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300-2319 St. Laurent Blvd.  
Ottawa, Ontario K1G 4J8  
p: 1-800-749-1947  
e: paracel@paracellabs.com  
www.paracellabs.com

Friday, February 12, 2010

David Wilson  
Stantec Consulting Ltd.  
200-2781 Lancaster Road  
Ottawa, ON K1B 1A7

Re: project 1049551 – Lab QA/QC

Dear Mr. Wilson,

I have reviewed the field sampling plan you had provided me for your project 1049551. The sampling plan includes details of sample collection, along with laboratory and field quality control.

I would like to suggest that once the samples have been collected, they are cooled and maintained in the dark by packing in a cooler. In addition, due to the relatively short holding time for the volatile analyses, I would recommend delivering the samples to the laboratory as quickly as reasonably possible, considering the location of the project. With these two items addressed, I believe that the plan is acceptable to ensure a sufficient level of sample integrity and quality control.

In addition, I would like to note that Paracel Laboratories is accredited according to ISO/IEC 17025:2005 for all of the contaminants of concern you have listed in the laboratory analytical program. Paracel is accredited by the Canadian Association for Laboratory Accreditation (CALA), and a current copy of our scope of testing is available on their web site under the directory of accredited laboratories at [www.cala.ca](http://www.cala.ca).

Please let me know if you require any further information and I will be happy to help.

Sincerely

A handwritten signature in black ink, appearing to read 'Dale Robertson'.

Dale Robertson, B.Sc.  
Laboratory Director

t: 1 800 749 1947  
e: [PARACEL@PARACELLABS.COM](mailto:PARACEL@PARACELLABS.COM)

[WWW.PARACELLABS.COM](http://WWW.PARACELLABS.COM)

OTTAWA  
300-2319 St. Laurent Blvd.  
Ottawa, ON K1G 4J8

MISSISSAUGA  
6645 Keele St. Unit 401  
Mississauga, ON L5J 6J2

NIAGARA FALLS  
5415 Morning Glory Ln.  
Niagara Falls, ON L2B 3A7

SARNIA  
123 Church St. P.O. #12  
Sarnia, ON N7T 5T7

## FIELD METHODOLOGY

### 1.0 TEST PITTING

#### 1.1 Service and Utility Locates

The locations of services and utilities are established prior to the test pitting and the sampling phase of the investigation. The sampling locations are cleared of underground utilities prior to drilling using an on-site cable locator. At the start of field work, the services were located with a third party service locate firm. The results of the survey are covered in the text of the 2008 field season report. All serviced located are now transcribed onto a drawing of the upper site.

#### 1.2 Soil Sampling

Soil samples are collected at approximately 0.3 m intervals (where possible) or at clearly defined stratigraphic layers. One half of the samples is field tested for combustible vapours and the other half is placed in laboratory supplied containers for potential laboratory analyses.

#### 1.3 Vapour Monitoring

Field screening for the presence of combustible vapours is conducted using a Gastechtor (Model 1238ME) combustible vapour meter, calibrated to hexane and operated in the methane elimination mode. The results of this monitoring are used as a guide for the selection of soil samples for laboratory analysis.

The soil samples subjected to field vapour screening are transferred to re-sealable plastic bags. The container is approximately half filled with soil, to provide adequate headspace for the accumulation of released vapours. Samples are broken by hand to increase surface area and permit vapour release. The samples are transferred quickly to minimize vapour loss. The plastic bag is then left to stand upright and undisturbed for a period of at least five minutes at ambient air temperature. The concentration of accumulated vapours in the headspace is then measured by inserting the probe of the instrument into the headspace of the bag. The vapour concentrations are measured in parts per million by volume (ppmv) and recorded on a field log for comparison with subsequent samples.

#### 1.4 PetroFLAG™ Test Kits

Based on combustible vapour concentrations and field observations, several samples are selected for on-site analysis using PetroFLAG™ test kits. Soil from the re-sealable plastic bags is used to conduct PetroFLAG™ analysis. Analysis of soil samples using the PetroFLAG™ test kit is a three-step process: extraction, filtration, and analysis. A 10 gram soil sample is extracted using the provided solvent according to the manufacturer's recommended procedure. After the sample is extracted, the sample is filtered then analyzed using the supplied photo-spectrometer. Sample results are adjusted based on soil moisture content.

### 2.0 DECONTAMINATION PROCEDURES

Where disposable sampling equipment is unavailable, equipment decontamination followed the following procedures:

1. Physically remove any excess material from the sampling tool.
2. Wash equipment with a non-phosphate detergent solution.
3. Rinse with tap water.
4. Rinse with distilled/deionized water. Rinse with 10% nitric acid if the sample will be analyzed for trace organics.
5. Rinse with distilled/deionized water.
6. Use a solvent rinse (e.g. methanol or hexane) if the sample will be analyzed for organics.
7. Air-dry the equipment completely.
8. Rinse again with distilled/deionized water.

### **3.0 SAMPLE LOCATION SURVEY**

Sample locations are recorded using a Garmin Colorado 300™ GPS hand held receiver capable of providing acceptable resolution.

### **4.0 GROUNDWATER AND SURFACE WATER SAMPLING**

Groundwater samples are collected from test pits at the time of excavation. Surface water samples are collected from the shore of on-site bodies of water.

## **QUALITY ASSURANCE/QUALITY CONTROL**

### **1.0 LABORATORY ANALYTICAL PROGRAM**

The contaminants of concern (COCs) for this site are benzene, toluene, ethyl benzene, total xylenes (BTEX), and CWS PHC fractions F1 to F4. The samples selected for analyses during the excavation activities will be submitted to Paracel Laboratories of Ottawa, Ontario. Paracel is fully accredited by to the International Standard IEC/ISO 17025 for the required analyses.

In accordance with the proposed scope of work, field quality assurance samples, (i.e., field duplicates), will be used in the remediation services. Paracel employs in-house laboratory quality assurance and quality control protocols for sample analyses, including the analyses of method blanks, spiked blanks, and laboratory duplicates (10% of samples) for each sample batch.

### **2.0 FIELD QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC)**

Potential sources of error and of variability will be identified and QC checks will be established. These will be documented by the field personnel during the program. The field observations to be recorded will be specific to the excavation activities. One field (blind) duplicate sample will be

submitted for analysis of the COCs at a rate of 10%. No other field QA/QC samples will be employed.

The sampling program will specify the number and type of field QC samples to be submitted for analyses. The Field QC samples may include field duplicates, travel blanks, field blanks, and reinstate (equipment blanks).

Throughout the sampling and sample handling, care will be taken to prevent cross-contamination of samples. Sampling equipment will be cleaned carefully between sampling events and appropriate laboratory-supplied or equivalent sample containers and preservatives, where prescribed, will be used. Every effort will be made to sample progressively from the least impacted areas to the most impacted areas, where possible, and equipment will be decontaminated between sampling events to minimize the potential for cross-contamination.

All samples will be collected following strict Stantec sampling procedures. Samples are uniquely labeled and control is maintained through use of chain of custody forms. All samples are collected in laboratory supplied containers and preserved in insulated coolers. Appropriate sampling QA/QC procedures are adhered to at all times.