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February 21, 2005

File No.: 04-217-02

Manitoba Conservation  
Attn: Randy Webber  
123 Main Street  
Suite 160  
Winnipeg, Manitoba  
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Dear Mr. Webber,

The City of Winnipeg has requested that Manitoba Conservation receive a copy of the Phase III Environmental Site Assessment (ESA) report conducted at #2 Point Douglas Avenue (South) in Winnipeg, Manitoba. Attached are two copies of the report for your files regarding impacted and contaminated sites.

If there are any questions, please call me.

Sincerely,  
ENG-TECH Consulting Limited

Clark Hryhoruk, M.Sc., P. Eng.  
President

Enclosures: Phase III ESA, Final Report - # 2 Point Douglas Avenue (South) (2)

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**PHASE III ENVIRONMENTAL SITE ASSESSMENT  
FINAL REPORT**

**SITE B: # 2 POINT DOUGLAS AVENUE (South)**

**File 04-217-02**



**February 2005**

**SUBMITTED BY:**



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## EXECUTIVE SUMMARY

ENG-TECH Consulting Limited (ENG-TECH) was retained by the City of Winnipeg to conduct a Phase III Environmental Site Assessment (ESA) of a property known as #2 Point Douglas Avenue (South), Winnipeg, Manitoba, owned by Gateway Industries Ltd. The purpose of the Phase III ESA was to define the extent of any subsurface impact present in areas where a source for environmental concern existed with the intent of developing an appropriate remedial action plan as identified in the Phase II ESA completed by ENG-TECH in December 2004.

The Phase III ESA consisted of a test hole drilling and monitoring well installation program, soil and groundwater sampling, and an analytical laboratory testing program for petroleum hydrocarbons (benzene, toluene, ethyl-benzene, xylene (BTEX) and fractions F1 to F4) and polycyclic aromatic hydrocarbons (PAHs), followed by an evaluation of the results and preparation of this report.

The Phase III ESA was conducted using several published documents and guidelines relating to environmental site assessments.

The Phase III ESA was focussed in the following areas as previously defined in the Phase II ESA:

- Area 1 - near the northwest property corner in proximity to a former underground gasoline tank
- Area 2 - in the centre of the Site near an above-grade fuel tank, two bunker-C tanks and asphalt storage tanks
- Area 5 - along the eastern half of the railroad spurs
- Area 10 - oil spill area near the asphalt tanks
- Area 13 - existing monitoring wells

From the field and laboratory programs the following was determined:

Area 1 - near the northwest property corner in proximity to a former underground gasoline tank

Visual observations of hydrocarbon contamination were observed during the installation of a monitoring well. One (1) soil sample had BTEX concentrations above CCME residential/parkland criteria. A groundwater sample contained benzene, toluene, ethylbenzene and xylene concentrations well above the CCME drinking water and aquatic life guidelines.

Area 2 - in the centre of the Site near an above-grade fuel tank, two bunker-C tanks and asphalt storage tanks

Four (4) monitoring wells were installed in the proximity of the two partially below grade bunker-C tanks. Visual observations of petroleum contamination were noted during the installation of three of the four monitoring wells. Three (3) soil samples were tested for BTEX and fractions F1 to F4 revealing parameter concentrations below the CCME residential criteria. Four (4) groundwater samples were tested for BTEX revealing only one of the four samples with an ethylbenzene concentration above the CCME drinking water and aquatic life guidelines.

Area 5 - along the eastern half of the railroad spurs

Five test holes were drilled along the rail spurs on the Site. No visual impact was detected at the test hole locations. Five (5) soil samples at varying depths were submitted for PAH compound analysis revealing concentrations below method detection limits for all five samples. From the previous test

results in the Phase II ESA it is known that PAH compound soil contamination does exist along the railroad spurs, however it is in isolated and limited quantities.

*Area 10 - possible oil spill area east of Building E*

The surface oil spill is in the process of being cleaned up and disposed of in a licensed landfill. Details will follow in a Phase IV report.

*Area 13 - existing monitoring wells*

Only two (2) of the four monitoring wells installed for the previous property owner in the late 1980s could be located. Further investigation was undertaken to locate the two missing wells by reviewing low elevation aerial photographs. The research indicated two possible locations for one of the wells, but did not provide any further information as to the location of the second missing well. An attempt was made to locate one of the wells, however, the ground was frozen, making excavation difficult.

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## **1.0 INTRODUCTION**

### **1.1 Terms of Reference**

ENG-TECH Consulting Limited (ENG-TECH) was retained by the City of Winnipeg to conduct a Phase III Environmental Site Assessment (ESA) at a property known as #2 Point Douglas Avenue (South), Winnipeg, Manitoba, owned by Gateway Industries Ltd. The Site is registered under six Certificates of Title, specifically Nos. 1569469, 1569475, 1569477, 1569478, 1569481 and 1569144 in the City of Winnipeg Land Titles Office. In this report the property will subsequently be referred to as the Site.

ENG-TECH received authorization to proceed with the investigation from Ed Dolhun, Land Development Co-coordinator with the City of Winnipeg on December 21, 2004.

### **1.2 Background**

ENG-TECH completed a Phase I ESA of the Site in November 2004. Consequently, a Phase II ESA was completed in December 2004 which concentrated on areas where a potential source for environmental concern existed, as identified in the Phase I ESA. Specifically, the following areas were identified:

- Area 1 - near the northwest property corner in proximity to a former underground gasoline tank
- Area 2 - in the centre of the Site near an above-grade fuel tank, two bunker-C tanks and asphalt storage tanks
- Area 3 - near the southwest property corner near two above ground tanks
- Area 4 - on the south side of the mill operation near a suspected underground gasoline tank
- Area 5 - along the eastern half of the railroad spurs
- Area 6 - near a transformer area with known PCB contamination
- Area 7 - around the perimeter of the Site to test for metals and PAHs
- Area 8 - tanks with suspected asbestos insulation
- Area 9 - riverbank areas embedded with asphaltic shingles
- Area 10 - possible oil spill area near the asphalt tanks
- Area 11 - floor and ceiling tiles with suspected asbestos content
- Area 12 - transformer oils with suspected PCB content
- Area 13 - existing monitoring wells
- Area 14 - the tar spill in the basement of the roofing felt paper operation building

Of these 14 areas, areas 1, 2, 5, 10 and 13 were identified in the Phase II ESA as having contamination requiring further investigation or action.

### **1.3 Objectives**

The purpose of the Phase III ESA was to determine the extent of any subsurface impact present in areas where a source for environmental concern was identified in the Phase II ESA completed by ENG-TECH in December 2004.

### **1.4 Scope of Work**

The scope of work for this project consisted of:

- A test hole drilling program adjacent the railway spur lines where a source of PAH contamination was revealed in the Phase II ESA. The test holes in areas of potential

hydrocarbon contamination were to be drilled to 3 m below existing grade or to the full depth of hydrocarbon impacted soils, if encountered.

- Obtaining soil samples from the test holes at regular depth intervals and at stratigraphic changes. Duplicate soils samples were to be collected at locations of potential concern, and tested for petroleum hydrocarbons.
- Installation of monitoring wells in Areas 1 and 2 to a depth between 6.1 and 7.6 m.
- Obtaining soil samples from the monitoring well holes at locations of possible petroleum hydrocarbon impact. Duplicate soils samples were to be collected at locations of potential concern, and tested for petroleum hydrocarbons.
- A laboratory testing program. Specifically, a total of five (5) soil samples were to be tested for polycyclic aromatic hydrocarbons (PAHs), four (4) soil samples were to be tested for BTEX and fractions F1 to F4, and five (5) water samples were to be tested for hydrocarbons.
- An evaluation of the results.
- An ESA report outlining the work conducted, evaluations, conclusions and recommendations.

## **1.5 Methodology**

The Phase III ESA was conducted using guidelines and criteria outlined in publications from the American Society for Testing and Materials (ASTM), the Canadian Standards Association (CSA) and the Canadian Council of Ministers of the Environment (CCME). A list of the publications used are attached.

## **2.0 SITE CONDITION**

### **2.1 Site Locations and Descriptions**

The Site is located at the eastern end of Point Douglas Avenue, on the south side of the CPR main line in the Point Douglas area of Winnipeg Manitoba, as shown in Figure 1. The Site is irregularly shaped, occupying a thin panhandle east of Higgins Avenue along the south side of the CPR main line and the eastern half of the south side of a peninsula from the beginning of an inside bend to the midpoint of the bend along the Red River, as shown in Figure 2. Further details on the Site description are outlined in ENG-TECH's Phase I and Phase II ESAs.

### **2.2 Site Topography and Drainage**

The ground surface was predominantly level, with a slight grade towards the river. Drainage from the Site would be directed towards the river. A private storm drainage system is located on the Site and drains to the river.

## **2.3 Site Geology and Groundwater**

Local geological maps and water well logs show that the subsurface stratigraphy in this area of Winnipeg normally consists of fill soils (such as topsoil and granular), underlain by alluvial and lacustrine silt and clay deposits, ranging in depth from 15 to 21 m. A deposit of silty till, varying in thickness from 6 to 12 m is encountered between the lacustrine deposits and the underlying bedrock. Bedrock in this area of Winnipeg typically consists of dolomitic limestone beds of various thicknesses from the Selkirk Member of the Red River Formation. Bedrock formation was from the Paleozoic Era during the Ordovician Period.

Near-surface groundwater elevations (perched groundwater) can exist at the Site and throughout the area, and will vary on a seasonal basis and from site to site. Perched groundwater elevations are predominantly controlled by site conditions, such as the type and thickness of fill soils. The near static groundwater elevation will typically vary with the river elevations, but mainly be located approximately 5 m below existing grade. The groundwater elevation is controlled by the underlying bedrock aquifer. There are no aquifers above the bedrock. The potential for impact to the aquifer was considered unlikely due to the thickness of the highly plastic clay deposits and Site usage.

## **3.0 FIELD INVESTIGATION AND LABORATORY ANALYSES**

### **3.1 Test Hole Drilling, Monitoring Well Installation and Soil Sampling Program**

#### **Test Hole Drilling**

On December 29 and 30, 2004 ENG-TECH supervised the drilling of five (5) test holes (TH34 to TH38) and the installation of five (5) monitoring wells (MW-7 to MW-11) at the Site. The test holes were drilled using a backhoe mounted drill rig (VL60) while the monitoring wells were installed using a truck mounted canterra drill rig both owned and operated by Maple Leaf Drilling Ltd. The test holes were drilled using 125 mm diameter solid stem augers to a maximum depth of 3.1 m below existing grade, while the monitoring wells were drilled to a maximum depth of 7.6 m below existing grade. Upon completion of the drilling program, each test hole was examined for indication of sloughing and seepage, and either a monitoring well was installed in each hole to a depth of 6.0 m with locking top caps and flush mount steel cover plates or the test hole was backfilled using the soil cuttings. Bentonite pellets were placed in each test hole to minimize the potential of surface runoff from entering the hole. The monitoring wells and test holes are shown in Figures 3, 4, 5 and 6. The stratigraphic logs outlining the soil and groundwater conditions at the Site are shown in Appendix A, including those test holes that were drilled during the Phase II ESA that were referenced in this report.

#### **Sampling**

Soil samples were collected from each test hole and visually classified using the Unified Soil Classification System (USCS). Soils samples were collected off the auger flights at all test hole locations.

In addition to the above, each soil sample was examined for the presence of hydrocarbon odours and staining. A duplicate soil sample was obtained for near surface soils samples, and at locations where visual signs of hydrocarbon staining were observed. The duplicate soil samples were placed in clean glass jars, sealed, and placed in a cooler packed with ice. Upon the completion of drilling the cooler was transported to Enviro.Test Laboratories in Winnipeg, Manitoba.



ENG-TECH obtained water samples from each of the 5 functional monitoring wells (MW-7 and MW-11) located on site after the wells had been purged and allowed to recharge. Samples were placed in clean glass jars and upon completion of sampling the samples were placed in a cooler packed with ice and then transported to Enviro-Test Laboratories in Winnipeg, Manitoba for BTEX testing.

### **3.2 Analytical Results**

A total of nine (9) soil samples and five (5) groundwater water samples were submitted to Enviro-Test Laboratories in Winnipeg, Manitoba for analysis. Specifically, five (5) soil samples were tested for PAHs, four (4) soil samples were tested for BTEX and fractions F1 to F4 and five (5) groundwater water samples were tested for hydrocarbons. An outline of the locations, depths, sample descriptions and results are shown in Tables 1 to 3. A copy of the analytical test results from Enviro-Test Laboratories are shown in Appendix B.

### **3.3 Remediation Criteria**

The BTEX, fractions F1 to F4 and PAH compound results from the analysis were compared to the values outlined by the Canadian Council of the Ministers of the Environment (CCME), including the Canadian Wide Standards (CWS) for petroleum hydrocarbons in soil. The BTEX results from the water samples were compared to the values outlined by the CCME Drinking Water and Aquatic Life criteria.

### **3.4 Soil Stratigraphy**

In general, the stratigraphy at the Site typically consisted of concrete or asphalt surface layer ranging from 50 to 250 mm in thickness, followed by granular fill, medium to highly plastic silty clays, and then medium plastic sandy clay. At some test hole locations a 0.1 to 0.7 m thick cinder layer was encountered within the upper 1.0 m. The near static groundwater level is expected to be between 4.3 to 5.3 m below existing grade based on the information obtained during drilling. A summary of the subsurface conditions are shown on the stratigraphic test hole logs (TH34 to TH38) and the monitoring well logs (MW-7 to MW-11) in Appendix A as well as on the stratigraphic test hole logs (TH1 to TH33) in Appendix A of ENG-TECH's Phase II ESA.

## **4.0 DISCUSSION AND CONCLUSIONS**

The test hole and monitoring well locations are shown on Figures 3, 4, 5 and 6, with the sample numbers, depths and analytical test results shown in Tables 1 through 3. Outlined below are discussions and conclusions based on the results of field observations and analytical testing.

### **Area 1 - near the northwest property corner in proximity to a former underground gasoline tank**

One (1) monitoring well (MW-7) was installed in Area 1 where an underground gasoline tank, the associated piping and hydrocarbon contaminated soil was removed in 1993, as shown in Figure 4. Figure 4 also shows test holes (TH10 to TH16) drilled for the Phase II ESA at the Site and an estimate of the extent of the contamination. From the well installation, one (1) soil sample was submitted for BTEX and fractions F1 to F4 analysis as shown in Table 1 and one (1) water sample was submitted for BTEX analysis as shown in Table 2. The soil sample was chosen based on visual observations of staining and odours. The soil sample, taken at a 5.2 m depth below grade, had benzene and ethylbenzene concentrations above the CCME criteria for residential/parkland land use and toluene

and xylene concentrations above the CCME criteria for commercial/industrial land use. Trace to low concentrations of fractions F1 to F4 were detected, however all of the fraction concentrations were below the CCME criteria. The water sample had benzene, toluene, ethylbenzene and xylene concentrations well above the CCME drinking water and aquatic life guidelines.

Referring to Section A-A in Figure 4, the majority of contamination was observed between 4.1 and 7.3 m below grade. TH-12 had contamination observed between 0.7 and 2.1 m, which corresponds to the approximate location of a former fuel pump per the 1988 aerial photographs. The impacted volume of soil with BTEX concentrations greater than the applicable CCME criteria is estimated to be 250 m<sup>3</sup> while the total volume of soil which contains hydrocarbon contamination based on visual observations in the field is estimated to be 825 m<sup>3</sup>.

Area 2 - in the centre of the Site near an above-grade fuel tank, two bunker-C tanks and asphalt storage tanks

Four (4) monitoring wells, (MW-8 to MW-11) were installed in the proximity of two (2) partially below grade bunker-C tanks as shown in Figures 3 and 5. Also shown in Figure 5 are test holes TH8, TH9 and TH17 to TH20 drilled during the Phase II ESA conducted by ENG-TECH, two monitoring wells, MW-1 and MW-4 installed by the previous Site owner in the late 1980s and an estimate of the extent of the contamination. Visual observations and odours of petroleum impact were observed in the subsurface soils in monitoring wells MW-8, MW-9 and MW-10 between 2.7 and 7 m below grade. No signs of petroleum impact were detected in MW-11.

One (1) soil sample from each of the three monitoring wells with observed petroleum impact were submitted for the chemical analysis BTEX, fractions F1 to F4. The results, shown in Table 1, revealed zero to trace concentrations of BTEX and fractions F1 to F4 in the three soil samples tested, all of which were below the CCME criteria. Four (4) water samples, one from each of the four (4) monitoring wells were submitted for BTEX analysis, as shown in Table 2. The results revealed only the water sample from MW-9 had an ethylbenzene concentrations above the CCME drinking water and aquatic life guidelines.

The observed contamination is in a concentrated zone between 2.7 and 7.6 m below grade and tapers out with distance as shown in Figure 5. The impacted volume of soil with BTEX concentrations greater than the applicable CCME criteria is estimated to be 40 m<sup>3</sup> while the total volume of soil which contains hydrocarbon contamination based on visual observations in the field is estimated to be 1200 m<sup>3</sup>.

Area 5 - along the eastern half of the railroad spurs

Five (5) test holes (TH34 to TH38) were drilled along the rail spurs on the Site as shown in Figure 6. No visual impact was detected at the test hole locations. Five (5) soil samples at varying depths were submitted for PAH analysis from TH34, TH36 and TH38. The results, as shown in Table 2, revealed PAH compound concentrations below method detection limits for all five (5) soil samples. Soil testing results from the Phase II ESA showed that PAH soil contamination does exist along the railroad spurs, however further soil testing conducted for this report shows that the contamination is in isolated areas.

Area 10 - possible oil spill area east of Building E

ENG-TECH staff will be supervising the clean up of the hydrocarbon contaminated water and surface soil. Details of the clean up will be presented in a Phase IV report.

Area 13 - existing monitoring wells

Four (4) monitoring wells (MW-1 to MW-4) at various locations throughout the Site were reportedly installed by Paddock Drilling Ltd. for the previous property owner in the late 1980s as shown in Figure 3. Only two (2) of the four monitoring wells could be located after discussions with Paddock Drilling Ltd. and a thorough search of the Site. An investigation of low elevation aerial photographs taken between 1988 and 1992 was undertaken. Two possible locations of MW-2 were identified in a 1992 aerial photograph in the gravel access road. Too much debris and vegetation was located in the suspected location of MW-3. Consequently no further information on the location of MW-3 was obtained. An attempt was made on January 12, 2005 to located MW-2 using the information gathered from the aerial photographs and a metal detector. However, the ground was frozen, making excavation difficult.

Two monitoring wells were installed through the till layer to bedrock by KGS Group (MW-5 and MW-6) as seen in Figure 3 in January, 2003 as part of a sewer replacement investigation for the City of Winnipeg. These wells are still on site.

## 5.0 RECOMMENDATIONS

### Area 1 - near the northwest property corner in proximity to a former underground gasoline tank

The majority of the hydrocarbon contaminated soil was determined to be confined to a limited area at least 4.0 m below grade. As such, no further action is required at this time considering the present industrial land use. If in the future the land use were to change, further evaluation into the removal of the hydrocarbon contamination should be conducted. ENG-TECH recommends undertaking an annual water sampling program and testing the sample for BTEX in order to monitor the contamination.

### Area 2 - in the centre of the Site near an above-grade fuel tank, two bunker-C tanks and asphalt storage tanks

The majority of the hydrocarbon contamination was found to be deep in the subsurface soils confined to a limited area at least 2.7 m below grade. Of the four monitoring wells installed, only one water sample revealed minor ethylbenzene contamination. Since the Site is presently used for industrial purposes, no further action is required at this time. Should the land use of the Site change in the future, removal of the hydrocarbon contaminated soil should be considered. ENG-TECH also recommends undertaking an annual water sampling program and testing the samples for BTEX in order to monitor the contamination.

### Area 5 - along the eastern half of the railroad spurs

The analytical testing revealed PAH compound concentrations below method detection limits for all of the soil samples. The Phase II ESA showed that PAH compound soil contamination does exist along the railroad spurs, however the testing conducted for this assessment showed that the contamination is in isolated areas and does not pose an immediate concern based on the present land use. Removal of the railroad tracks and subsequently the surface soils would greatly reduce any amounts of PAH compound present at the Site, should the land use change in the future. As such, no further action is required at this time.

Area 10 - possible oil spill area east of Building E

The surface oil spill on the east side of Building E is in the process of being cleaned up. Details of the clean up will be presented in a Phase IV report to follow.

Area 13 - existing monitoring wells

Only two (2) of the four monitoring wells (MW-1 and MW-4) installed for the previous property owner in the late 1980s could be located, as shown in Figure 3. An attempt was made to locate MW2 using the information gathered from the aerial photographs and a metal detector. However, the ground was frozen, making excavation difficult. Another attempt to locate this well should be conducted in the spring of 2005 when the ground has thawed. If located, the well should be decommissioned.

The two monitoring wells were installed by KGS Group (MW5 and MW6) as seen in Figure 3 in January, 2003 for the City of Winnipeg. It should be determined if these wells will be used in the future. If the wells are not to be used, then they should be decommissioned.

## 6.0 CLOSURE

The conclusions and recommendations presented in this report were based on the scope of work outlined for the purpose of the investigation, and were prepared in accordance with accepted professional engineering/geo-science principles and practises. However, as with any environmental site assessment the intent is to identify and address, not eliminate, potential environmental concerns.

The observations made at the Site do not apply to areas which could not be observed. In addition, other materials or compounds not investigated or addressed or beyond the scope of work could be present at the Site. If this occurs, ENG-TECH Consulting Limited must be notified to determine whether modification to any part of this report should be conducted. If you have any questions or concerns regarding the findings, conclusions or recommendations presented herein, please contact the undersigned.

Sincerely,  
ENG-TECH Consulting Limited



Clark Hryhoruk, M.Sc., P.Eng.  
President

CDH/jrd



## **BIBLIOGRAPHY/REFERENCES**



## **BIBLIOGRAPHY/REFERENCES**

American Society for Testing and Materials, "Standard Practice for Environmental Site Assessments: Transaction Screen Process", E 1528.

American Society for Testing and Materials, "Standard Guide for Corrective Action for Petroleum Releases, E 1599".

Barcos, A., D.H. Shields, and B. Kjartanson, "Geological Engineering Maps & Reports for Urban Development of Winnipeg", 1993.

Canadian Council of Ministers of the Environment, "Canadian Environmental Quality Guidelines", 1999.

Canadian Council of Ministers of the Environment, "Canada-Wide Standards for Petroleum Hydrocarbons (PHCs) in Soil", 2001.

Canadian Standards Association, "Phase I Environmental Site Assessment Z768-01", 2001.

Canada Mortgage and Housing Corporation, "Environmental Site Assessments, A Summary for Approved Lenders", 1993.

Department of the Environment, "Canadian Environmental Protection Act", 1999.

ENG-TECH Consulting Ltd., Phase I Environmental Site Assessment Final Report Site B: # 2 Point Douglas Avenue (South), File No. 04-217-02, December 2004.

ENG-TECH Consulting Ltd., Phase II Environmental Site Assessment Final Report Site B: # 2 Point Douglas Avenue (South), File No. 04-217-02, December 2004.

Enviroclean Laboratories Inc., Analytical report on soils testing to MacPlan Environmental Services Ltd., January 11, 1993.

Enviroclean Laboratories Inc., Analytical report on soils testing to MacPlan Environmental Services Ltd., January 08, 1993.

Enviroclean Laboratories Inc., Analytical report on soils testing to MacPlan Environmental Services Ltd., July 09, 1993.

MacPLAN Environmental Services Ltd. (Cochrane Engineering), "Gateway Industries Ltd. Environmental Assessment - Subsurface Investigation Gateway Paper Mill", File No. 09604, February 1993.

MacPLAN Environmental Services Ltd. (Cochrane Engineering), "Soil Samples taken during tank removal at Gateway Industries", Letter to Gateway Industries Ltd., File No. 09627, September 14, 1993.

Manitoba Conservation, "Treatment and Disposal of Petroleum Contaminated Soil, Guideline 96-05", Revised April 2002.

Manitoba Conservation, "Guideline for Designation of Contaminated Sites in Manitoba", Guideline 97-01, March 1997.

Manitoba Conservation, "Guideline for Environmental Site Investigations In Manitoba", Guideline 98-01, May 2002.

Manitoba Conservation, Impacted and Contaminated Sites File 0630, 2004.

Manitoba Conservation, "Impacted and Contaminated Sites list", March 13, 2000.

Manitoba Conservation, "Petroleum Storage Site Summary Report", August, 2000.

Manitoba Conservation, "Surveys and Mapping, Various Aerial Photographs".

Ontario Ministry of Environmental and Energy, "Guideline for Use at Contaminated Sites in Ontario", Revised February 1997.

## **LIST OF TABLES**

**Table 1: Petroleum Hydrocarbons in Soils**

**Table 2: Hydrocarbons in Water Samples**

**Table 3: Polycyclic Aromatic Hydrocarbons (PAH) in Soil**

**TABLE 1**  
**PETROLEUM HYDROCARBONS IN SOILS - PHASE III ESA - #2 POINT DOUGLAS AVENUE (SOUTH)**

| Sample No., Depth, Soil Type & Area                                                                   |         |             |        | Parameter <sup>(1)</sup> |         |              |         |                                       |                                        |                                        |                                        |
|-------------------------------------------------------------------------------------------------------|---------|-------------|--------|--------------------------|---------|--------------|---------|---------------------------------------|----------------------------------------|----------------------------------------|----------------------------------------|
|                                                                                                       |         |             |        | Benzene                  | Toluene | Ethylbenzene | Xylenes | F1 (C <sub>6</sub> -C <sub>10</sub> ) | F2 (C <sub>10</sub> -C <sub>16</sub> ) | F3 (C <sub>16</sub> -C <sub>34</sub> ) | F4 (C <sub>34</sub> -C <sub>50</sub> ) |
| MW7-S2                                                                                                | (5.2 m) | Clayey Sand | Area 1 | 1.2                      | 11      | 13           | 46      | 210                                   | 54                                     | 41                                     | < 5                                    |
| MW8-S2                                                                                                | (6.9 m) | Silty Clay  | Area 2 | < 0.005                  | < 0.01  | < 0.01       | < 0.03  | < 5                                   | < 5                                    | 51                                     | < 5                                    |
| MW9-S2                                                                                                | (5.6 m) | Silty Clay  | Area 2 | < 0.005                  | < 0.01  | 0.08         | 0.14    | 6                                     | 74                                     | 24                                     | < 5                                    |
| MW10-S1                                                                                               | (5.2 m) | Clayey Sand | Area 2 | < 0.005                  | < 0.01  | 0.16         | 0.59    | 27                                    | 150                                    | 39                                     | < 5                                    |
| Method Detection Limit                                                                                |         |             |        | < 0.005                  | < 0.01  | < 0.01       | < 0.03  | < 5                                   | < 5                                    | < 5                                    | < 5                                    |
| CCME <sup>(2)</sup> 1999 Canadian Environmental Quality Guidelines for Soil                           |         |             |        |                          |         |              |         |                                       |                                        |                                        |                                        |
| Residential/Parkland                                                                                  |         |             |        | 0.5                      | 0.8     | 1.2          | 1       | N/V                                   | N/V                                    | N/V                                    | N/V                                    |
| Commercial                                                                                            |         |             |        | 5                        | 0.8     | 20           | 17      | N/V                                   | N/V                                    | N/V                                    | N/V                                    |
| Industrial                                                                                            |         |             |        | 5                        | 0.8     | 20           | 20      | N/V                                   | N/V                                    | N/V                                    | N/V                                    |
| CCME CWS <sup>(3)</sup> for PHCs in Soil, 2001, Table 2, Tier 1 levels for fine grained surface soils |         |             |        |                          |         |              |         |                                       |                                        |                                        |                                        |
| Residential/Parkland                                                                                  |         |             |        | N/V                      | N/V     | N/V          | N/V     | 260                                   | 900                                    | 800                                    | 5600                                   |
| Commercial                                                                                            |         |             |        | N/V                      | N/V     | N/V          | N/V     | 660                                   | 1500                                   | 2500                                   | 6600                                   |
| Industrial                                                                                            |         |             |        | N/V                      | N/V     | N/V          | N/V     | 660                                   | 1500                                   | 2500                                   | 6600                                   |
| CCME CWS for PHCs in Soil, 2001, Table 3, Tier 1 levels for coarse grained surface soils              |         |             |        |                          |         |              |         |                                       |                                        |                                        |                                        |
| Residential/Parkland                                                                                  |         |             |        | N/V                      | N/V     | N/V          | N/V     | 30                                    | 150                                    | 400                                    | 2800                                   |
| Commercial                                                                                            |         |             |        | N/V                      | N/V     | N/V          | N/V     | 310                                   | 760                                    | 1700                                   | 3300                                   |
| Industrial                                                                                            |         |             |        | N/V                      | N/V     | N/V          | N/V     | 310                                   | 760                                    | 1700                                   | 3300                                   |
| CCME CWS for PHCs in Soil, 2001, Table 4, Generic levels in fine grained subsoil (>1.5 m depth)       |         |             |        |                          |         |              |         |                                       |                                        |                                        |                                        |
| Residential/Parkland                                                                                  |         |             |        | N/V                      | N/V     | N/V          | N/V     | 750                                   | 2200                                   | 3500                                   | 10000                                  |
| Commercial                                                                                            |         |             |        | N/V                      | N/V     | N/V          | N/V     | 1000                                  | 3000                                   | 5000                                   | 10000                                  |
| Industrial                                                                                            |         |             |        | N/V                      | N/V     | N/V          | N/V     | 1000                                  | 3000                                   | 5000                                   | 10000                                  |
| CCME CWS for PHCs in Soil, 2001, Table 5, Generic levels in coarse grained subsoil (>1.5 m depth)     |         |             |        |                          |         |              |         |                                       |                                        |                                        |                                        |
| Residential/Parkland                                                                                  |         |             |        | N/V                      | N/V     | N/V          | N/V     | 350                                   | 1500                                   | 2500                                   | 10000                                  |
| Commercial                                                                                            |         |             |        | N/V                      | N/V     | N/V          | N/V     | 700                                   | 2000                                   | 3500                                   | 10000                                  |
| Industrial                                                                                            |         |             |        | N/V                      | N/V     | N/V          | N/V     | 700                                   | 2000                                   | 3500                                   | 10000                                  |

Notes: <sup>(1)</sup> All concentrations are in mg/kg <sup>(2)</sup> Canadian Council of Ministers of the Environment <sup>(3)</sup> Canada Wide Standards N/V = no value

Shaded area greater than criterion.

MW7 to MW10 are labeled TH39 to TH42, respectively, on the EnviroTest laboratory results in Appendix B.

P:\2004\Projects\217COW-General\02(Site\_B-#2Point\_Douglas-S)\Phase III\Tables\Table 1 BTEX.wpd

**TABLE 2**  
**HYDROCARBONS IN WATER SAMPLES**  
**PHASE III ESA - #2 POINT DOUGLAS AVENUE (SOUTH)**

| Parameters <sup>(1)</sup>      | M.D.L  | Sample Location, Type & Area |                 |                 |                 |                 | CCME <sup>(2)</sup><br>Drinking<br>Water<br>Criteria<br>MAC/AO<br>(g) | CCME <sup>(2)</sup><br>Aquatic<br>Life<br>Criteria |
|--------------------------------|--------|------------------------------|-----------------|-----------------|-----------------|-----------------|-----------------------------------------------------------------------|----------------------------------------------------|
|                                |        | MW-7                         | MW-8            | MW-9            | MW-10           | MW-11           |                                                                       |                                                    |
|                                |        | Ground<br>Water              | Ground<br>Water | Ground<br>Water | Ground<br>Water | Ground<br>Water |                                                                       |                                                    |
|                                |        | Area 1                       | Area 2          | Area 2          | Area 2          | Area 2          |                                                                       |                                                    |
| Total Extractable Hydrocarbons | 0.1    | 1.2                          | 0.9             | 29              | 3.5             | < 0.1           | N/V                                                                   | N/V                                                |
| Total Volatiles                | 0.1    | 40                           | < 0.1           | 1.8             | 0.2             | 0.2             | N/V                                                                   | N/V                                                |
| Benzene                        | 0.0005 | 2.6                          | < 0.0005        | 0.014           | < 0.0005        | < 0.0005        | 0.005/--                                                              | 0.37                                               |
| Toluene                        | 0.0005 | 2.6                          | < 0.0005        | 0.0008          | 0.0020          | < 0.0005        | -/0.024                                                               | 0.002                                              |
| Ethylbenzene                   | 0.0005 | 1.4                          | < 0.0005        | 0.13            | 0.0052          | 0.0018          | -/0.0024                                                              | 0.09                                               |
| Xylenes                        | 0.0005 | 3.5                          | 0.0024          | 0.0021          | 0.014           | 0.0051          | -/0.3                                                                 | N/V                                                |

Notes: <sup>(1)</sup> All concentrations are in mg/L.

<sup>(2)</sup> Canadian Council of Ministers of the Environment

<sup>(3)</sup> MAC = Maximum Acceptable Concentration, AO = Aesthetic Objective

M.D.L. = Method Detection Limit as of January 2005.

Shaded areas greater than criteria.

MW7 to MW11 are labeled TH39 to TH43, respectively, on the EnviroTest laboratory results in Appendix B.

P:\2004\Projects\217COW-General\02(Site\_B-#2Point\_Douglas-S)\Phase III\Tables\Table 2 BTEX Water Samples.wpd

**TABLE 3**  
**POLYCYCLIC AROMATIC HYDROCARBONS (PAH) IN SOIL**  
**PHASE III ESA - #2 POINT DOUGLAS AVENUE (SOUTH)**

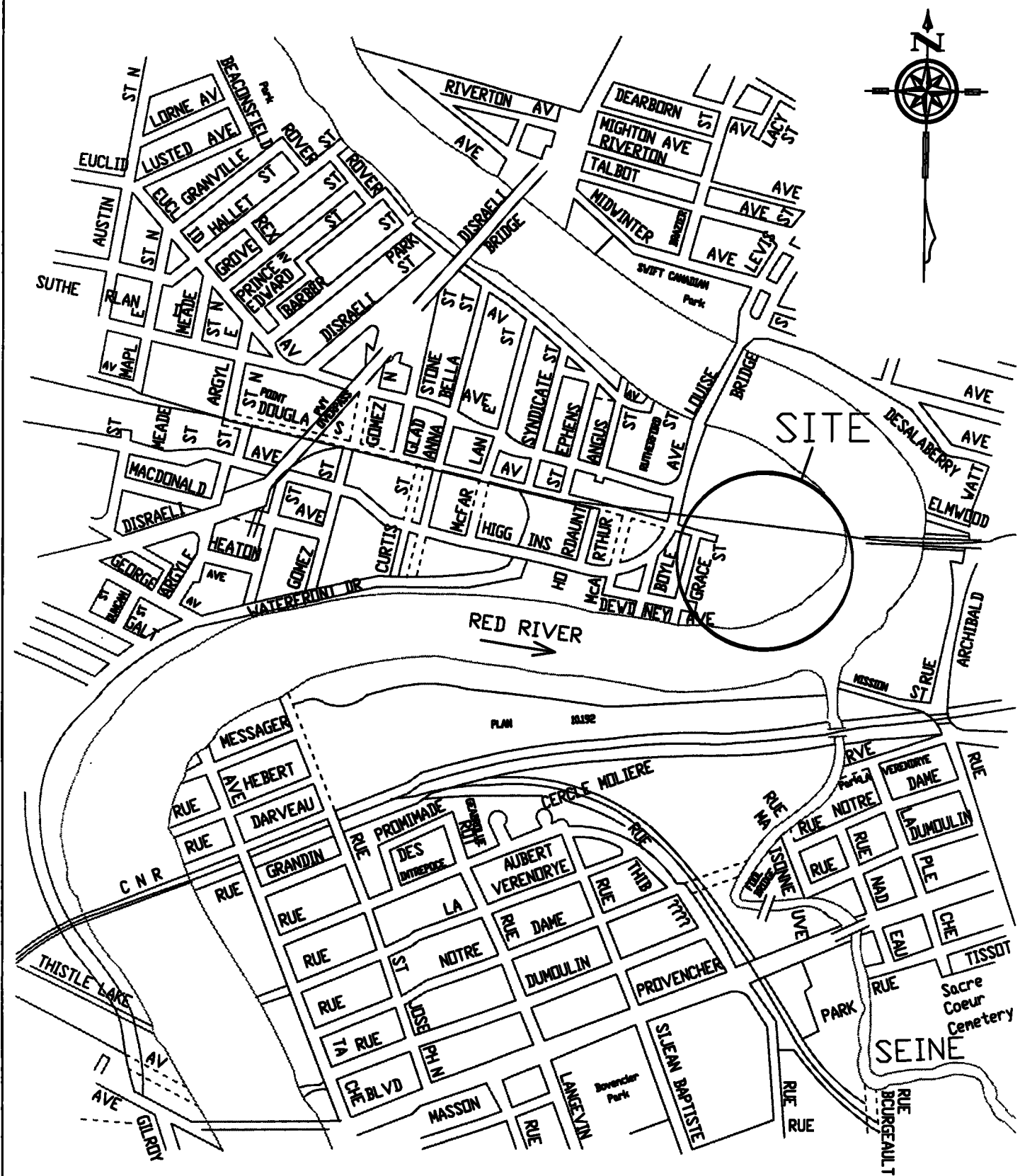
| Parameters <sup>(1)</sup>   | M.D.L | Sample Location, Depth, Area & Soil Type |               |              |               |               | CCME Criteria <sup>(2)</sup> |            |            |
|-----------------------------|-------|------------------------------------------|---------------|--------------|---------------|---------------|------------------------------|------------|------------|
|                             |       | TH34<br>S1                               | TH34<br>S2    | TH36<br>S1   | TH36<br>S2    | TH38<br>S2    |                              |            |            |
|                             |       | 0.75 m                                   | 1.5 m         | 0.75 m       | 1.5 m         | 1.5 m         |                              |            |            |
|                             |       | Area 5                                   | Area 5        | Area 5       | Area 5        | Area 5        |                              |            |            |
|                             |       | Granular<br>Fill                         | Silty<br>Clay | Clay<br>Fill | Silty<br>Clay | Silty<br>Clay | Residential/<br>Parkland     | Commercial | Industrial |
| Acenaphthene                | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | n/v                          | n/v        | n/v        |
| Acenaphthylene              | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | n/v                          | n/v        | n/v        |
| Anthracene                  | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | n/v                          | n/v        | n/v        |
| Benzo (a)<br>Anthracene     | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | 1                            | 10         | 10         |
| Benzo (a)<br>Pyrene         | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | 0.7                          | 0.7        | 0.7        |
| Benzo (b)<br>Fluoranthene   | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | 1                            | 10         | 10         |
| Benzo (g h i)<br>Perylene   | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | n/v                          | n/v        | n/v        |
| Benzo (k)<br>Fluoranthene   | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | 1                            | 10         | 10         |
| Chrysene                    | 0.1   | < 0.1                                    | < 0.1         | < 0.1        | < 0.1         | < 0.1         | n/v                          | n/v        | n/v        |
| Dibenzo (a h)<br>Anthracene | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | 1                            | 10         | 10         |
| Fluoranthene                | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | n/v                          | n/v        | n/v        |
| Fluorene                    | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | n/v                          | n/v        | n/v        |
| Indeno (1,2,3-cd)<br>Pyrene | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | 1                            | 10         | 10         |
| Napthalene                  | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | 0.6                          | 22         | 22         |
| Napthalene<br>1-Methyl      | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | n/v                          | n/v        | n/v        |
| Napthalene<br>2-Methyl      | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | n/v                          | n/v        | n/v        |
| Phenanthrene                | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | 5                            | 50         | 50         |
| Pyrene                      | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | 10                           | 100        | 100        |
| Quinoline                   | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | n/v                          | n/v        | n/v        |
| Acridine                    | 0.05  | < 0.05                                   | < 0.05        | < 0.05       | < 0.05        | < 0.05        | n/v                          | n/v        | n/v        |

Notes: <sup>(1)</sup> All concentrations are in mg/kg.  
<sup>(2)</sup> Canadian Council of Ministers of the Environment.  
M.D.L. = Method Detection Limit as of January 2005.  
n/v = no value.



## **LIST OF FIGURES**

Site Location  
Property Location  
Monitoring Well Locations  
Area 1 - Contamination Delineation/Profile  
Area 2 - Contamination Delineation/Profile  
Area 5 - Test Hole Locations



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CLIENT:  
 CITY OF WINNIPEG

SITE LOCATION  
 PHASE III ESA  
 #2 POINT DOUGLAS AVE  
 SOUTH SITE  
 WINNIPEG, MB

DRAWN BY:

SCALE:

DATE:

FILE No:

FIGURE No:

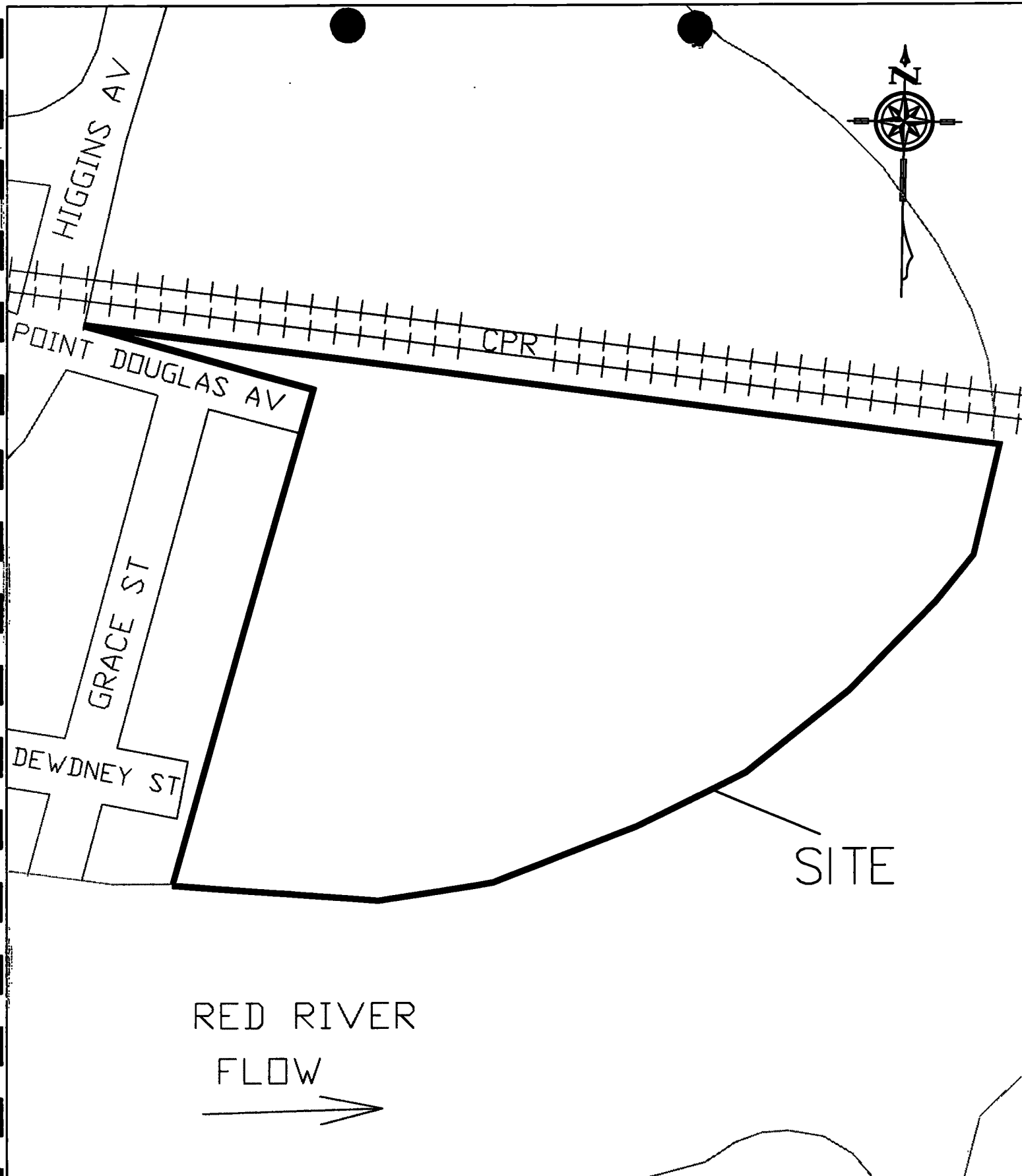
N/A

NTS

FEB 2005

04-217-02

1



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GEOTECHNICAL - ENVIRONMENTAL - MATERIALS TESTING

CLIENT:  
CITY OF WINNIPEG

PROPERTY LOCATION  
PHASE III ESA  
#2 POINT DOUGLAS AVE  
(SOUTH)  
WINNIPEG, MB

DRAWN BY:

SCALE:

DATE:

FILE No:

FIGURE No:

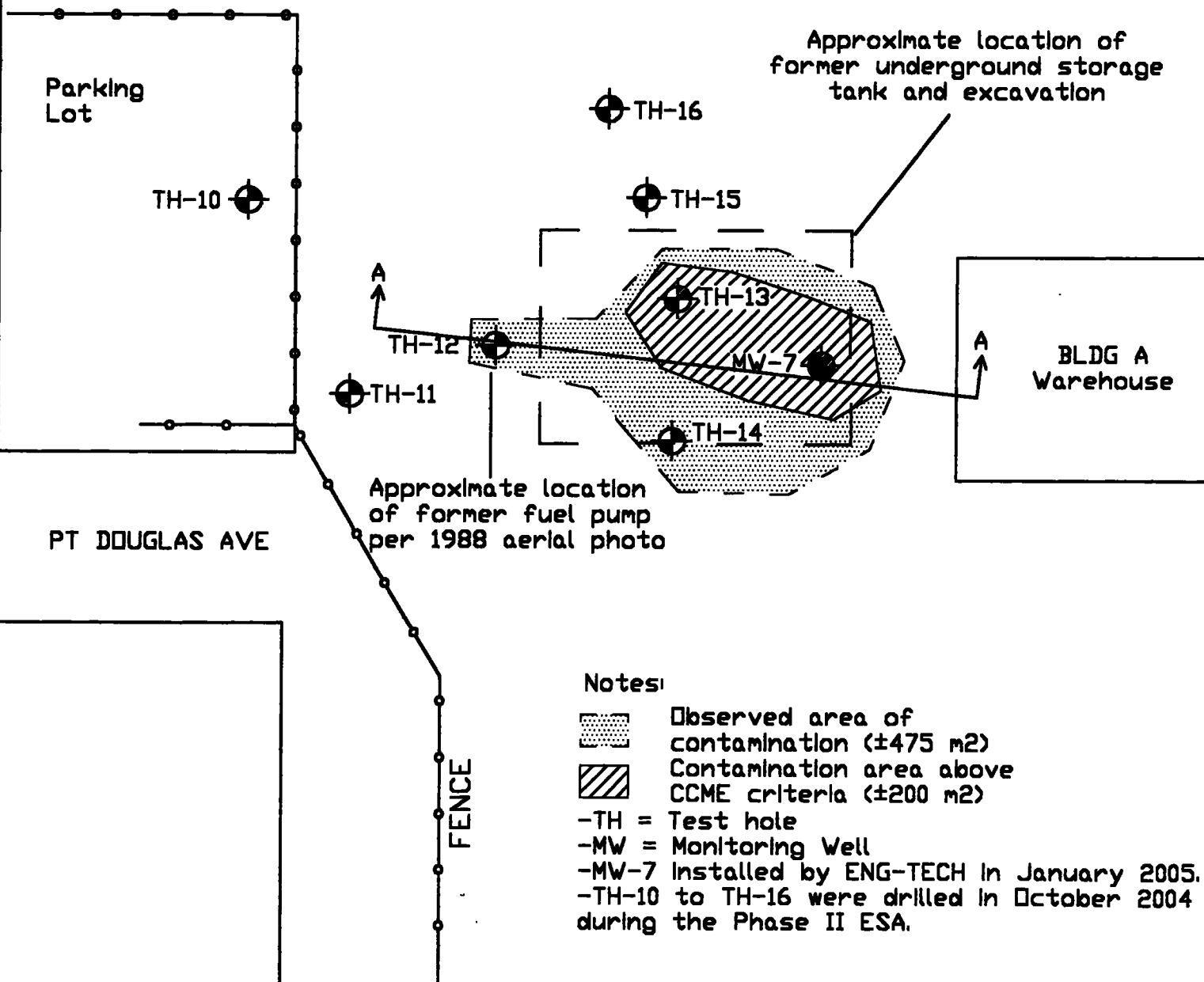
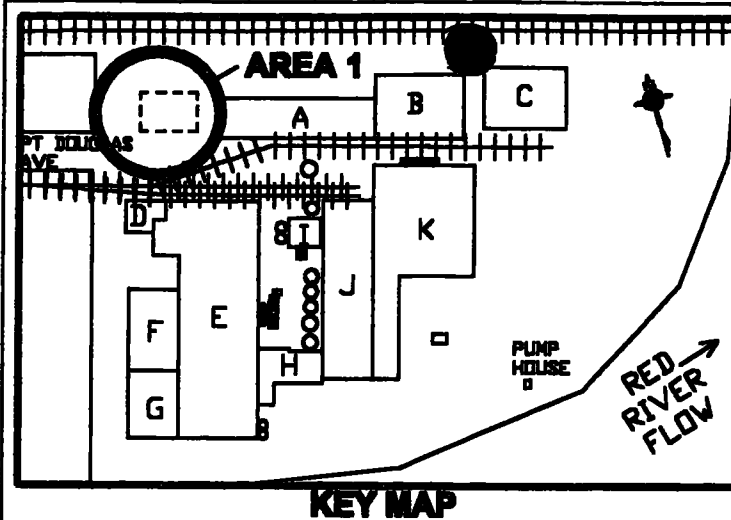
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NTS

FEB 2005

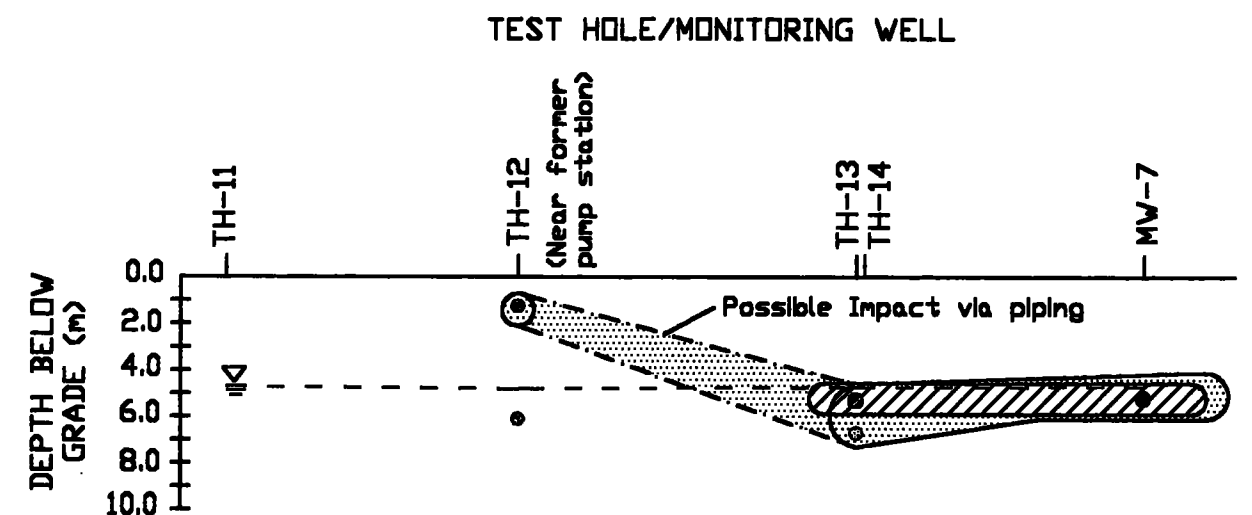
04-217-02

2



**Notes:**

- Observed area of contamination ( $\pm 475 \text{ m}^2$ )
- Contamination area above CCME criteria ( $\pm 200 \text{ m}^2$ )
- TH = Test hole
- MW = Monitoring Well
- MW-7 installed by ENG-TECH in January 2005.
- TH-10 to TH-16 were drilled in October 2004 during the Phase II ESA.



**SECTION A-A**

- Total Impacted Volume based on visual observations (Volume  $\pm 825 \text{ m}^3$ )
- Impacted volume greater than CCME criteria (Volume  $\pm 250 \text{ m}^3$ )
- - - Groundwater Elevation
- Tested Sample
- Tested Sample w/ contamination above CCME

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CLIENT:  
CITY OF WINNIPEG

AREA 1  
CONTAMINATION DELINEATION/PROFILE  
PHASE III ESA  
#2 POINT DOUGLAS AVE  
(SOUTH)  
WINNIPEG, MB

DRAWN BY:

JRD

SCALE:

NTS

DATE:

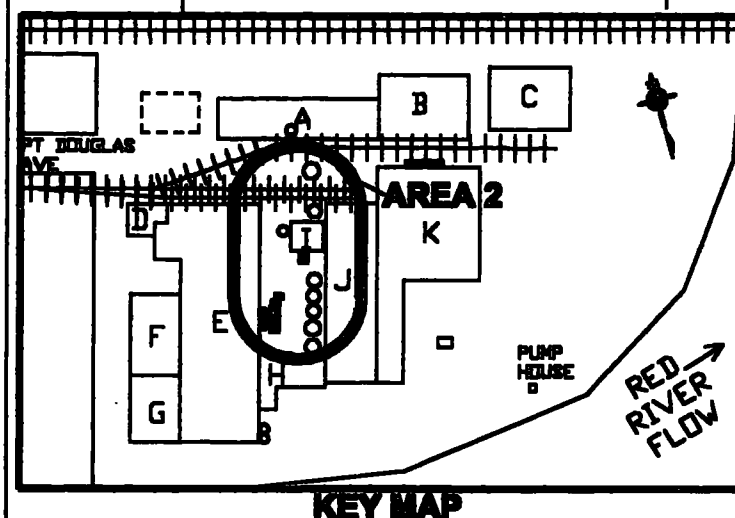
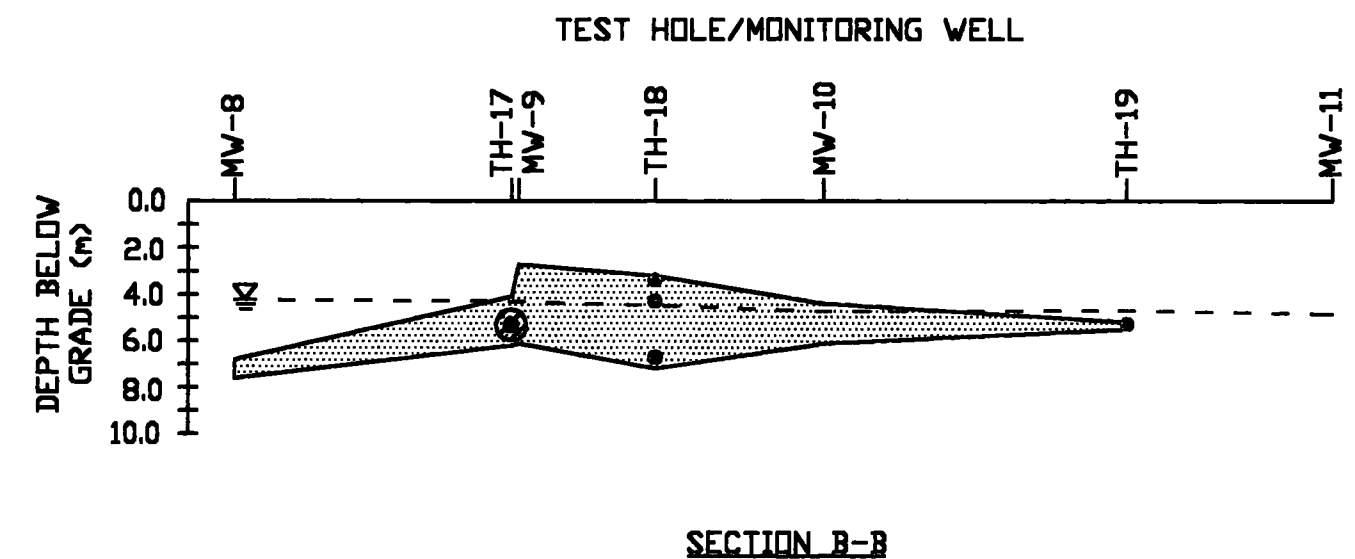
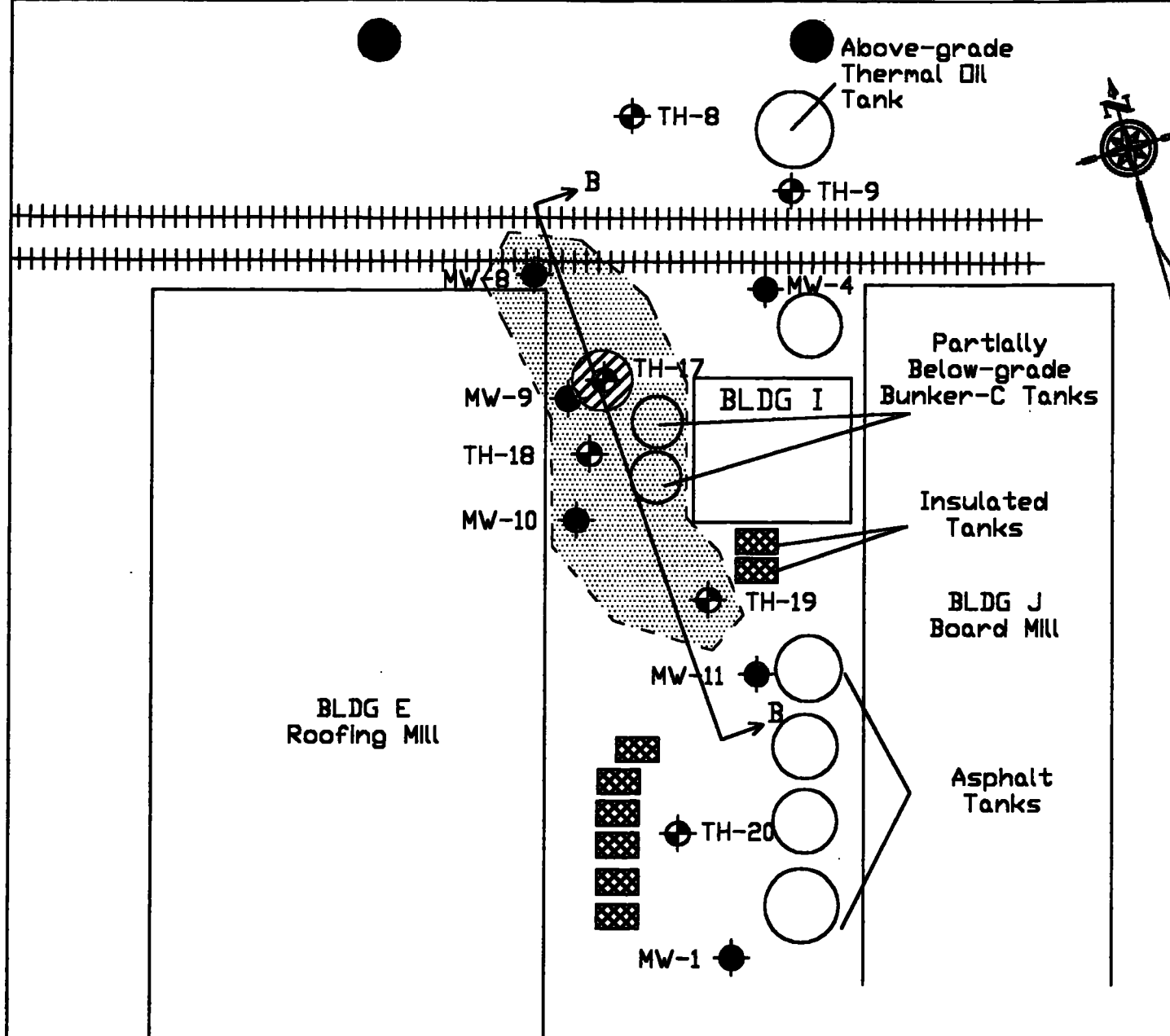
FEBRUARY 2005

FILE No:

04-217-02

FIGURE No:

4



- Notes:
- Impacted area based on visual observations ( $\pm 525 \text{ m}^2$ )
  - Impacted area above CCME criteria ( $\pm 25 \text{ m}^2$ )
  - TH = Test hole
  - MW = Monitoring Well
  - MW-1 and MW-4 - Installed in the late 1980's.
  - MW-8 to MW-11 - Installed by ENG-TECH in January, 2005.
  - TH8, TH9 and TH17 to TH20 drilled in October 2004 during the Phase II ESA.

- Total Impacted Volume based on visual observations (Volume  $\pm 1200 \text{ m}^3$ )
- Impacted volume greater than CCME criteria (Volume  $\pm 40 \text{ m}^3$ )
- Groundwater Elevation
- Tested Sample
- Tested Sample w/ contamination above CCME

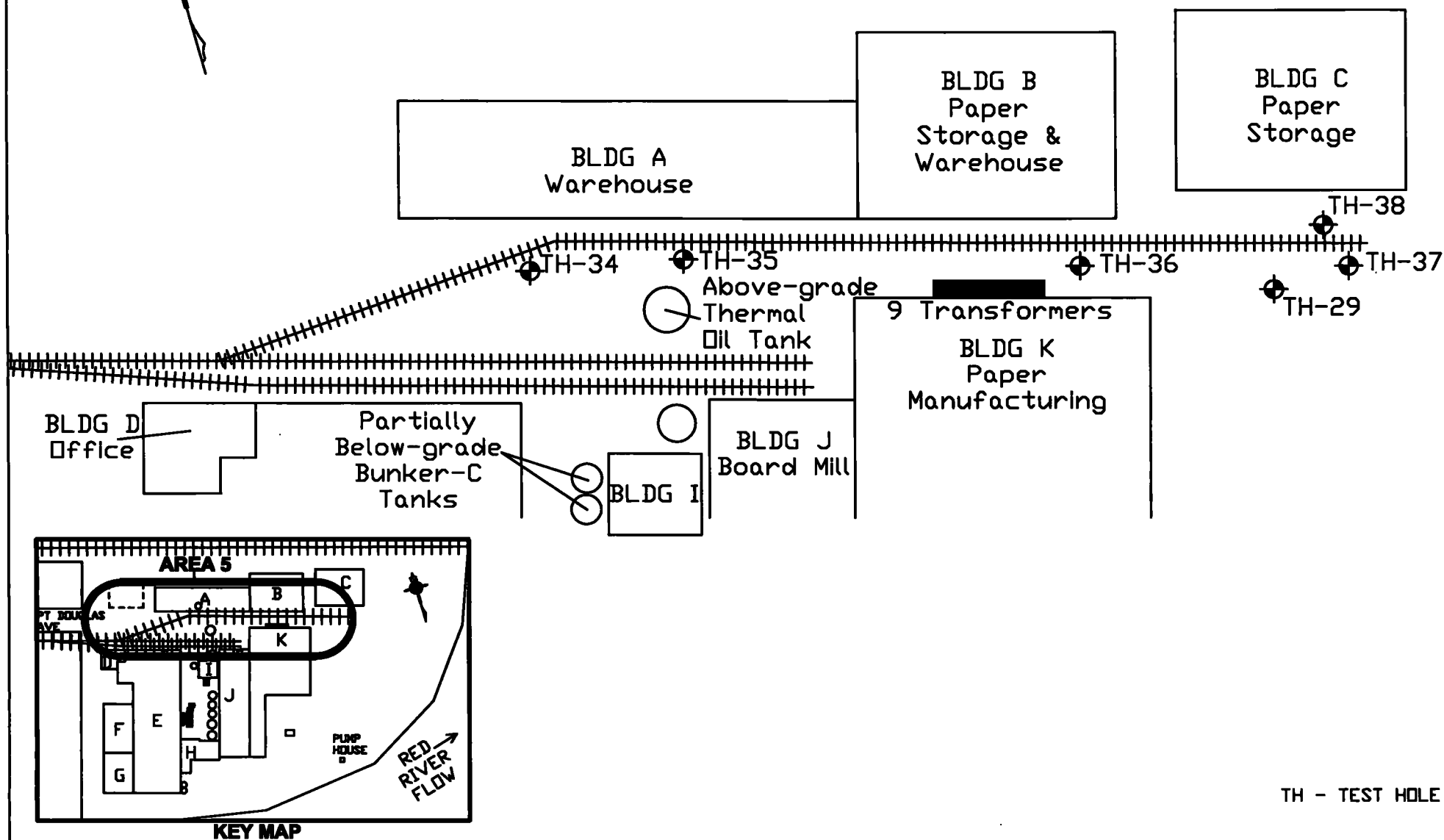
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 GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

CLIENT:  
 CITY OF WINNIPEG

AREA 2  
 CONTAMINATION DELINEATION/PROFILE  
 PHASE III ESA  
 #2 POINT DOUGLAS AVE  
 (SOUTH)  
 WINNIPEG, MB

|           |        |               |
|-----------|--------|---------------|
| DRAWN BY: | SCALE: | DATE:         |
| JRD       | NTS    | FEBRUARY 2005 |

|           |            |
|-----------|------------|
| FILE No:  | FIGURE No: |
| 04-217-02 | 5          |



TH - TEST HOLE

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DRAWN BY:  
JRD

SCALE:  
NTS

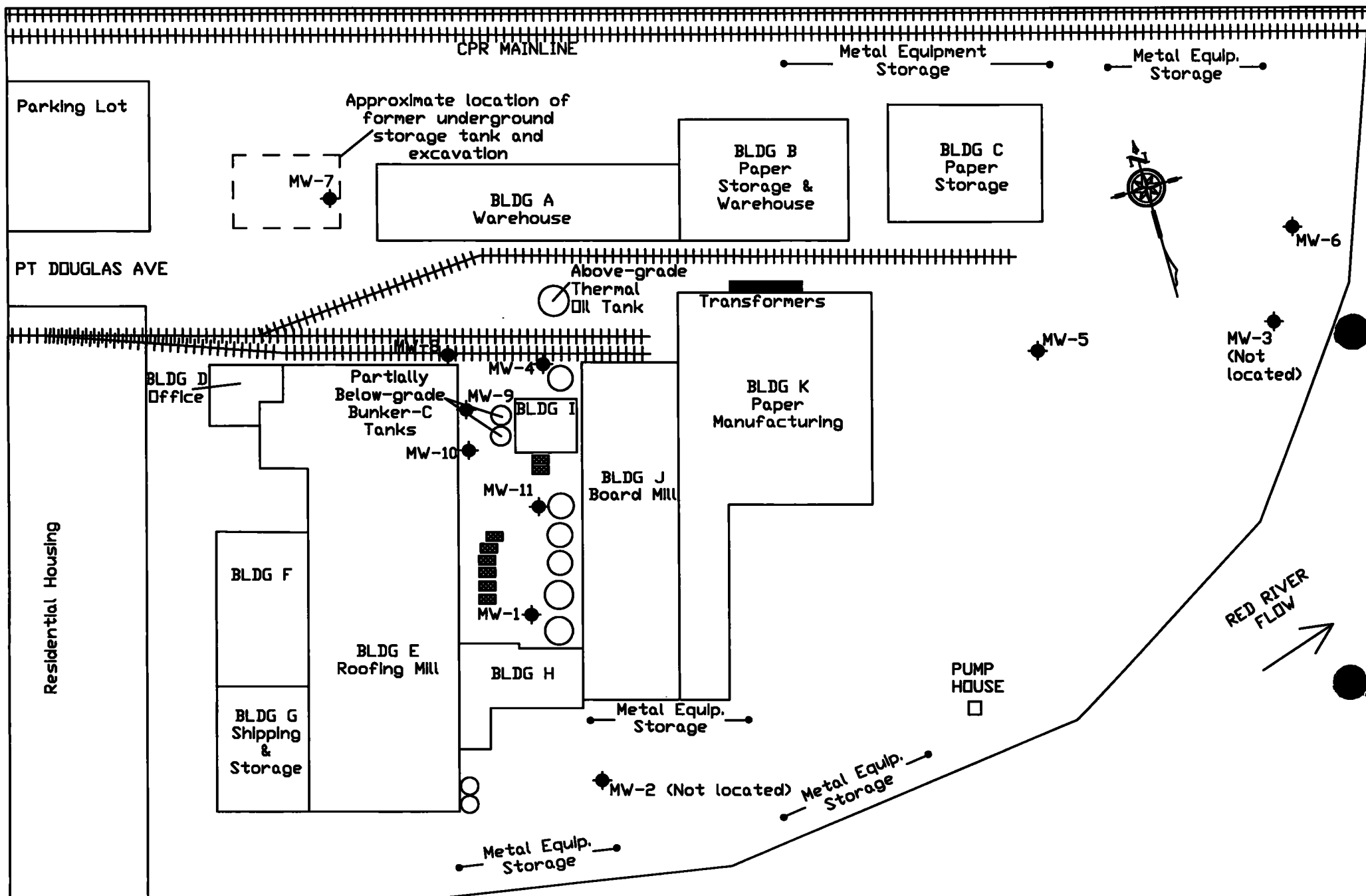
DATE:  
FEBRUARY 2005

CLIENT: CITY OF WINNIPEG

FILE NO: 04-217-02

FIGURE NO.: 6

AREA 5  
TEST HOLE LOCATIONS  
PHASE III ESA  
#2 POINT DOUGLAS AVE (SOUTH)  
WINNIPEG, MB



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DATE:  
 FEBRUARY 2005

CLIENT: CITY OF WINNIPEG

FILE NO: 04-217-02

FIGURE NO.: 3

MONITORING WELL LOCATIONS  
 PHASE III ESA  
 #2 POINT DOUGLAS AVE (SOUTH)  
 WINNIPEG, MB

## **LIST OF APPENDICES**

**Stratigraphic Test Hole Logs from the Phase II ESA**  
**Stratigraphic Test Hole and Monitoring Well Logs from the Phase III ESA**  
**Analytical Test Results**



## **APPENDIX A**

**Stratigraphic Test Hole Logs from the Phase II ESA**

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase II Environmental Site Assessment

Site: 2 Point Douglas Avenue (South), Winnipeg, Manitoba

Location: See Figure 2

Test Hole #: TH8

Project No: 04-217-02

Date Drilled: October 29, 2004

Grade Elevation: 100 m (local)

Water Elevation: 95.7 m

| SUBSURFACE PROFILE |             |                                                                                                    |               | SAMPLE DATA |              |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|-------------|----------------------------------------------------------------------------------------------------|---------------|-------------|--------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol | Description                                                                                        | Elevation (m) | Number      | Sample Type  | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |             |                                                                                                    |               |             |              |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |             | Ground Surface                                                                                     | 100           |             |              |              |                                |     |           |          |     |     |     |
|                    |             | 100 mm Concrete                                                                                    |               |             |              |              |                                |     |           |          |     |     |     |
|                    |             | Granular Fill                                                                                      |               |             |              |              |                                |     |           |          |     |     |     |
|                    |             | - 350 mm thick.                                                                                    |               |             |              |              |                                |     |           |          |     |     |     |
| 1                  |             | Silty Clay (CH/CI)                                                                                 | 99            | S1          | Split Barrel | 100          |                                |     |           |          |     |     |     |
|                    |             | - brown, moist, high to medium plastic, firm, some silt.                                           |               | S2          | Split Barrel | 100          |                                |     |           |          |     |     |     |
| 2                  |             |                                                                                                    | 98            | S3          | Split Barrel | 100          |                                |     |           |          |     |     |     |
|                    |             | - below 2.4 m, with medium grained sand sizes.                                                     |               | S4          | Split Barrel | 100          |                                |     |           |          |     |     |     |
| 3                  |             |                                                                                                    | 97            | S5          | Split Barrel | 100          |                                |     |           |          |     |     |     |
| 4                  |             | Sandy Clay (CI)                                                                                    | 96            | S6          | Split Barrel | 100          |                                |     |           |          |     |     |     |
|                    |             | - brown, moist, medium plastic, with sand sizes, some silt.                                        |               | S7          | Split Barrel | 100          |                                |     |           |          |     |     |     |
|                    |             | - below 4.3 m, wet.                                                                                |               | S8          | Split Barrel | 100          |                                |     |           |          |     |     |     |
| 5                  |             |                                                                                                    | 95            | S9          | Split Barrel | 100          |                                |     |           |          |     |     |     |
| 6                  |             | End of Test Hole                                                                                   | 94            |             |              |              |                                |     |           |          |     |     |     |
|                    |             | - ended test hole at 6.1 m below grade.                                                            |               |             |              |              |                                |     |           |          |     |     |     |
|                    |             | - test hole backfilled with auger cuttings, followed by bentonite from 0.3 m below grade to grade. |               |             |              |              |                                |     |           |          |     |     |     |
|                    |             | - sloughing encountered at 4.3 m below grade.                                                      |               |             |              |              |                                |     |           |          |     |     |     |
|                    |             | - water in test hole at 4.3 m below grade.                                                         |               |             |              |              |                                |     |           |          |     |     |     |
| 7                  |             |                                                                                                    | 93            |             |              |              |                                |     |           |          |     |     |     |
| 8                  |             |                                                                                                    | 92            |             |              |              |                                |     |           |          |     |     |     |

ENG-TECH Consulting Limited

Logged by: MRD & RRB

Reviewed by: *CA*

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

Drilled By: Subterranean (Manitoba) Ltd.

Drill Rig: Track Mounted CME 75

Auger Size: 125 mm

Completion Depth: 6.1 m

Completion Elevation: 93.9 m

Sheet: 1

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase II Environmental Site Assessment

Site: 2 Point Douglas Avenue (South), Winnipeg, Manitoba

Location: See Figure 2

Test Hole #: TH9

Project No: 04-217-02

Date Drilled: October 29, 2004

Grade Elevation: 100 m (local)

Water Elevation: 95.7 m

| SUBSURFACE PROFILE |             |                                                                                                                                                                                                                                                                         |               | SAMPLE DATA |                                                                                                                                                                        |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|-------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol | Description                                                                                                                                                                                                                                                             | Elevation (m) | Number      | Sample Type                                                                                                                                                            | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |             |                                                                                                                                                                                                                                                                         |               |             |                                                                                                                                                                        |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |             | Ground Surface                                                                                                                                                                                                                                                          | 100           |             |                                                                                                                                                                        |              |                                |     |           |          |     |     |     |
|                    |             | <b>Granular Fill</b><br>- 100 mm thick.                                                                                                                                                                                                                                 |               |             |                                                                                                                                                                        |              |                                |     |           |          |     |     |     |
| 1                  |             | <b>Clay Fill (CH)</b><br>- black, moist, high plastic, stiff, some silt, trace sand sizes.                                                                                                                                                                              | 99            | S1<br>S2    | <br> | 100<br>100   |                                |     |           |          |     |     |     |
|                    |             | <b>Silty Clay (CH/CI)</b><br>- brown, moist, high to medium plastic, stiff, some silt.                                                                                                                                                                                  |               | S3          |                                                                                       | 100          |                                |     |           |          |     |     |     |
| 2                  |             | - between 0.4 to 0.6 m, petroleum odours scented.                                                                                                                                                                                                                       | 98            | S4          |                                                                                      | 100          |                                |     |           |          |     |     |     |
| 3                  |             | - below 3.3 m, with sand sizes.                                                                                                                                                                                                                                         | 97            | S5          |                                                                                     | 100          |                                |     |           |          |     |     |     |
| 4                  |             |                                                                                                                                                                                                                                                                         | 96            | S6          |                                                                                     | 100          |                                |     |           |          |     |     |     |
|                    |             |                                                                                                                                                                                                                                                                         |               | S7          |                                                                                     | 100          |                                |     |           |          |     |     |     |
| 5                  |             | <b>Sandy Clay (CI)</b><br>- brown, wet, medium plastic, with sand sizes, some silt.                                                                                                                                                                                     | 95            | S8          |                                                                                     | 100          |                                |     |           |          |     |     |     |
| 6                  |             |                                                                                                                                                                                                                                                                         | 94            | S9          |                                                                                     | 100          |                                |     |           |          |     |     |     |
| 7                  |             | <b>End of Test Hole</b><br>- ended test hole at 6.1 m below grade.<br>- test hole backfilled with auger cuttings, followed by bentonite from 0.3 m below grade to grade.<br>- sloughing encountered at 4.9 m below grade.<br>- water in test hole at 4.3 m below grade. | 93            |             |                                                                                                                                                                        |              |                                |     |           |          |     |     |     |
| 8                  |             |                                                                                                                                                                                                                                                                         | 92            |             |                                                                                                                                                                        |              |                                |     |           |          |     |     |     |

ENG-TECH Consulting Limited

Logged by: MRD & RRB

Reviewed by: 

Drilled By: Subterranean (Manitoba) Ltd. Completion Depth: 6.1 m

Drill Rig: Track Mounted CME 75

Auger Size: 125 mm

Completion Elevation: 93.9 m

Sheet: 1

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase II Environmental Site Assessment

Site: 2 Point Douglas Avenue (South), Winnipeg, Manitoba

Location: See Figure 2

Test Hole #: TH10

Project No: 04-217-02

Date Drilled: October 27, 2004

Grade Elevation: 100 m (local)

Water Elevation: 94.7 m

| SUBSURFACE PROFILE |             |                |               | SAMPLE DATA |             |              |                                |     | Well Data | Comments |     |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| Depth (m)          | Soil Symbol | Description    | Elevation (m) | Number      | Sample Type | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|                    |             |                |               |             |             |              | 50                             | 150 |           |          | 250 | 350 | 450 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 0                  |             | Ground Surface | 100           |             |             |              |                                |     |           |          |     |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

ENG-TECH Consulting Limited

Logged by: JSD & RRB

Reviewed by: *CH*

Drilled By: Subterranean (Manitoba) Ltd.

Drill Rig: Track Mounted CME 75

Auger Size: 125 mm

Completion Depth: 6.1 m

Completion Elevation: 93.9 m

Sheet: 1

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase II Environmental Site Assessment

Site: 2 Point Douglas Avenue (South), Winnipeg, Manitoba

Location: See Figure 2

Test Hole #: TH11

Project No: 04-217-02

Date Drilled: October 27, 2004

Grade Elevation: 100 m (local)

Water Elevation: 95.4 m

| SUBSURFACE PROFILE |             |                                                                                                    |               | SAMPLE DATA |              |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|-------------|----------------------------------------------------------------------------------------------------|---------------|-------------|--------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol | Description                                                                                        | Elevation (m) | Number      | Sample Type  | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |             |                                                                                                    |               |             |              |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |             | Ground Surface                                                                                     | 100           |             |              |              |                                |     |           |          |     |     |     |
|                    |             | 65 mm Asphalt                                                                                      |               |             |              |              |                                |     |           |          |     |     |     |
|                    |             | Granular Fill                                                                                      |               |             |              |              |                                |     |           |          |     |     |     |
|                    |             | - 300 mm thick.                                                                                    |               |             |              |              |                                |     |           |          |     |     |     |
| 1                  |             | Cinders                                                                                            | 99            | S1          | Split Barrel | 100          |                                |     |           |          |     |     |     |
|                    |             | - black, damp, medium dense.                                                                       |               |             |              |              |                                |     |           |          |     |     |     |
|                    |             | Silty Clay (CH/CI)                                                                                 |               | S2          | Split Barrel | 100          |                                |     |           |          |     |     |     |
|                    |             | - brown, moist, high to medium plastic, stiff, with silt.                                          |               |             |              |              |                                |     |           |          |     |     |     |
| 2                  |             |                                                                                                    | 98            | S3          | Split Barrel | 100          |                                |     |           |          |     |     |     |
|                    |             |                                                                                                    |               |             |              |              |                                |     |           |          |     |     |     |
| 3                  |             | - below 2.9 m, firm.                                                                               | 97            | S4          | Split Barrel | 100          |                                |     |           |          |     |     |     |
|                    |             |                                                                                                    |               |             |              |              |                                |     |           |          |     |     |     |
| 4                  |             | Sandy Clay (CI)                                                                                    | 96            |             |              |              |                                |     |           |          |     |     |     |
|                    |             | - brown, moist, medium plastic, and sand sizes, some silt.                                         |               |             |              |              |                                |     |           |          |     |     |     |
|                    |             | Silty Clay (CI)                                                                                    |               | S5          | Split Barrel | 100          |                                |     |           |          |     |     |     |
|                    |             | - brown, wet, medium plastic, and silt, with sand sizes, occasional silt inclusions.               |               |             |              |              |                                |     |           |          |     |     |     |
| 5                  |             |                                                                                                    | 95            |             |              |              |                                |     |           |          |     |     |     |
|                    |             | - below 4.9 m, sand pockets.                                                                       |               |             |              |              |                                |     |           |          |     |     |     |
| 6                  |             |                                                                                                    | 94            | S6          | Split Barrel | 100          |                                |     |           |          |     |     |     |
|                    |             |                                                                                                    |               |             |              |              |                                |     |           |          |     |     |     |
| 7                  |             | End of Test Hole                                                                                   | 93            |             |              |              |                                |     |           |          |     |     |     |
|                    |             | - ended test hole at 6.1 m below grade.                                                            |               |             |              |              |                                |     |           |          |     |     |     |
|                    |             | - test hole backfilled with auger cuttings, followed by bentonite from 0.3 m below grade to grade. |               |             |              |              |                                |     |           |          |     |     |     |
|                    |             | - sloughing encountered at 4.8 m below grade.                                                      |               |             |              |              |                                |     |           |          |     |     |     |
|                    |             | - water in hole at 4.6 m below grade.                                                              |               |             |              |              |                                |     |           |          |     |     |     |

ENG-TECH Consulting Limited

Logged by: JSD & RRB

Reviewed by: *CA*

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

Drilled By: Subterranean (Manitoba) Ltd.

Drill Rig: Track Mounted CME 75

Auger Size: 125 mm

Completion Depth: 6.1 m

Completion Elevation: 93.9 m

Sheet: 1

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase II Environmental Site Assessment

Site: 2 Point Douglas Avenue (South), Winnipeg, Manitoba

Location: See Figure 2

Test Hole #: TH12

Project No: 04-217-02

Date Drilled: October 27, 2004

Grade Elevation: 100 m (local)

Water Elevation: 95.3 m

| SUBSURFACE PROFILE |             |                                                                                                    |               | SAMPLE DATA |              |              |                                | Well Data | Comments |
|--------------------|-------------|----------------------------------------------------------------------------------------------------|---------------|-------------|--------------|--------------|--------------------------------|-----------|----------|
| Depth (m)          | Soil Symbol | Description                                                                                        | Elevation (m) | Number      | Sample Type  | Recovery (%) | ATH Vapour Concentration (ppm) |           |          |
|                    |             |                                                                                                    |               |             |              |              | 50150250350450                 |           |          |
| 0                  |             | Ground Surface                                                                                     | 100           |             |              |              |                                |           |          |
|                    |             | 65 mm Asphalt                                                                                      |               |             |              |              |                                |           |          |
|                    |             | Granular Fill                                                                                      |               |             |              |              |                                |           |          |
|                    |             | - 350 mm thick.                                                                                    |               |             |              |              |                                |           |          |
| 1                  |             | Silty Clay (CH/CI)                                                                                 | 99            | S1          | Split Barrel | 100          |                                |           |          |
|                    |             | - dark brown, moist, high to medium plastic, firm, visible staining, with silt.                    |               |             |              |              |                                |           |          |
|                    |             | - below 0.7 m, odours scented, trace oxides & sand sizes.                                          |               | S2          | Split Barrel | 100          |                                |           |          |
| 2                  |             |                                                                                                    | 98            |             |              |              |                                |           |          |
|                    |             | Sandy Clay (CI)                                                                                    |               | S3          | Split Barrel | 100          |                                |           |          |
|                    |             | - brown, moist, medium plastic, and sand sizes, some silt.                                         |               |             |              |              |                                |           |          |
| 3                  |             |                                                                                                    | 97            | S4          | Split Barrel | 100          |                                |           |          |
|                    |             | - below 3.3 m, 300 mm thick brown sand lense, medium grained, poorly graded.                       |               |             |              |              |                                |           |          |
| 4                  |             |                                                                                                    | 96            |             |              |              |                                |           |          |
|                    |             | - below 4.3 m, with silt.                                                                          |               | S5          | Split Barrel | 100          |                                |           |          |
| 5                  |             |                                                                                                    | 95            |             |              |              |                                |           |          |
|                    |             | - below 4.7 m, wet.                                                                                |               |             |              |              |                                |           |          |
| 6                  |             |                                                                                                    | 94            | S6          | Split Barrel | 100          |                                |           |          |
|                    |             | End of Test Hole                                                                                   |               |             |              |              |                                |           |          |
|                    |             | - ended test hole at 6.1 m below grade.                                                            |               |             |              |              |                                |           |          |
|                    |             | - test hole backfilled with auger cuttings, followed by bentonite from 0.3 m below grade to grade. |               |             |              |              |                                |           |          |
|                    |             | - sloughing encountered at 4.8 m below grade.                                                      |               |             |              |              |                                |           |          |
|                    |             | - water in hole at 4.7 m below grade.                                                              |               |             |              |              |                                |           |          |
| 7                  |             |                                                                                                    | 93            |             |              |              |                                |           |          |

ENG-TECH Consulting Limited

Logged by: JSD & RRB

Reviewed by: *CA*

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

Drilled By: Subterranean (Manitoba) Ltd.

Drill Rig: Track Mounted CME 75

Auger Size: 125 mm

Completion Depth: 6.1 m

Completion Elevation: 93.9 m

Sheet: 1

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase II Environmental Site Assessment

Site: 2 Point Douglas Avenue (South), Winnipeg, Manitoba

Location: See Figure 2

Test Hole #: TH13

Project No: 04-217-02

Date Drilled: October 27, 2004

Grade Elevation: 100 m (local)

Water Elevation: 95.4 m

| SUBSURFACE PROFILE |             |                                                                                                                                                                                                                                                                    |               | SAMPLE DATA |             |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|-------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol | Description                                                                                                                                                                                                                                                        | Elevation (m) | Number      | Sample Type | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |             |                                                                                                                                                                                                                                                                    |               |             |             |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |             | Ground Surface                                                                                                                                                                                                                                                     | 100           |             |             |              |                                |     |           |          |     |     |     |
| 0.1                |             | <b>Granular Fill</b><br>- 200 mm thick.                                                                                                                                                                                                                            |               |             |             |              |                                |     |           |          |     |     |     |
| 1                  |             | <b>Clay Fill (CH)</b><br>- black, moist, high plastic, stiff, trace sand & gravel sizes, trace oxides.<br><br>- below 0.4 m, some silt.                                                                                                                            | 99            |             |             |              |                                |     |           |          |     |     |     |
| 2                  |             |                                                                                                                                                                                                                                                                    | 98            | S1          | 100         |              |                                |     |           |          |     |     |     |
| 3                  |             |                                                                                                                                                                                                                                                                    | 97            | S2          | 100         |              |                                |     |           |          |     |     |     |
| 4                  |             | <b>Silty Clay (CH/CI)</b><br>- dark grey, moist, high to medium plastic, firm, with silt.                                                                                                                                                                          | 96            | S3          | 100         |              |                                |     |           |          |     |     |     |
| 5                  |             |                                                                                                                                                                                                                                                                    | 95            | S4          | 100         |              |                                |     |           |          |     |     |     |
| 6                  |             | <b>Sandy Clay (CI)</b><br>- brown, wet, medium plastic, soft, and sand sizes, with silt, petroleum odours scented.                                                                                                                                                 | 94            | S5          | 100         |              |                                |     |           |          |     |     |     |
| 7                  |             | - below 6.7 m, 600 mm sand layer, medium grained, poorly graded.                                                                                                                                                                                                   | 93            | S6          | 100         |              |                                |     |           |          |     |     |     |
| 8                  |             | <b>End of Test Hole</b><br>- ended test hole at 7.6 m below grade.<br>- test hole backfilled with auger cuttings, followed by bentonite from 0.3 m below grade to grade.<br>- sloughing encountered at 5.3 m below grade.<br>- water in hole at 4.6 m below grade. | 92            | S7          | 100         |              |                                |     |           |          |     |     |     |
| 9                  |             |                                                                                                                                                                                                                                                                    | 91            | S8          | 100         |              |                                |     |           |          |     |     |     |

ENG-TECH Consulting Limited

Logged by: JSD & RRB

Reviewed by: *CHA*

Drilled By: Subterranean (Manitoba) Ltd.

Drill Rig: Track Mounted CME 75

Auger Size: 125 mm

Completion Depth: 7.6 m

Completion Elevation: 92.4 m

Sheet: 1

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase II Environmental Site Assessment

Site: 2 Point Douglas Avenue (South), Winnipeg, Manitoba

Location: See Figure 2

Test Hole #: TH14

Project No: 04-217-02

Date Drilled: October 27, 2004

Grade Elevation: 100 m (local)

Water Elevation: 95.4 m

| SUBSURFACE PROFILE |             |                                                                                                                                                                                                                                                                    |               | SAMPLE DATA |              |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|-------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|--------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol | Description                                                                                                                                                                                                                                                        | Elevation (m) | Number      | Sample Type  | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |             |                                                                                                                                                                                                                                                                    |               |             |              |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |             | Ground Surface                                                                                                                                                                                                                                                     | 100           |             |              |              |                                |     |           |          |     |     |     |
|                    |             | <b>Granular Fill</b><br>- 300 mm thick.                                                                                                                                                                                                                            |               |             |              |              |                                |     |           |          |     |     |     |
| 1                  |             | <b>Sand and Gravel Fill (SP)</b><br>- brown, moist, medium to coarse grained, poorly graded, some gravel sizes.                                                                                                                                                    | 99            |             |              |              |                                |     |           |          |     |     |     |
| 2                  |             |                                                                                                                                                                                                                                                                    | 98            |             |              |              |                                |     |           |          |     |     |     |
| 3                  |             |                                                                                                                                                                                                                                                                    | 97            |             |              |              |                                |     |           |          |     |     |     |
| 4                  |             | <b>Clay Fill (CH)</b><br>- black, moist, high plastic, firm, trace sand & gravel sizes.                                                                                                                                                                            | 96            |             |              |              |                                |     |           |          |     |     |     |
|                    |             | <b>Sand (SP)</b><br>- brown, moist, medium to coarse grained, poorly graded.                                                                                                                                                                                       |               | S1          | Split Barrel | 100          |                                |     |           |          |     |     |     |
| 5                  |             | <b>Silty Clay (CI)</b><br>- dark grey, moist, medium plastic, firm, visible staining, some silt & sand sizes.                                                                                                                                                      | 95            | S2          | Split Barrel | 100          |                                |     |           |          |     |     |     |
| 6                  |             | - between 4.6 to 6.1 m, petroleum odours scented.                                                                                                                                                                                                                  | 94            | S3          | Split Barrel | 100          |                                |     |           |          |     |     |     |
| 7                  |             | - below 6.4 m, 300 mm brown sand lense, medium to coarse grained, poorly graded.                                                                                                                                                                                   | 93            | S4          | Split Barrel | 100          |                                |     |           |          |     |     |     |
| 8                  |             | <b>End of Test Hole</b><br>- ended test hole at 7.6 m below grade.<br>- test hole backfilled with auger cuttings, followed by bentonite from 0.3 m below grade to grade.<br>- sloughing encountered at 6.3 m below grade.<br>- water in hole at 4.6 m below grade. | 92            |             |              |              |                                |     |           |          |     |     |     |
| 9                  |             |                                                                                                                                                                                                                                                                    | 91            |             |              |              |                                |     |           |          |     |     |     |

ENG-TECH Consulting Limited

Logged by: JSD & RRB

Reviewed by: *CH*

Drilled By: Subterranean (Manitoba) Ltd.

Drill Rig: Track Mounted CME 75

Auger Size: 125 mm

Completion Depth: 7.6 m

Completion Elevation: 92.4 m

Sheet: 1

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon



# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase II Environmental Site Assessment

Site: 2 Point Douglas Avenue (South), Winnipeg, Manitoba

Location: See Figure 2

Test Hole #: TH15

Project No: 04-217-02

Date Drilled: October 27, 2004

Grade Elevation: 100 m (local)

Water Elevation: 95.1 m

| SUBSURFACE PROFILE |             |                                                                                                    |               | SAMPLE DATA |             |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|-------------|----------------------------------------------------------------------------------------------------|---------------|-------------|-------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol | Description                                                                                        | Elevation (m) | Number      | Sample Type | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |             |                                                                                                    |               |             |             |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |             | Ground Surface                                                                                     | 100           |             |             |              |                                |     |           |          |     |     |     |
|                    |             | 250 mm Concrete                                                                                    |               |             |             |              |                                |     |           |          |     |     |     |
|                    |             | Granular Fill                                                                                      |               |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - 500 mm thick, with sand sizes.                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 1                  |             | Cinders                                                                                            | 99            |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - black, damp, medium dense.                                                                       |               |             |             |              |                                |     |           |          |     |     |     |
|                    |             | Silty Clay (CH/CI)                                                                                 |               | S1          |             | 100          |                                |     |           |          |     |     |     |
|                    |             | - brown, moist, high to medium plastic, stiff, with silt.                                          |               |             |             |              |                                |     |           |          |     |     |     |
| 2                  |             |                                                                                                    | 98            | S2          |             | 100          |                                |     |           |          |     |     |     |
|                    |             |                                                                                                    |               |             |             |              |                                |     |           |          |     |     |     |
| 3                  |             |                                                                                                    | 97            | S3          |             | 100          |                                |     |           |          |     |     |     |
|                    |             |                                                                                                    |               |             |             |              |                                |     |           |          |     |     |     |
| 4                  |             |                                                                                                    | 96            | S4          |             | 100          |                                |     |           |          |     |     |     |
|                    |             |                                                                                                    |               |             |             |              |                                |     |           |          |     |     |     |
| 5                  |             |                                                                                                    | 95            | S5          |             | 100          |                                |     |           |          |     |     |     |
|                    |             | - below 4.9 m, wet.                                                                                |               |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - below 5.2 m, firm, with sand sizes.                                                              |               | S6          |             | 100          |                                |     |           |          |     |     |     |
| 6                  |             |                                                                                                    | 94            | S7          |             | 100          |                                |     |           |          |     |     |     |
|                    |             |                                                                                                    |               |             |             |              |                                |     |           |          |     |     |     |
| 7                  |             | End of Test Hole                                                                                   | 93            |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - ended test hole at 6.1 m below grade.                                                            |               |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - test hole backfilled with auger cuttings, followed by bentonite from 0.3 m below grade to grade. |               |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - no sloughing encountered during drilling.                                                        |               |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - water in test hole at 4.9 m below grade.                                                         |               |             |             |              |                                |     |           |          |     |     |     |

ENG-TECH Consulting Limited

Logged by: JSD & RRB

Reviewed by: *CH*

Drilled By: Subterranean (Manitoba) Ltd.

Drill Rig: Track Mounted CME 75

Auger Size: 125 mm

Completion Depth: 6.1 m

Completion Elevation: 93.9 m

Sheet: 1

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase II Environmental Site Assessment

Site: 2 Point Douglas Avenue (South), Winnipeg, Manitoba

Location: See Figure 2

Test Hole #: TH16

Project No: 04-217-02

Date Drilled: October 27, 2004

Grade Elevation: 100 m (local)

Water Elevation: 95.4 m

| SUBSURFACE PROFILE |             |                                                                                                                                                                                                                                                                       |               | SAMPLE DATA |             |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|-------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol | Description                                                                                                                                                                                                                                                           | Elevation (m) | Number      | Sample Type | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |             |                                                                                                                                                                                                                                                                       |               |             |             |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |             | Ground Surface                                                                                                                                                                                                                                                        | 100           |             |             |              |                                |     |           |          |     |     |     |
|                    |             | <b>Granular Fill</b><br>- 100 mm thick.                                                                                                                                                                                                                               |               |             |             |              |                                |     |           |          |     |     |     |
| 1                  |             | <b>Clay Fill (CH)</b><br>- grey, moist, high plastic, stiff, some silt, trace sand sizes.                                                                                                                                                                             | 99            |             |             |              |                                |     |           |          |     |     |     |
|                    |             | <b>Cinders</b><br>- black, damp, medium dense.                                                                                                                                                                                                                        |               | S1          |             | 100          |                                |     |           |          |     |     |     |
| 2                  |             | <b>Silty Clay (CH/CI)</b><br>- brown, moist, high to medium plastic, stiff, with silt.                                                                                                                                                                                | 98            |             |             |              |                                |     |           |          |     |     |     |
|                    |             |                                                                                                                                                                                                                                                                       |               | S2          |             | 100          |                                |     |           |          |     |     |     |
| 3                  |             |                                                                                                                                                                                                                                                                       | 97            |             |             |              |                                |     |           |          |     |     |     |
|                    |             |                                                                                                                                                                                                                                                                       |               | S3          |             | 100          |                                |     |           |          |     |     |     |
| 4                  |             | - between 3.8 to 4.1 m, grey, firm.                                                                                                                                                                                                                                   | 96            |             |             |              |                                |     |           |          |     |     |     |
|                    |             |                                                                                                                                                                                                                                                                       |               | S4          |             | 100          |                                |     |           |          |     |     |     |
| 5                  |             |                                                                                                                                                                                                                                                                       | 95            |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - below 5.3 m, 150 mm brown sand lense, medium grained, poorly graded.                                                                                                                                                                                                |               | S5          |             | 100          |                                |     |           |          |     |     |     |
|                    |             | - below 5.5 m, and silt.                                                                                                                                                                                                                                              |               | S6          |             | 100          |                                |     |           |          |     |     |     |
| 6                  |             |                                                                                                                                                                                                                                                                       | 94            |             |             |              |                                |     |           |          |     |     |     |
|                    |             |                                                                                                                                                                                                                                                                       |               | S7          |             | 100          |                                |     |           |          |     |     |     |
| 7                  |             | <b>End of Test Hole</b><br>- ended test hole at 6.1 m below grade.<br>- test hole backfilled with auger cuttings, followed by bentonite from 0.3 m below grade to grade.<br>- no sloughing encountered during drilling.<br>- water in test hole at 4.6 m below grade. | 93            |             |             |              |                                |     |           |          |     |     |     |

ENG-TECH Consulting Limited

Logged by: JSD & RRB

Reviewed by: *CA*

Drilled By: Subterranean (Manitoba) Ltd. Completion Depth: 6.1 m

Drill Rig: Track Mounted CME 75

Auger Size: 125 mm

Completion Elevation: 93.9 m

Sheet: 1

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase II Environmental Site Assessment

Site: 2 Point Douglas Avenue, Winnipeg, Manitoba

Location: See Figure 2

Test Hole #: TH17

Project No: 04-217-02

Date Drilled: October 28, 2004

Grade Elevation: 100 m (local)

Water Elevation: 95.3 m

| SUBSURFACE PROFILE |             |                                                                   |               | SAMPLE DATA |             |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|-------------|-------------------------------------------------------------------|---------------|-------------|-------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol | Description                                                       | Elevation (m) | Number      | Sample Type | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |             |                                                                   |               |             |             |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |             | Ground Surface                                                    | 100           |             |             |              |                                |     |           |          |     |     |     |
| 0.15               |             | 150 mm Concrete                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 0.3                |             | Granular Fill                                                     |               |             |             |              |                                |     |           |          |     |     |     |
| 0.45               |             | - 300 mm thick.                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 0.75               |             | Clay Fill (CH)                                                    |               |             |             |              |                                |     |           |          |     |     |     |
| 0.9                |             | - black, moist, high plastic, stiff, some silt, trace sand sizes. |               | S1          | SH          | 100          |                                |     |           |          |     |     |     |
| 1.2                |             | Silty Clay (CH/CI)                                                |               |             |             |              |                                |     |           |          |     |     |     |
| 1.35               |             | - brown, moist to wet, high to medium plastic, firm, with silt.   |               | S2          | SH          | 100          |                                |     |           |          |     |     |     |
| 1.65               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 1.95               |             |                                                                   |               | S3          | SH          | 100          |                                |     |           |          |     |     |     |
| 2.25               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 2.55               |             |                                                                   |               | S4          | SH          | 100          |                                |     |           |          |     |     |     |
| 2.85               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 3.15               |             |                                                                   |               | S5          | SH          | 100          |                                |     |           |          |     |     |     |
| 3.45               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 3.75               |             |                                                                   |               | S6          | SH          | 100          |                                |     |           |          |     |     |     |
| 4.05               |             |                                                                   |               | S7          | SH          | 100          |                                |     |           |          |     |     |     |
| 4.35               |             |                                                                   |               | S8          | SH          | 100          |                                |     |           |          |     |     |     |
| 4.65               |             |                                                                   |               | S9          | SH          | 100          |                                |     |           |          |     |     |     |
| 4.95               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 5.25               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 5.55               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 5.85               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 6.15               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 6.45               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 6.75               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 7.05               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 7.35               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 7.65               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 7.95               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 8.25               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 8.55               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 8.85               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 9.15               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 9.45               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 9.75               |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 10.05              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 10.35              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 10.65              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 10.95              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 11.25              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 11.55              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 11.85              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 12.15              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 12.45              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 12.75              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 13.05              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 13.35              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 13.65              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 13.95              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 14.25              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 14.55              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 14.85              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 15.15              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 15.45              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 15.75              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 16.05              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 16.35              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 16.65              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 16.95              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 17.25              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 17.55              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 17.85              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 18.15              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 18.45              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 18.75              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 19.05              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 19.35              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 19.65              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 19.95              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 20.25              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 20.55              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 20.85              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 21.15              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 21.45              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 21.75              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 22.05              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 22.35              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 22.65              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 22.95              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 23.25              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 23.55              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 23.85              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 24.15              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 24.45              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 24.75              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 25.05              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 25.35              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 25.65              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 25.95              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 26.25              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 26.55              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 26.85              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 27.15              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 27.45              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 27.75              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 28.05              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 28.35              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 28.65              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 28.95              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 29.25              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 29.55              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 29.85              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 30.15              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 30.45              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 30.75              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 31.05              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 31.35              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 31.65              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 31.95              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 32.25              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 32.55              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 32.85              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 33.15              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 33.45              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 33.75              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 34.05              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 34.35              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 34.65              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 34.95              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 35.25              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 35.55              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 35.85              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 36.15              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 36.45              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 36.75              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 37.05              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 37.35              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 37.65              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 37.95              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 38.25              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 38.55              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 38.85              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 39.15              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 39.45              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 39.75              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 40.05              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 40.35              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 40.65              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 40.95              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 41.25              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 41.55              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 41.85              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 42.15              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 42.45              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 42.75              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 43.05              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 43.35              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 43.65              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 43.95              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 44.25              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 44.55              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 44.85              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 45.15              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 45.45              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 45.75              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 46.05              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 46.35              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 46.65              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 46.95              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 47.25              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 47.55              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 47.85              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 48.15              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 48.45              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 48.75              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 49.05              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 49.35              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 49.65              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 49.95              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 50.25              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 50.55              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 50.85              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 51.15              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 51.45              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 51.75              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 52.05              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 52.35              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 52.65              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 52.95              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 53.25              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 53.55              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 53.85              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 54.15              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 54.45              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 54.75              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 55.05              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 55.35              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 55.65              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 55.95              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
| 56.25              |             |                                                                   |               |             |             |              |                                |     |           |          |     |     |     |

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase II Environmental Site Assessment

Site: 2 Point Douglas Avenue (South), Winnipeg, Manitoba

Location: See Figure 2

Test Hole #: TH18

Project No: 04-217-02

Date Drilled: October 28, 2004

Grade Elevation: 100 m (local)

Water Elevation: 95.1 m

| SUBSURFACE PROFILE |             |                                                                                                    |               | SAMPLE DATA |              |              |                                |     | Well Data | Comments |     |     |                                              |
|--------------------|-------------|----------------------------------------------------------------------------------------------------|---------------|-------------|--------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|----------------------------------------------|
| Depth (m)          | Soil Symbol | Description                                                                                        | Elevation (m) | Number      | Sample Type  | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |                                              |
|                    |             |                                                                                                    |               |             |              |              | 50                             | 150 |           |          | 250 | 350 | 450                                          |
| 0                  |             | Ground Surface                                                                                     | 100           |             |              |              |                                |     |           |          |     |     |                                              |
|                    |             | 150 mm Concrete                                                                                    |               |             |              |              |                                |     |           |          |     |     |                                              |
|                    |             | Granular Fill                                                                                      |               | S1          | Split Barrel | 100          |                                |     |           |          |     |     |                                              |
|                    |             | - 300 mm thick.                                                                                    |               |             |              |              |                                |     |           |          |     |     |                                              |
| 1                  |             | Cinders                                                                                            | 99            |             |              |              |                                |     |           |          |     |     |                                              |
|                    |             | - black, damp, medium dense.                                                                       |               |             |              |              |                                |     |           |          |     |     |                                              |
| 2                  |             | Clay Fill (CH)                                                                                     | 98            | S2          | Split Barrel | 100          |                                |     |           |          |     |     |                                              |
|                    |             | - black, moist, high plastic, stiff, some silt, trace sand sizes.                                  |               |             |              |              |                                |     |           |          |     |     |                                              |
| 3                  |             | Silty Clay (CH/CI)                                                                                 | 97            | S3          | Split Barrel | 100          |                                |     |           |          |     |     |                                              |
|                    |             | - brown, moist to wet, high to medium plastic, firm, and silt.                                     |               |             |              |              |                                |     |           |          |     |     |                                              |
|                    |             | - below 3.2 m, visible staining and petroleum odours scented.                                      |               |             |              |              |                                |     |           |          |     |     | > 500 ppm<br>7.5% LEL                        |
| 4                  |             | Sandy Clay (CI)                                                                                    | 96            | S4          | Split Barrel | 100          |                                |     |           |          |     |     |                                              |
|                    |             | - grey, moist to wet, medium plastic, soft, and sand sizes, with silt, petroleum odours scented.   |               | S5          | Split Barrel | 100          |                                |     |           |          |     |     |                                              |
| 5                  |             |                                                                                                    | 95            |             |              |              |                                |     |           |          |     |     | > 500 ppm<br>20% LEL<br>> 500 ppm<br>10% LEL |
| 6                  |             |                                                                                                    | 94            | S6          | Split Barrel | 100          |                                |     |           |          |     |     |                                              |
|                    |             |                                                                                                    |               | S7          | Split Barrel | 100          |                                |     |           |          |     |     |                                              |
| 7                  |             |                                                                                                    | 93            | S8          | Split Barrel | 100          |                                |     |           |          |     |     |                                              |
|                    |             | - below 7.2 m, no visible staining and no petroleum odours scented.                                |               |             |              |              |                                |     |           |          |     |     | > 500 ppm<br>6.5% LEL                        |
| 8                  |             | End of Test Hole                                                                                   | 92            |             |              |              |                                |     |           |          |     |     |                                              |
|                    |             | - ended test hole at 7.6 m below grade.                                                            |               |             |              |              |                                |     |           |          |     |     |                                              |
|                    |             | - test hole backfilled with auger cuttings, followed by bentonite from 0.3 m below grade to grade. |               |             |              |              |                                |     |           |          |     |     |                                              |
|                    |             | - sloughing encountered at 4.6 m below grade.                                                      |               |             |              |              |                                |     |           |          |     |     |                                              |
| 9                  |             | - water in hole at 4.9 m below grade.                                                              | 91            |             |              |              |                                |     |           |          |     |     |                                              |

ENG-TECH Consulting Limited

Logged by: JSD & RRB

Reviewed by: *CA*

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

Drilled By: Subterranean (Manitoba) Ltd.

Drill Rig: Track Mounted CME 75

Auger Size: 125 mm

Completion Depth: 7.6 m

Completion Elevation: 92.4 m

Sheet: 1

Sheet: 1

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase II Environmental Site Assessment

Site: 2 Point Douglas Avenue (South), Winnipeg, Manitoba

Location: See Figure 2

Test Hole #: TH20

Project No: 04-217-02

Date Drilled: October 28, 2004

Grade Elevation: 100 m (local)

Water Elevation: 95.1 m

| SUBSURFACE PROFILE |             |                                                                                                    |               | SAMPLE DATA |             |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|-------------|----------------------------------------------------------------------------------------------------|---------------|-------------|-------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol | Description                                                                                        | Elevation (m) | Number      | Sample Type | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |             |                                                                                                    |               |             |             |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |             | Ground Surface                                                                                     | 100           |             |             |              |                                |     |           |          |     |     |     |
|                    |             | 75 mm Concrete                                                                                     |               |             |             |              |                                |     |           |          |     |     |     |
|                    |             | Granular Fill                                                                                      |               |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - 150 mm thick.                                                                                    |               |             |             |              |                                |     |           |          |     |     |     |
| 1                  |             | Cinders                                                                                            | 99            |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - black, damp, medium dense.                                                                       |               | S1          |             | 100          |                                |     |           |          |     |     |     |
|                    |             | Silty Clay (CH/CI)                                                                                 |               |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - brown, moist, high to medium plastic, stiff, with silt.                                          |               | S2          |             | 100          |                                |     |           |          |     |     |     |
| 2                  |             |                                                                                                    | 98            |             |             |              |                                |     |           |          |     |     |     |
|                    |             | Sandy Clay (CI)                                                                                    |               |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - brown, moist, medium plastic, firm, with sand sizes, some silt.                                  |               | S3          |             | 100          |                                |     |           |          |     |     |     |
| 3                  |             |                                                                                                    | 97            |             |             |              |                                |     |           |          |     |     |     |
|                    |             | Sand (SP)                                                                                          |               |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - brown, damp, medium to coarse grained, poorly graded, no petroleum odours scented.               |               | S4          |             | 100          |                                |     |           |          |     |     |     |
|                    |             |                                                                                                    |               | S5          |             | 100          |                                |     |           |          |     |     |     |
| 5                  |             |                                                                                                    | 95            |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - below 4.9 m, wet.                                                                                |               | S6          |             | 100          |                                |     |           |          |     |     |     |
| 6                  |             |                                                                                                    | 94            |             |             |              |                                |     |           |          |     |     |     |
|                    |             |                                                                                                    |               | S7          |             | 100          |                                |     |           |          |     |     |     |
|                    |             | End of Test Hole                                                                                   |               |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - ended test hole at 6.1 m below grade.                                                            |               |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - test hole backfilled with auger cuttings, followed by bentonite from 0.3 m below grade to grade. |               |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - sloughing encountered at 4.1 m below grade.                                                      |               |             |             |              |                                |     |           |          |     |     |     |
|                    |             | - water in hole at 4.9 m below grade.                                                              |               |             |             |              |                                |     |           |          |     |     |     |
| 7                  |             |                                                                                                    | 93            |             |             |              |                                |     |           |          |     |     |     |

ENG-TECH Consulting Limited

Logged by: JSD & RRB

Reviewed by: *CH*

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

Drilled By: Subterranean (Manitoba) Ltd.

Drill Rig: Track Mounted CME 75

Auger Size: 125 mm

Completion Depth: 6.1 m

Completion Elevation: 92.4 m

Sheet: 1

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

**Client:** City of Winnipeg

**Project:** Phase II Environmental Site Assessment

**Site:** 2 Point Douglas Avenue (South), Winnipeg, Manitoba

**Location:** See Figure 2

**Test Hole #:** TH29

**Project No:** 04-217-02

**Date Drilled:** October 29, 2004

**Grade Elevation:** 100 m (local)

**Water Elevation:** - -

| SUBSURFACE PROFILE |                                                                                    |                                                                                                                                                                           |               | SAMPLE DATA |                                                                                     |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|-------------------------------------------------------------------------------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol                                                                        | Description                                                                                                                                                               | Elevation (m) | Number      | Sample Type                                                                         | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |                                                                                    |                                                                                                                                                                           |               |             |                                                                                     |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |   | Ground Surface                                                                                                                                                            | 100           |             |                                                                                     |              |                                |     |           |          |     |     |     |
|                    |   | <b>Granular Fill</b><br>- 150 mm thick.                                                                                                                                   |               |             |                                                                                     |              |                                |     |           |          |     |     |     |
|                    |   | <b>Clay Fill (CH)</b><br>- black, moist, high plastic, firm, trace sand sizes.                                                                                            |               | S1          |    | 100          |                                |     |           |          |     |     |     |
|                    |  |                                                                                                                                                                           |               | S2          |    | 100          |                                |     |           |          |     |     |     |
| 1                  |                                                                                    | <b>Silty Clay (CH/CI)</b><br>- brown, moist, high to medium plastic, stiff, with silt, some sand sizes.                                                                   | 99            |             |                                                                                     |              |                                |     |           |          |     |     |     |
|                    |                                                                                    |                                                                                                                                                                           |               | S3          |  | 100          |                                |     |           |          |     |     |     |
|                    |                                                                                    | <b>End of Test Hole</b><br>- ended test hole at 1.5 m below grade.<br>- test hole backfilled with auger cuttings.<br>- no sloughing or water encountered during drilling. |               |             |                                                                                     |              |                                |     |           |          |     |     |     |
| 2                  |                                                                                    |                                                                                                                                                                           | 98            |             |                                                                                     |              |                                |     |           |          |     |     |     |
| 3                  |                                                                                    |                                                                                                                                                                           | 97            |             |                                                                                     |              |                                |     |           |          |     |     |     |

ENG-TECH Consulting Limited

Logged by: MRD & RRB

Reviewed by: *CTA*

Drilled By: Subterranean (Manitoba) Ltd.

Drill Rig: Track Mounted CME 75

Auger Size: 125 mm

Completion Depth: 1.5 m

Completion Elevation: 98.5 m

Sheet: 1

Sample Type



Split Barrel



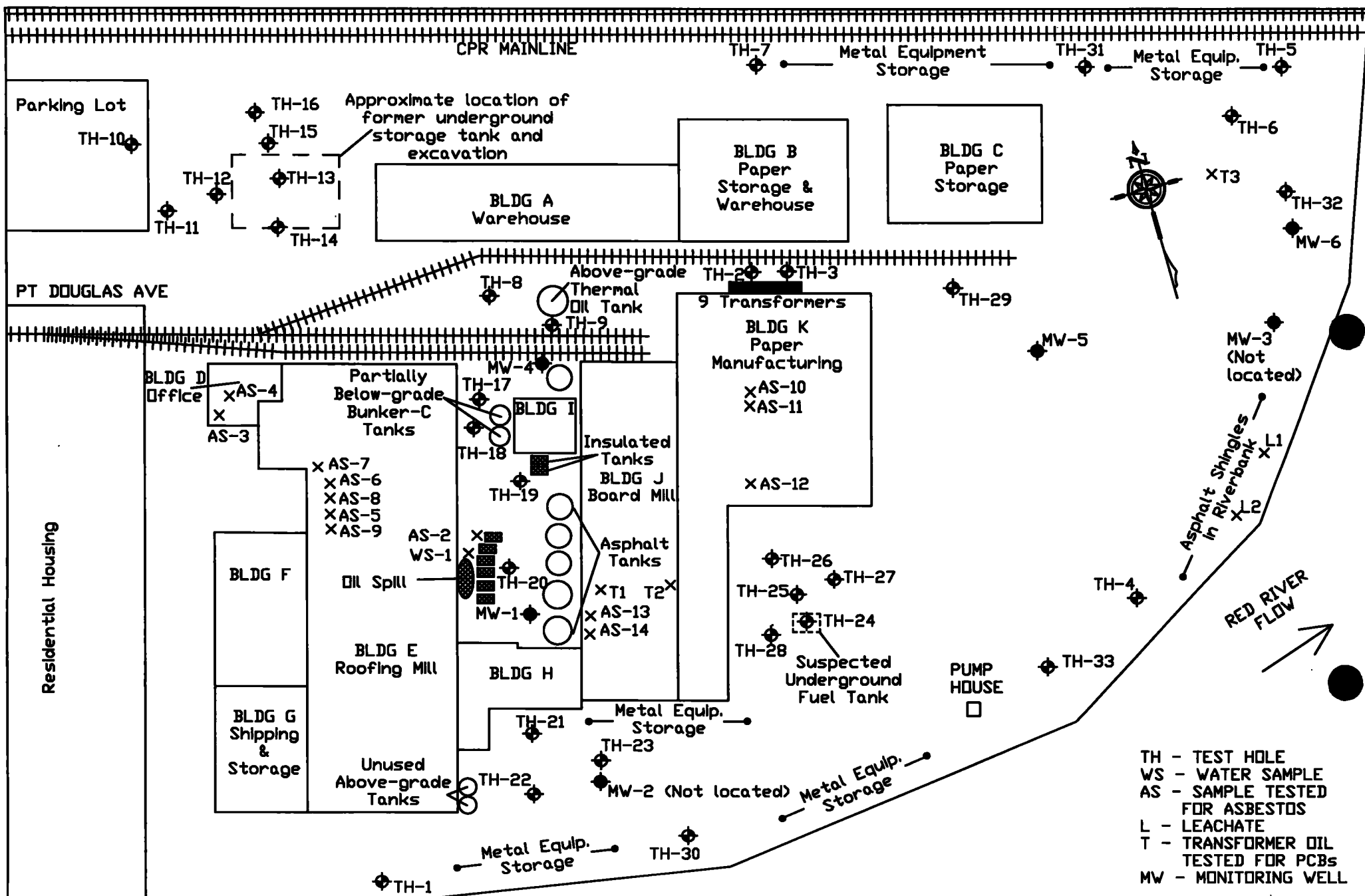
Shelby Tube



Auger Cuttings



Split Spoon



**ENG-TECH CONSULTING LIMITED**

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

DRAWN BY:  
JRD

SCALE:  
NTS

DATE:  
DECEMBER 2004

CLIENT: CITY OF WINNIPEG

FILE NO: 04-217-02

FIGURE NO.: 2

TEST HOLE & SAMPLE  
LOCATION PLAN

PHASE II ESA

#2 POINT DOUGLAS AVE (SOUTH)  
WINNIPEG, MB



## **APPENDIX B**

**Stratigraphic Test Hole and Monitoring Well Logs from the Phase III ESA**

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase III Environmental Site Assessment

Site: 2 Point Douglas (South), Winnipeg, Manitoba

Location: See Figure 6

Test Hole #: TH34

File No: 04-217-02

Date Drilled: December 29, 2004

Grade Elevation: 100 m (local)

Water Elevation: --

| SUBSURFACE PROFILE |                                                                                    |                                                                                                                                                                                                                                                          |               | SAMPLE DATA |                                                                                     |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|-------------------------------------------------------------------------------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol                                                                        | Description                                                                                                                                                                                                                                              | Elevation (m) | Number      | Sample Type                                                                         | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |                                                                                    |                                                                                                                                                                                                                                                          |               |             |                                                                                     |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |   | <b>Ground Surface</b><br><b>Granular Fill</b><br>- brown, damp, some clay, silt & sand sizes.<br>- below 0.2 m, light brown.<br>- frozen to 0.5 m.                                                                                                       | 100           |             |                                                                                     |              |                                |     |           |          |     |     |     |
| 1                  |  | <b>Silty Clay (CI)</b><br>- brown, moist, medium plastic, stiff, and silt, some fine grained sand sizes, occasional silt inclusions.                                                                                                                     | 99            | S1          |    | 100          |                                |     |           |          |     |     |     |
| 2                  |                                                                                    |                                                                                                                                                                                                                                                          | 98            | S2          |  | 100          |                                |     |           |          |     |     |     |
| 3                  |                                                                                    |                                                                                                                                                                                                                                                          | 97            | S3          |  | 100          |                                |     |           |          |     |     |     |
|                    |                                                                                    | <b>End of Test Hole</b><br>- ended test hole at 3.1 m below grade.<br>- test hole backfilled with approx. 150 mm of bentonite at base and top of test hole with auger cuttings in between.<br>- no sloughing or seepage was encountered during drilling. | 96            | S4          |  | 100          |                                |     |           |          |     |     |     |
| 4                  |                                                                                    |                                                                                                                                                                                                                                                          |               |             |                                                                                     |              |                                |     |           |          |     |     |     |
| 5                  |                                                                                    |                                                                                                                                                                                                                                                          | 95            |             |                                                                                     |              |                                |     |           |          |     |     |     |

ENG-TECH Consulting Limited

Logged by: RRB

Reviewed by: 

Drilled By: Maple Leaf Drilling

Drill Rig: Bobcat mounted VL60

Auger Size: 125 mm

Completion Depth: 3.1 m

Completion Elevation:

Sheet: 1

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase III Environmental Site Assessment

Site: 2 Point Douglas (South), Winnipeg, Manitoba

Location: See Figure 6

Test Hole #: TH35

File No: 04-217-02

Date Drilled: December 29, 2004

Grade Elevation: 100 m (local)

Water Elevation: --

| SUBSURFACE PROFILE |             |                                                                                                                                                                                                                                                          |               | SAMPLE DATA |                                                                                     |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|-------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|-------------------------------------------------------------------------------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol | Description                                                                                                                                                                                                                                              | Elevation (m) | Number      | Sample Type                                                                         | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |             |                                                                                                                                                                                                                                                          |               |             |                                                                                     |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |             | Ground Surface                                                                                                                                                                                                                                           | 100           |             |                                                                                     |              |                                |     |           |          |     |     |     |
|                    |             | <b>Silty Clay (CI)</b><br>- brown, moist, medium plastic, stiff, and silt, some line grained sand sizes, trace gravel sizes.<br>- frozen to 0.5 m.                                                                                                       |               |             |                                                                                     |              |                                |     |           |          |     |     |     |
| 1                  |             |                                                                                                                                                                                                                                                          | 99            | S1          |    | 100          |                                |     |           |          |     |     |     |
|                    |             |                                                                                                                                                                                                                                                          |               | S2          |  | 100          |                                |     |           |          |     |     |     |
| 2                  |             | <b>Clayey Sand (SC)</b><br>- brown, damp to moist, fine to medium grained, poorly graded, some clay & silt.                                                                                                                                              | 98            | S3          |  | 100          |                                |     |           |          |     |     |     |
|                    |             | <b>Silty Clay (CI)</b><br>- brown, moist, medium plastic, firm, and silt, with line grained sand sizes.                                                                                                                                                  |               | S4          |  | 100          |                                |     |           |          |     |     |     |
| 3                  |             | <b>End of Test Hole</b><br>- ended test hole at 3.1 m below grade.<br>- test hole backfilled with approx. 150 mm of bentonite at base and top of test hole with auger cuttings in between.<br>- no sloughing or seepage was encountered during drilling. | 97            |             |                                                                                     |              |                                |     |           |          |     |     |     |
| 4                  |             |                                                                                                                                                                                                                                                          | 96            |             |                                                                                     |              |                                |     |           |          |     |     |     |
| 5                  |             |                                                                                                                                                                                                                                                          | 95            |             |                                                                                     |              |                                |     |           |          |     |     |     |

ENG-TECH Consulting Limited

Logged by: RRB

Reviewed by: 

Drilled By: Maple Leaf Drilling

Drill Rig: Bobcat mounted VL60

Auger Size: 125 mm

Completion Depth: 3.1 m

Completion Elevation:

Sheet: 1

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase III Environmental Site Assessment

Site: 2 Point Douglas (South), Winnipeg, Manitoba

Location: See Figure 6

Test Hole #: TH36

File No: 04-217-02

Date Drilled: December 29, 2004

Grade Elevation: 100 m (local)

Water Elevation: --

| SUBSURFACE PROFILE |                                                                                     |                                                                                                                                                                                                                                                          |               | SAMPLE DATA |                                                                                     |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|-------------------------------------------------------------------------------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol                                                                         | Description                                                                                                                                                                                                                                              | Elevation (m) | Number      | Sample Type                                                                         | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |                                                                                     |                                                                                                                                                                                                                                                          |               |             |                                                                                     |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |    | <b>Ground Surface</b><br><br><b>Granular Fill</b><br>- brown, damp. some clay, silt & sand sizes.<br>- frozen to 0.3 m.                                                                                                                                  | 100           |             |                                                                                     |              |                                |     |           |          |     |     |     |
|                    |    | <b>Clay Fill (CH)</b><br>- black, moist, high plastic, stiff, some silt, trace sand & gravel sizes.                                                                                                                                                      |               | S1          |    | 100          |                                |     |           |          |     |     |     |
| 1                  |   | <b>Silty Clay (CI)</b><br>- brown, moist, medium plastic, firm, and silt, some fine grained sand sizes.                                                                                                                                                  | 99            | S2          |   | 100          |                                |     |           |          |     |     |     |
|                    |  | <b>Clayey Sand (SC)</b><br>- brown, damp to moist, fine to medium grained, poorly graded, some clay & silt.                                                                                                                                              |               | S3          |  | 100          |                                |     |           |          |     |     |     |
| 2                  |                                                                                     |                                                                                                                                                                                                                                                          | 98            | S4          |  | 100          |                                |     |           |          |     |     |     |
| 3                  |                                                                                     |                                                                                                                                                                                                                                                          | 97            |             |                                                                                     |              |                                |     |           |          |     |     |     |
|                    |                                                                                     | <b>End of Test Hole</b><br>- ended test hole at 3.1 m below grade.<br>- test hole backfilled with approx. 150 mm of bentonite at base and top of test hole with auger cuttings in between.<br>- no sloughing or seepage was encountered during drilling. |               |             |                                                                                     |              |                                |     |           |          |     |     |     |
| 4                  |                                                                                     |                                                                                                                                                                                                                                                          | 96            |             |                                                                                     |              |                                |     |           |          |     |     |     |
| 5                  |                                                                                     |                                                                                                                                                                                                                                                          | 95            |             |                                                                                     |              |                                |     |           |          |     |     |     |

ENG-TECH Consulting Limited

Logged by: RRB

Reviewed by: 

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

Drilled By: Maple Leaf Drilling

Drill Rig: Bobcat mounted VL60

Auger Size: 125 mm

Completion Depth: 3.1 m

Completion Elevation:

Sheet: 1

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase III Environmental Site Assessment

Site: 2 Point Douglas (South), Winnipeg, Manitoba

Location: See Figure 6

Test Hole #: TH37

File No: 04-217-02

Date Drilled: December 29, 2004

Grade Elevation: 100 m (local)

Water Elevation: --

| SUBSURFACE PROFILE |             |                |               | SAMPLE DATA |             |              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |     | Well Data | Comments |     |     |     |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  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| Depth (m)          | Soil Symbol | Description    | Elevation (m) | Number      | Sample Type | Recovery (%) | ATH Vapour Concentration (ppm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          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ENG-TECH Consulting Limited

Logged by: RRB

Reviewed by: *CR*

Drilled By: Maple Leaf Drilling

Drill Rig: Bobcat mounted VL60

Auger Size: 125 mm

Completion Depth: 1.5 m

Completion Elevation:

Sheet: 1

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase III Environmental Site Assessment

Site: 2 Point Douglas (South), Winnipeg, Manitoba

Location: See Figure 6

Test Hole #: TH38

File No: 04-217-02

Date Drilled: December 29, 2004

Grade Elevation: 100 m (local)

Water Elevation: --

| SUBSURFACE PROFILE |                                                                                     |                                                                                                                                                                                                                                                          |               | SAMPLE DATA |                                                                                     |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|-------------------------------------------------------------------------------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol                                                                         | Description                                                                                                                                                                                                                                              | Elevation (m) | Number      | Sample Type                                                                         | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |                                                                                     |                                                                                                                                                                                                                                                          |               |             |                                                                                     |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |    | <b>Ground Surface</b><br><b>Clay Fill (CH)</b><br>- dark brown, moist, high plastic, stiff, some silt, trace organic rootlets.<br>- frozen to 0.3 m.                                                                                                     | 100           |             |                                                                                     |              |                                |     |           |          |     |     |     |
|                    |    | <b>Topsoil</b><br>- black, damp to moist, stiff.                                                                                                                                                                                                         |               | S1          |    | 100          |                                |     |           |          |     |     |     |
| 1                  |   | <b>Silty Clay (CI)</b><br>- brown, moist, medium plastic, stiff, and silt, with fine grained sand sizes.                                                                                                                                                 | 99            | S2          |   | 100          |                                |     |           |          |     |     |     |
| 2                  |  | <b>Clayey Sand (SC)</b><br>- brown, damp to moist, fine to medium grained, poorly graded, some clay & silt.                                                                                                                                              | 98            | S3          |  | 100          |                                |     |           |          |     |     |     |
| 3                  |  | <b>End of Test Hole</b><br>- ended test hole at 3.1 m below grade.<br>- test hole backfilled with approx. 150 mm of bentonite at base and top of test hole with auger cuttings in between.<br>- no sloughing or seepage was encountered during drilling. | 97            | S4          |  | 100          |                                |     |           |          |     |     |     |
| 4                  |                                                                                     |                                                                                                                                                                                                                                                          | 96            |             |                                                                                     |              |                                |     |           |          |     |     |     |
| 5                  |                                                                                     |                                                                                                                                                                                                                                                          | 95            |             |                                                                                     |              |                                |     |           |          |     |     |     |

ENG-TECH Consulting Limited

Logged by: RRB

Reviewed by: 

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

Drilled By: Maple Leaf Drilling

Drill Rig: Bobcat mounted VL60

Auger Size: 125 mm

Completion Depth: 3.1 m

Completion Elevation:

Sheet: 1

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase III Environmental Site Assessment

Site: 2 Point Douglas (South), Winnipeg, Manitoba

Location: See Figures 3 & 4

Test Hole #: MW7

File No: 04-217-02

Date Drilled: December 30, 2004

Grade Elevation: 100 m (local)

Water Elevation: 95.435

| SUBSURFACE PROFILE |             |                                                                                                                                                                                                                                                                                                                                         |               | SAMPLE DATA |             |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|-------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|-------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol | Description                                                                                                                                                                                                                                                                                                                             | Elevation (m) | Number      | Sample Type | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |             |                                                                                                                                                                                                                                                                                                                                         |               |             |             |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |             | Ground Surface                                                                                                                                                                                                                                                                                                                          | 100           |             |             |              |                                |     |           |          |     |     |     |
| 0.25               |             | <b>Limestone Fill</b><br>- 25 mm thick, frozen.                                                                                                                                                                                                                                                                                         |               |             |             |              |                                |     |           |          |     |     |     |
| 1                  |             | <b>Sand Fill (SC)</b><br>- brown, damp, fine to coarse grained, poorly graded, some clay, with silt, trace gravel sizes.                                                                                                                                                                                                                | 99            |             |             |              |                                |     |           |          |     |     |     |
| 2                  |             |                                                                                                                                                                                                                                                                                                                                         | 98            |             |             |              |                                |     |           |          |     |     |     |
| 3                  |             |                                                                                                                                                                                                                                                                                                                                         | 97            |             |             |              |                                |     |           |          |     |     |     |
| 4                  |             | <b>Sand Fill (SP)</b><br>- brown, moist, fine to medium grained, poorly graded.                                                                                                                                                                                                                                                         | 96            |             |             |              |                                |     |           |          |     |     |     |
| 5                  |             | <b>Silty Clay (CI)</b><br>- grey, moist, medium plastic, firm, some silt, trace fine grained sand & gravel sizes, visible staining evident.                                                                                                                                                                                             | 95            | S1          | ←           | 100          |                                |     |           |          |     |     |     |
| 6                  |             | <b>Clayey Sand (SC)</b><br>- dark brown, moist, fine to medium grained, poorly graded, soft, and silt, with clay, odours scented & visible staining evident.                                                                                                                                                                            | 94            | S2          | ←           | 100          |                                |     |           |          |     |     |     |
| 7                  |             | <b>Silty Clay (CI)</b><br>- grey, moist to wet, medium plastic, soft, and silt, some fine grained sand sizes.                                                                                                                                                                                                                           | 93            |             |             |              |                                |     |           |          |     |     |     |
| 8                  |             |                                                                                                                                                                                                                                                                                                                                         | 92            |             |             |              |                                |     |           |          |     |     |     |
| 9                  |             | <b>End of Test Hole</b><br>- ended test hole at 7.6 m below grade.<br>- sloughing and seepage encountered within clayey sand layer at 4.9 m below grade.<br>- monitoring well installed with lockable top cap. Well data is as shown.<br>- dedicated bailer placed in well.<br>- groundwater elevation was 95.435 m on January 7, 2005. | 91            |             |             |              |                                |     |           |          |     |     |     |
| 10                 |             |                                                                                                                                                                                                                                                                                                                                         | 90            |             |             |              |                                |     |           |          |     |     |     |
| 11                 |             |                                                                                                                                                                                                                                                                                                                                         | 89            |             |             |              |                                |     |           |          |     |     |     |
| 12                 |             |                                                                                                                                                                                                                                                                                                                                         | 88            |             |             |              |                                |     |           |          |     |     |     |

ENG-TECH Consulting Limited

Logged by: RRB

Reviewed by: 

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

Drilled By: Maple Leaf Drilling

Drill Rig: Truck mounted Canterra

Auger Size: 125 mm

Completion Depth: 7.6 m

Completion Elevation:

Sheet: 1

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase III Environmental Site Assessment

Site: 2 Point Douglas (South), Winnipeg, Manitoba

Location: See Figures 3 & 4

Test Hole #: MW8

File No: 04-217-02

Date Drilled: December 30, 2004

Grade Elevation: 100 m (local)

Water Elevation: 95.768 m (local)

| SUBSURFACE PROFILE |                                                                                    |                                                                                                                                                                                                                                                                                                                                        |               | SAMPLE DATA |             |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|-------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol                                                                        | Description                                                                                                                                                                                                                                                                                                                            | Elevation (m) | Number      | Sample Type | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |                                                                                    |                                                                                                                                                                                                                                                                                                                                        |               |             |             |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |   | Ground Surface                                                                                                                                                                                                                                                                                                                         | 100           |             |             |              |                                |     |           |          |     |     |     |
| 1                  |   | <b>Granular Fill</b><br>- brown, damp, some clay, silt & sand sizes.<br>- below 0.3 m, and clay.<br>- frozen to 0.5 m.                                                                                                                                                                                                                 | 99            |             |             |              |                                |     |           |          |     |     |     |
| 2                  |   | <b>Sand Fill (SP)</b><br>- brown, damp, fine to medium grained, poorly graded.                                                                                                                                                                                                                                                         | 98            |             |             |              |                                |     |           |          |     |     |     |
| 3                  |   | <b>Clayey Sand (SC)</b><br>- brown, moist to wet, fine to medium grained, poorly graded, and silt, some clay<br>- below 2.4 m, wet.                                                                                                                                                                                                    | 97            |             |             |              |                                |     |           |          |     |     |     |
| 4                  |   | <b>Silty Clay (CI)</b><br>- grey, moist, medium plastic, firm, and silt, with fine grained sand, visible staining evident.<br>- below 5.5 m, wet, soft.                                                                                                                                                                                | 96            | S1          | 1           | 100          |                                |     |           |          |     |     |     |
| 5                  |   |                                                                                                                                                                                                                                                                                                                                        | 95            |             |             |              |                                |     |           |          |     |     |     |
| 6                  |   |                                                                                                                                                                                                                                                                                                                                        | 94            |             |             |              |                                |     |           |          |     |     |     |
| 7                  |  | <b>Clayey Sand (SC)</b><br>- dark brown, moist, fine to medium grained, poorly graded, soft, and silt, with clay, odours scented & visible staining evident.                                                                                                                                                                           | 93            | S2          | 1           | 100          |                                |     |           |          |     |     |     |
| 8                  |                                                                                    |                                                                                                                                                                                                                                                                                                                                        | 92            |             |             |              |                                |     |           |          |     |     |     |
| 9                  |                                                                                    | <b>End of Test Hole</b><br>- ended test hole at 7.6 m below grade.<br>- sloughing and seepage encountered within silty clay layer at 5.5 m below grade.<br>- monitoring well installed with lockable top cap. Well data is as shown.<br>- dedicated bailer placed in well.<br>- groundwater elevation was 95.768 m on January 7, 2005. | 91            |             |             |              |                                |     |           |          |     |     |     |
| 10                 |                                                                                    |                                                                                                                                                                                                                                                                                                                                        | 90            |             |             |              |                                |     |           |          |     |     |     |
| 11                 |                                                                                    |                                                                                                                                                                                                                                                                                                                                        | 89            |             |             |              |                                |     |           |          |     |     |     |
| 12                 |                                                                                    |                                                                                                                                                                                                                                                                                                                                        | 88            |             |             |              |                                |     |           |          |     |     |     |

ENG-TECH Consulting Limited

Logged by: RRB

Reviewed by: 

Drilled By: Maple Leaf Drilling

Drill Rig: Truck mounted Canterra

Auger Size: 125 mm

Completion Depth: 7.6 m

Completion Elevation:

Sheet: 1

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon



# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase III Environmental Site Assessment

Site: 2 Point Douglas (South), Winnipeg, Manitoba

Location: See Figures 3 & 4

Test Hole #: MW9

File No: 04-217-02

Date Drilled: December 30, 2004

Grade Elevation: 100 m (local)

Water Elevation: 95.273 M (local)

| SUBSURFACE PROFILE |             |                                                                                                                                                                                                                                                   |               | SAMPLE DATA |             |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|-------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol | Description                                                                                                                                                                                                                                       | Elevation (m) | Number      | Sample Type | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |             |                                                                                                                                                                                                                                                   |               |             |             |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |             | Ground Surface                                                                                                                                                                                                                                    | 100           |             |             |              |                                |     |           |          |     |     |     |
| 0                  |             | <b>Concrete</b><br>- 125 mm thick.                                                                                                                                                                                                                |               |             |             |              |                                |     |           |          |     |     |     |
| 1                  |             | <b>Cinders</b><br>- black, damp, some sand sizes, trace shingle debris.                                                                                                                                                                           | 99            |             |             |              |                                |     |           |          |     |     |     |
| 2                  |             | <b>Clay (CH)</b><br>- brown, moist, high plastic, stiff to firm, some silt & fine grained sand sizes.                                                                                                                                             | 98            |             |             |              |                                |     |           |          |     |     |     |
| 3                  |             | <b>Silty Clay (CI)</b><br>- brown, moist, medium plastic, firm, and silt, with sand sizes.<br>- below 2.7 m, visible staining evident.                                                                                                            | 97            | S1          | 1           | 100          |                                |     |           |          |     |     |     |
| 4                  |             | <b>Clayey Sand (SC)</b><br>- dark brown, moist, fine to medium grained, poorly graded, soft, and silt, with clay, odours scented & visible staining evident.<br>- below 4.9 m, wet, soft.                                                         | 96            |             |             |              |                                |     |           |          |     |     |     |
| 5                  |             |                                                                                                                                                                                                                                                   | 95            |             |             |              |                                |     |           |          |     |     |     |
| 6                  |             | <b>Silty Clay (CI)</b><br>- grey, moist to wet, medium plastic, soft, and silt, some fine grained sand sizes, odours scented & visible staining evident.                                                                                          | 94            | S2          | 1           | 100          |                                |     |           |          |     |     |     |
| 7                  |             |                                                                                                                                                                                                                                                   | 93            |             |             |              |                                |     |           |          |     |     |     |
| 8                  |             | <b>Clayey Sand (SC)</b><br>- dark brown, wet, fine to medium grained, poorly graded, soft, and silt, with clay.<br>- no signs of staining below 6.1 m.                                                                                            | 92            |             |             |              |                                |     |           |          |     |     |     |
| 9                  |             |                                                                                                                                                                                                                                                   | 91            |             |             |              |                                |     |           |          |     |     |     |
| 10                 |             | <b>End of Test Hole</b><br>- ended test hole at 7.6 m below grade.<br>- monitoring well installed with lockable top cap. Well data is as shown.<br>- dedicated bailer placed in well.<br>- groundwater elevation was 95.273 m on January 7, 2005. | 90            |             |             |              |                                |     |           |          |     |     |     |
| 11                 |             |                                                                                                                                                                                                                                                   | 89            |             |             |              |                                |     |           |          |     |     |     |
| 12                 |             |                                                                                                                                                                                                                                                   | 88            |             |             |              |                                |     |           |          |     |     |     |

ENG-TECH Consulting Limited

Logged by: RRB

Reviewed by: *CH*

Sample Type

Drilled By: Maple Leaf Drilling

Drill Rig: Truck mounted Canterra

Auger Size: 125 mm

Completion Depth: 7.6 m

Completion Elevation:

Sheet: 1



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase III Environmental Site Assessment

Site: 2 Point Douglas (South), Winnipeg, Manitoba

Location: See Figures 3 & 4

Test Hole #: MW10

File No: 04-217-02

Date Drilled: December 30, 2004

Grade Elevation: 100 m (local)

Water Elevation: 95.262 m (local)

| SUBSURFACE PROFILE |                                                                                     |                                                                                                                                                                                                                                                                                                                                         |               | SAMPLE DATA |             |              |                                |     | Well Data | Comments |     |     |     |
|--------------------|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|-------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|
| Depth (m)          | Soil Symbol                                                                         | Description                                                                                                                                                                                                                                                                                                                             | Elevation (m) | Number      | Sample Type | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |
|                    |                                                                                     |                                                                                                                                                                                                                                                                                                                                         |               |             |             |              | 50                             | 150 |           |          | 250 | 350 | 450 |
| 0                  |    | <b>Ground Surface</b><br><b>Concrete</b><br>- 125 mm thick.                                                                                                                                                                                                                                                                             | 100           |             |             |              |                                |     |           |          |     |     |     |
| 1                  |    | <b>Cinders</b><br>- black, damp, some sand sizes.                                                                                                                                                                                                                                                                                       | 99            |             |             |              |                                |     |           |          |     |     |     |
| 2                  |    | <b>Clay (CH)</b><br>- brown, moist, high plastic, stiff to firm, some silt & sand sizes.                                                                                                                                                                                                                                                | 98            |             |             |              |                                |     |           |          |     |     |     |
| 3                  |    | <b>Silty Clay (CI)</b><br>- brown, moist, medium plastic, and silt, with fine grained sand sizes.                                                                                                                                                                                                                                       | 97            |             |             |              |                                |     |           |          |     |     |     |
| 4                  |   | <b>Sand (SP)</b><br>- brown, damp to moist, fine to medium grained, poorly graded, some silt.                                                                                                                                                                                                                                           | 96            |             |             |              |                                |     |           |          |     |     |     |
| 5                  |  | <b>Silty Clay (CI)</b><br>- brown, moist, medium plastic, firm, and silt, with fine grained sand sizes.<br>- below 4.4 m, visible staining evident.                                                                                                                                                                                     | 95            | S1          | 1           | 100          |                                |     |           |          |     |     |     |
| 6                  |  | <b>Clayey Sand (SC)</b><br>- dark brown, moist to wet, fine to medium grained, poorly graded, soft, and silt, with clay.<br>- no signs of staining below 6.1 m.<br>- between 7.0 to 7.3 m, sandy clay lense, with oxide inclusions.                                                                                                     | 94            |             |             |              |                                |     |           |          |     |     |     |
| 7                  |                                                                                     |                                                                                                                                                                                                                                                                                                                                         | 93            |             |             |              |                                |     |           |          |     |     |     |
| 8                  |                                                                                     |                                                                                                                                                                                                                                                                                                                                         | 92            |             |             |              |                                |     |           |          |     |     |     |
| 9                  |                                                                                     | <b>End of Test Hole</b><br>- ended test hole at 7.6 m below grade.<br>- sloughing and seepage encountered within clayey sand layer at 4.9 m below grade.<br>- monitoring well installed with lockable top cap. Well data is as shown.<br>- Dedicated bailer placed in well.<br>- groundwater elevation was 95.262 m on January 7, 2005. | 91            |             |             |              |                                |     |           |          |     |     |     |
| 10                 |                                                                                     |                                                                                                                                                                                                                                                                                                                                         | 90            |             |             |              |                                |     |           |          |     |     |     |
| 11                 |                                                                                     |                                                                                                                                                                                                                                                                                                                                         | 89            |             |             |              |                                |     |           |          |     |     |     |
| 12                 |                                                                                     |                                                                                                                                                                                                                                                                                                                                         | 88            |             |             |              |                                |     |           |          |     |     |     |

ENG-TECH Consulting Limited

Logged by: RRB

Reviewed by: 

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

Drilled By: Maple Leaf Drilling

Drill Rig: Truck mounted Canterra

Auger Size: 125 mm

Completion Depth: 7.6 m

Completion Elevation:

Sheet: 1

# ENG-TECH CONSULTING LIMITED

GEOTECHNICAL • ENVIRONMENTAL • MATERIALS TESTING

Client: City of Winnipeg

Project: Phase III Environmental Site Assessment

Site: 2 Point Douglas (South), Winnipeg, Manitoba

Location: See Figures 3 & 4

Test Hole #: MW11

File No: 04-217-02

Date Drilled: December 30, 2004

Grade Elevation: 100 m (local)

Water Elevation: 95.162 m (local)

| SUBSURFACE PROFILE |             |                                                                                                                                                                                                                                          |               | SAMPLE DATA |             |              |                                |     | Well Data | Comments |     |     |     |  |
|--------------------|-------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|-------------|--------------|--------------------------------|-----|-----------|----------|-----|-----|-----|--|
| Depth (m)          | Soil Symbol | Description                                                                                                                                                                                                                              | Elevation (m) | Number      | Sample Type | Recovery (%) | ATH Vapour Concentration (ppm) |     |           |          |     |     |     |  |
|                    |             |                                                                                                                                                                                                                                          |               |             |             |              | 50                             | 150 |           |          | 250 | 350 | 450 |  |
| 0                  |             | <b>Ground Surface</b><br><b>Concrete</b><br>- 230 mm thick.                                                                                                                                                                              | 100           |             |             |              |                                |     |           |          |     |     |     |  |
| 1                  |             | <b>Cinders</b><br>- black, damp, some sand sizes.                                                                                                                                                                                        | 99            |             |             |              |                                |     |           |          |     |     |     |  |
| 2                  |             | <b>Clay (CH)</b><br>- brown, moist, high plastic, stiff to firm, some silt & fine grained sand sizes.                                                                                                                                    | 98            |             |             |              |                                |     |           |          |     |     |     |  |
| 3                  |             | <b>Silty Clay (CI)</b><br>- brown, moist, medium plastic, firm, and silt, trace fine grained sand sizes.<br>- 150 mm thick clay lense at 3.3 m,                                                                                          | 97            |             |             |              |                                |     |           |          |     |     |     |  |
| 4                  |             | <b>Clayey Sand (SC)</b><br>- brown, moist, stiff, some silt, trace fine grained sand sizes.                                                                                                                                              | 96            |             |             |              |                                |     |           |          |     |     |     |  |
| 5                  |             | <b>Clayey Sand (SC)</b><br>- dark brown, moist, fine to medium grained, poorly graded, soft, and silt, with clay.                                                                                                                        | 95            |             |             |              |                                |     |           |          |     |     |     |  |
| 6                  |             | <b>Silty Clay (CI)</b><br>- grey, moist to wet, medium plastic, soft, and silt, some fine grained sand sizes.                                                                                                                            | 94            |             |             |              |                                |     |           |          |     |     |     |  |
| 7                  |             | <b>Clayey Sand (SC)</b><br>- 300 mm clayey sand lense at 5.2 m and 5.8 m.                                                                                                                                                                | 93            |             |             |              |                                |     |           |          |     |     |     |  |
| 8                  |             | <b>Clayey Sand (SC)</b><br>- brown, moist to wet, fine to medium grained, poorly graded, soft, and silt, with clay.                                                                                                                      | 92            |             |             |              |                                |     |           |          |     |     |     |  |
| 9                  |             | <b>End of Test Hole</b><br>- ended test hole at 7.6 m below grade<br>- no visible or scented odours detected.<br>- monitoring well installed with lockable top cap and bailer.<br>- groundwater elevation was 95.162 on January 7, 2005. | 91            |             |             |              |                                |     |           |          |     |     |     |  |
| 10                 |             |                                                                                                                                                                                                                                          | 90            |             |             |              |                                |     |           |          |     |     |     |  |
| 11                 |             |                                                                                                                                                                                                                                          | 89            |             |             |              |                                |     |           |          |     |     |     |  |
| 12                 |             |                                                                                                                                                                                                                                          | 88            |             |             |              |                                |     |           |          |     |     |     |  |

ENG-TECH Consulting Limited

Logged by: RRB

Reviewed by: CTA

Sample Type



Split Barrel



Shelby Tube



Auger Cuttings



Split Spoon

Drilled By: Maple Leaf Drilling

Drill Rig: Truck mounted Canterra

Auger Size: 125 mm

Completion Depth: 7.6 m

Completion Elevation:

Sheet: 1

## **APPENDIX C**

### **Analytical Test Results**

# ENVIRO-TEST ANALYTICAL REPORT

| Sample ID / Parameters                                       | Result | Qualifier | Unit  | Extracted | Analyzed  | By  | Batch   |
|--------------------------------------------------------------|--------|-----------|-------|-----------|-----------|-----|---------|
| L237162-1 TH 34-S1<br>Sample Date: 29-DEC-04<br>Matrix: SOIL |        |           |       |           |           |     |         |
| PAH % Moisture                                               | 7.8    | 0.1       | %     | 12-JAN-05 | 12-JAN-05 | JAP | R252387 |
| Acenaphthene                                                 | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Acenaphthylene                                               | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Anthracene                                                   | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(a)anthracene                                           | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(a)pyrene                                               | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(b)fluoranthene                                         | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(ghi)perylene                                           | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(k)fluoranthene                                         | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Chrysene                                                     | <0.1   | 0.1       | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Dibenzo(ah)anthracene                                        | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Fluoranthene                                                 | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Fluorene                                                     | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Indeno(1,2,3 cd)pyrene                                       | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Naphthalene                                                  | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| 1-Methyl Naphthalene                                         | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| 2-Methyl Naphthalene                                         | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Phenanthrene                                                 | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Pyrene                                                       | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Quinoline                                                    | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Acridine                                                     | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Surr: 2-Fluorobiphenyl Surr                                  | 101    | 50-150    | %     | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Surr: Terphenyl Surr                                         | 94     | 50-150    | %     | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| L237162-2 TH 34-S2<br>Sample Date: 29-DEC-04<br>Matrix: SOIL |        |           |       |           |           |     |         |
| PAH % Moisture                                               | 21     | 0.1       | %     | 12-JAN-05 | 12-JAN-05 | JAP | R252387 |
| Acenaphthene                                                 | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Acenaphthylene                                               | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Anthracene                                                   | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(a)anthracene                                           | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(a)pyrene                                               | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(b)fluoranthene                                         | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(ghi)perylene                                           | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(k)fluoranthene                                         | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Chrysene                                                     | <0.1   | 0.1       | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Dibenzo(ah)anthracene                                        | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Fluoranthene                                                 | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Fluorene                                                     | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Indeno(1,2,3 cd)pyrene                                       | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Naphthalene                                                  | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| 1-Methyl Naphthalene                                         | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| 2-Methyl Naphthalene                                         | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Phenanthrene                                                 | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Pyrene                                                       | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Quinoline                                                    | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Acridine                                                     | <0.05  | 0.05      | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |

# **ENVIRO-TEST ANALYTICAL REPORT**

| Sample Data / Parameters                                            | Result | Qualifier | DL     | Unit  | Extracted | Analyzed  | By  | Batch   |
|---------------------------------------------------------------------|--------|-----------|--------|-------|-----------|-----------|-----|---------|
| <b>L237162-2 TH 34-S2</b><br>Sample Date: 29-DEC-04<br>Matrix: SOIL |        |           |        |       |           |           |     |         |
| <b>PAH</b>                                                          |        |           |        |       |           |           |     |         |
| Surr: 2-Fluorobiphenyl Surr                                         | 94     |           | 50-150 | %     | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Surr: Terphenyl Surr                                                | 105    |           | 50-150 | %     | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| <b>L237162-3 TH 36-S1</b><br>Sample Date: 29-DEC-04<br>Matrix: SOIL |        |           |        |       |           |           |     |         |
| <b>PAH</b>                                                          |        |           |        |       |           |           |     |         |
| % Moisture                                                          | 27     |           | 0.1    | %     | 12-JAN-05 | 12-JAN-05 | JAP | R252387 |
| Acenaphthene                                                        | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Acenaphthylene                                                      | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Anthracene                                                          | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(a)anthracene                                                  | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(a)pyrene                                                      | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(b)fluoranthene                                                | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(ghi)perylene                                                  | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(k)fluoranthene                                                | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Chrysene                                                            | <0.1   |           | 0.1    | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Dibenzo(ah)anthracene                                               | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Fluoranthene                                                        | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Fluorene                                                            | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Indeno(1,2,3 cd)pyrene                                              | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Naphthalene                                                         | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| 1-Methyl Naphthalene                                                | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| 2-Methyl Naphthalene                                                | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Phenanthrene                                                        | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Pyrene                                                              | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Quinoline                                                           | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Acridine                                                            | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Surr: 2-Fluorobiphenyl Surr                                         | 98     |           | 50-150 | %     | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Surr: Terphenyl Surr                                                | 109    |           | 50-150 | %     | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| <b>L237162-4 TH 36-S2</b><br>Sample Date: 29-DEC-04<br>Matrix: SOIL |        |           |        |       |           |           |     |         |
| <b>PAH</b>                                                          |        |           |        |       |           |           |     |         |
| % Moisture                                                          | 23     |           | 0.1    | %     | 12-JAN-05 | 12-JAN-05 | JAP | R252387 |
| Acenaphthene                                                        | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Acenaphthylene                                                      | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Anthracene                                                          | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(a)anthracene                                                  | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(a)pyrene                                                      | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(b)fluoranthene                                                | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(ghi)perylene                                                  | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(k)fluoranthene                                                | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Chrysene                                                            | <0.1   |           | 0.1    | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Dibenzo(ah)anthracene                                               | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Fluoranthene                                                        | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Fluorene                                                            | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Indeno(1,2,3 cd)pyrene                                              | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |

# **ENVIRO-TEST ANALYTICAL REPORT**

| Sample/Parameter                 | Result | Qualifier | D.L.   | Units | Extracted | Analyzed  | By  | Batch   |
|----------------------------------|--------|-----------|--------|-------|-----------|-----------|-----|---------|
| <b>L237162-4 TH 36-S2</b>        |        |           |        |       |           |           |     |         |
| Sample Date: 29-DEC-04           |        |           |        |       |           |           |     |         |
| Matrix: SOIL                     |        |           |        |       |           |           |     |         |
| <b>PAH</b>                       |        |           |        |       |           |           |     |         |
| Naphthalene                      | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| 1-Methyl Naphthalene             | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| 2-Methyl Naphthalene             | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Phenanthrene                     | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Pyrene                           | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Quinoline                        | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Acridine                         | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Surr: 2-Fluorobiphenyl Surr      | 98     |           | 50-150 | %     | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Surr: Terphenyl Surr             | 98     |           | 50-150 | %     | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| <b>L237162-5 TH 38-S2</b>        |        |           |        |       |           |           |     |         |
| Sample Date: 29-DEC-04           |        |           |        |       |           |           |     |         |
| Matrix: SOIL                     |        |           |        |       |           |           |     |         |
| <b>PAH</b>                       |        |           |        |       |           |           |     |         |
| % Moisture                       | 23     |           | 0.1    | %     | 12-JAN-05 | 12-JAN-05 | JAP | R252387 |
| Acenaphthene                     | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Acenaphthylene                   | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Anthracene                       | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(a)anthracene               | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(a)pyrene                   | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(b)fluoranthene             | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(ghi)perylene               | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Benzo(k)fluoranthene             | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Chrysene                         | <0.1   |           | 0.1    | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Dibenzo(ah)anthracene            | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Fluoranthene                     | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Fluorene                         | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Indeno(1,2,3 cd)pyrene           | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Naphthalene                      | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| 1-Methyl Naphthalene             | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| 2-Methyl Naphthalene             | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Phenanthrene                     | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Pyrene                           | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Quinoline                        | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Acridine                         | <0.05  |           | 0.05   | mg/kg | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Surr: 2-Fluorobiphenyl Surr      | 94     |           | 50-150 | %     | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| Surr: Terphenyl Surr             | 98     |           | 50-150 | %     | 11-JAN-05 | 12-JAN-05 | JAP | R252802 |
| <b>L237162-6 TH 39-S2</b>        |        |           |        |       |           |           |     |         |
| Sample Date: 30-DEC-04           |        |           |        |       |           |           |     |         |
| Matrix: SOIL                     |        |           |        |       |           |           |     |         |
| <b>CCME BTEX + F1-F4</b>         |        |           |        |       |           |           |     |         |
| <b>CCME Total Hydrocarbons</b>   |        |           |        |       |           |           |     |         |
| F1 (C6-C10)                      | 210    |           | 5      | mg/kg |           | 13-JAN-05 |     |         |
| F1-BTEX                          | 140    |           | 5      | mg/kg |           | 13-JAN-05 |     |         |
| F2 (C10-C16)                     | 54     |           | 5      | mg/kg |           | 13-JAN-05 |     |         |
| F3 (C16-C34)                     | 41     |           | 5      | mg/kg |           | 13-JAN-05 |     |         |
| F4 (C34-C50)                     | <5     |           | 5      | mg/kg |           | 13-JAN-05 |     |         |
| Total Hydrocarbons (C6-C50)      | 310    |           | 5      | mg/kg |           | 13-JAN-05 |     |         |
| Chromatogram to baseline at nC50 | YES    |           |        |       |           | 13-JAN-05 |     |         |

# ENVIRO-TEST ANALYTICAL REPORT

| Sample Data/Parameters                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Result | Qualifier | D.L.  | Units | Extracted | Analyzed  | By  | Batch   |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------|-------|-------|-----------|-----------|-----|---------|
| <b>L237162-6 TH 39-S2</b><br>Sample Date: 30-DEC-04<br>Matrix: SOIL<br><b>CCME BTEX + F1-F4</b><br><b>CCME Total Extractable Hydrocarbons</b><br>Prep/Analysis Dates<br><b>CCME BTEX</b><br>Benzene<br>Toluene<br>Ethylbenzene<br>o-Xylene<br>Xylenes, m+p<br>Xylenes<br><br>% Moisture                                                                                                                                                                                |        |           |       |       |           |           |     |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |           |       |       | 07-JAN-05 | 13-JAN-05 | HDT | R252842 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1.2    |           | 0.005 | mg/kg | 06-JAN-05 | 06-JAN-05 | DVH | R251943 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 11     |           | 0.01  | mg/kg | 06-JAN-05 | 06-JAN-05 | DVH | R251943 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 13     |           | 0.01  | mg/kg | 06-JAN-05 | 06-JAN-05 | DVH | R251943 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 19     |           | 0.01  | mg/kg | 06-JAN-05 | 06-JAN-05 | DVH | R251943 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 26     |           | 0.02  | mg/kg | 06-JAN-05 | 06-JAN-05 | DVH | R251943 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 46     |           | 0.03  | mg/kg | 06-JAN-05 | 06-JAN-05 | DVH | R251943 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 20     |           | 0.1   | %     | 06-JAN-05 | 10-JAN-05 | DVH | R251915 |
| <b>L237162-7 TH 40-S2</b><br>Sample Date: 30-DEC-04<br>Matrix: SOIL<br><b>CCME BTEX + F1-F4</b><br><b>CCME Total Hydrocarbons</b><br>F1 (C6-C10)<br>F1-BTEX<br>F2 (C10-C16)<br>F3 (C16-C34)<br>F4 (C34-C50)<br>Total Hydrocarbons (C6-C50)<br>Chromatogram to baseline at nC50<br><b>CCME Total Extractable Hydrocarbons</b><br>Prep/Analysis Dates<br><b>CCME BTEX</b><br>Benzene<br>Toluene<br>Ethylbenzene<br>o-Xylene<br>Xylenes, m+p<br>Xylenes<br><br>% Moisture |        |           |       |       |           |           |     |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <5     |           | 5     | mg/kg |           | 13-JAN-05 |     |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <5     |           | 5     | mg/kg |           | 13-JAN-05 |     |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <5     |           | 5     | mg/kg |           | 13-JAN-05 |     |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 51     |           | 5     | mg/kg |           | 13-JAN-05 |     |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <5     |           | 5     | mg/kg |           | 13-JAN-05 |     |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 51     |           | 5     | mg/kg |           | 13-JAN-05 |     |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | YES    |           |       |       |           | 13-JAN-05 |     |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |           |       |       | 07-JAN-05 | 13-JAN-05 | HDT | R252842 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <0.005 |           | 0.005 | mg/kg | 06-JAN-05 | 06-JAN-05 | DVH | R251943 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <0.01  |           | 0.01  | mg/kg | 06-JAN-05 | 06-JAN-05 | DVH | R251943 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <0.01  |           | 0.01  | mg/kg | 06-JAN-05 | 06-JAN-05 | DVH | R251943 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <0.01  |           | 0.01  | mg/kg | 06-JAN-05 | 06-JAN-05 | DVH | R251943 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <0.02  |           | 0.02  | mg/kg | 06-JAN-05 | 06-JAN-05 | DVH | R251943 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <0.03  |           | 0.03  | mg/kg | 06-JAN-05 | 06-JAN-05 | DVH | R251943 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 26     |           | 0.1   | %     | 06-JAN-05 | 10-JAN-05 | DVH | R251915 |
| <b>L237162-8 TH 41-S2</b><br>Sample Date: 30-DEC-04<br>Matrix: SOIL<br><b>CCME BTEX + F1-F4</b><br><b>CCME Total Hydrocarbons</b><br>F1 (C6-C10)<br>F1-BTEX<br>F2 (C10-C16)<br>F3 (C16-C34)<br>F4 (C34-C50)<br>Total Hydrocarbons (C6-C50)<br>Chromatogram to baseline at nC50<br><b>CCME Total Extractable Hydrocarbons</b><br>Prep/Analysis Dates<br><b>CCME BTEX</b><br>Benzene                                                                                     |        |           |       |       |           |           |     |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 6      |           | 5     | mg/kg |           | 13-JAN-05 |     |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 6      |           | 5     | mg/kg |           | 13-JAN-05 |     |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 74     |           | 5     | mg/kg |           | 13-JAN-05 |     |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 24     |           | 5     | mg/kg |           | 13-JAN-05 |     |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <5     |           | 5     | mg/kg |           | 13-JAN-05 |     |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 100    |           | 5     | mg/kg |           | 13-JAN-05 |     |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | YES    |           |       |       |           | 13-JAN-05 |     |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |        |           |       |       | 07-JAN-05 | 13-JAN-05 | HDT | R252842 |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | <0.005 |           | 0.005 | mg/kg | 06-JAN-05 | 06-JAN-05 | DVH | R251943 |





## Reference Information

### Methods Listed (If applicable):

| ETL Test Code       | Matrix | Test Description                    | Preparation Method Reference(Based On) | Analytical Method Reference(Based On) |
|---------------------|--------|-------------------------------------|----------------------------------------|---------------------------------------|
| ETL-BTX,TVH-CCME-WP | Soil   | CCME BTEX                           |                                        | CCME CWS-PHC Dec-2000 - Pub# 1310     |
| ETL-TEH-CCME-WP     | Soil   | CCME Total Extractable Hydrocarbons |                                        | CCME CWS-PHC Dec-2000 - Pub# 1310     |
| ETL-TVH,TEH-CCME-WP | Soil   | CCME Total Hydrocarbons             |                                        | CCME CWS-PHC Dec-2000 - Pub# 1310     |

Analytical methods used for analysis of CCME Petroleum Hydrocarbons have been validated and comply with the Reference Method for the CWS PHC

Hydrocarbon results are expressed on a dry weight basis.

In cases where results for both F4 and F4G are reported, the greater of the two results must be used in any application of the CWS PHC guidelines and the gravimetric heavy hydrocarbons cannot be added to the C6 to C50 hydrocarbons.  
In samples where BTEX and F1 were analyzed, F1-BTEX represents a value where the sum of Benzene, Toluene, Ethylbenzene and total Xylenes has been subtracted from F1.

In samples where PAHs, F2 and F3 were analyzed, F2-Naphth represents the result where Naphthalene has been subtracted from F2. F3-PAH represents a result where the sum of Benzo(a)anthracene, Benzo(a)pyrene, Benzo(b)fluoranthene, Benzo(k)fluoranthene, Dibenzo(a,h)anthracene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Phenanthrene, and Pyrene has been subtracted from F3.

Unless otherwise qualified, the following quality control criteria have been met for the F1 hydrocarbon range:

1. All extraction and analysis holding times were met.
2. Instrument performance showing response factors for C6 and C10 within 30% of the response factor for toluene.
3. Linearity of gasoline response within 15% throughout the calibration range.

Unless otherwise qualified, the following quality control criteria have been met for the F2-F4 hydrocarbon ranges:

1. All extraction and analysis holding times were met.
2. Instrument performance showing C10, C16 and C34 response factors within 10% of their average.
3. Instrument performance showing the C50 response factor within 30% of the average of the C10, C16 and C34 response factors.
4. Linearity of diesel or motor oil response within 15% throughout the calibration range.

PAH,PANH-WP      Soil      PAH

EPA SW846 8270B Sep 1994,3550A  
Sep 1994

Samples are ground into sodium sulfate and extracted with acetone/dichloromethane using a combination of high frequency sonication and shake using a wrist-action shaker. After extract concentration, samples are analyzed by GC/MS.

\*\* Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.

### Chain of Custody numbers:

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

| Laboratory Definition Code | Laboratory Location                                   | Laboratory Definition Code | Laboratory Location |
|----------------------------|-------------------------------------------------------|----------------------------|---------------------|
| WP                         | Enviro-Test Laboratories - Winnipeg, Manitoba, Canada |                            |                     |

### GLOSSARY OF REPORT TERMS

*Surr - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in environmental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds. The reported surrogate recovery value provides a measure of method efficiency. The Laboratory warning units are determined under column heading D.L.*

*mg/kg (units) - unit of concentration based on mass, parts per million*

*mg/L (units) - unit of concentration based on volume, parts per million*

*< - Less than*

*D.L. - Detection Limit*

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

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

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

*UNLESS OTHERWISE STATED, SAMPLES ARE NOT CORRECTED FOR CLIENT FIELD BLANKS.*

*Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.*

*Enviro-Test Laboratories has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, Enviro-Test Laboratories assumes no liability for the use or interpretation of the results.*

**ENVIRO-TEST ANALYTICAL REPORT**

| Sample Details/Parameters                                                                                                                                                                                                                                   | Result                                                                             | Qualifier | DL                                                                             | Unit                                                                 | Extracted | Analyzed                                                                                                     | By                                                           | Batch                                                                                        |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------|----------------------------------------------------------------------|-----------|--------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------|
| L238164-1 TH 39<br>Sample Date: 11-JAN-05<br>Matrix: WATER<br>BTEX,TVH and TEH<br>Tot. Extr. Hydrocarbons (C11-C30)<br>TEH (C11-C30)<br>TVH (C5-C10)<br>Total Volatiles<br>BTEX<br>Benzene<br>Toluene<br>Ethylbenzene<br>m+p-Xylenes<br>o-Xylene<br>Xylenes | 1.2<br><br>40<br><br>2.6<br>2.6<br>1.4<br>1.4<br>2.2<br>3.5                        |           | 0.1<br><br>0.1<br><br>0.0005<br>0.0005<br>0.0005<br>0.0005<br>0.0005<br>0.0005 | mg/L<br><br>mg/L<br><br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L | 17-JAN-05 | 18-JAN-05<br><br>13-JAN-05<br><br>13-JAN-05<br>13-JAN-05<br>13-JAN-05<br>13-JAN-05<br>13-JAN-05<br>13-JAN-05 | HDT<br><br>TJJ<br><br>TJJ<br>TJJ<br>TJJ<br>TJJ<br>TJJ<br>TJJ | R253851<br><br>R253139<br><br>R253139<br>R253139<br>R253139<br>R253139<br>R253139<br>R253139 |
| L238164-2 TH 40<br>Sample Date: 07-JAN-05<br>Matrix: WATER<br>BTEX,TVH and TEH<br>Tot. Extr. Hydrocarbons (C11-C30)<br>TEH (C11-C30)<br>TVH (C5-C10)<br>Total Volatiles<br>BTEX<br>Benzene<br>Toluene<br>Ethylbenzene<br>m+p-Xylenes<br>o-Xylene<br>Xylenes | 0.9<br><br><0.1<br><br><0.0005<br><0.0005<br><0.0005<br>0.0007<br>0.0016<br>0.0024 |           | 0.1<br><br>0.1<br><br>0.0005<br>0.0005<br>0.0005<br>0.0005<br>0.0005<br>0.0005 | mg/L<br><br>mg/L<br><br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L | 17-JAN-05 | 18-JAN-05<br><br>13-JAN-05<br><br>13-JAN-05<br>13-JAN-05<br>13-JAN-05<br>13-JAN-05<br>13-JAN-05<br>13-JAN-05 | HDT<br><br>TJJ<br><br>TJJ<br>TJJ<br>TJJ<br>TJJ<br>TJJ<br>TJJ | R253851<br><br>R253139<br><br>R253139<br>R253139<br>R253139<br>R253139<br>R253139<br>R253139 |
| L238164-3 TH 41<br>Sample Date: 07-JAN-05<br>Matrix: WATER<br>BTEX,TVH and TEH<br>Tot. Extr. Hydrocarbons (C11-C30)<br>TEH (C11-C30)<br>TVH (C5-C10)<br>Total Volatiles<br>BTEX<br>Benzene<br>Toluene<br>Ethylbenzene<br>m+p-Xylenes<br>o-Xylene<br>Xylenes | 29<br><br>1.8<br><br>0.014<br>0.0008<br>0.13<br><0.0005<br>0.0021<br>0.0021        |           | 0.1<br><br>0.1<br><br>0.0005<br>0.0005<br>0.0005<br>0.0005<br>0.0005<br>0.0005 | mg/L<br><br>mg/L<br><br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L<br>mg/L | 17-JAN-05 | 18-JAN-05<br><br>13-JAN-05<br><br>13-JAN-05<br>13-JAN-05<br>13-JAN-05<br>13-JAN-05<br>13-JAN-05<br>13-JAN-05 | HDT<br><br>TJJ<br><br>TJJ<br>TJJ<br>TJJ<br>TJJ<br>TJJ<br>TJJ | R253851<br><br>R253139<br><br>R253139<br>R253139<br>R253139<br>R253139<br>R253139<br>R253139 |
| L238164-4 TH 42<br>Sample Date: 11-JAN-05<br>Matrix: WATER<br>BTEX,TVH and TEH<br>Tot. Extr. Hydrocarbons (C11-C30)<br>TEH (C11-C30)<br>TVH (C5-C10)                                                                                                        | 3.5                                                                                |           | 0.1                                                                            | mg/L                                                                 | 17-JAN-05 | 18-JAN-05                                                                                                    | HDT                                                          | R253851                                                                                      |

# ENVIRO-TEST ANALYTICAL REPORT

[illegible]

## Reference Information

### Methods Listed (If applicable):

| ETL Test Code                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Matrix | Test Description                  | Preparation Method Reference(Based On) | Analytical Method Reference(Based On) |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|-----------------------------------|----------------------------------------|---------------------------------------|
| BTX-WP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Water  | BTEX                              |                                        | EPA SW846,5030,8015                   |
| <p>Volatile organic compounds are extracted (purged) by bubbling nitrogen through a water sample. The purged sample components are trapped in a tube containing a sorbent material. When purging is complete, the tube is heated and back flushed with helium to desorb the trapped compounds onto a gas chromatographic column. The gas chromatograph is temperature programmed to separate the method analytes which are then detected with a photoionization detector (PID) followed by a flame ionization detector (FID).</p>                                                                                                                                                                                                                                                                            |        |                                   |                                        |                                       |
| TEH-WP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Water  | Tot. Extr. Hydrocarbons (C11-C30) |                                        | EPA SW846,8000A                       |
| <p>This is the semi-quantitative determination of total extractable hydrocarbons (TEH) C11-C30 in water, soil and sediment samples. A water sample volume of 240 mLs in a 250 mL glass amber bottle is shaken with 2-4 mL hexane for one hour on a wrist action shaker, then sonicated for 5 minutes. A soil/sediment sample of 25 grams is weighed out with sodium sulphate and extracted with 10 mLs hexane/acetone for one hour on a wrist action shaker then sonicated for 5 minutes. After extraction, the solvent layer is drawn off and analysed against a calibrated diesel standard on a gas chromatograph equipped with a flame ionization detector. All results are reported on a dry weight basis. By special request, the result can be calculated on C10-C24 to meet specific regulations.</p> |        |                                   |                                        |                                       |
| TVH-WP                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Water  | TVH (C5-C10)                      |                                        | EPA SW846,5030,8015                   |

Volatile organic compounds are extracted (purged) by bubbling nitrogen through a water sample. The purged sample components are trapped in a tube containing a sorbent material. When purging is complete, the tube is heated and back flushed with helium to desorb the trapped compounds onto a gas chromatographic column. The gas chromatograph is temperature programmed to separate the method analytes which are then detected with a photoionization detector (PID) followed by a flame ionization detector (FID).

**\*\* Laboratory Methods employed follow in-house procedures, which are generally based on nationally or internationally accepted methodologies.**

### Chain of Custody numbers:

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

| Laboratory Definition Code | Laboratory Location                                   | Laboratory Definition Code | Laboratory Location |
|----------------------------|-------------------------------------------------------|----------------------------|---------------------|
| WP                         | Enviro-Test Laboratories - Winnipeg, Manitoba, Canada |                            |                     |

### GLOSSARY OF REPORT TERMS

**Surr** - A surrogate is an organic compound that is similar to the target analyte(s) in chemical composition and behavior but not normally detected in environmental samples. Prior to sample processing, samples are fortified with one or more surrogate compounds.

The reported surrogate recovery value provides a measure of method efficiency. The Laboratory warning units are determined under column heading D.L.

mg/kg (units) - unit of concentration based on mass, parts per million

mg/L (units) - unit of concentration based on volume, parts per million

< - Less than

D.L. - Detection Limit

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

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

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

*UNLESS OTHERWISE STATED, SAMPLES ARE NOT CORRECTED FOR CLIENT FIELD BLANKS.*

*Although test results are generated under strict QA/QC protocols, any unsigned test reports, faxes, or emails are considered preliminary.*

*Enviro-Test Laboratories has an extensive QA/QC program where all analytical data reported is analyzed using approved referenced procedures followed by checks and reviews by senior managers and quality assurance personnel. However, since the results are obtained from chemical measurements and thus cannot be guaranteed, Enviro-Test Laboratories assumes no liability for the use or interpretation of the results.*