				-	<0.40	-	-	-	-	-	-	-	-	-	-
Anthracene				-	<0.30	-	-	-	-	-	-	-	-	-	-
Benz(a)anthracene			10	-	<0.050	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	0.7	0.7	10	-	<0.050	-	-	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene			10	-	<0.050	-	-	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene				-	<0.050	-	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene			10	-	<0.050	-	-	-	-	-	-	-	-	-	-
Chrysene				-	<0.050	-	-	-	-	-	-	-	-	-	-
Dibenz(a,h)anthracene			10	-	<0.050	-	-	-	-	-	-	-	-	-	-
Fluoranthene				-	<0.050	-	-	-	-	-	-	-	-	-	-
Fluorene				-	2.50	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene			10	-	<0.050	-	-	-	-	-	-	-	-	-	-
2-Methylnaphthalene				-	46.3	-	-	-	-	-	-	-	-	-	-
Naphthalene	22	22	50	-	7.29	-	-	-	-	-	-	-	-	-	-
Phenanthrene			50	-	4.33	-	-	-	-	-	-	-	-	-	-
Pyrene			100	-	0.341	-	-	-	-	-	-	-	-	-	-

Notes: <sup>a</sup> CCME Canadian Council of Ministers of the Environment - Canadian Environmental Quality Guidelines, 1999 (updated 2001)

<sup>b</sup> Yukon Territory Environment. Contaminated Sites Regulations, 2002/171

<sup>c</sup> field duplicate sample

<sup>d</sup> Subsoils are below 1.5 m depth, coarse grained soils are >50% of particles by weight >75 um diameter

**Italic** results exceeding YCSR Industrial Land Use standards  
**Bold** results exceeding CWS or CCME Industrial land use guidelines  
 "n" = not analyzed  
 "<" = less than detection limit



**Table 3: Mill Diesel Tank, Anvil Range Mine, Faro, YT**

**Soil Analysis Results (mg/kg)**

Location	Guideline/Standard			TP 16-S1	TP 16-S2	TP 16-S3	BH05-13-1	BH05-13-2
	Date	CCME/CWS <sup>a</sup> Industrial	YCSR <sup>b</sup>	9/9/2004	9/9/2004	9/9/2004	8/9/2005	8/9/2005
Depth (m)	surface f/c	subsoils <sup>c</sup> f/c	Industrial	0.7	1.8	2.3	0.9	2.3
<b>Physical Tests</b>								
Moisture %				-	10.9	-	10.3	5.56
pH				5.61	-	5.61	-	-
<b>Total Metals</b>								
Antimony T-Sb			40	24	-	<10	-	-
Arsenic T-As	12	12	100	<b>152</b>	-	<b>97.4</b>	-	-
Barium T-Ba	2000	2000	2000	34.4	-	153	-	-
Beryllium T-Be	-	-	8	0.67	-	1.13	-	-
Cadmium T-Cd	22	22	500	15.8	-	7.22	-	-
Chromium T-Cr	87	87	700	36.8	-	37.0	-	-
Cobalt T-Co	-	-	300	31.0	-	13.7	-	-
Copper T-Cu	91	91	250	<b>445</b>	-	<b>206</b>	-	-
Lead T-Pb	600	600	2000	<b>7200</b>	-	<b>792</b>	-	-
Mercury T-Hg	50	50	150	7.93	-	0.187	-	-
Molybdenum T-Mo	-	-	40	4.5	-	<4.0	-	-
Nickel T-Ni	50	50	500	34.5	-	<b>55.3</b>	-	-
Selenium T-Se	3.9	3.9	10	<2.0	-	<2.0	-	-
Silver T-Ag			40	11.6	-	<2.0	-	-
Tin T-Sn			300	<5.0	-	<5.0	-	-
Vanadium T-V	130	130		41.2	-	44.5	-	-
Zinc T-Zn	360	360	600	<b>13200</b>	-	<b>2840</b>	-	-
<b>Non-Halogenated Volatiles</b>								
Benzene	5	5	150	-	-	-	0.128	<0.040
Ethylbenzene	20	20	20	-	-	-	0.497	<0.050
Methyl t-butyl ether (MTBE)				-	-	-	<0.20	<0.20
Styrene			50	-	-	-	<0.050	<0.050
Toluene	0.8	0.8	25	-	-	-	0.639	<0.050
meta- & para-Xylene				-	-	-	2.26	<0.050
ortho-Xylene				-	-	-	0.915	<0.050
Total Xylenes	20	20	50	-	-	-	3.18	<0.10
<b>CCME Hydrocarbon Fractions</b>								
F1 (C6-C10)	660/330	1000/700		-	-	-	220	<10
F1-BTEX				-	-	-	216	<10
F2 (C10-C16)	1500/760	3000/2000		-	1090	-	<b>1670</b>	<30
F2-PAH				-	1090	-	-	-
F3 (C16-C34)	2500/1700	5000/3500		-	679	-	1140	<50
F3-PAH				-	678	-	-	-
F4 (C34-C50)	6600/3300	10000		-	66	-	152	<50
F4G-Sg				-	-	-	-	-
F4G-SG Required (yes/no)				-	no	-	no	no
<b>Polycyclic Aromatic Hydrocarbons</b>								
Acenaphthene				-	<0.20	-	-	-
Acenaphthylene				-	<0.10	-	-	-
Anthracene				-	<0.060	-	-	-
Benzo(a)anthracene			10	-	<0.050	-	-	-
Benzo(a)pyrene	0.7	0.7	10	-	<0.050	-	-	-
Benzo(b)fluoranthene			10	-	<0.050	-	-	-
Benzo(g,h,i)perylene				-	<0.050	-	-	-
Benzo(k)fluoranthene			10	-	<0.050	-	-	-
Chrysene				-	<0.050	-	-	-
Dibenz(a,h)anthracene			10	-	<0.050	-	-	-
Fluoranthene				-	<0.050	-	-	-
Fluorene				-	0.401	-	-	-
Indeno(1,2,3-c,d)pyrene			10	-	<0.050	-	-	-
2-Methylnaphthalene				-	4.46	-	-	-
Naphthalene	22	22	50	-	<2.0	-	-	-
Phenanthrene			50	-	0.826	-	-	-
Pyrene			100	-	0.084	-	-	-

Notes: <sup>a</sup> CCME Canadian Council of Ministers of the Environment - Canadian Environmental Quality Guidelines, 1999 (updated 2001)  
<sup>b</sup> Yukon Territory Environment. Contaminated Sites Regulations, 2002/171  
<sup>c</sup> field duplicate sample  
<sup>d</sup> Subsoils are below 1.5 m depth, coarse grained soils are >50% of particles by weight >75 um diameter

**Italic** results exceeding YCSR Industrial Land Use standards  
**Bold** results exceeding CWS or CCME Industrial land use guidelines  
 "-" = not analyzed  
 "<" = less than detection limit



Table 4: Waste Oil Tanks, Anvil Range Mine, Faro, YT

Location	Soil Analysis Results (mg/kg)																		
	Guideline/Standard		TP 17-S1	TP 18-S2	TP 19-S2	TP 19-S2A*	TP 19-S3	TP 20-S3	TP 21-S1	TP 22-S2	TP 23-S1	TP 30-S3	BH05-5-1	BH05-5-3	BH05-6-4	BH05-6-5	BH05-7-4	BH05-7-5	
	CCME/CWS <sup>a</sup> Industrial	YCSR <sup>b</sup> Industrial	9/10/2004	9/10/2004	9/10/2004	9/10/2004	9/10/2004	9/10/2004	9/10/2004	9/10/2004	9/10/2004	9/11/2004	8/9/2005	8/9/2005	8/9/2005	8/9/2005	8/9/2005	8/9/2005	
Date																			
Depth (m)	surface f/c	subsoils' f/c	Industrial	0.8	1.5	1.2	1.2	2.2	2.7	1	1.7	0.8	3.2	0.61	4.6	4.6	5.5	5.8	6.4
<b>Physical Tests</b>																			
Moisture %				10.5	9.15	12.3	12.3	10.0	8.98	6.86	4.60	2.61	11.1	26.3	8.41	7.98	4.64	8.45	5.50
pH				-	-	7.53	6.69	-	-	-	-	-	-	-	-	-	-	-	7.53
<b>Total Metals</b>																			
Antimony T-Sb				-	-	16	38	-	-	-	-	-	-	-	-	-	-	-	<10
Arsenic T-As	12	12	100	-	-	75.2	144	-	-	-	-	-	-	-	-	-	-	-	7.4
Barium T-Ba	2000	2000	2000	-	-	42.3	33.9	-	-	-	-	-	-	-	-	-	-	-	389
Beryllium T-Be			8	-	-	0.72	<1.0	-	-	-	-	-	-	-	-	-	-	-	1.26
Cadmium T-Cd	22	22	500	-	-	17.1	38.5	-	-	-	-	-	-	-	-	-	-	-	<0.50
Chromium T-Cr	87	87	700	-	-	35.4	32.1	-	-	-	-	-	-	-	-	-	-	-	63.2
Cobalt T-Co	-	-	300	-	-	25.2	42.9	-	-	-	-	-	-	-	-	-	-	-	29.3
Copper T-Cu	91	91	250	-	-	439	704	-	-	-	-	-	-	-	-	-	-	-	40.9
Lead T-Pb	600	600	2000	-	-	7940	9380	-	-	-	-	-	-	-	-	-	-	-	<30
Mercury T-Hg	50	50	150	-	-	7.14	10.6	-	-	-	-	-	-	-	-	-	-	-	0.0124
Molybdenum T-Mo	-	-	40	-	-	4.4	9.5	-	-	-	-	-	-	-	-	-	-	-	<4.0
Nickel T-Ni	50	50	500	-	-	33.0	36	-	-	-	-	-	-	-	-	-	-	-	58.9
Selenium T-Se	3.9	3.9	10	-	-	<2.0	<4.0	-	-	-	-	-	-	-	-	-	-	-	<2.0
Silver T-Ag			40	-	-	11.0	17.4	-	-	-	-	-	-	-	-	-	-	-	<2.0
Tin T-Sn			300	-	-	<5.0	<10	-	-	-	-	-	-	-	-	-	-	-	<5.0
Vanadium T-V	130	130		-	-	48.7	43.7	-	-	-	-	-	-	-	-	-	-	-	60.4
Zinc T-Zn	360	360	600	-	-	13300	25400	-	-	-	-	-	-	-	-	-	-	-	887
<b>Non-Halogenated Volatiles</b>																			
Benzene	5	5	150	0.095	0.044	0.110	0.178	-	-	-	-	-	-	-0.10	-0.040	-0.040	-0.040	-0.040	-0.040
Ethylbenzene	20	20	20	2.26	0.058	1.91	2.13	-	-	-	-	-	-	-0.050	-0.050	0.447	0.204	2.08	0.836
Methyl t-butyl ether (MTBE)				<0.20	-	<0.20	<0.20	-	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Styrene			50	<0.050	<0.050	<0.050	<0.050	-	-	-	-	-	-	<0.050	<0.050	<0.050	<0.050	0.109	<0.050
Toluene	0.8	0.8	25	2.00	0.167	0.897	1.33	-	-	-	-	-	-	<0.20	<0.050	<0.050	<0.050	0.365	<0.15
meta- & para-Xylene				11.3	0.210	5.79	7.36	-	-	-	-	-	-	0.086	<0.050	0.675	0.411	5.36	1.80
ortho-Xylene				7.98	0.099	1.51	2.76	-	-	-	-	-	-	<0.10	<0.050	<0.10	<0.10	0.868	0.369
Total Xylenes	20	20	50	19.3	0.31	7.30	10.1	-	-	-	-	-	-	<0.15	<0.10	0.67	0.41	6.23	2.17
TVHS-10				900	<100	510	750	-	-	-	-	-	-	-	-	-	-	-	-
VPH			200	880	<100	500	740	-	-	-	-	-	-	-	-	-	-	-	-
<b>CCME Hydrocarbon Fractions</b>																			
F1 (C6-C10)	660/330	1000/700		361	26	278	301	-	-	-	-	-	-	52	39	182	147	379	205
F1-BTEX				338	26	267	287	-	-	-	-	-	-	52	39	181	147	370	202
F2 (C10-C16)	1500/760	3000/2000		4460	505	5230	7340	1430	<30	151	<30	<60	<30	111	572	2560	1250	2650	1490
F2-PAH				4450	-	5230	7330	-	-	-	-	-	-	-	-	-	-	-	-
F3 (C16-C34)	2500/1700	5000/3500		6000	430	3530	5000	1810	<50	482	<50	<100	<50	117	152	1120	678	1900	876
F3-PAH				6000	-	3520	5070	-	-	-	-	-	-	-	-	-	-	-	-
F4 (C34-C50)	6600/3300	10000		2920	102	<100	<200	<200	<50	933	<50	<100	<50	<50	<50	310	194	499	186
F4-G-SG				-	-	-	-	-	-	2070	-	-	-	-	-	-	-	-	-
F4-G-SG Required (yes/no)				no	no	no	no	no	no	yes	no	no	no	no	no	no	no	no	no
<b>Glycols</b>																			
Diethylene Glycol				-	<10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ethylene Glycol			20000	-	<10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
1,2-Propylene Glycol				-	<10	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Polycyclic Aromatic Hydrocarbons</b>																			
Acenaphthene				<0.30	-	<2.0	2.69	-	-	-	-	-	-	-	-	-	-	-	-
Acenaphthylene				<0.20	-	<0.50	0.745	-	-	-	-	-	-	-	-	-	-	-	-
Anthracene				<0.070	-	<0.40	0.467	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)anthracene	10			<0.050	-	0.071	0.083	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(a)pyrene	0.7	0.7	10	<0.050	-	<0.050	<0.050	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(b)fluoranthene				10	0.053	0.070	0.094	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(g,h,i)perylene				<0.050	-	<0.050	<0.050	-	-	-	-	-	-	-	-	-	-	-	-
Benzo(k)fluoranthene	10			<0.050	-	<0.050	<0.050	-	-	-	-	-	-	-	-	-	-	-	-
Chrysene				<0.050	-	<0.10	0.073	-	-	-	-	-	-	-	-	-	-	-	-
Dibenz(a,h)anthracene	10			<0.050	-	<0.050	<0.050	-	-	-	-	-	-	-	-	-	-	-	-
Fluoranthene				0.061	-	<0.20	0.158	-	-	-	-	-	-	-	-	-	-	-	-
Fluorene				0.318	-	2.04	2.55	-	-	-	-	-	-	-	-	-	-	-	-
Indeno(1,2,3-c,d)pyrene	10			<0.050	-	<0.050	<0.050	-	-	-	-	-	-	-	-	-	-	-	-
2-Methylnaphthalene				7.27	-	34.8	26.7	-	-	-	-	-	-	-	-	-	-	-	-
Naphthalene	22	22	50	2.69	-	5.27	7.78	-	-	-	-	-	-	-	-	-	-	-	-
Phenanthrene				50	0.485	4.91	5.34	-	-	-	-	-	-	-	-	-	-	-	-
Pyrene				100	-	0.209	0.284	-	-	-	-	-	-	-	-	-	-	-	-

Notes: <sup>a</sup> CCME Canadian Council of Ministers of the Environment - Canadian Environmental Quality Guidelines, 1999 (updated 2001)  
<sup>b</sup> Yukon Territory Environment, Contaminated Sites Regulations, 2002/171  
<sup>c</sup> field duplicate sample  
<sup>d</sup> Subsoils are below 1.5 m depth, coarse grained soils are > 50% of particles by weight > 75 um diameter

**Italic** results exceeding YCSR Industrial Land Use standards  
**Bold** results exceeding CWS or CCME Industrial land use guidelines  
 \* - not analyzed  
 <- - less than detection limit



Table 5: Maintenance Bays, Anvil Range Mine, Faro, YT

Table with columns for Location, Date, Guideline/Standard, YCSR, and Soil Analysis Results (mg/kg) for various metals and compounds. Includes sections for Physical Tests, Total Metals, Non-Halogenated Volatile, and Polycyclic Aromatic Hydrocarbon.

Notes: a CCME Canadian Council of Ministers of the Environment - Canadian Environmental Quality Guidelines, 1999 (updated 2001)

b Yukon Territory Environment. Contaminated Sites Regulations, 2002/171

c field duplicate sample

d Subsoils are below 1.5 m depth, coarse grained soils are >50% of particles by weight >75 um diameter

Italic results exceeding YCSR Industrial Land Use standards

Bold results exceeding CWS or CCME Industrial land use guidelines

\* = not analyzed

<< = less than detection limit



Table 6: Lube Shack, Anvil Range Mine - Vangorda Plateau, Faro, YT

Table with columns for Location, Date, Depth (m), Guideline/Standard (CCME/CWS, Industrial, YCSR), and Soil Analysis Results (mg/kg) for various metals and hydrocarbons across 14 sampling points (TP 56-S1 to BH05-18-2).

Notes:
- CCME Canadian Council of Ministers of the Environment - Canadian Environmental Quality Guidelines, 1999 (updated 2001)
- Yukon Territory Environment. Contaminated Sites Regulations, 2002/171
- field duplicate sample
- Subsoils are below 1.5 m depth, coarse grained soils are >50% of particles by weight >75 µm diameter
- Bold results exceeding YCSR Industrial Land Use standards
- results exceeding CWS or CCME Industrial Land Use guidelines
- not analyzed
- less than detection limit



Table 7: Tank Farm, Anvil Range Mine - Vangorda Plateau, Faro, YT

Soil Analysis Results (mg/kg)

Location	Guideline/Standard			TP 64-S1	TP 64-S1A <sup>c</sup>	TP 64-S3	TP 65-S3	TP 66-S3	TP 67-S3	TP 68-S2	TP 69-S2	BH05-19-1	BH05-19-4	BH05-20-1	BH05-20-3	BH05-20-4	BH05-21-1	BH05-21-3	
	Date	CCME/CWS <sup>a</sup> Industrial	YCSR <sup>b</sup> Industrial	9/14/2004	9/14/2004	9/14/2004	9/14/2004	9/14/2004	9/15/2004	9/15/2004	9/15/2004	8/10/2005	8/10/2005	8/10/2005	8/10/2005	8/10/2005	8/10/2005	8/10/2005	
Depth (m)	surface f/c	subsoils <sup>d</sup> f/c	Industrial	0.60	0.60	3.10	3.00	2.70	2.50	1.70	2.30	0.90	4.60	1.10	4.00	4.60	0.90	4.10	
<b>Physical Tests</b>																			
Moisture %				10.2	10.4	10.7	10.9	8.03	9.97	11.1	10.2	6.24	7.75	12.7	7.12	5.93	10.1	6.39	
pH				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
<b>Non-Halogenated Volatiles</b>																			
Benzene	5	5	150	<0.040	<0.040	0.054	<0.040	<0.040	-	-	-	<0.040	<0.040	1.01	<0.040	<0.040	0.917	<0.040	
Ethylbenzene	20	20	20	0.868	2.25	4.98	2.16	<0.050	-	-	-	<0.050	<0.050	10.6	1.04	<0.050	9.93	0.176	
Methyl t-butyl ether (MTBE)				-	-	-	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Styrene			50	<0.070	<0.20	<0.60	<0.20	<0.050	-	-	-	<0.050	<0.050	<0.050	<0.050	<0.050	0.057	<0.050	
Toluene	0.8	0.8	25	0.249	<b>0.992</b>	<b>1.95</b>	0.103	<0.050	-	-	-	<0.050	<0.050	<b>6.32</b>	<0.15	<0.050	<b>7.33</b>	<0.10	
meta- & para-Xylene				4.58	10.6	26.8	5.27	<0.050	-	-	-	<0.050	<0.050	41.7	1.23	0.176	52.7	0.635	
ortho-Xylene				2.59	6.41	17.3	5.24	<0.050	-	-	-	<0.050	<0.050	23.9	2.90	0.109	31.3	0.658	
Total Xylenes	20	20	50	7.17	17.0	<b>44.2</b>	10.5	<0.10	-	-	-	<0.10	<0.10	<b>65.6</b>	4.13	0.28	<b>84.1</b>	1.29	
TVHS-10				420	880	1970	780	<100	-	-	-	-	-	-	-	-	-	-	
VPH			200	<b>410</b>	<b>860</b>	<b>1920</b>	<b>770</b>	<100	-	-	-	-	-	-	-	-	-	-	
<b>CCME Hydrocarbon Fractions</b>																			
F1 (C6-C10)	660/330	1000/700		251	<b>457</b>	714	406	17	-	-	-	<10	25	<b>1280</b>	276	33	<b>2340</b>	69	
F1-BTEX				242	437	662	393	17	-	-	-	<10	25	1200	270	33	2240	68	
F2 (C10-C16)	1500/760	3000/2000		<b>3480</b>	<b>3890</b>	<b>6200</b>	1970	111	<30	30	40	<b>4420</b>	343	<b>12200</b>	1260	152	<b>6370</b>	254	
F2-PAH				-	-	6200	1960	111	-	-	-	-	-	12200	-	-	-	-	
F3 (C16-C34)	2500/1700	5000/3500		809	660	835	<500	<50	<50	<50	<55	<b>1750</b>	99	639	165	<50	584	<50	
F3-PAH				-	-	834	<500	<50	-	-	-	-	-	639	-	-	-	-	
F4 (C34-C50)	6600/3300	10000		<50	<50	<50	<50	<50	<50	<50	<55	<50	<50	<50	<50	<50	<50	<50	
F4G-Sg				-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
F4G-SG Required (yes/no)				no	no	no	no	no	no	no	no	no	no	no	no	no	no	no	
<b>Glycols</b>																			
Diethylene Glycol				<10	<10	-	<10	<10	-	<10	<10	-	-	-	-	-	-	-	
Ethylene Glycol			20000	<10	<10	-	<10	<10	-	<10	<10	-	-	-	-	-	-	-	
1,2-Propylene Glycol				<10	<10	-	<10	<10	-	<10	<10	-	-	-	-	-	-	-	
<b>Polycyclic Aromatic Hydrocarbons</b>																			
Acenaphthene				-	-	<0.60	<0.25	<0.040	-	-	-	-	-	0.330	-	-	-	-	
Acenaphthylene				-	-	<0.15	<0.15	<0.050	-	-	-	-	-	0.113	-	-	-	-	
Anthracene				-	-	<0.060	<0.050	<0.050	-	-	-	-	-	<0.050	-	-	-	-	
Benzo(a)anthracene			10	-	-	<0.050	<0.050	<0.050	-	-	-	-	-	<0.050	-	-	-	-	
Benzo(a)pyrene	0.7	0.7	10	-	-	<0.050	<0.050	<0.050	-	-	-	-	-	<0.050	-	-	-	-	
Benzo(b)fluoranthene			10	-	-	<0.050	<0.050	<0.050	-	-	-	-	-	<0.050	-	-	-	-	
Benzo(g,h,i)perylene				-	-	<0.050	<0.050	<0.050	-	-	-	-	-	<0.050	-	-	-	-	
Benzo(k)fluoranthene			10	-	-	<0.050	<0.050	<0.050	-	-	-	-	-	<0.050	-	-	-	-	
Chrysene				-	-	<0.050	<0.050	<0.050	-	-	-	-	-	<0.050	-	-	-	-	
Dibenz(a,h)anthracene			10	-	-	<0.050	<0.050	<0.050	-	-	-	-	-	<0.050	-	-	-	-	
Fluoranthene				-	-	<0.050	<0.050	<0.050	-	-	-	-	-	<0.050	-	-	-	-	
Fluorene				-	-	0.967	0.327	<0.050	-	-	-	-	-	0.317	-	-	-	-	
Indeno(1,2,3-c,d)pyrene			10	-	-	<0.050	<0.050	<0.050	-	-	-	-	-	<0.050	-	-	-	-	
2-Methylnaphthalene				-	-	33.3	17.1	0.090	-	-	-	-	-	49.5	-	-	-	-	
Naphthalene	22	22	50	-	-	16.5	8.31	0.082	-	-	-	-	-	<b>26.0</b>	-	-	-	-	
Phenanthrene			50	-	-	1.19	0.059	<0.050	-	-	-	-	-	0.621	-	-	-	-	
Pyrene			100	-	-	0.097	<0.050	<0.050	-	-	-	-	-	<0.050	-	-	-	-	

Notes: <sup>a</sup> CCME Canadian Council of Ministers of the Environment - Canadian Environmental Quality Guidelines, 1999 (updated 2001)  
<sup>b</sup> Yukon Territory Environment, Contaminated Sites Regulations, 2002/171  
<sup>c</sup> field duplicate sample  
<sup>d</sup> Subsoils are below 1.5 m depth, coarse grained soils are >50% of particles by weight >75 um diameter

**Italic** results exceeding YCSR Industrial Land Use standards  
**Bold** results exceeding CWS or CCME Industrial land use guidelines  
 \* = not analyzed  
 <\* = less than detection limit

# **Appendices**

# **Appendix A**

## **Tier 1 Objectives – Canada Wide Standards**

TIER 1 VALUES

Land Use	Exposure Pathway	FINE-GRAINED SURFACE SOILS				COARSE-GRAINED SURFACE SOILS				FINE-GRAINED SUBSOILS				COARSE-GRAINED SUBSOILS			
		F1	F2	F3	F4	F1	F2	F3	F4	F1	F2	F3	F4	F1	F2	F3	F4
<b>Agricultural</b>	Soil Ingestion (SI)	15000	8000	18000	25000	15000	8000	18000	25000	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact (DC)	RES	RES	RES	RES	RES	RES	RES	RES	NA	NA	NA	NA	NA	NA	NA	NA
	Vapour Inhalation (VI)	2100	11400	NA	NA	200	1100	NA	NA	2100	11400	NA	NA	200	1100	NA	NA
	Ecological Soil Contact (ESC)	260	900	800	5600	130	450	400	2800	750	2200	3500	10000	350	1500	2500	10000
	Protection of GW for Livestock (GW-L)	NA	NA	NA	NA	9000	4000	NA	NA	NA	NA	NA	NA	9000	4000	NA	NA
	Protection of Potable GW (GW-P)	180	250	NA	NA	860	1200	NA	NA	180	250	NA	NA	860	1200	NA	NA
	Protection of GW for Aquatic Life (GW-A)	NA	NA	NA	NA	230	150	NA	NA	NA	NA	NA	NA	230	150	NA	NA
	<b>Governing Objective</b>	<b>180</b>	<b>250</b>	<b>800</b>	<b>5600</b>	<b>130</b>	<b>150</b>	<b>400</b>	<b>2800</b>	<b>180</b>	<b>250</b>	<b>3500</b>	<b>10000</b>	<b>200</b>	<b>150</b>	<b>2500</b>	<b>10000</b>
	<b>Governing Pathway</b>	<b>GW-P</b>	<b>GW-P</b>	<b>ESC</b>	<b>ESC</b>	<b>ESC</b>	<b>GW-A</b>	<b>ESC</b>	<b>ESC</b>	<b>GW-P</b>	<b>GW-P</b>	<b>ESC</b>	<b>ESC</b>	<b>VI</b>	<b>GW-A</b>	<b>ESC</b>	<b>ESC</b>
<b>Residential</b>	Soil Ingestion (SI)	15000	8000	18000	25000	15000	8000	18000	25000	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact (DC)	RES	RES	RES	RES	RES	RES	RES	RES	NA	NA	NA	NA	NA	NA	NA	NA
	Vapour Inhalation - basement (VI)	940	5200	NA	NA	50	240	NA	NA	940	5200	NA	NA	50	240	NA	NA
	Vapour Inhalation - slab-on-grade (VI)	940	5200	NA	NA	30	150	NA	NA	990	5500	NA	NA	40	190	NA	NA
	Ecological Soil Contact (ESC)	260	900	800	5600	130	450	400	2800	750	2200	3500	10000	350	1500	2500	10000
	Protection of Potable GW (GW-P)	180	250	NA	NA	860	1200	NA	NA	180	250	NA	NA	860	1200	NA	NA
	Protection of GW for Aquatic Life (GW-A)	NA	NA	NA	NA	230	150	NA	NA	NA	NA	NA	NA	230	150	NA	NA
	<b>Governing Objective</b>	<b>180</b>	<b>250</b>	<b>800</b>	<b>5600</b>	<b>30</b>	<b>150</b>	<b>400</b>	<b>2800</b>	<b>180</b>	<b>250</b>	<b>3500</b>	<b>10000</b>	<b>40</b>	<b>150</b>	<b>2500</b>	<b>10000</b>
	<b>Governing Pathway</b>	<b>GW-P</b>	<b>GW-P</b>	<b>ESC</b>	<b>ESC</b>	<b>VI</b>	<b>VI</b>	<b>ESC</b>	<b>ESC</b>	<b>GW-P</b>	<b>GW-P</b>	<b>ESC</b>	<b>ESC</b>	<b>VI</b>	<b>GW-A</b>	<b>ESC</b>	<b>ESC</b>
<b>Commercial</b>	Soil Ingestion (SI)	RES	29000	RES	RES	RES	29000	RES	RES	NA	NA	NA	NA	NA	NA	NA	NA
	Dermal Contact (DC)	RES	RES	RES	RES	RES	RES	RES	RES	NA	NA	NA	NA	NA	NA	NA	NA
	Vapour Inhalation (VI)	4600	25000	NA	NA	310	1700	NA	NA	4800	26000	NA	NA	340	1800	NA	NA
	Ecological Soil Contact (ESC)	660	1500	2500	6600	330	760	1700	3300	1000	3000	5000	10000	700	2000	3500	10000
	Protection of Potable GW (GW-P)	180	250	NA	NA	860	1200	NA	NA	180	250	NA	NA	860	1200	NA	NA
	Protection of GW for Aquatic Life (GW-A)	NA	NA	NA	NA	230	150	NA	NA	NA	NA	NA	NA	230	150	NA	NA
	<b>Governing Objective</b>	<b>180</b>	<b>250</b>	<b>2500</b>	<b>6600</b>	<b>230</b>	<b>150</b>	<b>1700</b>	<b>3300</b>	<b>180</b>	<b>250</b>	<b>5000</b>	<b>10000</b>	<b>230</b>	<b>150</b>	<b>3500</b>	<b>10000</b>
	<b>Governing Pathway</b>	<b>GW-P</b>	<b>GW-P</b>	<b>ESC</b>	<b>ESC</b>	<b>GW-A</b>	<b>GW-A</b>	<b>ESC</b>	<b>ESC</b>	<b>GW-P</b>	<b>GW-P</b>	<b>ESC</b>	<b>ESC</b>	<b>GW-A</b>	<b>GW-A</b>	<b>ESC</b>	<b>ESC</b>
	<b>Industrial</b>	Soil Ingestion (SI)	RES	RES	NA	NA	RES	RES	NA	NA	NA	NA	NA	NA	NA	NA	NA
Dermal Contact (DC)		RES	RES	RES	NA	RES	RES	RES	NA	NA	NA	NA	NA	NA	NA	NA	NA
Vapour Inhalation (VI)		4600	25000	NA	NA	310	1700	NA	NA	4800	26000	NA	NA	340	1800	NA	NA
Ecological Soil Contact (ESC)		660	1500	2500	6600	330	760	1700	3300	1000	3000	5000	10000	700	2000	3500	10000
Protection of Potable GW (GW-P)		180	250	NA	NA	860	1200	NA	NA	180	250	NA	NA	860	1200	NA	NA
Protection of GW for Aquatic Life (GW-A)		NA	NA	NA	NA	230	150	NA	NA	NA	NA	NA	NA	230	150	NA	NA
Offsite Migration (OM)		NA	NA	12000	RES	NA	NA	RES	RES	NA	NA	NA	NA	NA	NA	NA	NA
<b>Governing Objective</b>		<b>180</b>	<b>250</b>	<b>2500</b>	<b>6600</b>	<b>230</b>	<b>150</b>	<b>1700</b>	<b>3300</b>	<b>180</b>	<b>250</b>	<b>5000</b>	<b>10000</b>	<b>230</b>	<b>150</b>	<b>3500</b>	<b>10000</b>
<b>Governing Pathway</b>		<b>GW-P</b>	<b>GW-P</b>	<b>ESC</b>	<b>ESC</b>	<b>GW-A</b>	<b>GW-A</b>	<b>ESC</b>	<b>ESC</b>	<b>GW-P</b>	<b>GW-P</b>	<b>ESC</b>	<b>ESC</b>	<b>GW-A</b>	<b>GW-A</b>	<b>ESC</b>	<b>ESC</b>

# **Appendix B**

## **Borehole Logs**

<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-1 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 August 2005 <b>LOGGED BY:</b> TJR <b>GROUND ELEV</b> 1148.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS		
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC	
1		<p><b>FILL</b> Brown silt and sand with cobble gravel. Dry. Hydrocarbon odours.</p> <p>-Becoming wet below 3.6 m depth.</p> <p><b>TOPSOIL</b> Dark brown peat some silt and fine sand. Moist. Soft. Hydrocarbon odours.</p> <p><b>TILL</b> Grey silt and shale gravel. Damp. Dense. Some hydrocarbon odours. - no hydrocarbon odours below 5.2 m depth.</p> <p>-Becoming drier below 6.1 m.</p> <p>- Borehole terminated at 9.14 m in till.</p>			1		CS			70	<p><b>PID Readings</b></p> <p>177 ppm</p> <p>541 ppm</p> <p>440 ppm</p> <p>145 ppm</p> <p>91.2 ppm</p> <p>141 ppm</p>	
					1		GS					
2					2		CS			60		
					2		GS					
3					3		CS			80		
					3		GS					
4.0					4		CS			100		
4.6					4		GS					
5					5		CS			100		
					5		GS					
6					6		CS			100		
					6		GS					
7	7		CS			100						
	7		GS									
8	8		CS			100						
	8		GS									
9.1	9		CS			100						
	9		GS									



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-10 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 September 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1180.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1		<b>SANDY TILL</b> Brown sand with some silt and gravel. Damp. Medium dense. - Becoming dry with slight hydrocarbon odours.			1		CS			80	<b>PID Readings</b>
2		- Becoming moist below 2.29 m.			1		GS				117 ppm
3.1					2		CS			80	
3.4		<b>BOULDER</b>			2		GS				64.2 ppm
4		<b>TILL</b> Silt with some sand and gravel. Moist. Some hydrocarbon odours. - Becoming dark brown/black, dry. - Becoming moist. No hydrocarbon odours below 4.88m.			3		GS				271 ppm
5					4		CS			100	
6		- Becoming dry.			4		GS				54 ppm
7.2					5		GS				69.3 ppm
7.6		<b>BEDROCK</b> Grey shale. Dry. - Borehole terminated at 7.62 m in bedrock.									



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-11 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 September 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1190.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1		<b>FILL</b> Brown silt with some sand and gravel. Moist. Dense. No hydrocarbon odours.			1		CS			100	<b>PID Readings</b>
					1		GS				121 ppm
2					2		CS			80	
					2		GS				117 ppm
3					3		CS			90	
					3		GS				114 ppm
4					4		CS			70	
5											
6		- Becoming more gravelly between 5.79 m and 6.4 m.			4		GS				104 ppm
6.7											
7		<b>WASTE ROCK (FILL)</b> Gravel and cobbles and shale. Grey . Dry. Dense.			5		CS			50	
8											
9											
10											
10.7		-Borehole terminated at 10.67m.									



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-12 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 September 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1189.50m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1		<b>FILL</b> Brown sand and silt with some gravel and some cobble. Dry. Dense.			1		CS			90	<b>PID Readings</b> 114 ppm
					1		GS				
2					2		CS			90	
3					2		GS				148 ppm
4					3		CS			90	
5					3		GS				96.4 ppm
5.8					4		CS			50	
5.8					4		GS				158 ppm
6		<b>WASTE ROCK (FILL)</b> Cobble gravel. Dry. Dense.									
7											
7.6		- Borehole terminated at 7.6 m in waste rock.									



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-13 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 September 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1133.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
0.5		<b>FILL</b> Brown fine sand and gravel. Dry. Dense.			1		CS			60	<b>PID Readings</b>  75.2 ppm  71.3 ppm
1		<b>FILL</b> Brown silt with some gravel and fine sand. Some black staining. Medium dense. Damp. Some hydrocarbon odours.			1		GS				
2.1					2		CS			100	
2		<b>TILL</b> Schist gravel and silt. Light grey. Dry. Dense.			2		GS				
3					3		CS			100	
4											
4.6		- Borehole terminated at 4.57m in bedrock.									



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-14 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 October 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1148.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1.2 1 2 3 4 5 6 7 7.6	+	<b>FILL</b> Brown fine sand and gravel with some silt. Dry. Dense. No odours.	[Patterned]	-	1		CS			80	<b>PID Readings</b>
					1	GS			99.7 ppm		
					2	CS		100			
					2	GS			88.1 ppm		
					3	CS		100			
					3	GS			126 ppm		
					4	CS		100			
					4	GS			166 ppm		
					5						
					5						
		- Borehole terminated at 7.62 m in till.									



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-15 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 October 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1146.50m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1		<b>FILL</b> Brown fine sand and gravel with some cobbles. Dry. Dense. No hydrocarbon odours.			1		CS			60	<b>PID Readings</b>  41 ppm    61.5 ppm 68.3 ppm  81.7 ppm  75.9 ppm
2					1		GS				
2.7					2		CS			60	
3.1		<b>SILT</b> Dark grey silt with some gravel and trace fine sand. Stiff. Wet. Some hydrocarbon odours.			2		GS				
3					3		GS			100	
4		<b>TILL</b> Gey gravel and silt with some fine sand. Dense. Wet. Slight hydrocarbon odours.			3		CS				
4					4		GS			60	
5					4		CS				
5.8					5		GS				
6.1		<b>BEDROCK</b> Schist. - Borehole terminated at 5.79 m in bedrock.									



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-16 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 October 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1279.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1		<b>TILL</b> Brown fine sand and silt. Dense. Dry.  - Becoming moist between 1.22 m and 1.68 m.  - Becoming gravelly below 1.68 m.			1		CS			80	<b>PID Readings</b>
2					1		GS				75.3 ppm
3					2		CS			100	
4					2		GS				46.7 ppm
4.4		- Orange-brown with slight hydrocarbon odours between 4.11 m and 4.42 m.			3		CS			80	
5		<b>BEDROCK</b> Bedrock. Mica and schist gravel. Some hydrocarbon odours between 4.42m and 4.88m.			3		GS				77.1 ppm
6.1					4		CS			100	80.4 ppm
6					4		GS				
6.1		- Borehole terminated at 6.1 m in bedrock.									



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-17 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 October 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1278.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1		<b>SILT TILL</b> Silt and sand with some gravel. Dry. Dense. Some hydrocarbon odours.			1		CS			95	<b>PID Readings</b>
		-Becoming moist below 1.37m.			1		GS				527 ppm
2		-Becoming sandy between 1.52 m and 2.13 m. Strong hydrocarbon odours.			2		CS			85	94.4 ppm
		- No hydrocarbon odours below 2.44 m.			2		GS				54.8 ppm
3		- Increasing gravel (broken bedrock) below 3.05 m. Becoming orange-brown in colour.			2		GS				
4					2		GS				44.0 ppm
4.6					3		CS			100	
5		<b>BEDROCK</b> Broken schist bedrock. Dry. Dense.									
6.1		-Borehole terminated at 6.1 m in bedrock.									



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-18 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 October 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1278.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1		<b>TILL</b> Grey silt, sand and gravel. Dry. Medium dense.			1		CS			90	<b>PID Readings</b>
					1		GS				203 ppm
2		-Becoming moist between 1.52m and 1.68m. - Becoming light brown fine to medium sand below 1.68 m.			2		CS			100	
2.3					2		GS				429 ppm
3		<b>BEDROCK</b> Light grey mica-schist. Damp. Medium dense. Some hydrocarbon odours between 2.74 m and 4.57 m.			3		GS				58.1 ppm
4											
4.6		- Borehole terminated at 4.57m in bedrock.									



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-19 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 October 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1278.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1		<b>TILL</b> Silt with some gravel and some sand. Medium dense. Moist. Slight hydrocarbon odours.			1		CS			100	<b>PID Readings</b>
					1		GS				99.3 ppm
2					2		CS			50	
					2		GS				63.3 ppm
3					3		CS			100	
					3		GS				57.8 ppm
4					4		CS			100	68.8 ppm
5		- Becoming wet, less gravel below 4.57 m. - No hydrocarbon odours below 4.72 m.			4		GS				
6.1					5		GS				76.4 ppm
6.1		<b>BEDROCK</b> Light grey schist. Dry. Dense.			5		CS			100	
7.0		- Borehole terminated at 7.0 m in bedrock.									


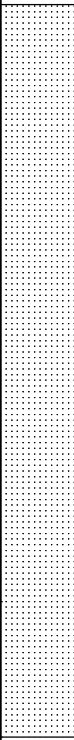



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-2 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 August 2005 <b>LOGGED BY:</b> TJR <b>GROUND ELEV</b> 1148.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1		<b>FILL</b> Brown sand with silty gravel. Medium dense. Moist. Slight hydrocarbon odours.			1		CS			70	<b>PID Readings</b>
					1		GS				180 ppm
2		- Hydrocarbon odours becoming stronger between 2.13 m and 2.74 m.			2		CS			80	
					2		GS				158 ppm
3					3		CS			100	
					3		GS				55.7 ppm
4.3					4		CS			40	
4.4		<b>TOPSOIL</b> Brown peat with some silt and wood waste. Soft. Moist. No hydrocarbon odours.			4		CS				
5		<b>SILT TILL</b> Medium brown and grey silt with peat layers and some fine sand. Medium dense. Damp. No hydrocarbon odours.			4		GS				127 ppm
6					5		CS			100	
7					5		GS				99.7 ppm
7.6		- Borehole terminated at 7.62 m in silt.									



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-20 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 October 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1278.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1		<b>TILL</b> Brown silt with some gravel and some fine sand. Stiff. Moist. Some hydrocarbon odours. - Becoming wet and loose sand and gravel between 0.76 m and .9 m. -Silt, some fine gravel, moist and stiff below 1.52 m. - Trace sand between 2.44m and 3.66m. Stiff. - Occasional cobbles between 3.66m and 4.72m.			1		CS			100	<b>PID Readings</b>
		1			GS			953 ppm			
2		2			CS			100			
		2			GS			295 ppm			
3		3			CS			100			
4		3	GS			364 ppm					
4.7		4	CS			100	62.7 ppm				
5		<b>BEDROCK</b> Light grey schist.			4		GS				
5.8											
		- Borehole terminated at 5.79 m in bedrock.									



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-21 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 October 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1278.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1		<b>TILL</b> Brown silt with some gravel and some sand. Wet. Loose. Hydrocarbon odours. - Becoming moist and stiff between 0.46m and 0.61m. - Cobble gravel between 0.61 and 0.91m. Dry. Dense.			1		CS			60	<b>PID Readings</b>
2		- Becoming dry between 1.83m and 3.05m.			1		GS				759 ppm
3		- Below 3.05m very dense, grey.			2		CS			100	
4					2		GS				330 ppm
5		- Becoming moist below 4.57m.			3		CS			100	
5.5					3		GS				106 ppm
5.8					4		CS			100	
					5		CS			100	
					4		GS				73.7 ppm
		<b>BEDROCK</b> Light grey shale. Dry. No hydrocarbon odours. - Borehole terminated at 5.49m in bedrock.									



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-3 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 August 2005 <b>LOGGED BY:</b> TJR <b>GROUND ELEV:</b> 1147.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS			
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC		
1	FILL Grey fine to medium gravelly sand. Medium dense. Dry. No odours - Pyrite in brown sand at 0.3 m.  - Becoming moist  - Black, coarse gravelly sand. Strong hydrocarbon odour. Possible product.  Medium brown silt with some fine sand. Firm. Moist. No hydrocarbon odours below 4.27 m.  - Becoming grey below 6.1 m.				1		CS			80	<b>PID Readings</b>		
					1		GS				95.6 ppm		
2					2		CS			90			
					2		GS					91.6 ppm	
3					3		GS					498 ppm	
					3		CS			100			
4					4		GS					95.8 ppm	
5				4		CS			90				
6				5		GS					54.0 ppm		
7				6		GS					116 ppm		
7.3													
7.6		<b>TOPSOIL</b> Brown peat with some silt. Soft. Moist. Rootlets. No odours. - Borehole terminated at 7.62 m in silty topsoil.											



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-4 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 September 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1148.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1		<b>FILL</b> Grey to brown fine sand with some silt and some gravel. Medium dense. Dry. Slight hydrocarbon odours.			1		CS			100	<b>PID Readings</b> 338 ppm
					1		GS				
2.1		- Black gravelly coarse sand, wet, with strong hydrocarbon odours.			2		CS			90	527 ppm
		<b>SILT TILL</b> Brown silt with some gravel, wet, with strong hydrocarbon odours.			2		GS				
3		- no hydrocarbon odours below 3.05m. Frozen below 3.05 m.			3		CS			90	52.1 ppm
					3		GS				
4					4		CS			100	
5											
6		- Becoming wet at 6.1m.									
7		- Becoming silver grey with some mica/schist at 7.0 m.									
7.6		- Borehole terminated at 7.62 m in silt.			4		GS				102 ppm


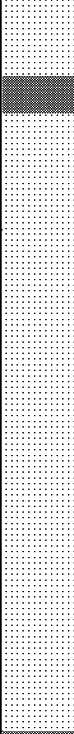




<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-5 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 September 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1139.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1	[Cross-hatched pattern]	<b>FILL</b> Dark grey fine sand and silt and some gravel. Loose. Dry.  - Becoming light brown at .91 m.	[Dotted pattern]		1		CS			100	<b>PID Readings</b>  174 ppm
2.1		2				GS			75		
3	[Vertical line pattern]	<b>SILT TILL</b> Red-brown silt with some fine sand and occasional gravel. Dry. Dense. No odours. Boulder from 2.74 m to 3.05 m.  - Becoming moist with some hydrocarbon odours at 3.05 m	[Dotted pattern]		2		CS				61.7 ppm
4		2				GS					
4.6	[Diagonal line pattern]	<b>BEDROCK</b> Grey mica-schist shale.	[Dotted pattern]		3		CS			70	120 ppm
5		3				GS					
7.6		Borehole terminated at 7.62 m.									



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-6 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 September 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1137.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1	 <b>FILL</b> Brown fine sand and silt with gravel. Medium dense. Dry. No odours.				1		CS			80	<b>PID Readings</b>  101 ppm  86.9 ppm  87.4  244  220
1.8					1	GS					
2					2	CS			100		
3					2	GS					
4					3	CS			100		
5.8	 <b>BEDROCK</b> Mica-schist. No odours.				3		GS			87.4	
6					4	CS			100	244	
7.0					4	GS					
7.0		- Borehole terminated at 7.0 m in bedrock.									



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-7 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 September 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1136.50m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1		<b>FILL</b> Brown gravelly silt and fine grained sand. Dense. Moist. - Becoming sandy with some gravel below 0.46 m.			1		CS			90	<b>PID Readings</b>
					1		GS				61.8 ppm
2					2		CS			70	
3											
4					2		GS				93.2 ppm
5		<b>SILT TILL</b> Grey gravelly silt with some fine sand. Wet. Dense. Some hydrocarbon odours.			3		CS			100	
					3		GS				117 ppm
6					4		GS				487 ppm
6.4											
		<b>BEDROCK</b> Grey schist and shale. Dry.			5		GS				242 ppm
7.0		- Borehole terminated at 7.0 m in bedrock.									



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-8 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 September 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1179.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1		<b>TILL</b> Light brown to light grey silt with some sand and gravel. Dense. Dry. - Some hydrocarbon odours below .3 m. - Becoming moist, with hydrocarbon odours between .76 m and 1.83 m.			1		CS			100	<b>PID Readings</b>
2		- Becoming dry below 1.83 m.			1		GS				515 ppm
3					2		CS			100	
4		- Becoming moist with some hydrocarbon odours between 3.96 m and 6.1 m.			2		GS				93.5 ppm
5					3		CS			100	
6		- Becoming wet below 6.96 m. No hydrocarbon odours.			3		GS				550 ppm
7					4		CS			100	
7.6		- Borehole terminated at 7.62 m in till.			4		GS				294 ppm
					5		GS				68.8 ppm



<b>BOREHOLE LOG</b>	<b>PROJECT:</b> 40436	<b>BOREHOLE:</b> BH05-9 1 of 1
2005 Environmental Site Assessment Faro Mine Site <b>FOR:</b> Deloitte & Touche Inc.		<b>DATE:</b> 8 September 2005 <b>LOGGED BY</b> TJR <b>GROUND ELEV</b> 1179.00m ASL

DEPTH (m)	STRATIGRAPHY	STRATIGRAPHIC DESCRIPTION	MONITOR DETAILS & NUMBER	WATER LEVEL	SAMPLE					COMMENTS	
					NUMBER	INTERVAL	TYPE	N VALUE	% WATER		% REC
1		<b>TILL</b> Brown to grey silt with sand and gravel. Dry. Dense. Some hydrocarbon odours.  - no hydrocarbon odours between 0.91 m and 3.05 m.			1		CS			100	<b>PID Readings</b>
2					1		GS				67.5 ppm
3		- Slight hydrocarbon odours below 3.05 m.			2		CS			80	
4					2		GS				64.3 ppm
5					3		CS			80	331 ppm
6		- Boulder between 6.1 m and 6.4 m.			3		GS				
7					4		CS			60	
7.6		- Borehole terminated at 7.62 m in till.			4		GS				87.9 ppm





**2004 Test Pit Logs - Anvil Range Mine  
Environmental Site Assessment - Faro Mine**

**Faro Mine**

**Lube Shack**

Test Pit Name	Sample ID	UTM Easting	UTM Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-1	S1	584116	6914374	0.35	191	(0 to 0.6 m) grey, dense, moist, medium to coarse Sand and Gravel, some cobbles, strong HC odours
	S2			0.8	146	(0.6 to 1.2 m) orange-brown, dense, damp, Cobbles, some medium sand and gravel, some HC odours
	S3			1.7	71	(1.2 to 2.0 m) grey, dense, damp, fine to medium Sand and coarse Gravel, slight HC odours
	S4			1.9	4.7	
TP-2	S1	584110	6914366	0.4	491	(0 to 0.7m) dk brown, dense, dry, fine to medium Sand and Gravel, cobbley, slight HC odou
	S2			0.9	84.8	(0.7 to 1.8m) greyish brown, dense, dry, fine Sand, some silt, some fine gravel and cobbl
	S3			1.7	16.6	(below 1.2 m) cobbley
TP-3	S1	584096	6914372	0.65	264	(0 to 0.7m) dk grey, dense, moist, fine to medium Sand, gravelly, some silt and cobbles, strong HC odours
	S2			1.3	223	(0.7 to 1.7m) medium brown, dense, dry, medium Sand, some gravel, occ. Cobble, some HC odours
	S3			1.9	44.8	(1.7 to 2.7m) grey, dense, moist, Silt and fine Gravel, some HC odours, below 2.5 m no odours
	S4			2.7	10.2	
TP-4	S1	584085	6914362	0.6	272	(0 to 0.9m) grey, dense, dry, fine to medium Gravel, some silt and fine sand, some HC odou
	S2			1.5	512	(0.9 to 2.9 m) grey, medium dense, moist, fine to med. Sand, silty, some gravel, occ. Cobbles, some HC odours
	S3			2.8	591	(below 1.5m) some cobbles, slight HC odour
TP-5	S1	584098	6914340	0.8	4.4	(0 to 0.6m) orange brown, dense, dry, fine Sand and coarse Gravel
	S2			1.6	3.5	(0.6 to 2.6m) grey, medium dense, moist, fine Sand, some fine gravel, some silt, occ. Cobbles
	S3			2.6	3.5	
TP-6	S1	584125	6914371	0.6	34	(0 to 0.5m) medium brown, dense, dry, fine Sand, some grav
	S2			1.6	3.8	(0.5 to 0.7 m) orange brown, dense, dry, fine Sand and coarse Gravel, some cobbl
	S3			2.5	2.1	(1.0 to 2.6m) grey, dense, damp, fine Sand, some fine gravel, some sil
TP-7	S1	584071	6914358	0.8	73.5	(0 to 0.4m) medium brown, dense, dry, fine to medium Sand and Gravel, some cobble
	S2			2.4	7	(0.4 to 1.0m) orange brown, dense, dry, Gravel, some medium san (1.0 to 2.5m) light brown, dense, dry Cobbles, some medium sand, some grav
TP-85	S1	584094	6914400	0.8	12.3	(0 to 1.1m) greyish brown, med dense, moist, med to coarse Sand and Gravel, some cobbles, sl HC odou
	S2			1.5	14.2	(1.1 to 2.5m) orange brown, dense, dry, medium to coarse Sand, some gravel, occ cobbl
	S3			2.4	13.3	

**Tank Farm**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-8	S1	584005	6914446	0.5	589	(0 to 0.9m) grey, med dense, moist, fine to med Sand, silty, some gravel, FILL, some HC odours
	S2			1.4	83.8	(0.9 to 2.4m) orange brown, dense, dry, medium to coarse Sand and Gravel, cobbley, slight HC odours
	S3			2.3	114	
TP-9	S1	583990	6914452	0.6	332	(0 to 0.4m) dk brown, dense, dry, fine to med Sand and fine Gravel, some HC odou
	S2			1	351	(0.4 to 2.0m) orange brown, dense, dry, fine to medium Sand and Gravel, cobbley, some HC odou
	S3			2.6	322	(2.0 to 2.6m) grey, dense, dry Cobbles, some med sand and gravel, some HC odou
TP-10	S1	583978	6914420	0.9	13.7	(0 to 2.2m) orange brown, dense, dry, fine to medium Sand and Gravel, cobbley, FIL
	S2			1.9	4.5	
TP-11	S1	583969	6914438	0.8	3.2	(0 to 0.2m) grey, dense, dry, coarse Sand and Grave
	S2			2	4.9	(0.2 to 0.9m) orange brown, dense, dry, fine to medium Sand and Gravel, cobbley
	S3			2.3	2.3	(0.9 to 1.8m) med brown, dense, dry medium Sand and Cobbles, some gravel (1.8 to 2.4m) med brown, dense, dry, Gravel, some medium sand, cobbley
TP-12	S1	584012	6914448	0.7	2.1	(0 to 1.1m) dk brown, med dense, moist, fine Sand, some gravel and silt
	S2			1.9	3.2	(1.1 to 1.7m) lt brown, dense, dry, fine Sand and Gravel, some cobbles (1.7 to 2.0m) brown, dense, dry, Gravel, cobbley, some fine sand
TP-13	S1	583994	6914466	0.8	3.3	(0 to 2.8m) med brown, dense, dry, fien to medium Sand and Gravel, some cobbles
	S2			1.9	2.9	-below 1.5m cobbley
	S3			2.8	3.3	
TP-14	S1	583930	6914496	0.8	3.9	(0 to 1.0m) dk brown, dense, dry, fine Sand, some gravel, some small cobbles
	S2			2	2.8	(1.0 to 2.0m) orange-brown dense, dry, fine to medium Sand and Cobbles, some gravel
TP-15	S1	583930	6914483	0.9	3.5	(0 to 2.2m) orange and brown, dense, dry, fine to medium Sand and Gravel, some cobbles
	S2			1.8	5.5	(2.2m to 2.4m) grey, dense, dry, Gravel, some fine sand, some cobble
	S3			2.4	2.1	

**Mill Diesel Tank**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-16	S1	583153	6914061	0.7	66.8	(0 to 2.4m) dark brown, dense, dry, fine to medium Sand, some grav
	S2			1.8	170	-below 1.5m moist, slight HC odou
	S3			2.3	146	-at 1.8m electrical line, water seepage at 1.7m -below 1.8m HC odours, shean on water

**Waste Oil Tanks**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-17	S1	583003	6914147	0.8	492	(0 to 2.2m) dark brown, med dense, dry, fine to medium Sand, some gravel, FIL
	S2			1.7	61.3	-below 1.2m some silt, occ cobble:
	S3			2.2	45.2	
TP-18	S1	583001	6914140	0.9	19.9	(0 to 0.3m) orange brown, dense, dry, fine Sand and Gravel, some si
	S2			1.5	139	(0.3 to 0.7m) coal seam
	S3			2	16.9	(0.7 to 1.4m) dark brown, dense, dry, fine Sand, some grave (1.4 to 2.1m) dark brown, very dense, dry, fine Sand, silty, some gravel size sha
TP-19	S1	582970	6914129	0.8	50.6	(0 to 0.6m) coal seam
	S2			1.2	270	(0.6 to 1.4m) light brown, dense, dry, fine Sand and Silt, moderate diesel odours from 1.0 to 1.4
	S3			2.2	77.7	(1.4 to 2.3m) med brown, dense, dry, fine Sand, some gravel, below 1.6m some cobbles, HC odou
	S4			2.8	17.3	(2.3 to 2.8m) med brown, dense, dry, Silt, some fine sand, some gravel, occ cobbles

**Waste Oil Tanks continued**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-20	S1	582997	6914126	0.9	2.3	(0 to 0.4m) dark brown, dense, dry, fine Sand, some gravel
	S2			1.6	6.8	(0.4 to 2.8m) med brown, dense, dry, fine Sand, silty, some gravel, occ cobbl
	S3			2.7	10.8	
TP-21	S1	582972	6914116	1	67	(0 to 1.2m) med brown, dense, dry, fine Sand and Gravel, some si
	S2			1.8	19.5	(1.2 to 2.2m) med brown, dense, dry, fine Sand and Silt, some gravel, occ cobbl
	S3			2.8	7.3	(2.2 to 2.8m) med brown, dense, dry, Silt, gravelly, some fine sand, occ cobbl
TP-22	S1	583007	6914094	0.8	3.3	(0 to 0.8m) dark brown, very dense, dry, fine Sand, gravel
	S2			1.7	4.4	(0.8 to 1.5m) dark brown, dense, dry, fine to med Sand and Gravel, some HC odour
	S3			2.7	3.3	(1.5 to 2.8m) med brown, med dense, dry, coarse Sand, some gravel, no HC odou
TP-23	S1	583010	6914101	0.8	14.6	(0 to 0.5m) dark brown, med dense, dry, fine Sand, some grav
	S2			2	3.4	(0.5 to 1.8m) med brown, med dense, dry, medium to coarse Sand, gravel
	S3			2.8	5.6	(1.8 to 2.9m) med brown, stiff, dry, Silt, some fine sand, gravel
TP-30	S1	582955	6914106	0.9	2.6	(0 to 2.3m) orange-brown, med dense, dry, fine to med Sand and Gravel, occ cobbles, below 1.2m cobbl
	S2			1.5	3.1	(2.3 to 3.2m) med brown, firm, moist, Silt, some fine sand, occ grav
	S3			3.2	0.8	

**Coal Loading Area**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-24	S1	583010	6914106	0.6	2.5	(0 to 0.4m) dark brown/black, loose, dry, fine Sand, Coal seam
	S2			1.4	3.4	(0.4 to 1.5m) med brown, med dense, dry, fine to med Sand, some grav
TP-25	S1	582996	6914101	0.6	3.8	(0 to 0.3m) black, loose, dry, fine Sand, coal seam
	S2			1.6	2	(0.3 to 1.2m) medium brown, medium dense, dry, fine to medium Sand, gravelly, occ cobbl
TP-26	S1	582991	6914086	0.6	2.5	(1.2 to 1.7m) medium brown, dense, dry, fine Sand and Gravel
	S2			1.6	3.1	(0 to 1.8m) medium brown, loose, dy, coarse Sand, some gravel, some co

**Concentrate Loadout Area**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-27	S1	583051	6913996	0.9	2.8	(0 to 2.0m) med brown, dense, dry, fine to medium Sand and Gravel, cobbl
	S2			1.8	11.3	
TP-28	S1	583035	6913996	0.4	6.9	(0 to 1.1m) orange-brown, dense, dry, fine Sand and Gravel, cobble
	S2			1.3	3.4	(1.1 to 1.4m) med brown, dense, dry, fine to med Sand, some gravel, some cobbl
TP-29	S1	583017	6914010	0.7	61.2	(0 to 0.5m) orange-brown, dense, dry, fine Sand, some gravel
	S2			1.9	239	(0.5 to 1.6m) med brown, dense, damp, Silt, fine sandy, some gravel and cobbles, slight HC odou
	S3			2.5	80.6	(1.6 to 2.5m) light brown, med dense, dry, medium Sand and Gravel, cobble, no HC odours below 2.0
TP-31	S1	582979	6913999	0.9	40.2	(0 to 0.8m) med brown, dense, dry, fine Sand, gravelly, some silt, occ cobbl
	S2			1.6	29.1	(0.8 to 1.3m) dark brown, dense, dry, Silt, fine sandy, some gravel, occ cobbles, some HC odou
						(1.3 to 1.8m) dark brown, very dense, dry, Gravel (mica-schist), some med sand, cobbley, some HC odours

**Maintenance Bays**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-34	S1	582969	6914287	0.9	17.2	(0 to 1.1m) orange-brown, dense, dry, fine Sand, gravelly, occ cobbles, slight HC odours below 0.5
	S2			1.3	7.5	(1.1 to 1.3m) grey, dense, dry, Silt, some fine sand, no odour
TP-35	S1	582943	6914311	0.7	112	(0 to 0.5m) orange-brown, dense, dry, fine Sand, silty, some gravel, occ cobbl
	S2			1.6	72.2	(0.5 to 2.0m) grey, dense, dry, Silt, gravelly, some fine sand, slight HC odou
	S3			2.5	7.6	(2.0 to 2.5m) med brown, dense, dry, fine Sand and Silt, some grav
TP-36	S1	582902	6914305	0.9	2.1	(0 to 1.3m) med brown, dense, dry, med to coarse Sand, gravelly, occ cobbl
	S2			1.5	1128	(1.3 to 1.7m) grey, dense, dry, fine Sand, gravelly, some silt, occ cobbles, some diesel odou
	S3			1.8	542	(1.7 to 1.8m) med brown, very dense, dry, Gravel, cobbley, some med sand, HC odou
TP-37	S1	582883	6914313	0.8	3.6	(0 to 0.8m) brown, very dense, dry Gravel, some sand, refusal at 0.8r
TP-39	S1	582896	6914229	1	7.8	(0 to 2.3 m) medium brown, dense, dry, Silt, gravelly, some fine sand, occ cobbl
	S2			2.3	8.4	
TP-40	S1	582891	6914349	0.7	181	(0 to 2.0m) grey, dense, dry, fine to medium Sand and Gravel, occ cobbles, slight HC odou
	S2			1.7	804	(2.0 to 2.9m) brown, med dense, dry, medium Sand, some gravel, occ cobbles, strong HC odou
	S3			2.8	905	
TP-41	S1	582959	6914351	1.2	8.3	(0 to 1.9m) medium brown, dense, dry, fine to medium Sand, gravelly, some silt, occ cobbl
	S2			2	6.8	(1.9 to 2.4m) brown, med dense, moist to wet, Silt and med Sand, some grav
TP-42	S1	583015	6914325	0.8	7.4	(0 to 1.1m) grey, very dense, dry, Silt and Gravel, some cobble
	S2			1.2	5.4	(1.1 to 1.2m) grey, dense, dry, Gravel (mica-schist), some fine sand
TP-43	S1	583068	6914313	1.1	3.7	(0 to 1.5m) med brown, dense, damp, fine to med Sand, gravelly, some silt, some cobbl
	S2			1.4	9.8	(1.5m) grey, dense, dry, Gravel and Cobbles, refusa
TP-45	S1	582886	6914355	1	142	(0 to 2.2m) med brown, dense, dry, fine to med Sand and Gravel, some cobbles, slight HC odou
	S2			1.5	335	- below 1.5m, grey, strong HC odour:
	S3			2.2	355	- rock at 2.2m, refusal
TP-46	S1	582875	6914332	0.8	4.9	(0 to 0.4m) orange-brown, dense, dry, fine to med Sand, gravelly, occ cobbl
	S2			1.6	4.8	(0.4 to 1.6m) dark brown, dense, dry, Gravel, cobbley, some medium sand

**Scrap yards**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-51	S1	583065	6914458	0.6	2.9	(0 to 1.2m) grey/brown, dense, dry, Silt with fine sand, some gravel, occasional cobbl
	S2			1.6	1.9	(1.2 to 1.8m) light grey, medium dense, moist, Gravel, some coarse sand and silt, occasional cobbl
TP-52	S1	583029	6914471	0.6	3.4	(0 to 1.3m) grey, dense, moist, Gravel, some sand, some silt, cobble
	S2			1.3	4	
TP-53	S1	582994	6914493	0.8	2.4	(0 to 1.5m) grey, dense, moist, Gravel, cobbley, some sand and sil
	S2			1.5	2.7	
TP-86	S1	583255	6914197	0.5	3.8	(0 to 1.5m) greyish brown, medium dense, damp, fine Sand, some gravel, some silt, occasional cobbl
	S2			1.6	1.4	(1.5 to 1.7m) dark grey, dense, dry, Gravel (mica Schist), trace coarse san
TP-87	S1	583235	6914176	0.8	1.6	(0 to 1.4m) orange-brown, med dense, dry, fine to med Sand, some gravel, occ. cobbl
	S2			1.5	2.6	(1.4 to 1.7m) grey, med. dense, moist, med. to coarse Sand, gravelly, some silt, occ cobbl
TP-88	S1	583317	6914087	0.4	5	(0 to 0.6m) med. brown, dense, damp, med. Sand and Gravel, occ. cobbl
	S2			1	13.2	(0 to 3.2m) black and dark brown, loose, dry, fine Sand, no odou
	S3			3.2	19.5	
TP-89	S1	583299	6914047	0.6	2.8	(0 to 0.6m) orange/brown, dense, dry, med. to coarse. Sand and Gravel, some cobbl
	S2			2.3	2.1	(0.5 to 1.5m), med. brown, med. dense, dry, fine Sand, occ. grav
						(1.5 to 2.5m) med. brown, dense, dry, fine to med Sand, some gravel

**Pumphouse**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-48	S1	583479	6912337	0.8	3.8	(0 to 0.4m) dark brown to black, med dense, dry, fine to coarse Sand, some gravel, no odo
	S2			0.3	1.2	(0.4 to 0.8m) orange-brown, dense, dry, med to coarse Sand, gravelly, some cobbl
	S3			1.2	3.8	(0.8 to 1.3m) orange-brown, med dense, wet, coarse Sand and Cobbles, ponded water at 1.1
TP-49	S1	583459	6912327	0.8	2.2	(0 to 1.0m) med brown, med dense, dry, fine to med Sand, cobbley, some grav
	S2			1.4	2.3	(1.0 to 1.4m) med brown, med dense, wet, Sand and Cobbles, occ boulders below 1.0m, water infiltration at 1.4
TP-50	S1	583491	6912323	0.8	3.1	(0 to 1.0m) med brown, loose, wet, med Sand and Gravel, some cobbl
	S2			1.5	3	(1.0 to 1.5m) med brown, loose, wet, coarse Sand, some gravel, some cobbles, water at 1.5m

**Coarse Ore Area**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-90	S1	6583141	6914276	0.5	1	(0 to 0.6m) orange-brown, dense, dry, coarse Sand and Gravel, cobble
	S2			1.5	1.4	(0.6 to 1.7m) grey, med dense, damp, Silt and Gravel, some fine sand, occ cobbl
TP-91	S1	583159	6914271	0.6	1.7	(0 to 0.7m) orange, med dense, moist, Silt, some fine sand, gravel
						(0.7 to 0.9m) dark brown, dense, damp, Silt, some gravel, occ cobbles

**Reagent Storage Area**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-54	S1	583087	6914255	0.7	2.7	(0 to 0.9m) grey, dense, dry, Silt and Gravel, some c sand, cobble
						(0.9m) concrete pad (ramp)
TP-55	S1	583113	6914238	0.4	2.1	(0 to 0.6m) reddish brown, dense, dry, f to med Sand, some gravel, some cobbl
						(0.6m) rock

**General Yard Area**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-32	S1	582975	6914220	1	35	(0 to 1.3m) med brown, dense, dry, fine to med Sand, some silt, gravelly, occ cobbl
	S2			1.8	5.4	(1.3 to 2.6m) med brown, dense, dry, Silt, some fine sand, gravelly, occ cobbles, below 2.1m sti
	S3			2.5	1.2	
TP-33	S1	582942	6914254	0.8	5.6	(0 to 1.1m) med brown, dense, dry, fine to med Sand and Gravel, some small cobbles
	S2			1.6	3	(1.1 to 1.7m) med brown, med dense, dry, fine to med Sand, some gravel, occ cobbl
TP-38	S1	582893	6914281	0.8	3.6	(0 to 0.8m) brown, very dense, dry, Gravel, some san
TP-44	S1	583073	6914288	1.1	3.3	(0 to 2.2m) med brown, dense, dry, fine to med Sand, gravelly, occ cobbl
	S2			2	2.8	

**Vangorda Mine**

**Lube Shack**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-56	S1	592165	6964528	0.9	252	(0 to 2.6m) grey, med dense, moist, Gravel (schist), some fine sand, occ cobbles, below 0.5m hydrocarbon odo
	S2			1.6	235	(2.6 to 2.8m) grey and brown, Silt, some gravel, some fine san
	S3			2.8	148	slight hydrocarbon odour below 2.7m and colour change to light brow
TP-57	S1	592147	6904536	0.9	2.3	(0 to 0.5m) orange-brown, med dense, damp, fine to med Sand, some silt, some grav
	S2			1.8	1.2	(0.5 to 1.6m) brown, stiff, dry, Silt, some gravel, some fine sand, occ boulders, no odour
	S3			2.7	2.3	(1.6 to 2.7m) grey, very stiff, moist, Silt, occ grave
TP-58	S1	592144	6904523	0.7	2.3	(0 to 0.8m) red brown, loose, dry, fine to med Sand, some gravel (mica Schist), occ cobbl
	S2			1.7	2.6	(0.8 to 2.6m) brown, stiff, moist, Silt, some fine sand, occ grave
	S3			2.5	2.5	
TP-59	S1	592154	6904514	0.5	105	(0 to 0.9m) grey, med dense, dry, Gravel (Schist), some silt, occ cobbles, some hydrocarbon odou
	S2			1.2	7.2	(0.9 to 1.5m) brown, med dense, dry, med to coarse Sand, some gravel, no odou
	S3			2.1	3.5	(1.5 to 2.3m) brown, stiff, moist, Silt, some gravel, no odour
TP-60	S1	592178	6904528	0.7	45.7	(0 to 1.0m) grey, dense, dry, Gravel (Schist), some fine sand, trace of silt, occ cobbles, slight h/c odou
	S2			1	36	(1.0m) rock
TP-61	S1	592174	6904515	0.8	7.9	(0 to 1.7m) grey, dense, dry, Gravel (mica Schist), some silt and fine sand, occ cobbles, no odou
	S2			1.8	87.5	(1.7 to 2.3m) brown, loose, dry, med to coarse Sand, some hydrocarbon odou
	S3			2.6	7.6	(2.3 to 2.6m) brown, med dense, moist, Silt, some fine sand, some gravel, no odou
TP-62	S1	592172	6904492	0.7	3.1	(0 to 0.5m) med brown, loose, dry, fine to med Sand, some grav
	S2			2.3	3.3	(0.5 to 1.2m) greyish brown, med dense, moist, Silt, some fine sand, some grav
	S3			2.8	3.2	(1.2 to 2.1m) dark brown, soft, moist Peat, some sand, rootlets, septic odou (2.1 to 2.9m) greyish green, stiff, moist, Silt, some fine sand, occ grav
TP-63	S1	592186	6904513	0.7	7.7	(0 to 1.7m) grey, dense, dry, Gravel (mica Schist), silty, no odour
	S2			2	25.5	(1.7 to 1.9m) dark brown, firm, moist, Peat, rootlets, some si
	S3			2.9	11.4	(1.9 to 2.8m) brown, med dense, dry, fine to med San (2.8m) light brown-grey, med dense, dry, fine Sand, some silt, cemented, vegetation, layering, no odour

**Tank Farm**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-64	S1	592142	6904408	0.6	277	(0 to 0.5m) brown, med dense, wet, med to coarse Sand, some gravel, diesel odo
	S2			1.9	427	(0.5 to 1.5m) med brown, stiff, moist, Silt, some fine sand, some gravel, diesel odo
	S3			3.1	497	(1.5 to 3.1m) brown, dense, dry, fine Sand and Silt, gravelly, hydrocarbon odou
TP-65	S1	592129	6904419	0.7	289	(0 to 0.4m) med brown, med dense, moist, med to coarse Sand, some gravel, diesel odo
	S2			1.7	466	(0.4 to 3.0m) brown, stiff, moist, Silt, some f sand, some gravel, strong diesel odou
	S3			3	590	
TP-66	S1	592166	6904398	0.8	7.9	(0 to 0.5m) grey, med dense, wet, Silt, some fine sand, some gravel (disturbei
	S2			1.8	4.9	(0.5 to 1.5m) brown, med dense, moist, fine to med Sand, some silt, some gravel, occ cobbles and boulders
	S3			2.7	86.9	(1.5 to 2.7m) brown, stiff, dry, Silt, some fine sand, some grav
TP-67	S1	592112	6904380	0.8	3.1	(0 to 0.4m) brown, med dense, moist, fine to med Sand, some gravel, occ cobbl
	S2			1.6	2.1	(0.4 to 2.5m) brown, stiff, dry, Silt, some fine sand, occ gravel, no odours, below 2.3 m gr
	S3			2.5	6.9	
TP-68	S1	592107	6904420	0.7	2.3	(0 to 2.7m) brown, firm, moist, Silt, some f sand, some gravel, no odou
	S2			1.7	3.1	
	S3			2.6	2.7	
TP-69	S1	592126	6904445	0.7	2.7	(0 to 0.6m) brown, loose, dry, med San
	S2			2.3	3	(0.6 to 2.4m) brownish grey, firm, moist, Silt, some fine sand, occ grav
	S3			2.5	2.3	(2.4 to 2.6m) brown, stiff, damp, fine sandy Silt, some gravel

**Maintenance Shop**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-73	S1	591217	6905147	0.5	1.7	(0 to 0.6m) brown, med dense, dry, fine to med Sand, some grav
						(0.6 to 0.7m) brown and grey, dense, dry, Gravel (mica Schist), trace fine sand, no odour
TP-74	S1	591244	6905143	0.7	2.7	(0 to 0.6m) brown, loose, dry, fine to med Sand
	S2			1.4	5.1	(0.6 to 0.8m) light brown, stiff, dry, Silt and Gravel (mica Schist)
						(0.8 to 1.5m) grey, dense, dry, Gravel (mica Schist), trace sand
TP-75	S1	591218	6905181	0.5	1.9	(0 to 1.6m) brown, loose, dry, fine to med Sand, some grav
	S2			1.5	2.3	(0.6 to 1.7m) grey, dense, dry, Gravel (mica Schist), some fine sand

**Gasoline Tank Area**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-70	S1	591209	6905087	0.8	4.6	(0 to 0.6m) black and brown, firm, moist, Silt, some fine sand, peat
						(0.6 to 1.0m) med brown, med dense, dry, fine to med Sand, some gravel (mica Schist)
						(1.0 to 1.6m) grey, dense, dry, Gravel (mica Schist) no odours
TP-71	S1	591215	6905067	0.4	1.8	(0 to 0.5m) brown, loose, damp, fine to med Sand, some grav
	S2			1.1	3.8	(0.5 to 1.1m) brown, dense, dry, Gravel (mica Schist), no odour
TP-72	S1	591231	6905071	0.6	3	(0 to 0.9m) brown, med dense, dry, Silt, some fine sand, occ. Grav
	S2			1.5	3.6	(0.9 to 1.7m) grey and brown, dense, dry, Gravel (mica Schist), some fine sand
TP-76	S1	591195	6905096	0.5	5.6	(0 to 0.5m) brown, loose, dry, fine to med Sand, some grav
	S2			0.8	10.7	(0.5 to 1.0m) brown, stiff, dry, Silt, some fine sand, some gravel, hydrocarbon odour
	S3			1.8	24.5	(1.0 to 2.7m) brown, dense, dry, Gravel (mica Schist), trace fine sand, hydrocarbon odour
	S4			2.7	38	

**Hot Line**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-77	S1	591625	6905267	0.7	2.7	(0 to 1.4m) grey, dense, dry, Gravel (mica Schist), some fine sand, no odour
	S2			1.5	3.3	(1.4 to 1.6m) brown, stiff, moist, Silt, some f sand, occ gravel, peaty, rootle
TP-78	S1	591610	6905293	0.8	3	(0 to 1.8m) dark grey, dense, dry, Gravel (mica Schist), some fine sand and si
	S2			1.8	2.7	(1.8 to 2.0m) brown, stiff, moist, Silt, some fine sand, occ grave
TP-79	S1	591623	6905227	0.8	2.2	(0 to 1.3m) grey, dense, dry, Gravel (mica Schist), some fine sand
	S2			1.7	3.1	(1.3 to 2.0m) brown, stiff, dry, Silt, some fine sand, occ gravel

**Contractor Yard**

Test Pit Name	Sample ID	Easting	Northing	Sample Depth (m)	Vapour Reading (ppm)	Sample Description
TP-80	S1	591444	6905841	0.8	3	(0 to 3.0m) grey, med dense, moist, fine to med Sand, some gravel (mica Schist)
	S2			1.7	39	below 1.4m some hydrocarbon odour
	S3			2.6	161	(1.5 to 2.7m) grey, dense, dry, med to coarse Sand, gravelly (mica Schist), occ cobbles and boulders
TP-81	S1	591424	6905826	0.8	4.2	(0 to 1.3m) grey, dense, dry, Gravel (mica Schist), some coarse sand, some cobble
	S2			1.5	3.2	(1.3 to 1.7m) brown, med dense, moist, fine to med Sand, some gravel
TP-82	S1	591453	6905829	0.7	1.4	(0 to 2.0m) brown, med dense, dry, med to coarse Sand, some gravel, occ cobble
	S2			1.2	7.8	below 0.8m colour changes to dark grey
	S3			2.5	7.2	(2.0 to 2.6m) brown, stiff, dry, Silt, some gravel
TP-83	S1	591420	6905852	0.7	14.4	(0 to 0.5m) brown, med dense, dry, med to coarse Sand, gravel
	S2			1.8	3.8	(0.5 to 2.0m) grey, dense, dry, Gravel (mica Schist), some coarse sand
TP-84	S1	591458	6905858	0.8	2.3	(0 to 2.8m) dark grey, dense, dry, Gravel (mica Schist), some coarse sand, some cobble
	S2			1.7	2.7	
	S3			2.7	2.4	

# **Appendix C**

## **Photographs**



**Photograph 1.** Sonic drill rig extracting the core at BH05-02



**Photograph 2.** Core samples from BH05-1



**Photograph 3.** Setting up to drill at BH05-8 at the Faro Lube Shack



**Photograph 4.** Drilling BH05-11 at the Faro Tank Farm



**Photograph 5.** Drilling BH05-19 adjacent to the Vangorda Tank Farm



**Photograph 6.** Drilling BH05-20 inside the bermed Vangorda Tank Farm



**Photograph 7.** Core from BH05-21 from 0 to 3 m depth



**Photograph 8.** Core from BH05-21 from 3 m to 5.8 m depth

# **Appendix D**

**Analytical Reports**

**(Hard Copy Only)**