

**Updated Site Management Plan (2014)  
Final Version**  
Hounsfield Heights – Briar Hill Community  
CALGARY, Alberta

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Prepared by:  
Clifton Associates Ltd.  
2222 – 30<sup>th</sup> Avenue NE  
Calgary, Alberta T2E 7K9

Prepared for:  
Sears Canada Inc.  
Department 702 CE Real Estate  
290 Young Street  
Toronto, Ontario M5B 2C3

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Sears Canada Inc.  
Alberta Environment  
Alberta Health Services  
City of Calgary  
Hounsfield Heights Gas Plume Committee  
Intrinsic Environmental Inc.  
Clifton Associates Ltd.

## Executive Summary

In 1998, petroleum hydrocarbons compounds (PHCs) were identified within the soils and groundwater beneath the Kal-Tire Automotive Centre and North Hill Shopping Centre parking lot (Mall area), located at 1614 - 14<sup>th</sup> Avenue NW. PHCs were also later found in the subsurface soils and groundwater between 14<sup>th</sup> Avenue NW and 10<sup>th</sup> Avenue NW, and, between 14<sup>th</sup> Street NW and 17A Street NW. The aforementioned areas include Lions Park and the community of Hounsfield Heights – Briar Hill (Hounsfield Heights area) in Calgary, Alberta. The overall Site (and when the term “Site” is used in this document) is comprised of both the Mall area and the Hounsfield Heights area.

The suspected sources of the PHCs are former fuel underground storage tanks (USTs) located at the Kal-Tire Automotive Center, formerly operated as a Sears Service Centre and Sunoco Service Station. Both gasoline and diesel fuels were sold at the facility. The original tanks were removed in 1984 and the replacement tanks were removed in 1995, when the service station was decommissioned.

The Updated Site Management Plan (2014) presented in this document is based on the environmental work completed for Sears Canada Inc. (Sears) in both the Mall area and Hounsfield Heights area by Clifton Associates Ltd. (Clifton), and other consultants. The environmental work completed at the Site included the characterization of portions of the underlying geology as well as a delineation of both the horizontal and vertical extent of contamination to the environmental standards of the time.

The standards that were applicable at the time of the original SMP were the Alberta Environment and Sustainable Resource Development (AESRD) 2001 Petroleum Storage Tank (PST) Guidelines (AESRD 2001 PST Guidelines).

In 2007, AESRD implemented a new set of guideline standards for remediation. The *Alberta Tier 1 Soil and Groundwater Remediation Guidelines* were first introduced in 2007 (AESRD 2007 Tier 1 Guidelines) and have since been modified in 2010 (AESRD 2010 Tier 1 Guidelines). With the implementation of the AESRD 2010 Tier 1 Guidelines, AESRD decided that the previously selected, preferred method of

remediation for the Site, Natural Attenuation, was no longer an acceptable alternative.

On 20 July 2012, AESRD requested to Sears that the following points be incorporated into a new Updated SMP (2014) for the Hounsfeld Heights area and further suggested that a separate updated SMP be created for the Mall area:

- “Fully delineate the dissolved plume south of 11<sup>th</sup> Avenue”;
- “Sample the groundwater adjacent to where it discharges to the surface in the south (sic) portion of zone 3 (sic) and evaluate it for risk to ecological receptors”;
- “Delineate the soil gas/vapour plume in Zones 1, 2 and 3”;
- “Access potential risks from ingress of petroleum hydrocarbon vapours to indoor air in areas where the guidelines are exceeded for the vapour inhalation pathway, and in areas where it has been determined that elevated soil gas/vapours are present”;
- “Establish a soil gas monitoring program on properties that may be at risk from vapour ingress to indoor air. Compare current needs with those previously identified in the Clifton April 5, 2007 response to Alberta Environment regarding the soil vapor monitoring”;
- “Implement additional remediation techniques to deal with the expanding dissolved phase plume. As discussed, this could include enhanced bioremediation. Monitored natural attenuation is not appropriate while LPHC is being removed and when the dissolved plume is not stable. Multiple remediation approaches are needed to address the petroleum hydrocarbon impacts”;
- “Review the groundwater monitoring and sampling program to ensure adequate coverage based on current conditions and trends”; and,
- “Apply the Tier 1 Guidelines to monitoring well locations along 11<sup>th</sup> Avenue NW and include these wells in the groundwater monitoring and sampling program”.

Clifton has structured this Updated SMP (2014) to address the comments of AESRD, as well as to identify and acquire additional data regarding the contaminant plume under the current regulatory guidelines, so that Sears may remediate the plume to below any current action levels.

The main objective of the Updated SMP (2014) will be to continue to address, to the extent practicable, the removal of the liquid phase hydrocarbons (LPH) and the dissolved PHCs from the groundwater. This will be accomplished ultimately by the simultaneous application of diverse remediation techniques.

At the conclusion of the implementation of this Updated SMP (2014), Sears expects to the extent practicable, to attain the following goals:

- Fully delineate the dissolved plume south of 11<sup>th</sup> Avenue;
- Sample the groundwater adjacent to where it discharges to the surface in the southern portion of Zone 3 and evaluate it for risk to human and ecological receptors;
- Develop a more detailed geologic and hydrogeologic model for the Site to test against remedial alternatives;
- Delineate the soil vapour plume in Zones 1, 2 and 3 where the vapour inhalation pathway is exceeded in the area that the clayey silt unit thins or pinches out;
- Assess potential risks from the ingress of petroleum hydrocarbon vapours to indoor air in areas identified in the previous bullet;
- Establish a soil gas monitoring program on properties that may be at risk from vapour ingress to indoor air;
- Complete an update of the Health Risk Assessment (HRA) and the Tier 3 Guidelines developed by Intrinsic Environmental Sciences Inc. (Intrinsic). This update will be based on the current AESRD 2014 Tier 2 Guidelines and will include gasoline and diesel fuel constituents in both the soils and groundwater;
- If LPH remains in the Hounsfield Heights area, complete removal of the LPH by refurbishing existing extraction wells, installing additional extraction wells and connecting them to the currently operating dual-phase extraction system (DPVE), or commissioning a second DPVE system or other technology as necessary;

- Implement additional remediation techniques to deal with the expanding dissolved phase plume. Multiple remediation approaches may be needed to address the petroleum hydrocarbon impacts;
- Review the groundwater monitoring and sampling program to ensure adequate coverage based on current conditions and trends; and,
- Apply the Tier 2 Guidelines to monitoring well locations along 11<sup>th</sup> Avenue NW, if applicable under the revised HRA, and include these wells in the groundwater monitoring and sampling program.

Once the LPH has been removed, the monitoring program and modeling activities will help to identify whether the potential reduction in contaminant concentrations is caused by natural attenuation, or a different cause (i.e., plume expansion, contaminant dilution, etc.).

If it is confirmed that the groundwater plume is no longer expanding, and after contaminant levels in the dissolved phase groundwater plume have been reduced below all appropriate Site guidelines, a confirmatory groundwater monitoring and sampling program will be implemented to verify that the groundwater beneath the Site has met these criteria. It is envisioned that the confirmatory groundwater monitoring and sampling program will last a minimum of three years and will consist of the quarterly sampling of selected, indicator monitoring wells.

Following the successful completion of the confirmatory monitoring program, a request will be made to AESRD to decommission the remaining monitoring wells in the area, as well as the DPVE system (s), and any other remedial equipment associated with the Site.

It is expected that after the completion of the remedial activities, the residual hydrocarbons beneath the Site that are below all appropriate guidelines will continue to decrease over time through natural attenuation.

As part of this Updated SMP (2014), the existing communications plan will be updated to disseminate the findings of the investigations and the proposed SMP activities. The communications plan recipients will include regulators, elected officials, residents, other Stakeholders and the Hounsfield Heights-Briar Hill Community Association, Gas Plume Committee (GPC).

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## List of Acronyms

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ACMs	Asbestos-Containing Materials
AENV	Alberta Environment
AEP	Alberta Environmental Protection
AESRD	Alberta Environment and Sustainable Resource Development
AESRD 1994 PST Guidelines	AESRD 1994 Remediation Guidelines for Petroleum Storage Tank Sites
AESRD 2001 PST Guidelines	AESRD 2001 Remediation Guidelines for Petroleum Storage Tank Sites
AESRD 2007 Tier 1 Guidelines	AESRD 2007 Alberta Tier 1 Soil and Groundwater Remediation Guidelines
AESRD 2007 Tier 2 Guidelines	AESRD 2007 Alberta Tier 2 Soil and Groundwater Remediation Guidelines
AESRD 2010 Tier 1 Guidelines	AESRD 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines
AHS	Alberta Health Services
asl	above sea level
AST	Above ground Storage Tank
ATS	Alberta Township System
Beck	Beck Environmental Drilling and Environmental Services Ltd
bgs	below ground surface
BH	Borehole
BTEX	Benzene, Toluene, Ethylbenzene, Xylene
CaCO <sub>3</sub>	Calcium Carbonate
CCME	Canadian Council of Ministers of the Environment
Clifton	Clifton Associates Ltd.
CO <sub>2</sub>	Carbon Dioxide
COCs	Contaminants of Concern
CSM	Conceptual Site Model
CSA	Canadian Standards Association
DC	Direct Control

1, 2 - DCA	1, 2 - Dichloroethane
DPVE	Duel-Phase Vapour Extraction System
DUA	Domestic Use Aquifer
EDC	1, 2 - Dichloroethane
ELC	Environmental Law Center
EPA	Environmental Protection Agency
ERCB	Energy Resources Conservation Board
ERIS	Environmental Risk Information Services
ESA	Environmental Site Assessment
ESAR	Environmental Site Assessment Repository
EX	Extraction Well
F1 – F2	Petroleum Hydrocarbon Fractions F1 – F2
F1 – F4	Petroleum Hydrocarbon Fractions F1 – F4
FAL	Freshwater Aquatic Life
Fe <sup>2+</sup>	Ferrous (Iron) Oxide II
Fe <sup>3+</sup>	Ferric (Iron) Oxide III
FIPs	Fire Insurance Plans
FOIP	Freedom of Information and Protection of Privacy
FUD	Special Purpose Future Urban Development
GEE	Ground Effects Environmental Services Inc.
GIS	Groundwater Information System
GPC	Hounsfield Height – Briar Hill Community Gas Plume Committee
ha	hectare
HMM	Hobbs Miller Maat Inc.
Hounsfield Heights Area	Hounsfield Heights – Briar Hill Community
H <sub>2</sub> O <sub>2</sub>	Hydrogen Peroxide
HRA	Health Risk Assessment
HSAs	Hollow Stem Augers
H <sub>2</sub> S	Hydrogen Sulfide
Intrinsik	Intrinsik Environmental Services Inc.
ISCO	In-Situ Chemical Oxidation
LEL	Lower Explosive Limit
LPH	Liquid Petroleum Hydrocarbons

LPHC	Liquid Petroleum Hydrocarbons
LRT	Light Rail Transit
Mall area	North Hill Mall portion of the Site area
M-CG	Multi-Residential – Contextual Grade – Oriented District
M-CI	Multi-Residential – Contextual Low – Profile District
mg/kg	milligrams per kilogram
mg/L	milligrams per liter
Mn	Magnesium
MPVE	Multi-Phase Vacuum Extraction
MSDS	Material Safety Data Sheet
msl	mean sea level
MTBE	methyl tertiary butyl ether
MUST	Management of Underground Storage Tanks
N <sub>2</sub>	Nitrogen
NO <sub>3</sub> <sup>-</sup>	Nitrate
NG	No Guideline Available
NPRI	National Pollutant Release Inventory
O <sub>2</sub>	Oxygen
O <sub>3</sub>	Ozone
ODS	Ozone-depleting Substances
OH <sup>-</sup>	Oxide Radical
OWS	Oil/Water Separator
PAHs	Polycyclic Aromatic Hydrocarbons
PCBs	Polychlorinated Biphenyls
PCS	Petroleum Contaminated Soils
PHC	Petroleum Hydrocarbon
PID	Photo-ionization Detector
ppb	parts per billion
ppm	parts per million
PST	Petroleum Storage Tank
PTMAA	Petroleum Tank Management Association of Alberta
PVC	Polyvinyl Chloride

RC-1	Residential Contextual Narrow Parcel One Dwelling District
ROW	Right of Way
RMC	Risk Management Criteria
RMP	Risk Management Plan
RPD	Relative Percent Difference
S-CI	Special Purpose – Community Institutional District
S-CS	Special Purpose – Community Service District
SEACOR	SEACOR Environmental Engineering Inc.
Sears	Sears Canada Inc.
SG	Soil Gas
Site	Mall area and Hounsfield Heights area combined
SMP	Site Management Plan
SO <sub>4</sub> <sup>3+</sup>	Sulfate
S-SPR	Special Purpose – School, Park, Community Reserve District
SVE	Soil Vapour Extraction
Tier 3 Guidelines	Risk guidelines developed by Intrinsik in the HRA
TCLP	Toxicity Characteristic Leaching Procedure
TDS	Total Dissolved Solids
TPH	Total Petroleum Hydrocarbons
UFFI	Urea Formaldehyde Foam Insulation
USDA	United States Department of Agriculture
UST	Underground Storage Tank
VOCs	Volatile Organic Compounds

## 1.0 Introduction

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A SMP to address PHC impacts beneath both the Mall area and the Hounsfield Heights area in Calgary, Alberta was submitted in 2006 to AENV, now known as AESRD. While AENV might be the appropriate acronym to use in this document to represent a specific referenced period, for the sake of simplicity, AESRD will be used though out the document no matter the referenced period and it should be understood to represent the same organization as it changed through time.

As a further note, when the term “Site” is used in this document, it is meant to mean the entirety of both the Mall area and the Hounsfield Heights area (Figure 1).

The 2006 version of the SMP was accepted by AESRD with conditions. In a communication dated 27 June 2007, AESRD accepted revised Site-specific soil and groundwater guidelines generated in the 2006 SMP with the following conditions:

“Inclusive in Alberta Environment’s acceptance of the SMP are the site specific remediation objectives for zones (sic) 1 and 2 derived by Intrinsik Environmental Inc. for BTEX in soil and groundwater. Soil Remediation objectives for F1 and F2 in Zones 1 and 2 will require compliance with the *Alberta Tier 1 (2007)* management limit. Remediation criteria for zone (sic) 3 are as defined by the *2007 Alberta Tier 1 Soil and Groundwater Remediation Guidelines*” (AESRD 2007 Tier 1 Guidelines). BTEX is an acronym for benzene, toluene, ethylbenzene, and total xylenes, while PHC fractions F1 and F2 are represented by F1 and F2, respectively.

The impacts to the Hounsfield Heights area were encountered in the subsurface between 14<sup>th</sup> Avenue NW and 10<sup>th</sup> Avenue NW and, between 14<sup>th</sup> Street NW and 17A Street NW. The aforementioned area includes Lions Park and the Hounsfield Heights area.

On 20 July 2012, a communication from AESRD was received by Mr. Greg Paliouras, Divisional Vice President of Construction, Energy, and Maintenance with Sears Canada Inc. (Sears). The communication required that actions be taken by Sears, due to the change in the guidelines under the AESRD 2010 *Alberta Tier 1 Soil and Groundwater Remediation Guidelines* (AESRD 2010 Tier 1 Guidelines), since the acceptance by AESRD of the 2006 SMP.

One of the requirements in the AESRD correspondence was to develop a new SMP for the Hounsfield Heights area and that it be a separate document from the SMP for the Mall area. The 2006 SMP and a previous update on 18 July 2011 do not address the changes at the Site or the necessity of additional assessment, monitoring, and remediation activities.

Therefore, as requested by AESRD and at the direction of Mr. Paliouras of Sears, Clifton has prepared the following Updated SMP (2014).

The Updated SMP (2014) presented in the following sections is based on historical and current environmental work conducted at the Site by Clifton and other consultants, including: Cantox Environmental Inc. (now known as Intrinsik Environmental Sciences Inc. - Intrinsik), Hobbs Miller Maat Inc. (HMM), and SEACOR Environmental Engineering Inc. (SEACOR).

For the purpose of this Updated SMP (2014), the Site will consist of two distinct areas – the Mall area (Figure 2) and the Hounsfield Heights area (Figure 3). Some discussion of the Mall area is included in this Updated SMP (2014) so that the reader may understand the source area and how it relates to the Hounsfield Heights area.

The Mall area will be defined: to the north by the southern ROW of 16<sup>th</sup> Avenue NW; to the east by the eastern ROW of 14<sup>th</sup> Street NW; to the south by the northern edge of the LRT line within Lions Park; and, to the west by the western edge of the mall property and a line extending south to the northern edge of the LRT line within Lions Park.

The Hounsfield Heights area will be defined: to the north as the southern edge of the LRT line within Lions Park; to the east by the eastern ROW of 14<sup>th</sup> Street NW; to the south by the southern ROW of 10<sup>th</sup> Avenue NW and a line extending west to the western ROW of 17A Street NW; and, to the west by the western ROW of 17A Street NW and a line extending north to the southern edge of the LRT line within Lions Park.

## 2.0 Background

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This document summarizes the results of the previous assessments and remedial activities, and the proposed site management activities planned by Sears to address the identified hydrocarbon impacts at the Site. The objective of this Updated SMP (2014) is to remediate hydrocarbon impacts to the degree practicable and to ensure that, given Clifton's understanding of the current Site conditions, there is no potential risk to any occupants, buildings, or other receptors.

The location of all referenced soil borings and groundwater monitoring wells in the Hounsfield Heights area is shown on Figure 4. A summary of various environmental reports completed since 1996 is presented in Appendix A. A complete set of borehole logs for the Hounsfield Heights area is included in Appendix B, for reference.

### 2.1 Regulatory Guideline History

In 1996, when SEACOR was retained by Sunoco to complete the first ESA at the former service station located on Sears' property, the applicable guidelines for the Site were the AESRD 1994 *Remediation Guidelines for Petroleum Storage Tank Sites* (AESRD 1994 PST Guidelines).

After October 2001, the applicable guidelines became the AESRD *Risk Management Guidelines for Petroleum Storage Tank Sites*, known as the AESRD 2001 PST Guidelines. At the time of the writing of the original SMP, these guidelines were adopted as the applicable criteria for the Mall area. Clifton later retained Intrinsic to complete a community-wide HRA based on the AESRD 2001 PST Guidelines.

Subsequently, Intrinsic developed Site-specific Tier 3 Guidelines for benzene and PHC fraction F1 that better captured the unique characteristics of the Hounsfield Heights area, including the depth of the PHC impacts, the soil stratigraphy, and the soil properties. The Tier 3 Guidelines were developed under the guidance documents prepared by AESRD that were in place at the time and based on the AESRD 2001 PST Guidelines.

AESRD accepted with conditions the revised Site-specific soil and groundwater guidelines (Tier 3 Guidelines) for Zones 1 and 2, which consisted of benzene and



PHC fraction F1 in the groundwater and benzene in the soils, on 27 June 2007. The acceptance also detailed that the “Soil Remediation objectives for F1 and F2 in zones (sic) 1 and 2 will require compliance with the *Alberta Tier 1 (2007)* management limit. Remediation criteria for zone (sic) 3 are as defined by the *2007 Alberta Tier 1 Soil and Groundwater Remediation Guidelines*.”

Risk management and remedial activities were completed between 2003 and 2007 within the Mall area and were regulated by the 2001 PST Guidelines.

In June 2007, AESRD introduced the AESRD 2007 Tier 1 Guidelines, and the *Alberta Tier 2 Soil and Groundwater Remediation Guidelines* (AESRD 2007 Tier 2 Guidelines). The remedial excavation completed at the Mall area in 2007 was “grandfathered in” and regulated by the AESRD 2001 PST Guidelines.

The most recent revision to the guidelines is the AESRD 2010 Tier 1 Guidelines. These guidelines are now the applicable guidelines for the Site with the exception of Zone 1 and Zone 2 within the Hounsfield Heights area, which are subject to the Tier 3 Guidelines developed by Intrinsic, for concentrations of benzene in soils and concentrations of benzene and PHC fraction F1 in the groundwater.

The remainder of the Site and surrounding area is governed by the AESRD 2010 Tier 1 Guidelines, including all of 11<sup>th</sup> Avenue NW.

Concentrations of toluene, ethylbenzene, xylenes, PHC fractions F2 in groundwater; and, toluene, ethylbenzene, xylenes and PHC fractions F1 to F4 for soils beneath Zones 1 and 2 will need to be compared to the above mentioned criteria unless additional health risk assessment work is completed to prove that a pathway to a receptor is incomplete.

## **2.2 Investigative History of North Hill Shopping Centre and Kal-Tire Automotive Centre**

The Kal-Tire Automotive Centre, located at 1614 – 14<sup>th</sup> Avenue NW in Calgary Alberta, was originally developed as a service station and automotive centre in 1958. The service station was located at the North Hill Shopping Centre on a property owned by Sears and operated as a Sears Service Centre from 1958 to 1984. From 1984 to 1995, the location was operated under license as a Sunoco Service Station.

An addition to the automotive centre building was constructed in 1982 and a separate gas bar kiosk was added in 1989. The original USTs were replaced in 1984 and in October 1995, fuel storage and dispensing facilities at the gas bar were decommissioned. The former Sears Service Centre continues operating at the Sears property under license to Kal-Tire Automotive Centre.

Several ESAs were conducted at the North Hill Shopping Centre and adjacent properties between October 1995 and May 1998 by SEACOR, on behalf of Sunoco Inc., to determine the nature and extent of subsurface PHCs.

Between 1996 and 1998, a total of 55 boreholes (BH1 to BH55) were drilled by SEACOR. Twenty-nine of these boreholes were completed as monitoring wells. BH1 to BH20 were drilled close to the Kal-Tire building; BH21 to BH30 and BH38 to BH49 were drilled within the parking lot (Bentall property); and, BH31 to BH37 and BH50 to BH55 were drilled within the City of Calgary property (14<sup>th</sup> Avenue NW and Lions Park). The applicable guidelines of the time were the 1994 PST Guidelines.

Findings of the ESA have been previously reported by SEACOR in the report entitled *Environmental Activities Synthesis Report - October 1995 to August 1997*, dated August 1997; and, within several off-Site investigation reports from June 1997 to April 1998.

Subsequently, Clifton was retained by Sears in September 1998 to review the findings of the former investigations, to locate and monitor the SEACOR wells, and to complete a supplementary ESA within the Mall area.

In October 1998, a total of 18 boreholes were drilled within the Mall area (BH201 to BH205; and, BH301 to BH304) and City of Calgary (BH206 to BH214) properties by Clifton. All boreholes were completed as monitoring wells.

The findings of the monitoring and sampling event and supplementary ESA have been documented in reports entitled *Site Monitoring Report - September 1998*, and *Supplementary Environmental Site Assessment Former Sears Gas Bar*, dated 29 September 1998 and 18 June 1999, respectively. The ESAs identified PHCs beneath the Mall area in the soil and groundwater at concentrations that did not meet the Level II Risk Management Criteria contained in the AESRD 1994 PST Guidelines

for the vapour inhalation pathway through coarse-grained soil, which were the guidelines applicable at the time. The contaminant of concern was primarily benzene, but LPH were also encountered.

In November 1998, Clifton drilled and installed monitoring wells within the parking lot (BH401 to BH413) to a maximum depth of approximately 8.8 m bgs in the southeastern corner of the mall, within the Cadillac Fairview property. Eight of the samples submitted for the analysis of PHCs exceeded the AESRD 1994 PST Guidelines. Two of the groundwater samples collected exceeded the benzene concentration limits of the applicable guidelines.

In 2001, the AESRD 1994 PST Guidelines were updated and the AESRD 2001 PST Guidelines became the applicable guidelines for future activities at the Mall area.

Between 2000 and 2004, HMM was contracted by Sears to undertake remediation of the Mall area properties. HMM constructed an in-situ remediation system during the summer of 2000 and active remediation began in early September 2000. Progress of HMM's remedial activities have been presented in *Progress Reports 1 to 9*, dated 14 November 2000 to 15 December 2004, respectively.

HMM's remedial program included the installation of 35 horizontal injection wells and 40-50 vertical injection wells. HMM injected liquid bio-inoculum and nutrients into the wells to stimulate the biodegradation of PHCs. An aeration system was also installed to provide oxygen, stimulating biodegradation rates in the saturated and vadose zones.

The impacted clay zones beneath the Mall area was pneumatically fractured by HMM in 2002, resulting in a release of LPH and PHC vapours. Correspondingly, PHCs within the soil matrix declined.

HMM estimated that 80-90% of the PHCs present in the soils were removed from beneath the Mall area through June 2004. A residual "hotspot" in the former tank nest was excavated and remediated in 2003. This hotspot was located under concrete slabs, which prevented the *in-situ* system from operating as designed. This location, thought to be the source, was also the location of the LPH found in earlier investigations.

Clifton conducted further borehole drilling and monitoring well installation to determine the conditions beneath the Mall area in February 2004. Sixteen boreholes were completed (BH1001 to BH1016), with eleven completed as monitoring wells. Forty-eight soil samples were submitted for laboratory analysis of PHC concentrations. The soil and groundwater results indicated that at least one sample from each borehole had concentrations of at least one of the following compounds - benzene, toluene, ethyl benzene, or xylenes that did not meet the applicable criteria. In addition, LPH was found in two monitoring wells that had been installed in the northwestern portion of the Mall area, within the parking lot.

In May 2004, Clifton advanced eight boreholes (BH1201 to BH1208) to a maximum depth of approximately 15.2 m bgs (BH1204 to BH1207) and completed six of them (BH1203 to BH1208) as monitoring wells. Fifteen soil samples were submitted for laboratory analyses of BTEX, PHC fractions F1 to F4 and lead. One sample collected did not meet the applicable AESRD 2001 PST Guidelines for benzene, toluene, and total xylenes. Six soil samples collected from the boreholes did not meet the applicable AESRD 2001 PST Guidelines for benzene.

In June and December 2004, HMM conducted two further remedial excavations to remove residual “hotspots”. The June excavation was near BH1010, and approximately 770 m<sup>3</sup> of impacted soils were stockpiled for treatment by HMM. The December excavation was near BH1007, and approximately 875 m<sup>3</sup> of impacted soils were stockpiled for treatment in the southwest parking lot area.

In January 2005, Clifton advanced five boreholes (BH1401 to BH1405) to a maximum depth of approximately 7.6 m bgs and completed all of them as monitoring wells. Five soil samples were submitted for laboratory analyses of BTEX and PHC fractions F1 to F4. The five soil samples analyzed met the applicable AESRD 2001 PST Guidelines.

Clifton completed five additional boreholes (BH1501 to BH1505) in July 2005 to determine both the northern and southern extent of impact in the Mall area. Four boreholes were drilled along the southern property boundary and one was completed along the northern edge of the parking area, adjacent to the mall. BH1501 and BH1503 were completed as monitoring wells. Nine soil samples were submitted for laboratory analysis. Four of the soil samples collected met the applicable criteria,

while the remaining five soil samples exceeded benzene concentrations. One soil sample also exceeded toluene, xylenes, and PHC fraction F1 concentrations.

Activities that occurred after the implementation of the 2006 SMP are discussed in Section 5.1.1.

### **2.3 Investigative History of Hounsfield Heights - Briar Hill Area**

Between 1998 and 2012, several ESAs were completed on properties owned by the City of Calgary, including, 13<sup>th</sup> Avenue NW, and Lions Park. The ESAs were completed to evaluate the presence of subsurface PHCs beneath these properties.

The completed ESAs identified the presence of LPH underlying City of Calgary property in two monitoring wells (BH213 and BH214) located on 13<sup>th</sup> Avenue NW. Subsequently, a program was implemented to recover LPH from these monitoring wells as part of a plan to address identified PHC impacts beneath this area. Recovery of LPH from these monitoring wells has been ongoing since October 1998.

In November 2002, a supplemental ESA was conducted to characterize and further delineate the extent of the previously identified subsurface PHC impacts. Ten additional groundwater monitoring wells (BH501 to BH510) were installed on City of Calgary property.

LPH was encountered in one monitoring well (BH509) located on 16<sup>th</sup> Street NW, and in another monitoring well (BH510) located in the alley between the 16<sup>th</sup> Street NW and 15<sup>th</sup> Street NW. The ongoing LPH recovery was expanded to include the above two monitoring wells. In addition, soil and groundwater samples were found to contain concentrations of PHCs that did not meet the AESRD 2001 PST Guidelines for residential land use and generic hydrocarbon criteria for the vapour inhalation pathway in fine-grained soils.

On 16 July 2003, Sears held a meeting and gave a presentation to the owners and occupants of properties located south of 13<sup>th</sup> Avenue NW, between 16A Street NW and 15<sup>th</sup> Street NW. At that meeting, Sears presented the results of the previous environmental investigations, including soil and groundwater conditions, and outlined plans for further investigations to be conducted in the fall of 2003. In addition, an offer was extended by Sears to property owners, to conduct shallow vapour sampling or subsurface investigations on their properties, at their request.

From August 2003 to March 2004, Clifton conducted further borehole drilling and monitoring well installations to delineate the extent of the previously identified subsurface PHC impacts beneath City of Calgary properties. A total of 68 boreholes (BH701 to BH744, BH901 to BH917 and BH1101 to BH1107) were advanced and 67 of these boreholes were completed as groundwater monitoring wells (with the exception of BH906). The boreholes were drilled on City of Calgary roads, laneways and in Lions Park. Three more boreholes (BH601 to BH603) were drilled and monitoring wells were installed within the property located at 1306 - 15<sup>th</sup> Street NW.

In addition, 76 shallow soil vapour probes were installed on 25 residential properties. The soil vapour probes were installed proximal to the house foundations, at a depth equivalent to the basement floors, of approximately 3 m bgs.

In December 2004, Clifton conducted further borehole drilling and monitoring well installation in the park south of 11<sup>th</sup> Avenue NW and west of 16<sup>th</sup> Street NW. Three monitoring wells (BH1301 to BH1303) were installed for the collection of groundwater samples from beneath the City of Calgary property.

The location of all referenced soil borings and groundwater monitoring wells in the Hounsfield Heights area is shown on Figure 4. A complete set of borehole logs is included in Appendix B. Activities that occurred after the implementation of the 2006 SMP is discussed in Section 5.1.2.

## **2.4 Health Risk Assessment**

The Cantox Environmental report, *A Community-Wide Assessment of Potential Health Impacts Associated with Subsurface Petroleum Hydrocarbons in the Hounsfield Heights Community of Calgary, Alberta* was developed by Intrinsic in 2006 and based upon the AESRD 2001 PST Guidelines, which were applicable at the time. The sections below contain a summary discussion of the more important features.

### **2.4.1 Tier 3 Guideline Development**

Based on the then current 2001 PST Guidelines, Intrinsic developed Tier 3 Guidelines for concentrations of benzene in the soil and benzene and PHC fraction F1 in the groundwater. The final HRA Tier 3 Guidelines were developed

individually for every property within the zones previously conceived; however, the AESRD approval referenced the earlier draft version of the HRA, which had developed guidelines by ‘Zones’.

Intrinsic found that the PHC fraction F1 for groundwater to be “not applicable due to soil vapour exceeding solubility limits.” This meant that no matter the level of PHC fraction F1 in groundwater (except for LPH) within Zones 1 and 2, it did not pose a risk; therefore, no guideline was developed.

Ultimately, AESRD did not accept the PHC fraction F1 guideline for soils that had been developed in the HRA. AESRD instead chose to default the PHC fractions F1 and F2 to the AESRD 2007 Tier 1 Guidelines management limit.

Additionally, no standards were developed for toluene, ethylbenzene, xylene, or the PHC fractions F2 to F4 because the sample results were all less than the AESRD 2001 PST Guidelines applicable at the time; therefore, these compounds did not pose a health risk under that standard.

In the end, AESRD only accepted the HRA values for benzene in both the soil and groundwater and PHC fraction F1 for groundwater.

The initial HRA divided the Site in three zones: Zones 1 and 2 are located between the southern curb of Lions Park and the northern curb of 11<sup>th</sup> Avenue NW, within a corridor from the western curb of 15<sup>th</sup> Street NW to the eastern curb of 16<sup>th</sup> Street NW. At the time of the 2006 SMP development, Zone 3 was considered south of 11<sup>th</sup> Avenue NW towards 10<sup>th</sup> Avenue NW and assumed to be within the same western curb of 15<sup>th</sup> Street NW to the eastern curb of 16<sup>th</sup> Street NW boundaries.

A summary of physical soil properties that Intrinsic used to develop the Tier 3 Guidelines for the soils beneath the Hounsfield Heights area is presented in Table 1.

#### **2.4.2 Pathway Discussion**

Pathways of concern are discussed in detail in Table 4.2 of the Cantox HRA. The pathways as defined in the above document are summarized below.

### **Human Receptors**

- Soil Ingestion – Incomplete
- Soil Dermal Contact – Incomplete
- Inhalation of Indoor Air – Complete
- Ingestion of Groundwater – Incomplete

### **Ecological Receptors**

- Agricultural Scenarios – Incomplete
- Natural Area Scenarios – Incomplete
- Freshwater Aquatic Life – Incomplete
- Vegetation (Shallow Soils) – Incomplete
- Soil Invertebrates (Shallow Soils) – Incomplete
- Other (Pets, Birds, Small Mammals) – Complete
- Soil Contact – Incomplete
- Soil ingestion – Incomplete
- Protection of Groundwater – Incomplete
- Inhalation of Indoor Air - Incomplete

### **Completed Pathways to Receptors as of 2006**

- Human - Inhalation of Indoor Air
- Ecological - Other (Pets, Birds, Small Mammals)

## **3.0 Hounsfield Heights Area Characteristics**

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Water supply in the area of the Site comes from City of Calgary municipal water distribution lines.

The AESRD Water Well Information Database System had no records of groundwater production wells located within an 800 m radius of the Site.

A river valley plateau and associated upper valley wall characterize the topography of the Site. The gently south sloping river valley plateau is located on the northern half of the Site. A transition to a more moderately sloping valley wall is located in Zones 1 and 2 of the Hounsfield Heights area. The slope of the southern portion of the Hounsfield Heights area decreases as the valley floor is approached.



In the Mall area, the elevation is approximately 1,090 m asl. The surface appears to slope gently to the south toward 14<sup>th</sup> Avenue NW. Surface runoff currently drains toward catch basins, which are connected to the municipal main storm line located beneath 14<sup>th</sup> Avenue NW.

Within the Hounsfield Heights area, the Site varies in elevation from approximately 1,094 m asl in the northwestern corner along 13<sup>th</sup> Avenue NW, to approximately 1,068 m asl in the southeastern corner, north of the intersection of 15<sup>th</sup> Street NW and 10<sup>th</sup> Avenue NW. Surface drainage in the Hounsfield Heights area is typically via infiltration in unpaved areas or to the south along roadways and laneways into the City of Calgary storm sewer system south of 13<sup>th</sup> Avenue NW.

Tables 2 – 8 show a summary of all monitoring well data, soil sampling data, and groundwater sampling data. Table 9 identifies all LPH recovered.

### **3.1 Hounsfield Heights Area Facilities and Land Use**

The Hounsfield Heights area is comprised of single-family dwellings with some basements. The majority of the Hounsfield Heights area is zoned as Residential Contextual Narrow Parcel One Dwelling District (RC-1). Three areas within the Hounsfield Heights area are zoned as Special Purpose – School, Park, Community Reserve District (S-SPR): one to the north (Lions Park); one to the southwest (Hounsfield Heights Park); and, one along 10<sup>th</sup> Avenue NW, between 16<sup>th</sup> Street NW and 15<sup>th</sup> Street NW.

Within the original Hounsfield Heights area (between 16A Street NW and 15<sup>th</sup> Street NW), there are a total of 55 residential properties and associated buildings, with approximately 51 addresses. The boundaries of the Hounsfield Heights area have been expanded towards the west to 17A Street NW and towards the east to 14<sup>th</sup> Street NW. Residential properties within the Site area have increased by approximately 78 more lots that contain approximately 71 additional structures with addresses and associated dwellings that are now within the area encompassed by the extension of the Hounsfield Heights area boundaries.

The extension of the boundaries to specific straight-line features (i.e. streets) beyond the proposed area of investigation was a professional choice that will help to

simplify the later mapping and data presentation. This extension in no way implies that every property in the extended area has been affected.

Underground utilities include water, sanitary and storm sewers, cable, and natural gas, which are located along the avenues and streets within the Hounsfield Heights area. The remaining utilities are supplied by overhead lines along the laneways.

Surrounding land use consists of:

- North of 14<sup>th</sup> Avenue NW - Several areas of Direct Control (DC) districts zoned at different times;
- Northeast – Large area of Special Purpose Future Urban Development (S-FUD);
- East - Special Purpose – Community Institution District (S-CI);
- Southeast – Multi-Residential - Contextual Grade-Oriented District (M-CG);
- South – Areas of Community Service District (S-CS), Multi-Residential - Contextual Low-Profile District (M-C1) and R-C1;
- Southwest – Areas of S-CI; and,
- West – Areas of S-SPR and R-C1.

### **3.2 Geology**

The geology encountered in the Hounsfield Heights area consists of three distinguishable native soil units overlain by fill and road structure placed in areas of roads, alleys, and parking areas. The observed soil strata underlying the fill, base, and sub-base gravel were, from top to bottom: an upper silty sand unit; a middle clayey silt unit; and, a lower interbedded sandy silt unit with silt.

Typical fill material in the area of asphalt covered roads such as 16<sup>th</sup> Street NW, 16A Street NW, and 11<sup>th</sup> Avenue NW consisted of 0.05 m to 0.15 m of asphalt underlain by cobble and gravel, road-base material. The road base material was typically rounded river bottom pit run. The thickness of the road base material varied from 0.2 m to 0.3 m throughout the Hounsfield Heights area. Underlying the gravel and cobble of the road base was typically native soil, although evidence of fill material was observed in some borehole locations. Generally, the observed road base material was thicker towards the northern end of the Hounsfield Heights area.

Along 15<sup>th</sup> Street NW, angular gravel coated with asphalt oil was observed at the surface to depths between 0.03 m bgs and 0.08 m bgs. Topsoil underlying the asphalt-coated gravel was observed in most boreholes along 15<sup>th</sup> Street NW. The observed topsoil had a maximum thickness of the 0.3 m.

Along the laneway between 15<sup>th</sup> Street NW and 16<sup>th</sup> Street NW, and along 13<sup>th</sup> Avenue NW, angular gravel was observed at the surface and extended to depths between 0.08 m bgs and 0.2 m bgs. Underlying the gravel was native topsoil, which had a maximum observed thickness of 0.3 m. Topsoil was not observed in any of the boreholes drilled in this area.

Native soil underlying the fill and road structure is comprised of fluvial and lacustrine deposits with noticeable variations observed throughout each soil stratum. The upper native stratum was silty sand, underlain by a middle clayey silt unit, which was then underlain by a unit of sandy silt interbedded with silt. Detailed descriptions and observations are provided below.

### **3.2.1 Upper Silty Sand**

The upper silty sand stratum consisted of fine-grained, poorly sorted sand and silt, with trace amounts of clay and gravel. Variations in texture were noted throughout the stratum, with sand and silt percentages both typically ranging between 26% and 60%. The soil was brown and oxidized, with variations in colour from light brown to olive brown throughout the Hounsfield Heights area. The structure of the stratum was found to be generally laminated; with areas of bedding, and occasionally clay and silt lenses that are typical of fluvial riverbank deposits. The thickness of the clay and silt lenses varied from a few millimetres to several centimetres. Small coal specks, iron staining, manganese staining and Glauber's salts were observed during drilling. No water table was observed in this stratum; however, localized areas of wetness were observed adjacent to silt lenses.

Hydrometer analysis, mechanical sieve analysis, and plasticity index calculations were performed on samples from this stratum. Unified soil classification determined the soil to be SM, corresponding to silty sand.

The stratum ranged in thickness from 0.5 m to 9.1 m, and became noticeably thinner towards the southern extent of the Hounsfield Heights area, according to a review of

the borehole logs and may represent a separate unit or event in the southern portion of the Site.

### **3.2.2 Middle Clayey Silt**

The clayey silt stratum consisted of a clay and silt matrix interbedded with occasional silt and sand lenses. The structure of the stratum was typically laminated, with some bedding observed throughout. Variations in texture were noted throughout the stratum, with clay concentrations varying from 24% to 53%. Silt concentrations varied from 35% to 60%. The soil was typically moist, oxidized, and brown, with variations in colour from light brown to olive brown. The interbedded sand and silt lenses range in thickness from several millimetres up to 0.3 m. Secondary characteristics such as iron staining, manganese staining, coal specks, and Glauber's salts were observed.

Plasticity index results ranged between 14 and 36 for the stratum. Unified soil classification determined the stratum to be typically ML, with some areas of CH. This corresponds to low plasticity clayey silt, with some areas of high plasticity encountered.

The clayey silt stratum was encountered in all boreholes drilled, with the exception of boreholes BH732 and BH737 along 11<sup>th</sup> Avenue NW. The stratum, where encountered, ranged in thickness from 1.2 m to 11.2 m, and became thinner towards the southern extent of the Hounsfield Heights area. The depth to the clayey silt ranged from 8.2 m bgs in borehole BH704 along 13<sup>th</sup> Avenue NW, to 9.2 m bgs in borehole BH727 located near the topographic high point in the laneway between 15<sup>th</sup> Street NW and 16<sup>th</sup> Street NW, to 2.4 m bgs in borehole BH733 along 11<sup>th</sup> Avenue NW. The upper stratum surface is undulating and dips slightly to the south.

### **3.2.3 Lower Interbedded Sandy Silt with Silt**

The lower interbedded sandy silt with silt stratum consisted of fine-grained, poorly graded sand and silt interbedded with silt. The interbedded silt consisted of a silt matrix with some poorly graded, fine-grained sand and trace amounts of clay. Sand and silt percentages ranged between 19% and 55%, and 43% and 63%, respectively, in the sandy silt. The interbedded silt had concentrations of silt up to 87%. The upper portion of the stratum was dark brown and oxidized, and became grey and un-

oxidized at depths below the encountered water table. The soil structure was bedded with observed laminations. Secondary structures such as iron staining and coal specks were observed.

Hydrometers, mechanical sieve analysis and plasticity index calculations were performed on samples from this stratum. Unified soil classification determined the soil to be SM and ML in nature, corresponding to sandy silts and inorganic silts.

The depth to the sandy silt ranged from 11.4 m bgs in borehole BH703 along 13<sup>th</sup> Avenue NW, to 12.1 m bgs in borehole BH725 located near the topographic high point in the laneway between 15<sup>th</sup> Street NW and 16<sup>th</sup> Street NW, to 2.4 m bgs in borehole BH732 along 11<sup>th</sup> Avenue NW.

This interbedded sandy silt and silt stratum was observed at the extent of exploration in all boreholes drilled, with the exception of borehole BH919. Weathered sandstone bedrock was encountered at a depth of 8.5 m bgs in borehole BH914.

Due to the interbedded nature of the geological units, acquisition of additional information will allow Clifton to better interpret the characteristics beneath the Hounsfield Heights area. Better interpretation will subsequently allow for the creation of an appropriate cross-section and hydrogeological model for the Hounsfield Heights area.

### **3.3 Hydrogeology**

The nearest surface water body to the Hounsfield Heights area is the Bow River, located approximately 1.5 km to the south of the Site. An ephemeral marshy area may be located, east of 17A Street NW and south of 12<sup>th</sup> Avenue NW, within the new boundaries of the Hounsfield Heights area.

Due to the significant topographic relief of the Hounsfield Heights area, depths to the groundwater table are variable. With the exception of Lions Park, the groundwater table beneath the Hounsfield Heights area occurs within the lower interbedded sandy silt and silt stratum at an average depth of 10.62 m bgs and ranged from 5.80 m to 14.40 m bgs.

North of 13<sup>th</sup> Avenue NW in Lions Park, the depth to water from the ground surface ranged from 6.48 m to 7.15 m bgs with an average of 6.81 m bgs. This set of

readings are from those monitoring wells that are completed within the upper portion of the clayey silt only, and do not penetrate the lower interbedded sandy silt and silt. In the monitoring wells that were installed in the lower interbedded sandy silt and silt, the depth to water ranged from 9.94 m to 11.52 m bgs, with an average depth of 10.66 m bgs.

Along 13<sup>th</sup> Avenue NW between 15<sup>th</sup> Street NW and 16A Street NW, the depth to water ranged from 9.27 m to 13.19 m bgs, with an average depth of 10.50 m bgs.

Within the topographic high point located midway between 13<sup>th</sup> Avenue NW and 11<sup>th</sup> Avenue NW and between 15<sup>th</sup> Street NW and 16A Street NW, the depth to water ranged from 11.21 m to 14.40 m bgs, with an average of 12.76 m bgs.

Along 11<sup>th</sup> Avenue NW between 16A Street NW and 15<sup>th</sup> Street NW, the depth to water ranged from 5.80 m to 9.38 m bgs, with an average of 7.33 m bgs.

Currently, the groundwater elevation in the monitoring wells ranged from 1066.087 m (BH915) to 1083.924 m (BH1107) asl. The horizontal hydraulic gradient at the Site is 0.055, between monitoring wells BH915 and BH1107.

Historically, the groundwater flow direction has been determined to be towards the south-southeast. The hydraulic gradient ranges from 0.148 within Lions Park to 0.023 south of Lions Park. Note these hydraulic gradients are for comparison purposes only, as the well screens were installed across the three identified geological units in almost all of the monitoring wells. Therefore, the hydraulic conductivity and gradients is not unit specific. This is information that needs to be generated in the upcoming Hounsfield Heights area work.

The ephemeral marshy area that may be located east of 17A Street NW and south of 12<sup>th</sup> Avenue NW is located hydrogeologically cross gradient to the Hounsfield Heights area. The monitoring data for the Site groundwater monitoring wells is presented in Table 2.

### **3.4 Petroleum Hydrocarbon Impact**

The following summary of the investigation findings and PHC impact is based on assessment of the PHCs compared to the AESRD 2010 Tier 1 Guidelines and the Tier 3 Guidelines developed by Intrinsik. PHCs are broken down by the identification of carbon atoms. PHC Fraction F1 contains carbon chain lengths of C6 – C10. PHC Fraction F2 contains carbon chain lengths of C10 – C16. PHC Fraction F3 contains carbon chain lengths of C16 – C34. PHC Fraction F4 contains carbon chain lengths of C34 – C50. PHCs also consist of BTEX compounds, which are represented by the constituents benzene, toluene, ethylbenzene, and total xylenes. While PHC Fractions F1 – F4 make up the main body of gasoline, BTEX constituents are naturally occurring chemicals that are modified in the refineries to meet vapour pressure and octane standards for gasoline.

Based on subsurface investigation activities completed between 1998 and 2012, detailed results are presented in the previously referenced reports and have not been included here. A summary of the previous investigations by media and the associated PHC impacts are summarized below.

#### **3.4.1 Hydrocarbons in Soil**

Laboratory analysis has been conducted on 286 soil samples collected from 109 boreholes drilled within the Hounsfield Heights area. The soil samples were collected from the lower sandy silt unit beneath the clayey silt at, or near, the groundwater table, and from the base of the clayey silt unit. On average, three samples were collected from each borehole and tested in the laboratory. The results of the laboratory data are presented in Tables 3 to Table 5.

Two soil samples (BH738 at 15.8 m bgs and BH739 at 14.3 m bgs) from Zones 1 and 2 have exceeded the Tier 3 Guidelines developed by Intrinsik for benzene concentrations.

A total of 76 soil samples have benzene concentrations exceeding the AESRD 2010 Tier 1 Guidelines within Zone 3 or the area surrounding Zones 1, 2 and 3.

A total of 44 soil samples would exceed the applicable concentrations for toluene, 46 soil samples would exceed the applicable concentrations for ethylbenzene, and ten soil samples would exceed the applicable concentrations for xylenes if compared

against the AESRD 2010 Tier 1 Guidelines in the area of Zones 1 and 2, where Intrinsik developed the Tier 3 criteria for benzene concentrations.

A total of twenty soil samples exceeded concentrations for toluene, 41 soil samples exceeded concentrations for ethylbenzene, and nine soil samples exceeded concentrations for xylenes when compared against the applicable AESRD 2010 Tier 1 Guidelines for Zone 3 or the area surrounding Zones 1, 2, and 3.

Concentrations of PHC fractions F1 were generally below the AESRD 2010 Tier 1 Guidelines applicable for Zones 1 and 2. Concentrations of PHC fractions F2 – F4 were below the AESRD 2010 Tier 1 Guidelines applicable for Zones 1 and 2. Concentrations of PHC fractions F1 and F2 – F4 were below the AESRD 2010 Tier 1 Guidelines applicable for Zone 3 and the surrounding areas.

### **3.4.2 Hydrocarbons in Groundwater**

A summary of analytical test results of groundwater samples collected from the Hounsfield Heights area between November 1998 and May 2013 are presented in Tables 6 and 7. In addition to the PHC characterization, routine parameters, PAHs, dissolved metals, and VOCs have been analyzed and a summary of laboratory results have been included in Tables 8 through 8.4. A total of 311 groundwater samples have been collected from 35 monitoring wells within Zones 1 and 2 in the Hounsfield Heights area. Approximately 755 groundwater samples have been collected from 77 monitoring wells installed within Zone 3 and the area surrounding Zones 1, 2, and 3.

Due to the development of the Tier 3 Guidelines by Intrinsik, concentrations of benzene were all below the applicable criteria. However, concentrations of toluene, ethylbenzene and xylenes, as well as PHC fractions F1 and F2 did not have groundwater remediation guidelines developed for them. Therefore, they are presented in Tables 6 and 7 as NG. The adopted criteria for these compounds defaults to the AESRD 2010 Tier 1 Guidelines.

Consequently between 1998 and April 2013, 212 groundwater samples collected from 35 monitoring wells within Zones 1 and 2 in the Hounsfield Heights area, had concentrations of toluene that exceeded the referenced AESRD 2010 Tier 1 Guidelines. A total of 240 groundwater samples had concentrations of ethylbenzene exceeding the applicable criteria. Concentrations of xylenes exceeded the criteria in



1825 of the groundwater samples analyzed. Concentrations of PHC fraction F1, PHC fraction F2 and Lead exceeded the criteria in 126, 41, and 33 groundwater samples, respectively.

Likewise, between 1998 and 2013, 77 groundwater samples collected from monitoring wells located within Zone 3 and the areas surrounding Zone 1, 2, and 3 had concentrations of benzene that exceeded the applicable criteria in 384 groundwater samples; concentrations of toluene exceeded the applicable criteria in 142 groundwater samples; concentrations of ethylbenzene exceeded the applicable criteria in 210 groundwater samples; concentrations of xylenes exceeded the applicable criteria in 107 groundwater samples; concentrations of PHC fraction F1 exceeded the applicable criteria in 95 groundwater samples; concentrations of PHC fraction F2 exceeded the applicable criteria in ten groundwater samples; and, concentrations of dissolved lead exceeded the applicable criteria in 110 samples (mainly because the new standards were less than the detection limits of the time).

Figure 7 is a plume map of benzene concentrations in the groundwater, as of October 2012. Figure 7.1 is a plume map of benzene concentrations in the groundwater, as of April 2013.

### **3.4.3 Liquid Petroleum Hydrocarbons**

LPH was found floating on the surface of the groundwater in twelve monitoring wells, between 1998 and 2012:

- BH209, BH213, BH214, BH702 and BH1703 - located on 13<sup>th</sup> Avenue near 16<sup>th</sup> Street NW;
- BH509, BH705 and BH706 – located on 16<sup>th</sup> Street NW near 13<sup>th</sup> Avenue NW;
- BH510, BH510A and BH725 – located in the laneway between 15<sup>th</sup> Street NW and 16<sup>th</sup> Street NW; and,
- BH1105 (sheen only) – located in Lions Park.

LPH was present in monitoring well BH1703 in October 2012, located on 13<sup>th</sup> Avenue NW, proximal to monitoring well BH214. Since June 2011, approximately two litres of LPH have been recovered during the 2012 monitoring and sampling events. No monitoring well other than BH1703 has produced LPH since 2008.

The apparent LPH thickness ranges from less than 1 mm (trace) in monitoring wells BH509, BH510, BH705, BH706, BH725 and BH1105 to a maximum of 1.006 m in monitoring well BH706, during the event completed on 20 January 2006. It should be noted that the maximum LPH in BH1703 (currently the most recent monitoring well to have had LPH) has been 0.318 m during the event completed on 13 September 2011. A summary of LPH volume recovered is presented in Table 9.

#### **3.4.4 Shallow Soil Vapour Samples**

Human health risks associated with the inhalation of PHC vapours from impacted soils and groundwater are critical risks that should be addressed during an ESA. Potential indoor air impacts can be estimated by collecting air samples from shallow vapours probes installed around the building to an average depth of 1.5 m below the building foundation (depending on the depth of the source).

Shallow soil vapour samples were collected in September 2003, April 2004, August 2004, and August 2005 from the Hounsfield Heights area, as far south as 1112 – 16<sup>th</sup> Street NW (two parcels from 10<sup>th</sup> Avenue NW), and did not find any detectable concentrations of BTEX or PHC fraction F1 or F2 compounds at any location with the exception of two homes.

These homes, located at 1604 and 1605 – 11<sup>th</sup> Avenue NW, detected benzene and F1 – BTEX, respectively. The benzene detection was found at a level of 0.002 parts per million in the air, while the associated, most-stringent action levels for soil and groundwater via the inhalation pathway are 0.073 ppm and 0.14 ppm, respectively. Although direct air readings are not comparable to readings from the soil or groundwater, the levels found at the 1604 – 11<sup>th</sup> Avenue address are 35 times lower than the action level for the soil inhalation pathway.

The F1 – BTEX detection was found at a level of 12,000  $\mu\text{g}/\text{m}^3$ , which is approximately 12 ppm in air. One curious aspect of this detection is that none of the surrounding properties had a single hit for F1 – BTEX at any level. There was not any gradual buildup of concentrations further to the north, or a decrease in concentrations to the south.

The associated action levels for soil and groundwater via the inhalation pathway are 24 ppm and 0.81 ppm, respectively. Although direct air readings are not comparable

to readings from the soil or groundwater, the levels found at the 1605 – 11<sup>th</sup> Avenue address would potentially be above action levels for F1 – BTEX were they associated with the groundwater plume. However, the lack of associated readings from surrounding properties leads Clifton to conclude that these readings may be from a leaking home heating oil fuel tank or the use of petroleum products as an herbicide in the area of the residential foundation. The analytical results are presented in Table 10.

## **4.0 Regulatory Framework**

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The subsurface delineation results (horizontal and vertical) as presented in the 2006 SMP were all based on the then, current AESRD 2001 PST Guidelines.

As discussed previously in Section 2.1, Intrinsik developed Site-specific Tier 3 Guidelines for benzene and PHC fraction F1 that better captured the unique characteristics of the Hounsfield Heights area that were accepted by AESRD with conditions.

According to a later communication from AESRD, dated 20 July 2012, areas formerly included in Zone 2 along 11<sup>th</sup> Avenue NW, now need to be contained within Zone 3. The communication indicated that Sears was to: “Apply the Tier 1 Guidelines to monitoring well locations along 11<sup>th</sup> Avenue NW and include these wells in the groundwater monitoring and sampling program”

Zone 3 had formerly comprised areas south of the southern side of 11<sup>th</sup> Avenue and is under the AESRD 2010 Tier 1 Guidelines.

The revised Tier 3 Guidelines in the final Cantox report are property specific and only include benzene and PHC fraction F1 concentrations in soils and benzene concentrations in groundwater. However, AESRD did not recognize or acknowledge these revised guideline levels and only accepted the Tier 3 Guidelines developed in the original draft report. The details for each address and their proposed Tier 3 Guidelines can be found in the Cantox report, *A Community-Wide Assessment of Potential Health Impacts Associated with Subsurface Petroleum Hydrocarbons in the Hounsfield Heights Community of Calgary, Alberta [Including Development of*

*Site-Specific (Tier 3) Remediation Standards], Appendix C, Table C3, dated 31 May 2006. A summary of the Tier 3 Guidelines may be found in Table 11.*

It should be noted that the AESRD 2001 PST Guidelines for concentrations of toluene, ethylbenzene, xylenes and PHC fraction F2 in the 2001 PST Guidelines were higher than today's guideline limits (AESRD 2010 Tier 1 Guidelines) and none of the samples collected at the time exceeded the AESRD 2001 PST Guidelines levels. Therefore, Tier 3 Guidelines were not developed for the mentioned compounds. Consequently, many of the historical laboratory results now exceed the current applicable criteria.

The most recent guidelines are the AESRD 2010 Tier 1 Guidelines. These guidelines are now the applicable guidelines for the Site with the exception of Zone 1 and Zone 2 within the Hounsfield Heights area, which are subject to the Tier 3 Guidelines developed by Intrinsik, for concentrations of benzene in soils and concentrations of benzene and PHC fraction F1 in the groundwater.

The remainder of the Site is governed by the AESRD 2010 Tier 1 Guidelines. Concentrations of toluene, ethylbenzene, xylenes and PHC fractions F1 to F4 for soils beneath the Zones 1 and 2 and toluene, ethylbenzene, xylenes, and PHC fractions F1 and F2 in groundwater; would also need to be compared to the above mentioned criteria.

AESRD has again updated the Tier 1 and 2 Guidelines. These new AESRD 2014 Tier 1 Guidelines become effective in December 2014.

## **5.0 Activities Completed Since the Implementation of the 2006 SMP**

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The established objectives for the Hounsfield Heights area in the 2006 SMP, and its update in 2011, were to:

- Manage and/or control the migration of the LPH plume; and,
- Remove the LPH underlying the Site to the degree practicable.

The removal of LPH would result in an improvement of both the soil and groundwater quality. Mitigating the mass of residual PHCs contained in the soil will result in a further improvement of the groundwater quality.

Actives undertaken since the acceptance of the 2006 SMP by AESRD in 2007 are summarized in the following sections.

## **5.1 Soil Boring Installation**

A discussion of the soil boring installations that occurred after the implementation of the 2006 SMP are found in the sections below.

### **5.1.1 Mall Area**

In March 2008, one borehole (BH1601) was drilled and a monitoring well was installed to the north of the Kal-Tire building. The well was drilled to a depth of approximately 13.7 m bgs and was screened within the clay unit from approximately 11 m to 12.8 m bgs.

In September 2009, ten confirmatory boreholes (BH1801 to BH1810) were advanced to an approximate depth of 19.30 m bgs. The wells were screened across the sand, silt and clay units between depths of 6 m bgs and 19.30 m bgs. Forty-four soil samples, including five blind field duplicates, were collected and submitted for laboratory analysis of BTEX, and PHC fractions F1 to F4. Laboratory analytical results from the soil samples collected during borehole drilling were compared to the AESRD 2001 PST Guidelines for the vapour inhalation pathway in coarse and fine-grained soils and for commercial land use, and to the AESRD 2007 Tier 1 Guidelines for fine-grained soil and commercial land use. These wells were drilled within the remedial excavation footprint to confirm the removal of the impacted soils during the activities completed between 2006 and 2008.

None of the soil samples submitted for laboratory analysis exceeded the AESRD 2001 PST Guidelines for fine-grained soil. However, the benzene analytical results exceeded the AESRD 2001 PST Guidelines for coarse-grained soil in seven of the samples submitted. These exceedances ranged in depth from 8.2 m to 13.0 m bgs.

Concentrations of benzene exceeded the AESRD 2007 Tier 1 Guidelines in 21 of the samples submitted, including four of the blind field duplicates. These exceedances

ranged in depth from 5.2 m to 13.7 m bgs. Concentrations of toluene exceeded AESRD 2007 Tier 1 Guidelines in four of the samples submitted, including one of the blind field duplicates. Exceedances ranged in depth from 8.2 m to 9.9 m bgs. Concentrations of ethylbenzene exceeded AESRD 2007 Tier 1 Guidelines in eight of the samples submitted, including one of the blind field duplicates. These exceedances ranged in depth from 6.7 m to 13.7 m bgs. Other parameters did not exceed the AESRD 2007 Tier 1 Guidelines.

In addition to the above activities associated with the Mall area, PHC-impacted soils exceeding Level II of the AESRD 1994 PST Guidelines for the vapour inhalation pathway through coarse-grained soil were excavated from 14<sup>th</sup> Avenue NW in September 2001. Impacted soils were encountered during trenching operations for a utility corridor. A total of approximately 998 tonnes of PHC-impacted soil was excavated from 14<sup>th</sup> Avenue NW, south of the Kal-Tire, and removed for disposal to an approved landfill.

### **5.1.2 Hounsfield Heights Area**

In July 2008, seventeen boreholes were advanced and monitoring wells (BH1701 to BH1717) were installed beneath City of Calgary properties (13<sup>th</sup> Avenue NW, 16<sup>th</sup> Street NW, in the alley between 15<sup>th</sup> Street NW and 16<sup>th</sup> Street NW, and in a park located at the intersection of 11<sup>th</sup> Avenue NW and 16<sup>th</sup> Street NW).

Monitoring wells BH1701 to BH1711 were installed as replacement wells during the decommissioning program (see Section 5.4). Borehole logs and monitoring well construction details were presented in the 30 July 2008 report. As these boreholes were drilled immediately proximal to previous borehole locations, soil samples for laboratory analysis were not collected.

Subsequent to the decommissioning program (see Section 5.4), AESRD and the GPC, requested that additional boreholes be drilled and monitoring wells be installed. Boreholes BH1712 to BH1717, completed as monitoring wells, were drilled 20 January 2009. A copy of the borehole logs and monitoring well construction details are attached in Appendix B.

The laboratory results of soil samples collected from boreholes BH1712 to BH1717 are presented in Table 5. Concentrations of benzene and ethylbenzene in soil

samples collected from BH1712 at 11.89 m bgs, BH1714 at 4.88 bgs, BH1715 at 11.58 m bgs and BH1717 at 7.92, 8.69, and 11.89 m bgs exceeded the 2010 AESRD Tier 1 Guidelines.

## **5.2 Well Monitoring and Groundwater Sampling**

Groundwater monitoring and sampling results up to the monitoring and sampling event conducted in April 2013 are presented in the Updated SMP (2014).

### **5.2.1 June and July 2008**

The monitoring event conducted in June and July 2008 was the last full event prior to completion of the monitoring well decommissioning program. A total of 87 wells were monitored and 76 groundwater samples were collected during that event. The results were presented in the Clifton document, *Monitoring Report, Hounsfield Heights, Calgary, Alberta*, dated 25 November 2008.

### **5.2.2 September 2010**

The monitoring event in September 2010 was conducted to establish baseline conditions prior to start-up of the DPVE in October 2010. A total of 54 wells were monitored and 24 groundwater samples were collected during that event. The results were presented in the Clifton document, *Pre-Commissioning Site Monitoring Report, Hounsfield Heights, Calgary, Alberta*, dated 17 January 2011.

### **5.2.3 October 2012**

A full monitoring and sampling event was conducted in October 2012. On 1 October 2012, Clifton initiated the monitoring and sampling program within the Site. A total of 53 groundwater monitoring wells were monitored for PHC vapours, LPH occurrence (if any) and water levels, while 43 groundwater samples and three quality control samples were collected. In addition to the sampling phase of the program, calcium peroxide, filter socks were removed from the following wells during monitoring: BH907, BH913, BH1303, BH1713, and BH1714.

In October 2012, standpipe vapour concentrations ranged from 0 to 2,100 ppm. Vapour concentrations were highest in EX4 (530 ppm) and EX5 (2,100 ppm).

Groundwater in the monitoring wells at Lions Park ranged in depth from 1078.705 m (BH1102) to 1083.924 m (BH1107) asl. Groundwater in the monitoring wells in the residential area ranged in depth from 1066.087 m (BH915) to 1081.943 m (BH904) asl.

Potentiometric surface results can be found in the *Site Monitoring and Sampling – Semi-Annual Report 2012*, dated January 2013. The results are consistent with all previous results, showing the groundwater flow direction to be towards the southeast.

LPH was not observed or measured in any monitoring well during the September 2010 monitoring event. However, LPH was encountered in monitoring well BH1703 during the October 2012 monitoring and sampling event. Monitoring well BH1703 contained a measured LPH thickness of 0.01 m. The recorded LPH thickness is the lowest detectable level since LPH was first encountered in this monitoring well in June 2011. This monitoring well was installed to replace monitoring wells removed for the installation of the extraction wells, within the same area where LPH had previously been observed.

Concentrations of benzene were reported in a range of less than the analytical detection limit to 11.60 mg/L (EX1). Benzene concentrations were below the detection limit in 21 of the 43 monitoring wells sampled and did not exceed the Tier 3 Guidelines within Zones 1 and 2. However, benzene concentrations exceeded the AESRD 2010 Tier 1 Guidelines in 17 monitoring wells, including: BH733, BH737, BH905, and BH907, all of which were located in Zone 3; BH711, BH719, BH734, BH736, BH1302, BH1706, BH1708, BH1710, BH1712 and BH1714, all of which were located in the areas surrounding Zone 3; and, BH1103, BH1104, and BH1106, all of which were located in Lions Park.

Toluene was reported in a range of less than the analytical detection limit to 6.60 mg/L (EX5). Toluene concentrations were below the detection limit in 23 of the 43 monitoring wells sampled. There is no Tier 3 Objective developed for toluene within Zones 1 and 2; however, concentrations of toluene did exceed the AESRD 2010 Tier 1 Guidelines in BH510A, BH1704, BH1711, EX1, EX2, EX4, EX5, and EX6. Toluene concentrations also exceeded the AESRD 2010 Tier 1 Guidelines in monitoring wells BH719, BH1706, and BH1708, all of which were located in the



areas surrounding Zone 3; and, in BH1103 located in Lions Park. It should be noted that the detection limits were raised for the groundwater sample collected from BH719, which pushed the laboratory detection limits above the AESRD 2010 Tier 1 criterion for toluene.

Ethylbenzene was reported in a range of less than the analytical detection limit to 1.27 mg/L (EX5). Ethylbenzene concentrations were below the detection limit in 26 of the 43 monitoring wells sampled. There is no Tier 3 guideline for ethylbenzene within Zones 1 and 2; however, concentrations of ethylbenzene did exceed the AESRD 2010 Tier 1 Guidelines in BH510A, BH1704, BH1711, and EX1 through EX6. Ethylbenzene concentrations also exceeded the AESRD 2010 Tier 1 Guidelines in monitoring well BH905 located in Zone 3; and, BH711, BH719, BH1706, BH1708, BH1710, and BH1712, all of which were located in the areas surrounding Zone 3. BH1103, BH1104, and BH1106, all located in Lions Park, exceeded the AESRD 2010 Tier 1 Guidelines. It should be noted that the detection limits were raised for the groundwater sample collected from BH719, which pushed the laboratory detection limits above the AESRD 2010 Tier 1 Guidelines for ethylbenzene.

Total xylenes were reported in a range of less than the detection limit to 6.59 mg/L in extraction well EX4. Total xylenes were below the detection limit in 20 of the 43 monitoring wells sampled. There is not any Tier 3 Guideline for total xylenes within Zones 1 and 2; however, concentrations of xylenes did exceed the AESRD 2010 Tier 1 Guidelines in BH510A, BH1704, BH1711, EX2, EX4, EX5, and EX6. Total xylene concentrations did not exceed the AESRD 2010 Tier 1 Guidelines in any of the monitoring wells located in Zone 3 or the surrounding areas.

PHC fraction F1 was reported in a range of less than the detection limit to 7.51 mg/L (EX1). PHC fraction F1 concentrations were below the detection limit in 25 of the 43 monitoring wells sampled. There is no Tier 3 guideline for PHC fraction F1 concentrations within Zones 1 and 2, due to the calculated objectives exceeding the solubility limit (Cantox 2006 report, Page 42). However, concentrations of PHC fraction F1 would exceed the AESRD 2010 Tier 1 Guidelines in BH510A, BH1711, EX1, EX2, EX4, EX5, and EX6. Concentrations of PHC fraction F1 exceeded the AESRD 2010 Tier 1 Guidelines in monitoring wells: BH907 located in Zone 3; BH1708 located in the areas surrounding Zone 3; and, BH1103 located in Lions

Park. It should be noted that the concentrations in monitoring wells BH907, BH1103 and BH1711 was below the modified detection limit of 4.4 mg/L; however, this detection limit exceeds the AESRD 2010 Tier 1 Guidelines value.

PHC fraction F2 was reported in a range of less than the detection limit to 1.05 mg/L (EX5). PHC fraction F2 concentrations were below the detection limit in 35 of the 43 monitoring wells sampled. There is not any Tier 3 Guideline for PHC fraction F2 within Zones 1 and 2, and none of the samples collected would exceed the AESRD 2010 Tier 1 Guidelines. PHC fraction F2 concentrations did not exceed the AESRD 2010 Tier 1 Guidelines in any of the monitoring wells located in Zone 3 or the surrounding areas.

A summary of all well monitoring results collected since 1998 are presented in Table 2. A historical summary of groundwater laboratory results are presented in Tables 6 to 8.

#### **5.2.4 April 2013**

A full monitoring and sampling event was conducted in April 2013. On 29 April 2013, Clifton initiated the monitoring and sampling program within the Site. A total of 52 groundwater monitoring wells were monitored for PHC vapours, LPH occurrence (if any) and water levels, while 46 groundwater samples and five quality control samples were collected. In addition to the sampling phase of the program, calcium peroxide, filter socks were removed from the following wells during monitoring: BH907, BH913, BH1303, BH1713, and BH1714.

In April 2013, standpipe vapour concentrations ranged from 0 to 2,900 ppm. Vapour concentrations were highest in BH1106 (1,700 ppm) and EX5 (2,900 ppm).

Groundwater in the monitoring wells in the residential area ranged in depth from 1066.275 m (BH915) to 1084.028 m (BH1107) asl.

Potentiometric surface results can be found in the *Site Monitoring and Sampling – Semi-Annual Report – April 2013*, dated 29 July 2013. The results are consistent with all previous results, showing the groundwater flow direction to be towards the south-southeast.

LPH was not observed or measured in any monitoring well during the April 2013 monitoring event.

Concentrations of benzene were reported in a range of less than the analytical detection limit to 15 mg/L (EX1). Benzene concentrations were below the detection limit in 11 of the 46 monitoring wells sampled and did not exceed the Tier 3 Guidelines within Zones 1 and 2. However, benzene concentrations exceeded the AESRD 2010 Tier 1 Guidelines in 19 monitoring wells, including: BH733, BH737, BH905, and BH907, all of which were located in Zone 3; BH711, BH734, BH736, BH1303, BH1702, BH1703, BH1706, BH1708, BH1710, BH1712 and BH1714, all of which were located in the areas surrounding Zone 3; and, BH1103, BH1104, BH1106, and BH1107 all of which were located in Lions Park.

Toluene was reported in a range of less than the analytical detection limit to 10 mg/L (EX5). Toluene concentrations were below the detection limit in 24 of the 46 monitoring wells sampled. There is no Tier 3 Objective developed for toluene within Zones 1 and 2; however, concentrations of toluene did exceed the AESRD 2010 Tier 1 Guidelines in BH510A, BH729, BH1704, BH1711, EX1, EX2, EX4, EX5, EX7, and EX7. Toluene concentrations also exceeded the AESRD 2010 Tier 1 Guidelines in monitoring wells BH1703, BH1706, and BH1708, all of which were located in the areas surrounding Zone 3; and, in BH1103 located in Lions Park.

Ethylbenzene was reported in a range of less than the analytical detection limit to 3.4 mg/L (BH1703). Ethylbenzene concentrations were below the detection limit in 24 of the 46 monitoring wells sampled. There is no Tier 3 guideline for ethylbenzene within Zones 1 and 2; however, concentrations of ethylbenzene did exceed the AESRD 2010 Tier 1 Guidelines in BH510A, BH729, BH1704, BH1711, and EX1 through EX7. Ethylbenzene concentrations also exceeded the AESRD 2010 Tier 1 Guidelines in monitoring well BH905 located in Zone 3; and, BH711, BH1303, BH1703, BH1706, BH1708, BH1710, and BH1712, all of which were located in the areas surrounding Zone 3. BH1103, BH1104, and BH1106, all located in Lions Park, exceeded the AESRD 2010 Tier 1 Guidelines.

Total xylenes were reported in a range of less than the detection limit to 25 mg/L in BH1703. Total xylenes were below the detection limit in 22 of the 46 monitoring wells sampled. There is not any Tier 3 Guideline for total xylenes within Zones 1

and 2; however, concentrations of xylenes did exceed the AESRD 2010 Tier 1 Guidelines in BH510A, BH729, BH1711, EX1, EX2, EX4, EX5, EX6, and EX7. Total xylene concentrations also exceeded the AESRD 2010 Tier 1 Guidelines in monitoring wells BH1703 and BH1706 located in the areas surrounding Zone 3. BH1103, located in Lions Park, also exceeded the AESRD 2010 Tier 1 Guidelines.

PHC fraction F1-BTEX was reported in a range of less than the detection limit to 81 mg/L (BH1703). PHC fraction F1-BTEX concentrations were below the detection limit in 27 of the 46 monitoring wells sampled. There is no Tier 3 guideline for PHC fraction F1-BTEX concentrations within Zones 1 and 2, due to the calculated objectives exceeding the solubility limit (Cantox 2006 report, Page 42). However, concentrations of PHC fraction F1-BTEX would exceed the AESRD 2010 Tier 1 Guidelines in BH729, EX2, EX4, EX5, EX6, and EX7. Concentrations of PHC fraction F1-BTEX exceeded the AESRD 2010 Tier 1 Guidelines in monitoring wells: BH1703, BH1706, BH1708 located in the areas surrounding Zone 3; and, BH1103 located in Lions Park.

PHC fraction F2 was reported in a range of less than the detection limit to 28 mg/L (BH1703). PHC fraction F2 concentrations were below the detection limit in 30 of the 46 monitoring wells sampled. There is not any Tier 3 Guideline for PHC fraction F2 within Zones 1 and 2; however, concentrations of PHC fraction F2 would exceed the AESRD 2010 Tier 1 Guidelines in EX5 and EX7. Concentrations of PHC fraction F2 exceeded the AESRD 2010 Tier 1 Guidelines in monitoring well BH1703, located in the areas surrounding Zone 3.

Several other compounds were analyzed during this round of sampling, including routine parameters, PAHs, dissolved metals, and VOCs.

Of the routine parameters, TDS exceeded the AESRD 2010 Tier 1 Guidelines in five of the six monitoring wells tested. This is common in areas of high mineralization.

None of the PAHs exceeded AESRD 2010 Tier 1 Guidelines. Of the dissolved metals, manganese exceeded the AESRD 2010 Tier 1 Guidelines in each of the six monitoring wells tested. Manganese is a common background metal contaminant and is found throughout Alberta.

Of the VOCs, 1, 2-dichloroethane (1, 2-DCA) exceeded the AESRD 2010 Tier 1 Guidelines in five of the six monitoring wells tested. The compound 1, 2-DCA was found in monitoring wells at the southern end of the groundwater plume, and was a common anti-knock compound along with tetraethyl lead. Finding 1, 2-DCA in the plume indicates that the release occurred prior to the mid-1980s.

A summary of all well monitoring results collected since 1998 are presented in Table 2. A historical summary of groundwater laboratory results are presented in Tables 6 to 8.4.

### **5.3 Natural Attenuation Assessment**

All measured groundwater concentrations of benzene currently meet the Tier 3 Guidelines within Zones 1 and 2. These concentrations may continue to decrease over time through natural biodegradation processes, as long as new secondary source material does not migrate into the area. As part of the 2006 SMP, a monitoring program was established to confirm that hydrocarbons in the groundwater are being naturally degraded (natural attenuation) to below the established Tier 3 Guidelines.

The assessment for, and confirmation of, natural attenuation was to be conducted following the protocols and examples provided in Todd H. Wiedemeier et al., *Natural Attenuation of Fuels and Chlorinated Solvents in the Subsurface*, published by John Wiley & Sons Inc., 1999. In addition, guidance was provided by AESRD, *Guidance on the Assessment and Monitoring of Natural Attenuation of Contaminants in Groundwater (Draft)*, dated September 1999.

Indications of decreasing hydrocarbon concentrations can be seen in the existing groundwater analyses. Where groundwater-sampling data is available over time, there has been a general consistent trend of decreasing BTEX concentrations for groundwater samples collected. However, there is no confirmation that this behavior is caused by natural attenuation. It is possible that these decreases have been caused by plume migration or contaminant dilution in a plume that has yet to reach equilibrium.

#### **5.4 Monitoring Well Decommissioning**

As part of the 2006 SMP and in accordance with the Clifton document, *Response to Alberta Environment Regarding the Groundwater and Soil Vapour Monitoring Program, Hounsfield Site Management Plan*, dated 05 April 2007, 56 monitoring wells were decommissioned between 23 June 2008 and 09 July 2008.

The monitoring wells selected for decommissioning were chosen based on three criteria: proximity to the proposed extraction wells required for the DPVE system; monitoring wells where soil and groundwater samples consistently met established objectives or guidelines for groundwater or soil; and, monitoring wells that were completed at depths above the clay strata.

In addition, a number of monitoring wells near the DPVE extraction wells were decommissioned in order to minimize the potential for short-circuiting the DPVE system. Any monitoring well within the 50 m radius of influence of an extraction well was decommissioned and replaced in order to prevent short-circuiting of air away from the lower sand through to the upper sand.

The activities associated with the monitoring well decommissioning were presented in the Clifton document, *Monitoring well Decommissioning and Installation of Replacement Wells, Hounsfield Heights Community N.W., Calgary, Alberta*, dated 30 July 2008.

The locations of all boreholes and monitoring wells, including decommissioned monitoring wells, are shown in Figure 4.

#### **5.5 Remedial Excavation**

Between 2006 and 2007, a remedial excavation to remove the impacted soils beneath the parking lot of the Mall area was completed. A total of approximately 69,000 m<sup>3</sup> of PHC impacted soil and approximately 12,000 m<sup>3</sup> of clean overburden were excavated from the parking lot area. Soil treatment was done using Allu buckets to volatilize PHC constituents. Confirmation samples were collected prior to placing the soil back into the excavation. The backfilled soils were compacted. The remediation was guided by use of the AESRD 2001 PST Guidelines.

Due to the depth of the PHC impacts, the limited space during each phase of the excavation, safety considerations, and the soil and groundwater conditions present during the execution of the Work Plan, some limited volumes of PHC-impacted soil with concentrations in excess of the AESRD 2001 PST Guidelines remained beneath the parking lot of the Mall area.

A PHC-resistant, 38 - mil Isoflex geotextile liner was installed on 11 September 2006 along the eastern and southern walls of the excavation adjacent to 14<sup>th</sup> Avenue. This liner extended from the eastern boundary approximately 35 m to the west and to a depth of approximately 12 m, along the southern boundary. The liner was placed along areas that had analytical results for PHCs that exceeded the 2001 PST Guidelines.

Another liner, of the same specifications, was installed on 10 October 2007 along the eastern wall of the excavation on the Sear's property and was welded onto the liner that had been installed in 2006. This new liner reached a depth of approximately 12 m bgs and extended along the northern excavation boundary approximately 15 m. The liner was placed along areas that had analytical results for PHCs that exceeded the AESRD 2001 PST Guidelines, as well as locations where LPH was present on the Sears property adjacent to the Kal Tire building.

In 2007, the AESRD 2001 PST Guidelines were updated as the AESRD 2007 Tier I Guidelines.

## **5.6 Dual-Phase Vapour Extraction System**

DPVE, a type of MPVE technology was the preferred technology for the Site, not only due to the results of early tests, but also due to the nature of MPVE systems in general.

MPVE is a proven technology. An MPVE system was determined be the quickest and least intrusive extraction method for LPH. All infrastructure and extraction wells are located on City of Calgary property and routine access to individual properties is not required for system maintenance. The DPVE is also equipped with a thermal oxidizer to ensure that no noxious odors are generated. Other additions were made to reduce the noise generated by the system to acceptable levels.

The DPVE system installed at the Site is a Ground Effects Environmental Services Inc. (GEE) Titan 2440 MPVE System. The system is completely self-contained with a separate thermal oxidizer unit. Due to low hydrocarbon vapour concentrations, the thermal oxidizer unit currently uses propane for make-up gas to run efficiently.

The installation of the DPVE system was completed in three separate phases:

- Installation of the extraction wells;
- Installation of the underground header system; and,
- Installation of the DPVE system.

### **5.6.1 Installation of the Extraction Wells**

In October 2008, 7 extraction wells (EX1 to EX7) were installed and connected to a DPVE system to remove the LPH present beneath the Site. The extraction wells were drilled to a maximum depth of approximately 15.85 m bgs (EX7) and screened within the sandy silt unit from approximately 8.5 m bgs to 15.85 m bgs.

Beck Drilling and Environmental Services Ltd. (Beck) was contracted for the installation. The extraction wells were installed to varying depths depending on groundwater levels and subsurface stratigraphy. The locations of the extraction wells are shown in Figure 4.

Beck completed the first two boreholes using 200 mm solid stem augers. However, due to the unconsolidated nature of the lithology encountered, sloughing (collapse) became an issue. The remaining five boreholes were completed using 200 mm hollow stem augers to avoid collapsing within the borehole.

Copies of the borehole logs and extraction well construction details have been included in Appendix B.

The laboratory results of soil samples collected from boreholes EX1 to EX7 are presented in Table 3. Where detected, the concentrations of BTEX and PHC fraction F1 in all samples met the respective Tier 3 Guidelines. However, concentrations of toluene and ethylbenzene exceeded the AESRD 2010 Tier 1 Guidelines in soil samples collected from EX1 at 12.19 m and 14.48 m bgs, EX3 at 7.77 m, 9.60 m, and 13.41 m bgs, EX4 at 19.35 m bgs, EX6 at 10.82 m bgs and EX7 at 13.41 m and 14.02 m bgs. Concentrations of ethylbenzene exceeded the AESRD 2010 Tier 1



Guidelines in EX4 at 14.94 m bgs, EX5 at 10.82 m bgs and EX6 at 12.65 m bgs. Concentrations of xylene in EX3 at 9.60 m bgs also exceeded the AESRD 2010 Tier 1 Guidelines.

The extraction wells were constructed using 100 mm PVC pipe. The pipe was screened below the impermeable clay layer to avoid short-circuiting during operation of the DPVE system. The bottom of the extraction wells was placed to account for the annual groundwater table fluctuation. The annulus was filled with washed sil-9 sand across the screened section followed with approximately 0.3 m of hydrated bentonite. The annulus was then filled to surface with a cement-bentonite grout. Each extraction well was protected at surface with a temporary 0.3 m flush-mount steel road box. The temporary road boxes were replaced with a steel vault once the underground header system was completed.

### **5.6.2 Installation of the Underground Header System**

Subsequent to installation of the extraction wells, each extraction well was connected via an underground header system to the location of the DPVE system.

The header system was installed in early November 2008. Eight underground header lines were completed via horizontal drilling. The drilling was initiated from three different locations and tied together into a single header system. Top Gun Directional Drilling was contracted to install the header lines at approximately 1.3 m bgs. Note that one header line was installed south of extraction well EX7 and “dead-ended” in front of 1324 - 16<sup>th</sup> Street NW. The header line was installed as a contingency for potential future installations.

In mid-November 2008, GEE connected the extraction wells to the product lines using PVC couplers fitted with gate valves. The average depth of the tie-ins was approximately 1.3 m bgs. Upon completion of the tie-ins, the extraction wells were enclosed in flush-mounted, 0.6 m square, steel road vaults.

### **5.6.3 Installation of the DPVE System**

The DPVE system was installed on the grounds of Lions Park during the latter part of November 2008. The system consists of a self-contained DPVE treatment skid unit, a catalytic (thermal) oxidizer, and a propane storage tank.

The initial design provided to the City of Calgary, Parks and Recreation, showed the DPVE system surrounded by a wood fence. The fence was to serve three functions: security for the system; aesthetics to reduce the visual impact; and, some degree of noise reflection and reduction. The City of Calgary rejected the wood fence and required that a chain link fence be used in place of the wood fence. Subsequent to the placement of the DPVE system components, a three metre high, chain-link fence was built surrounding the components.

A soil berm was built outside the fence along the north side of the facility to redirect any surface run-off from entering the DPVE facility. Installation of the DPVE facility components was completed at the end of November 2008.

The DPVE system required 3-phase, 240-volt electrical service. The original plan assumed that the electrical service could be supplied from existing services located north of 14<sup>th</sup> Avenue NW. However, subsequent to installation of the DPVE system, Clifton was informed by Enmax that service could not be routed as originally planned. Instead, the electrical service was to be routed from an existing substation located south of 10<sup>th</sup> Avenue NW.

The existing electrical infrastructure in the neighbourhood was not sufficient to carry the 3-phase 240-volt electrical service from the substation to the DPVE system. Consequently, Sears was required to upgrade the electrical infrastructure from the substation to Lions Park. This included the replacement of all power poles within the laneway between 15<sup>th</sup> Street NW and 16<sup>th</sup> Street NW and the installation of a transformer. The design, contracting of the installation through Enmax, and subsequently Enmax's approved subcontractors took a significant amount of time through 2009. Installation of the power poles and electrical lines was finally completed by Enmax at the end of January 2010.

In mid-March 2010, the treated water discharge line from the DPVE system was connected to the City of Calgary sanitary sewer discharge network.

In October 2010, a high-speed internet link was installed to allow for remote access, monitoring and controlling of the DPVE system. The system started operations in October 2010 and began running full time in June 2011.

#### **5.6.4 DPVE Operation**

The DPVE system was commissioned in the first week of October 2010. Very soon, after operations began, Clifton received a complaint regarding noise from the DPVE system. The complaint was also forwarded to the City of Calgary.

In response to the complaint, continuous noise measurements were made between 7 October and 8 October 2010. Additional spot sampling was also conducted on 12 October 2010. Sampling points included: inside the facility; outside the facility; along 13<sup>th</sup> Avenue NW; and, near the residents' homes that were immediately south of 13<sup>th</sup> Avenue NW.

The City of Calgary noise limit is 65 dB for a continuous period of time during the day (7 am to 10 pm on weekdays and 9 am to 10 pm on weekends) and 50 dB during the night. The noise measurements showed that the noise levels during system operation were well within daytime limits. However, nighttime noise levels marginally exceeded the allowable levels. The City of Calgary and the GPC was informed of those results. The DPVE system was shut down until noise mitigation measures could be implemented.

With permission of the City of Calgary, the DPVE system was operated for brief periods to further test noise levels and potential mitigation measures. One measure tested was wood fencing, original to the design of the DPVE system. The fence was to serve three functions, one of which was some degree of noise reflection and reduction. Previously, the City of Calgary rejected the wood fence and required that a chain link fence be used in place of the wood fence. The testing showed that the wood fence would reduce the noise levels, as originally intended. Clifton discussed the results of the testing with the City of Calgary and approval was granted to replace the chain link fence with the original wood design.

The fence was installed during the first week of December 2010. Preliminary noise measurements subsequent to installation of the wood fence show a reduction in noise levels to less than 10 dB, meeting the nighttime noise limit. Following installation of the wooden fence, minor repairs were made to the system and it was reactivated on 14 January 2011. The system essentially ran continuously until the first week of June 2011 with minor shut down periods to reconfigure the electrical system to avoid nuisance fuse tripping. The system was shut down in the first week of June to assess

two vacuum blowers, which had seized, as well as the accumulation of sediment within the extraction wells. Two electric motors were replaced in the seized blowers and the extraction wells have been flushed of the accumulated sediment. The system was reactivated following a reassessment of the extraction well configuration on 27 July 2011, which was intended to reduce the occurrence of sediment accumulation within the extraction wells.

The system was originally tested as having the potential to remove as much as 300 kg per day of contaminant mass equivalent through the airstream in a vapour phase. These tests were completed in an area of the highest known LPH concentrations. Over time, the LPH mass in this area has been reduced to significantly lower levels, requiring more effort to remove additional mass, as the remaining contaminant is bound up in smaller pore spaces of lesser concentration and continuing to move into a dissolved phase. Therefore, the system currently removes much less than the 300 kg per day of contaminant mass equivalent through the airstream in a vapour phase.

As of 30 June 2013, the total volume of treated groundwater discharged to the City of Calgary sanitary sewer system was 695,642.9 L. Discharge rates ranged from a minimum of 38 L/min to a maximum of 113 L/min. To date, the system has extracted approximately 2,461 L of LPH vapour equivalent from beneath the Hounsfield Heights area and is up and running. LPH has not been observed in the monitoring wells since October 2012 (BH1703, 0.01 m). A summary of the total LPH recovered can be found in Table 9.

As per the requirements of the City of Calgary's Groundwater Disposals to Sanitary Sewer Permit (Permit #WQS-GW01), laboratory analysis of the treated groundwater being discharged into the sanitary sewer is required. The most recent report was submitted 6 August 2013. All parameters tested were either non-detectable or met the Discharge Release Limits. It should be noted that all PHC concentrations in the sanitary sewer discharge were non-detectable, including benzene.

## **5.7 Communications**

All general communications to residents in the Hounsfield Heights area have been through the GPC. The GPC has been most recently chaired by Mr. Emmanuel Malterre and all communications to the GPC have been directly through the chair.

As per the 2006 SMP, issues specific to potentially affected residents were communicated directly to those residents.

Subsequent to acceptance of the 2006 SMP by AESRD, a number of property owners have requested information (monitoring well data, laboratory sample results, etc.) regarding their properties. Sears, through Clifton, has continued to provide to those owners who request it, information specific to their properties.

Since February 2013, Clifton, on behalf of Sears, has communicated to the Hounsfield Heights area residents through the community newsletter *The Beacon*, regarding the activities completed within the Hounsfield Heights area.

## **5.8 Key Findings**

After thoroughly reviewing the summation of data collected between 1998 and 2012, Clifton identified the following key points:

- Tier 3 Guidelines were developed for benzene in both the soil and groundwater and PHC fraction F1 in the groundwater in Zones 1 and 2;
- Concentrations of toluene, ethylbenzene, xylenes and PHC fractions F2 – F4 were either below the applicable 2001 PST Guidelines for the vapour inhalation pathway, were below the other applicable pathway guidelines that existed at the time in 2006, or were not applicable as the pathways did not apply;
- AESRD did not approve the PHC fractions F1 and F2 Tier 3 Guidelines for soil, so these constituents defaulted to the AESRD 2007 Tier 1 Guidelines;
- PHC impacts above the Tier 3 Guidelines for soils within Zones 1 or 2 appear to be present for benzene at two locations (BH738, 14 mg/Kg at 15.8 – 15.9 m bgs and BH739, 13 mg/Kg at 14.3 – 14.5 m bgs) within the lower interbedded sandy silt and silt unit (Figure 5). This may represent the nearby presence of LPH with the possibility that the plume may still be migrating south. It is possible that a risk pathway may be complete if the middle clayey silt unit excessively thins or pinches out within this zone;

- No benzene or PHC fraction F1 concentrations exceed the Tier 3 Guidelines within the shallow silty sand unit or in the underlying clayey silt layer within Zones 1 or 2;
- The constituents benzene, toluene, ethylbenzene, xylenes and PHC fractions F1 and F2 would exceed the AESRD 2010 Tier 1 Guidelines at numerous locations, if the guidelines were applied within Zones 1 and 2;
- At least seven soil samples exceed the AESRD 2010 Tier 1 Guidelines for benzene within Zone 3, south of 11<sup>th</sup> Avenue NW, where the AESRD 2010 Tier 1 Guidelines currently are applied (Figure 6);
- PHC impacts that did not necessarily exceed AESRD 2010 Tier 1 Guidelines in soils are found at depths ranging from approximately 3.7 m (BH708, in the area surrounding Zone 3) to 19.35 m bgs (EX-4, within Zone 1), the extent of the current series of investigations;
- The lateral and vertical extents of the PHC impacts need to be expanded since the former delineation was based on the AESRD 2001 PST Guidelines. Since 2007, the applicable guidelines have changed significantly and the current applicable guidelines are the AESRD 2010 Tier 1 Guidelines;
- LPH was identified in 2001 in monitoring well BH1703 (within Zone 1), located on City property near 13<sup>th</sup> Avenue NW and 16<sup>th</sup> Street NW (Figure 4). The well is screened within the lower interbedded sandy silt and silt layer. In October 2012, LPH was encountered in this monitoring well;
- LPH was not physically encountered during the most recent sampling event completed in April 2013. However, data from sampling events indicates that it is possible that LPH remains on the Site in areas where monitoring wells are not installed;
- After a careful review of borehole logs and grain size analysis, the clay unit has been re-defined more accurately as clayey silt. It appears that this unit acts as a barrier preventing the upward migration of PHC vapours. Soil sample headspace combustible vapour concentrations collected during borehole drilling from the base of the clayey silt were lower than those collected from the underlying

interbedded sandy silt and silt unit, even where the lower interbedded sandy silt and silt unit was impacted;

- Accurate cross-sections of the Site area need to be completed to fully understand the stratigraphic and hydrogeologic relationships between the various units;
- As of 2005, shallow soil, hydrocarbon vapour concentrations were below the limit of analytical detection and well below the soil vapour concentrations that could be harmful to health on either, a short term, or long term basis. There is no current evidence to indicate that upward migration of vapours to the surface, or near the surface occurs in the Hounsfield Heights area from the PHC impacts at depth;
- It is unclear whether or not the clayey silt layer, which is found across the entire studied Site area, thins to a minimum thickness that would allow vapours to migrate through the layer, so as to cause risk to the residents living in structures built upon the surface;
- The HRA needs to be updated due to the significant changes in the applicable guidelines. The new HRA should be based on the AESRD 2010 Tier 1 Guidelines; and,
- A CSM of the Site needs to be developed. Additional information should be collected to determine a more accurate hydrogeological model that captures the physical characteristics of the Site.

## **6.0 Site Management Plan and Proposed Actions**

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The Updated SMP (2014) has considered input from AESRD and Sears. Additionally, opinions were solicited from the GPC, Alberta Health Services, and the City of Calgary prior to finalization.

### **6.1 AESRD Correspondence**

On 20 July 2012, AESRD requested that Sears incorporate the following points into an Updated SMP (2014) for the Hounsfield Heights area and further suggested that a separate updated SMP be created for the Mall area:

- “Fully delineate the dissolved plume south of 11<sup>th</sup> Avenue”;
- “Sample the groundwater adjacent to where it discharges to the surface in the south portion of zone 3 and evaluate it for risk to ecological receptors”;
- “Delineate the soil gas/vapour plume in Zones 1, 2 and 3”;
- “Access potential risks from ingress of petroleum hydrocarbon vapours to indoor air in areas where the guidelines are exceeded for the vapour inhalation pathway, and in areas where it has been determined that elevated soil gas/vapours are present”;
- “Establish a soil gas monitoring program on properties that may be at risk from vapour ingress to indoor air. Compare current needs with those previously identified in the Clifton April 5, 2007 response to Alberta Environment regarding soil vapour monitoring”;
- “Implement additional remediation techniques to deal with the expanding dissolved phase plume. As discussed, this could include enhanced bioremediation. Monitored natural attenuation is not appropriate while LPHC are being removed and when the dissolved plume is not stable. Multiple remediation approaches are needed to address the petroleum hydrocarbon impacts”;
- “Review the groundwater monitoring and sampling program to ensure adequate coverage based on current conditions and trends”; and,
- “Apply the Tier 1 guidelines to monitoring well locations along 11<sup>th</sup> Avenue NW and include these wells in the groundwater monitoring and sampling program”.

As of the date of this report, only the last two of the above points have been implemented; however, a number of additional points are scheduled for implementation during the 2014 calendar year. A copy of the June 2012 AESRD correspondence may be found in Appendix C.



## **6.2 Objectives and Summary of the Updated SMP (2014)**

The main objective of the Updated SMP (2014) will be to the extent practicable, continue to address the removal of the LPH and the dissolved PHCs in the groundwater. This will ultimately be accomplished by the simultaneous application of diverse remediation techniques. Additional objectives will include: the refinement of the subsurface geology and hydrogeology; the delineation of the PHC plume; and, a determination as to whether any risk is present to receptors. If risks are found to be present, then the final objective will be to manage those risks.

An extensive soil boring and monitoring well installation program has been planned for the Hounsfield Heights area. This includes the abandonment of over 70 existing groundwater monitoring wells and the installation of over 100 new wells. The wells to be abandoned are cased through multiple units and are insufficient for the current level of detail needed for the investigation. These new wells will each target a specific stratigraphic unit, so that each unit can in turn be hydraulically isolated and a better understanding gained of the groundwater contamination and movement through each of the units.

AESRD has again updated the Tier 1 and 2 Guidelines. These new AESRD 2014 Tier 1 Guidelines become effective in December 2014. The objectives of the installation program will be: to gain a consistent stratigraphic profile of the entire Site; delineate the plume in both soil and groundwater to AESRD 2014 Tier 1 Guidelines; and, to gather current data for a revised HRA.

In addition, based upon the results of the installation program, select sensitive areas will have soil vapour probes installed to collect data on potential soil gas infiltration into the upper most unit upon which homes are constructed.

Based upon the results of the investigation, both the HRA and CSM will be modified to incorporate the new findings.

If LPH is encountered in any of the new groundwater wells, it will be removed by technologies appropriate to the size of the area of LPH. Additionally, several consecutive groundwater sampling events are planned to determine the status of the plume. Additional technologies may be introduced to remediate the plume.

Once it is confirmed that the plume is no longer expanding, plans will be made to reduce the size and area of the plume.

Monitoring programs and modeling activities will help to identify whether the potential reduction in contaminant concentrations is caused by natural attenuation or a different cause (i.e., plume expansion, contaminant dilution, etc.)

After contaminant levels in the dissolved phase groundwater plume have been reduced below all appropriate Site guidelines, a confirmatory groundwater monitoring and sampling program will be implemented to verify that the groundwater beneath the Site has met these criteria. It is envisioned that the confirmatory groundwater monitoring and sampling program will last a minimum of three years and will consist of the quarterly sampling of selected indicator monitoring wells.

Following the successful completion of the confirmatory monitoring program, an application to AESRD will be made to decommission the remaining monitoring wells in the area, as well as the DPVE system (s), and any other remedial equipment associated with the Site.

It is expected that after the completion of the remedial activities, the residual PHCs, if any, beneath the Site will continue to decrease over time through natural attenuation. This timeline has not yet been calculated or modeled.

### **6.3 Site Management Plan Discussion**

The following sections discuss the identified components of the future SMP for the Hounsfield Heights area.

#### **6.3.1 Conceptual Site Model Preparation**

As a part of the Updated SMP (2014), a CSM has been prepared that details the known specifics of the Hounsfield Heights area related to the release, pathways of migration, and target receptors. The CSM (Section 6.4) includes a visual representation of the Site as well as a detailed text description.

### **6.3.2 Public Meeting**

A public meeting of the Hounsfield Heights area community will be conducted prior to the initiation of the well abandonment and installation programs. The meeting will offer information regarding the proposed schedule and locations of Hounsfield Heights area work, as well as offer the opportunity to collect specific information from the residents regarding potential risk pathways.

Additionally during the public meeting, the residents will receive a briefing of the proposed work to be completed and the data gaps that exist in our current understanding of the plume. The meeting will request participation from the residents within certain areas regarding information on basements, sump pumps, and crawl spaces to install monitoring wells or vapour probes on their property, in an attempt to determine whether LPH remains in formerly inaccessible areas.

### **6.3.3 License of Occupation, Utility Line Assessments and Excavation Permits**

A license of occupation, utility line assessments, and associated excavation permits must be requested from the City of Calgary for any soil boring or monitoring well installation in the right-of-way on City of Calgary streets or lanes. The utility line assessment must also be approved and on hand prior to any well abandonment.

### **6.3.4 Monitoring Well Abandonment**

As mentioned previously, over 70 existing groundwater monitoring wells are planned to be abandoned during the coming year in order to install a more specific network of groundwater monitoring wells. The existing groundwater monitoring wells will be over-drilled with HSAs and all of the original well materials removed, leaving only native stratigraphy. The resulting empty borehole will be backfilled with liquid bentonite slurry from the base of the borehole to less than a meter below the surface, using a tremie pipe to prevent bridging.

The remainder of the borehole will be backfilled with clean, pit run soil and topped with: at least 0.3 m of topsoil in areas where the borehole is surrounded by topsoil; gravel in lanes and alleyways to blend in with existing surficial materials; or,

structured roadbed materials including an asphalt or concrete surficial topping where appropriate in City of Calgary streets.

### **6.3.5 Full Delineation of Impacts and Extent of the Contaminate Plume**

A drilling program is necessary to delineate fully both the horizontal and vertical extent of the contamination plume, to gather the data required for groundwater flow modeling and to gather the soil and groundwater data required to revise the HRA. All of this information will be used to modify the CSM.

Drilling of boreholes along the City of Calgary properties (i.e. from 17A Street NW to 14<sup>th</sup> Street NW and from south of 14<sup>th</sup> Avenue NW to 10<sup>th</sup> Avenue NW; and, parklands) and if feasible and with the resident's permission, within private properties, will be completed.

The drilling program will consist of the installation of monitoring wells and as a follow up, if necessary, the installation of soil vapour probes: to obtain the additional information necessary to revise the CSM; to stratigraphically recognize and define the most important characteristics of the Hounsfield Heights area; to identify any environmental and human health risks; delineate both the horizontal and vertical extent of contamination; and ultimately to gather the data necessary to determine the most effective remediation practices for the cleanup of the Hounsfield Heights area.

A subset objective of the delineation work will be to determine the extent and thickness of the middle clayey silt layer, which has been assumed to act as a barrier to petroleum vapours from the lower, interbedded sand silt with silt unit, preventing the vapours from reaching the surface and the associated receptors.

Areas where the air inhalation pathway is exceeded will be flagged for further investigation by either indoor air sampling of the affected homes surrounding the monitoring well(s) or the installation of soil vapour probes around the same residences in the area.

Additionally, determination of contaminant flow and migration, time of travel, and other parameters will help to define the most appropriate remedial option(s). Upon approval by the City of Calgary, the Updated SMP (2014) will be amended to include a drawing of approved soil boring and monitoring well installation locations.

### **6.3.6 Surface Spring or Seep Sampling**

A limited sampling program will be completed within Hounsfield Heights Park in the southern portion of Zone 3, where the groundwater is projected to discharge to the surface. Soil and groundwater samples will be collected from any identified surface seeps and submitted for laboratory analysis of potential contaminants of concern (i.e., PHCs, VOCs, etc.). Samples will be collected by excavating a small basin in the area of the seep with a clean, decontaminated tool and allowing the surface flow to clear away any disturbed sediments. A water sample will then be collected using a clean, decontaminated polyethylene or glass sampling container and transferred with minimal agitation to laboratory-supplied, clean sample containers.

### **6.3.7 Well Monitoring and Groundwater Sampling**

#### *6.3.7.1 Groundwater Monitoring*

A program to continue the monitoring of groundwater elevations and standpipe combustible vapour concentrations, as well as to confirm or deny LPH presence, will be conducted. If LPH is detected at the groundwater surface, the LPH will be recovered for disposal.

The well monitoring initially will be conducted for a three-year period beginning after the installation and development of the complete network in late 2014 or early 2015: on a quarterly basis for the first two years, then semi-annually for the remainder of the period. The monitoring program will then be reviewed based on the data collected. This is not to be confused with the monitoring and sampling necessary to determine the confirmation of closure of the Site, which has a different set of requirements and not be discussed at this time.

#### *6.3.7.2 Groundwater Sampling*

Over the same three-year period, samples of the groundwater will be collected from all the accessible monitoring wells and analyzed on a semi-annual basis in the laboratory for concentrations of BTEX, PHC fractions F1 and F2, and VOCs. Certain well locations may also be analyzed for dissolved metals concentrations and routine parameters, to help determine groundwater chemistry and whether natural attenuation is occurring.

Site monitoring reports, documenting the results of the well monitoring and groundwater sampling (if applicable for the monitoring period) will be prepared after each well monitoring event. In those reports where it applies, the results of the laboratory analyses will be compared to the established Tier 2 Site-specific soil and groundwater quality objectives, or the AESRD 2014 Tier 1 Guidelines, depending upon the location of the monitoring well. Areas where the air inhalation pathway is exceeded will be flagged in some manner.

It is also anticipated that the groundwater guidelines will be modified by new Tier 2 Site-specific action levels at some time in 2015, when the collected data set can be analyzed.

The overall well monitoring and groundwater sampling results will be reviewed after the first two years, to evaluate the concentrations of the COC concentrations and groundwater conditions beneath the Site.

### **6.3.8 Interior Air Sampling**

Air samples will be collected from the interior of selected homes where there is the potential for a completed air pathway, specifically after exceedances of the air inhalation pathway are found in the groundwater monitoring data. Ultimately, if exceedances of the air inhalation pathway are found in groundwater monitoring data, or later, in soil vapour probe data, but the COCs are not found in the air within the home, then a risk pathway has not been completed.

Prior to the analysis of the soil and groundwater data from the planned investigation, interior air samples may be collected from locations where prior groundwater sample results indicated that an exceedance of the air inhalation pathway might exist. Air samples will be collected from the breathing zone in the lowest livable portion of the home. Air samples will be collected for BTEX, PHC fractions F1 – F2, and 1, 2-Dichloroethane

### **6.3.9 Shallow Vapour Monitoring**

Shallow vapour probes will be installed within areas that may have the potential for a completed pathway, if the groundwater data shows exceedances of the vapour

inhalation pathway. These areas may include locations where the Middle Clayey Silt layer thins or possibly pinches out.

The probes will be situated at multiple depths on each property to monitor the soil vapours immediately above the clayey silt layer, and just below the building foundation. Sampling of the shallow vapour probes will also be conducted on a quarterly basis for the first two years of the remediation program, if required.

#### **6.3.10 Door to Door Survey**

It is anticipated that announcements for the community meeting, requesting that the residents attend the meeting, will be sent to every home within the Hounsfield Heights area. Residents that attend the community meeting will be asked specific information about their homes (i.e., Do they have a basement or crawlspace? Do they have a sump pump?). For those residents that do not attend the meeting, Clifton will attempt to collect the information necessary for the HRA by going door-to-door to get these questions answered.

#### **6.3.11 Topographic and Well Survey**

A survey of all newly installed and existing monitoring wells, using a common datum, is required to determine a more accurate direction of shallow groundwater flow. The current survey data is incomplete due to missing grade elevation.

#### **6.3.12 Monitoring Well Repairs**

Regular monitoring well repairs are proposed to be completed as needed.

#### **6.3.13 Groundwater Hydrogeologic and Plume Modelling**

Data from the soil boring and groundwater monitoring well installations will be input into a modelling programs, such as Surfer and MODFLOW, to create a visual representations of the plume under the Hounsfield Heights area. This will better allow Sears to track plume movements, anticipate when the plume may reach equilibrium, and determine if it is fully delineated.

#### **6.3.14 Revised Health Risk Assessment**

Data from the laboratory analysis of the soil boring and groundwater monitoring well installation samples will be input into new calculations for a revised HRA. The revised HRA will reflect the current conditions in the Hounsfield Heights area and provide enough information to calculate new Tier 2 Site-specific guidelines. Clifton will consult with AESRD regarding baseline default and Site-specific parameters, as well as the new AESRD 2014 Tier 1 Guidelines.

#### **6.3.15 Revised Conceptual Site Model**

Data from the soil boring and groundwater monitoring well installations will be used to revise the CSM.

#### **6.3.16 DPVE System Operation**

It is anticipated that the DPVE system will remain in operation throughout the process cycle of completing the additional work on the Site. The system may need to be shut down for a period if any of the existing extraction wells are repaired or replaced. It should also be noted that the operation of the DPVE system has been interrupted at times due to necessary maintenance and repairs on the system.

#### **6.3.17 Schedule of Activities**

A schedule of activities has been included as Table 12. The anticipated timeline of activities is a best estimate and is meant to be provided as a guide, and not an absolute drop-dead date. The schedule should be used as a reference for the anticipated number of days or weeks that a particular portion of the project is projected to last. The schedule of activities will be modified prior to the end of 2014 for the following two years of planned activities and milestones.

#### **6.3.18 Contingency Plan Development**

The development of contingency plan will be completed for incorporation into a later edition of the SMP. However, in the interim, Clifton will contact the City of Calgary Development Department and begin both the development of a process for notification to residents prior to the submittal of a development permit as well as tagging the parcels within the Site area for notification should a development permit



be requested. This will allow Sears and Clifton to be notified should direct subsurface soil work be planned for the permitted parcel.

The plan will also include: a process for notifying landowners as a part of the permit process; exceedance limits for the various media; soil and groundwater sampling strategies and coordination with the landowner; triggers, response timelines, and response actions that may include the installation of sub-slab devapourization systems under new infills.

## **6.4 Ancillary Plans**

### **6.4.1 Conceptual Site Model**

Site investigations have revealed the presence of PHCs in the subsurface soils and groundwater found beneath City of Calgary and adjacent privately owned properties in the Hounsfield Heights community of Calgary. The source of the PHCs was a former service station located in the North Hill Shopping Centre on property owned by Sears Canada.

See Section 2.2 for a more detailed description of the release history and Section 2.3 for a more detailed description of the history of the Hounsfield Heights area investigation.

This CSM forms a part of the Updated SMP (2014) developed by Clifton in 2014. It is limited to the Hounsfield Heights area. The Mall area is covered by a separate CSM in accordance with AESRD requirements. The CSM follows the recommendations for CSM development described in the AESRD 2010 Tier 1 Guidelines, AESRD 2010 Tier 2 Guidelines, and Canadian Council of Ministers of the Environment (CCME, 2006a). In view of the fact that this CSM is a part of the Updated SMP (2014), it refers to data and information contained in the Updated SMP (2014).

#### *6.4.1.1 Site Description*

##### **6.4.1.1.1 Location**

Additional descriptions of the Hounsfield Heights area may be found in Sections 1.0 and 2.3.

#### **6.4.1.1.2 Topography**

A detailed discussion of the Hounsfield Heights area topography may be found in Section 3.0.

#### **6.4.1.1.3 Climate**

The City of Calgary climate is classified as a dry continental climate (Koeppen climate classification Dfb, USDA Plant Hardiness Zone 3a) heavily influenced by the City's elevation and proximity to the Rocky Mountains. Winters are usually cold and dry with moderately warm summers.

Average daytime high temperatures range from 19 °C in July to -4 °C in January (Environment Canada). Average relative humidity is 55% in the winter and 45% in the summer. The City receives an average of 439 mm of precipitation annually, with 321 mm of that occurring in the form of rain, and 118 mm as snow. Most of the precipitation occurs from May to August, with June averaging the greatest, monthly rainfall.

#### **6.4.1.1.4 Land Use, Buildings, Utilities**

For a detailed description of the land use in the Hounsfield Heights area, please refer to Section 3.0.

The Site is comprised of single-family dwellings, some with basements or crawl spaces. The residences are occupied by young families, working couples and retirees, with all age categories represented (i.e., infants, toddlers, children, adolescents, and adults). No buildings with unique features, such as earthen floors or structures with an exceptionally low air exchange rate are known to be on the Site.

#### **6.4.1.1.5 Surface Water and Drainage**

Please see Section 3.3 for a detailed discussion of the Hounsfield Heights area hydrogeology.

Surface drainage at the Site is via infiltration and percolation of precipitation in unpaved areas (especially in Lions Park). Overland flow is to the south along paved roadways and sidewalks into the City of Calgary storm sewer system.

#### **6.4.1.1.6 Vegetation**

Vegetation in the Hounsfield Heights area is typical of urbanized areas and is comprised by mixture of trees, shrubs, and grasses. Trees are predominantly represented by Aspen Poplar, White Birch, Black Spruce, and Jack Pine. Grasses in the Hounsfield Heights area are typically of the mixed prairie vegetation type and predominately represented by short and mid height grasses such as Rough Fescue Grass, Common Spear Grass, and Western Wheat Grass. Small vegetable gardens exist in some of the privately owned backyards, with a very limited production of edible vegetables and berries for private consumption.

#### *6.4.1.2 Regional Processes*

##### **6.4.1.2.1 Geology**

A detailed description of the current knowledge of the Hounsfield Heights area geology may be found in Section 3.2.

##### **6.4.1.2.2 Hydrogeology**

A detailed description of the current knowledge of the Hounsfield Heights area hydrogeology may be found in Section 3.3.

#### *6.4.1.3 Site Investigation, Contaminant Characteristics and Migration*

##### **6.4.1.3.1 Results of Previous Site Investigations**

A detailed discussion of the current state of knowledge of previous Hounsfield Heights area investigations may be found in Section 2.3.

##### **6.4.1.3.2 Contaminants of Concern, Contaminant Sources**

The contamination source is a former service station located at the North Hill Shopping Centre (1614-14<sup>th</sup> Avenue NW) in Calgary, Alberta. The service station was operated between the years 1958 and 1984 as a Sears Service Center and later as a Sunoco Service Station from 1984 to 1995. The service station used USTs to store both gasoline and diesel fuel for retail sale to the public. The original USTs were removed in 1984. Ultimately, the station was decommissioned in 1995 and the second generation of USTs was removed.

The North Hill Shopping Centre is hydrogeologically up gradient of the northern portion of the Hounsfield Heights area. The exact mechanism, of how the PHCs were able to reach the lower interbedded silty sand and silt stratum through the relatively low-permeable clayey silt layer, is imperfectly understood at this time.

The COCs at the Site are typical of the primary source:

- PHC fractions F1 and F2 – primary component of fuel;
- BTEX – makes up as much as 18% of gasoline, naturally occurring with additional ethylbenzene added to fuels;
- Lead – antiknock compound banned in 1993; and,
- 1, 2-Dichloroethane (aka 1, 2-DCA, Ethylene Dichloride, EDC) – lead scavenger used in conjunction with lead antiknock additives in leaded fuels.

#### **6.4.1.3.3 Area of Environmental Concern**

The Hounsfield Heights area of concern will be defined: to the north as the southern edge of the LRT line within Lions Park; to the east by the eastern ROW of 14<sup>th</sup> Street NW; to the south by the southern ROW of 10<sup>th</sup> Avenue NW and a line extending west to the western ROW of 17A Street NW; and, to the west by the western ROW of 17A Street NW and a line extending north to the southern edge of the LRT line within Lions Park (Figure 3).

#### **6.4.1.3.4 Contaminants Transport and Fate**

The nature of the COCs and the Site allows for transportation in the various media as follows:

- Direct contaminant migration in soil strata by mass flow and diffusion;
- Migration via man-made conduits, such as utility trenches and boreholes;
- Migration directly in soil profiles by means of infiltration and percolation of precipitation into the vadose zone;
- Shallow water (perched) contamination plume diffusion and possibly advection;
- Groundwater in the lower interbedded silty sand and silt stratum allows for the formation of an LPH layer at the surface of the water table;

- Contamination of the soils above the saturated zone during fluctuation of the water level table;
- A dissolved phase contaminant plume within the groundwater of the lower interbedded silty sand and silt unit is subject to the processes of advection, diffusion, longitudinal and transverse dispersion directly within in the aquifer; and,
- Vapour migration from any of the units to the surface unless precluded by a confining layer.

The predominant mode and speed of the transport are functions of both contaminant and media physical and chemical properties, such as (but not limited to): solubility, specific gravity, half lifetime, water diffusion coefficient, and soil adsorption coefficient. Generally, it can be expected that due to their physical and chemical properties, BTEX and especially 1, 2 – Dichloroethane are the most mobile of COCs present at the Site. The upper silty sand, as well as the lower sandy silt and silt strata, due to their permeability and presence of underground water bodies, is providing the best conduits for contaminant migration at the Site.

The eventual fate of the contaminants will depend on their physical and chemical properties, mode of transport, and the stratum of occurrence. For contaminants in the upper silty sand stratum, the most significant processes related to natural attenuation will be volatilization, vaporization, dilution, dispersion, biodegradation, and possibly bioaccumulation. For contaminants in shallow water, it will be biodegradation, hydrodynamic and mechanical dispersion, diffusion, and advection, with possibility of a surface discharge of water in forms of water seeps leading to further biodegradation and photo transformation. Contaminants in the lower silty sand and silt stratum are susceptible to biodegradation, advection, diffusion, longitudinal, transverse dispersion, as well as upward migration in the form of vapours.

#### **6.4.1.3.5 Active Exposure Pathways and Receptors**

For visual expression of possible exposure pathways and receptors in the Hounsfield Heights area, please refer to Figure 8 (Conceptual Site Model Diagram) and the Figure 9 (Idealized Conceptual 3D Cross Section) of the Hounsfield Heights area. The CSM was guided by a number of considerations:

#### **Human Receptors:**

- The Hounsfield Heights area is zoned for residential/parkland land use, with the most sensitive human receptors as discussed in the HRA;
- The buildings in the Hounsfield Heights area are mainly single-family dwellings, some with basements, with a depth not exceeding 3 meters. Structures with features such as earthen floors or unusually low air exchange rate do not appear to be present in the Hounsfield Heights area. The source of volatile contaminants is further than 30 cm from all structures in the Hounsfield Heights area. Sump pumps may be used in basements. A subsurface water hydraulic connection cannot be ruled out on the basis of known information;
- The residences are occupied by young families, working couples and retirees, with all age categories represented (infants, toddlers, children, adolescents and adults);
- The Site is visited by the general public (parks) and workers (infill housing constructions);
- There is no evidence of domestic water wells in the vicinity of the Hounsfield Heights area; and,
- The local drinking water supply is provided by the City of Calgary municipal water system.

#### **Ecological Receptors:**

- The nearest surface body of water is the Bow River, located approximately 1,500 m to the south of the Hounsfield Heights area. There is not any surface water body within 300 m down gradient or 100 m up gradient of the Hounsfield Heights area. Groundwater is not used as irrigation water or for livestock/wildlife watering;
- The Hounsfield Heights area represents an urban environment (i.e., residential land use), and as such, is devoid of species that would typically qualify as valued ecosystem components (e.g., livestock, game animals) and parks at the Site are not known to be frequented by wildlife or endangered species;
- The ecological receptors that might inhabit or frequent the Hounsfield Heights area are limited to soil-dwelling invertebrates, small mammals (e.g., squirrels, voles), song birds, household pets, and vegetation (plants, grasses, shrubs, trees); nutrient and energy cycling occurs on the Site, biomagnifying

processes among primary, secondary and tertiary consumers cannot be excluded at this time; and,

- There two potential ephemeral marshy areas at the Site, one of them possibly hydraulically cross gradient (17A Street NW and 12<sup>th</sup> Avenue NW) and another hydraulically down gradient (just south of 10<sup>th</sup> Avenue NW). Clifton does not have any visual evidence of these seasonal water seep(s).

#### *6.4.1.4 Data Gaps and Model Limitations*

##### **6.4.1.4.1 Data Gaps**

As already mentioned in the text above, there are numerous environmental data gaps related to the Hounsfield Heights area, which necessarily affect an outcome of the CSM and that are identified below:

- Incomplete delineation of the contamination plume extent in several areas of the Site, especially south of the 11<sup>th</sup> Avenue NW;
- Unknown values of the specific hydraulic gradient for the upper silty sand and the lower interbedded sandy silt and silt strata;
- Imperfectly investigated thickness and continuity of all three soil strata in the southern portion of the Site;
- Lack of information related to perched zones that may be present in the upper silty sand strata;
- Numerical modeling of mass flow between source area and the Site has not been completed; and,
- Numerical modeling with regard to transport, fate, and natural attenuation for COCs has not been completed.

The above-mentioned data gaps are targeted for closure in this Updated SMP (2014).

##### **6.4.1.4.2 Model Limitations**

Any CSM is dynamic by its nature and therefore, it represents a stage of knowledge about a site to date. Further stages of environmental investigation will allow for updating and fine-tuning of a CSM. The CSM for the Hounsfield Heights area is no exception to this rule.

The investigations undertaken by Clifton with respect to this CSM and any conclusions or recommendations made in the CSM reflect Clifton's judgment based on the conditions observed at the time of the investigations and on information available at the time of preparation of this CSM. This CSM has been prepared for specific application to the Hounsfield Heights area and it is based, in part, upon visual observation of the Hounsfield Heights area, and review of available records.

Unless otherwise stated, the findings cannot be extended to previous or future conditions, portions of the Hounsfield Heights area that were not investigated, subsurface locations that were not investigated directly, or chemical parameters, materials and analysis which were not addressed. Substances other than those addressed may exist within the Hounsfield Heights area. Substances addressed by the investigation may exist in areas of the Hounsfield Heights area not investigated and concentrations of substances addressed may exist in areas other than the location from which samples were taken.

If conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions, and recommendations in this CSM may be necessary.

#### **6.4.2 Safety**

Safety concerns for work in the Hounsfield Heights area will be addressed through safety plans, tailgate meetings, appropriate training and certifications, personal protective equipment, communications, and job site observations.

Members of the work crews will be protected from traffic hazards by the establishment of safety corridors that will either be completely blocked by barriers or if temporary, by flag personnel. Members of the work crews will be protected from contaminant hazards by the use of appropriate personal protective equipment.

Members of the public will be protected from harm in the work areas by hazard identification signs, fencing, other barriers, and communication.



### **6.4.3 Noise**

All work will be restricted to within the levels established by the City of Calgary. The noise limit is 65 dB for a continuous period of time during the day (7 am to 10 pm on weekdays and 9 am to 10 pm on weekends) and 50 dB during the night.

### **6.4.4 Odours**

It is possible that odours will be generated during the borehole investigation program, depending upon the contamination level of the soils encountered. The odours should dissipate quickly due to the small surface area exposed.

### **6.4.5 Complaints or Claims**

Any complaints or claims concerning work in the Hounsfield Heights area should be directed in writing to Mr. Wayne E. Prada ([wprada@sears.ca](mailto:wprada@sears.ca)) with Sears via email, copying Mr. Stephen d'Abadie of Clifton ([stephen\\_dabadie@clifton.ca](mailto:stephen_dabadie@clifton.ca)). All correspondence should provide a detailed description of the complaint or claim, as well as a name and phone number where they may be reached during normal business hours.

### **6.4.6 Investigative Derived Wastes**

All investigative derived wastes will be appropriately containerized, handled, transported, and disposed in accordance with all applicable regulations and bylaws.

- Soil cuttings will be containerized in soil bags for ultimate disposal in a licensed Class II landfill after receipt of appropriate laboratory analyses;
- All purge or development water from groundwater monitoring wells will be containerized pails for ultimate disposal in the DPVE groundwater treatment system; and,
- All solid wastes and disposables will be containerized and transported away from the Hounsfield Heights area in solid waste receptacles for ultimate disposal by a commercial waste hauling firm.

#### **6.4.7 Traffic**

Traffic controls will be set up to protect both the Hounsfield Heights area residents and the investigative program workers.

- Areas of work will be blocked off the evening prior to the start of work with appropriate street or lane closure permits;
- Areas of a street where a drilling rig, support truck, or crew vehicle are blocking access will be cordoned off with barriers as well as safety tape. A street will not be blocked entirely and will always be accessible from one end or the other;
- In especially busy areas such as 14<sup>th</sup> Avenue NW, cones, barriers and flagging crews may be used to block a lane of traffic for the safety of the drilling crew; and,
- Soil bags that may be blocking parking areas along a curb will be removed with two days of the completion of the borehole location.

#### **6.4.8 Staging**

An area within Lions Park adjacent to the current may be utilized for the staging of equipment and materials necessary for the current investigation. The staging area will be enclosed by temporary fencing with a locked gate.

### **6.5 Proposed Remedial Options**

Several proposed remedial options are available for the Site and are discussed below. Once the CSM has been updated with data from the drilling program, additional remedial options may be identified that would be of benefit in the reduction of the plume, especially in any area that is outside of the radius of influence of the DPVE system.

#### **6.5.1 Natural Attenuation**

All measured groundwater concentrations of benzene currently meet the Tier 3 Guidelines beneath Zones 1 and 2. Measured concentrations of benzene in some of the groundwater monitoring wells exceed the AESRD 2010 Tier 1 Guidelines in Zone 3 and in the areas surrounding Zone 3.

These concentrations are expected to decrease over time through natural biodegradation processes. However, concentrations of BTEX and PHCs fractions F1 and F2 need to be closely monitored. As part of the Updated SMP (2104), a program will be established to confirm that hydrocarbons in the groundwater are being naturally degraded (natural attenuation) to below the guidelines that will be revised based upon the new sampling data set and HRA. The new guidelines will be Tier 2 Site-Specific Guidelines based upon the AESRD 2014 guideline development process established in this document.

Natural processes can be effective in reducing levels of PHCs in the soil and groundwater. These processes are ongoing, limited by the availability of moisture, nutrients, and oxygen. It is anticipated that these processes are occurring beneath the Hounsfield Heights area. Indications of decreasing PHC concentrations can be seen in the existing groundwater analyses. Where groundwater-sampling data is available over time, there has been a consistent trend of decreasing BTEX concentrations for the groundwater samples collected. However, the monitoring program and modeling activities will help to identify whether the potential reduction in contaminant concentrations is caused by natural attenuation; or, a different cause (i.e., plume expansion, contaminant dilution, etc.)

Evidence of natural biodegradation of the PHCs will be monitored through parameters measured in the groundwater (BTEX, metals, routine parameters, and dissolved oxygen). If it appears that degradation of the PHCs is limited by groundwater conditions, a plan will be developed to enhance microbial activity. Options to be considered would include the addition of slow release oxygen compounds or nutrients to promote microbial growth and increase PHC degradation.

Natural attenuation of dissolved PHCs in the groundwater will be used as an indirect indication of natural attenuation within the soils.

Biological degradation of PHCs, or intrinsic biodegradation, occurs when PHCs are degraded by microorganisms indigenous to the subsurface soils. Through a series of microbial mediated oxidation-reduction reactions, dissolved PHCs are transformed into by-products such as carbon dioxide, methane, and water. The specific oxidation-reduction reactions (in reverse order) that are indicative of hydrocarbon biodegradation include aerobic respiration ( $O_2$  to  $CO_2$ ), denitrification ( $NO_3^-$  to  $N_2$ ), manganese reduction ( $Mn^{4+}$  to  $Mn^{3+}$ ), iron reduction ( $Fe^{3+}$  to  $Fe^{2+}$ ), sulfate reduction

(SO<sub>4</sub><sup>3-</sup> to H<sub>2</sub>S) and methanogenesis. The carbon dioxide released during these reactions combines with the calcium in the soil to increase the alkalinity of the groundwater. Thus, in assessing the presence of natural hydrocarbon biodegradation processes, groundwater samples will be tested for concentrations of dissolved oxygen, nitrate, iron, manganese, sulfate, methane, and total alkalinity (CaCO<sub>3</sub>).

The results of the laboratory testing for indicators of intrinsic biodegradation, or natural attenuation, will be presented in the Site Monitoring reports.

### **6.5.2 Additional Extraction Wells / Second DPVE system**

The renovation of existing extraction wells and the drilling of additional extraction wells will be completed to expand the area covered currently and increase the LPH extraction effectiveness. The location of these wells will be determined once the results of the drilling and modelling activities have been obtained. However, drilling of extraction wells along 10<sup>th</sup> Avenue NW and within the alley between 15<sup>th</sup> and 16<sup>th</sup> Streets NW, could be anticipated. These extraction wells may remove additional amounts of LPH, if the LPH is located under the residential area between the streets and where there are not currently any monitoring wells. It is possible that LPH will be near the border of Zone 3.

The potential addition of new extraction wells would be conditional on factors such as the distance from the new extraction well location, equipment performance, and extraction capacity of the existing system. Depending on the results of other aspects of this Updated SMP (2014), a second DPVE system may be recommended.

### **6.5.3 Interception Trenches**

Interception trenches, also known as French Drains, are an effective, low technology remedial technique for the interception of groundwater. A trench is excavated to the desired depth below the level of the contaminant plume. Perforated piping is placed in the bottom of the trench and connected to a sump. The trench is then backfilled with washed gravels and topped with materials near the surface to support local area activities.

The effect of the trench is that groundwater is intercepted as it moves down gradient and out of the trench wall, on the wall's up gradient side. This creates an area of lesser resistance and the groundwater then moves vertically downward to the base of

the trench and into the collection pipe. The piping is sloped towards the sump, from which the groundwater is removed and sent to a treatment system.

This system also effectively dewateres the area, creating a steeper slope or groundwater gradient towards the trench, effectively speeding up the recovery of contaminated groundwater. Some water on the down gradient wall side of the trench will also backflow into the trench from that direction, effectively reducing the contaminant load in that area as well.

Ultimately, an interceptor trench will prevent additional contamination from reaching areas of the Site. Potential areas that may benefit from the use of interceptor trenches include: the area in Lions Park north of the residential area; and, the area along 11<sup>th</sup> Avenue NW. Trenches in these two locations will prevent additional contaminants from the source area near the Mall from reaching the Hounsfield Heights area and the area south of 11<sup>th</sup> Avenue NW where the clayey silt layer thins, respectively.

#### **6.5.4 Bioremediation**

The term bioremediation is used to describe a variety of systems using living organisms (plants, fungi, bacteria, etc.) to degrade, transform, or remove toxic organic compounds to make them harmless or less toxic. This biological strategy depends on the catabolic activities of organisms, and therefore its ability to use the contaminants (PHCs) as source of food and energy.

The process of biodegradation of organic contaminants will vary depending on the chemical structure of the compounds and the microbial species used to degrade these compounds. This process includes redox (reduction/oxidation) reactions, sorption (absorption and adsorption) and processes of ion exchange.

Bioremediation can use microorganisms that are native to the Hounsfield Heights area or from other sites (exogenous), can be in-situ or ex-situ, and can be aerobic (in the presence of oxygen) or anaerobic (without oxygen). Not all organic compounds are susceptible to biodegradation; however, the bioremediation process has been used successfully to treat soils, sludge, and sediments contaminated with PHCs.

In this case, due to the conditions of the Hounsfield Heights area, only in-situ remediation technologies will be discussed.

#### *6.5.4.1 In-Situ Technologies*

In-situ techniques attempt to create a more hospitable environment for microbial growth from the contaminant compounds. This can be achieved with the addition of air or oxygen supply (bio venting), nutrients (bio-stimulation), microorganisms (bio-augmentation), humidity, temperature control, and pH.

##### **6.5.4.1.1 Bio-venting**

The purpose of bio venting is to stimulate the natural biodegradation of any compound aerobically biodegradable. Air is supplied to the contaminated site through wells by forced movement (extraction or injection) with low flow velocities, in order to provide enough oxygen to sustain the increased activity of the microbes. This technique can be used to treat a variety of biodegradable compounds.

It has been successfully used to remediate PHC and PAH contaminated soils. The type and concentration of the COCs, the lack of nutrients, a low moisture content or low airflow are some parameters that may limit the efficiency of bio venting.

##### **6.5.4.1.2 Bio-stimulation**

Bio-stimulation involves movement of aqueous solutions, which contain nutrients and/or oxygen through the impacted soil to stimulate the activity of native microorganisms and enhance the bio-degradation of contaminants. It has been successfully used to remediate soil contaminated with gasoline, VOCs, and some pesticides. This technology is not recommended for clayey soils or highly heterogeneous soils due to limitations with the oxygen transference, which may preclude its use in the clayey silt unit.

The type of soil, high contaminant mobility, or blockage in the injection wells caused by microbial growth, are some of the factors that may limit the efficiency of bio-stimulation.

#### **6.5.4.1.3 Bio-augmentation**

This technology is used when immediate treatment is required at a contaminated site or when native microorganisms are insufficient in number or in their ability to degrade the COCs. This technique consists in adding living microorganisms that have the ability to degrade, to promote bio-degradation or biotransformation of the COC. The amount of inoculum used depends on the size of impacted area, the grade of contaminant dispersion and degrader microorganisms' growth rate.

Before conducting bio-augmentation work on a site, enrichment of micro-cultures has to occur. This is when microorganisms are identified and isolated that are able to use the contaminant as a carbon source. These cultures are then grown until a sufficiently large biomass is obtained.

#### *6.5.4.2 Ex-Situ Technologies*

Ex-situ bioremediation is a process where impacted soils are excavated and placed on a liner in a designated treatment area (windrows, bio piles, composting area, land farming areas, etc.) and ventilated to stimulate the degradation of contaminants by enhancing the microbial population.

Due to the potential for extensive disruption to the local residents, these technologies have not been considered at this time.

#### **6.5.5 Chemical Oxidation**

Chemical oxidation transforms susceptible compounds (aldehydes, organic acids, phenols, cyanides, pesticides, organic chlorides, etc.) to other harmless compounds, such as water and carbon dioxide. The technique is based on the injection of the oxidant through wells at different depths. However, it has been noted that better results have been obtained in a closed system, by re-injecting the oxidant recovered from the extraction wells that has not been completely used. The re-injected oxidant is mixed again with the contaminant, improving the chemical reaction and helping in its degradation.

#### 6.5.5.1 *In-Situ Chemical Oxidation*

During ISCO, chemical compounds are injected via injection wells in order to oxidize the contaminants beneath the site. The oxidants most commonly used are discussed in the following sections.

##### 6.5.5.1.1 **Ozone**

Ozone ( $O_3$ ) can oxidize contaminants directly or through the formation of hydroxyl radicals ( $OH^\cdot$ ). Along with the hydrogen peroxide ( $H_2O_2$ ) injection, the oxidation reactions produced by ozone are the most effective in acid media. The oxidation reaction is a first order reaction that is extremely rapid but becomes problematic due to the gas/steam produced. Due to the high reactivity of ozone and its instability, the reaction occurs at points too close to the injection point.

##### 6.5.5.1.2 **Peroxide**

Using the  $H_2O_2$  in liquid form in combination with ferrous ion ( $Fe^{2+}$ ) will result in what is known as Fenton's Reaction, which causes the formation of  $OH^\cdot$  that are strong oxidants and that can quickly degrade a great variety of organic compounds. The reactions are very fast. This process is very effective in highly acidic conditions ( $pH = 2-4$ ) and ineffective within moderate or strong alkaline conditions.

##### 6.5.5.1.3 **Permanganate**

Permanganate is introduced into the soil in liquid form or in solid solution combined with potassium ( $KMnO_4$ ) or sodium ( $NaMnO_4$ ), and is more economical than the previous oxidants. The permanganate reaction stoichiometry in natural systems is complex because of its multiple valence states. Oxidation reactions are slower than ozone and peroxide. Depending on the pH of the soils, the oxidation might be direct electron transfer or by generation of radicals. Permanganate reactions are effective in soils with a pH range of approximately 3 to 12.

##### 6.5.5.1.4 **Persulfate**

Sodium and potassium persulfates are very strong oxidants and have wide range of applications for different kind of contaminants. It is used in the oxidation of organic contaminants like PHCs in soils and groundwater. Studies show that potassium



persulfate solutions are exceptional in the removal of the BTEX in the range of 95 – 97%.

Typically, persulfate is activated with the addition of a catalyst like heat, any chelated metal, or hydrogen peroxide in order to generate sulfate radicals that will take the hydrogen molecules from the hydrocarbon compounds, degrading them to harmless compounds. As an example, the reaction of PHCs and sodium persulfate, with a catalyst or an activator like an oxygen-releasing compound, produces carbon dioxide and sodium bisulfate.

Chemical oxidation is a suitable technique for the removal of certain organic contaminants, especially when they are at considerable depths, to which other methods cannot reach.

#### *6.5.5.2 Ex-Situ Chemical Oxidation*

The ex-situ chemical oxidation is a process where the impacted soils are excavated and placed on a selected area and chemical compounds are mixed with the soils in order to oxidize the contaminants. For this type of process, an extensive and specially prepared area is required.

Due to the potential for extensive disruption to the local residents, this kind of treatment has not been considered at this time.

#### **6.5.6 Remedial Option Summary**

A summary of the remedial options identified above, their feasibility, and whether or not they remain as a viable consideration are included in Table 13.

## **7.0 Communications**

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The communications plan that has been developed for this Updated SMP (2014) will consist of:

- An open house;
- The Community Association and GPC interactions;
- Correspondence; and,
- Future public meetings.

## **7.1 Open House**

In general, the residents of the affected areas were invited to a proposed “Community” meeting or “Open House” prior to the initiation of area activities. The residents were contacted via a printed and mailed flyer addressed to particular Hounsfield Heights area residences that may be affected by the upcoming activities.

During this event, the residents received a packet of information, a briefing of the proposed work to be completed, and the data gaps that exist in our current understanding of the plume. We requested participation from the residents within certain areas to allow us to install monitoring wells on their property in an attempt to determine whether LPH remains.

The Stakeholders, including Sears, AESRD, AHS, the City of Calgary, GPC, and Clifton, attended and participated in the discussions with the residents.

Project fact sheets were distributed along with a proposed schedule of activities and timelines. Many issues have already been addressed in this Updated SMP (2014); however, Clifton staff was present to answer any questions presented regarding the investigation.

## **7.2 Community Association and GPC Interactions**

AESRD advised Sears in 2006 to include the Hounsfield Heights – Briar Hill Community Association in the remediation process and they have since been identified as a Stakeholder. The GPC was created as a subset of the Hounsfield Heights – Briar Hill Community Association and charged with the responsibility to interact with the remaining Stakeholders (i.e. Sears, City of Calgary, Clifton, etc.) and the dissemination of information regarding plume –related activities to the residents of the Hounsfield Heights – Briar Hill Community.

The Hounsfield Heights – Briar Hill Community Association has recently acquired a Director of Information Technology (IT). This Director is actively working with the GPC to modify the Hounsfield Heights – Briar Hill Community Association website

to identify and list all of the current and historical documents related to activities associated with the plume identification and remediation.

Clifton on behalf of Sears, will work with the IT Director to provide a copy of all historical documents related to the plume, or a link to all documents retained by ESRD on their ESAR website (<http://www.environment.alberta.ca/01520.html>), to ensure the community can have access all reports and information related to the plume. Future documents for dissemination to the Hounsfield Heights – Briar Hill Community will be forwarded to [it@hh-bh.ca](mailto:it@hh-bh.ca) for incorporation into the website.

In addition, Clifton on behalf of Sears, will communicate to the Hounsfield Heights – Briar Hill Community the activities completed within the area through the community newsletter called The Beacon. Updates on the activities proposed under the Updated SMP (2014) will be submitted to The Beacon quarterly. These updates will consist of recent and upcoming events.

### **7.3 Correspondence**

As part of the Updated SMP (2014), the communications plan will disseminate the findings of the investigations and the proposed Updated SMP (2014) activities to the regulators, elected officials, and Stakeholders. In this case, “Stakeholders” include both the affected and unaffected property owners via the GPC. A later community meeting may be held to discuss the findings and plan for future remedial activities.

All general communications to residents in the neighbourhood will be through the GPC. The GPC is currently chaired by Mr. Emmanuel Malterre and all communications to the GPC will be directly through the chair or their designee on an “as needed” basis. This will occur upon publication of Site investigation reports or in answer to any correspondence from the GPC. Clifton also intends to include the President of the Hounsfield Heights – Briar Hill Community Association, to which the GPC reports, in the correspondence chain.

Clifton on behalf of Sears, will issue annual letters to the general Stakeholders, as well as the residents of individual addresses within the Site area, of larger scale progress to date and upcoming plans for the Site. This will include a summary of the events that have transpired over the past year and projected future activities and timelines based on most recent information.

Issues specific to individual residents will be communicated directly to those residents. Subsequent to acceptance of the 2006 SMP by AESRD, a number of property owners have requested information (monitoring well data, laboratory sample results, etc.) regarding their properties. This is expected to continue after AESRD acceptance of the Updated SMP (2014). Sears, through Clifton, will continue to provide to those owners who request it, information specific to their properties. Consistent with privacy laws, Sears, through Clifton, will not copy any other parties in their responses in order to respect the privacy of the individual request. Should other parties request this information be shared, we will advise the individual resident to respond directly to the request.

#### **7.4 Future Public Meetings**

Once the results of this round of investigation have been assessed, the new risk assessment has been completed, the geology and hydrogeology re-interpreted, and the delineation of the plume defined based upon the new 2014 Tier 1 and 2 Guidelines, discussions will held with the Stakeholders to determine whether a future public meeting will have any benefit at the time.

#### **7.5 Contacts**

All correspondence or questions for either Sears or the consultant, Clifton Associates, regarding the plume should be directed to Mr. Stephen d'Abadie of Clifton at [stephen\\_dabadie@clifton.ca](mailto:stephen_dabadie@clifton.ca).

The President of the Hounsfield Heights – Briar Hill Community Association can be reached at [president@hh-bh.ca](mailto:president@hh-bh.ca).

The Hounsfield Heights – Briar Hill Community Association GPC Director can be reached at [sears.plume@hh-bh.ca](mailto:sears.plume@hh-bh.ca).

The Hounsfield Heights – Briar Hill Community Association IT Director can be reached at [it@hh-bh.ca](mailto:it@hh-bh.ca).

Questions for Sears, AESRD, the City of Calgary, or Alberta Health Services should be directed through either the Clifton contact or one of your Hounsfield Heights – Briar Hill Community Association contacts.

## 8.0 Sears Commitment

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Sears Canada seeks to operate its business in a way that has minimal or no impact on the environment. As a national retailer and employer of over 20,000 Canadians, we view the protection of the environment for the benefit of today's and future generations as an important component of corporate social responsibility. We reaffirm our commitment to reduce the effects stemming from the past operations at this location, and to meeting the requirements asked of us by the regulators who are helping to manage the remediation process.

## 9.0 Completion of Work

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The Updated SMP (2014) is a living document. As more focused information is gathered and applied to the Updated SMP (2014), the CSM and other components of the Updated SMP (2014) may be modified or refined to reflect this new data.

At the conclusion of this Updated SMP (2014), Sears expects, to the extent practicable, to attain the following goals:

- Fully delineate the dissolved plume south of 11<sup>th</sup> Avenue;
- Sample the groundwater adjacent to where it discharges to the surface in the southern portion of Zone 3 and evaluate it for risk to human and ecological receptors;
- Develop a more detailed geologic and hydrogeologic model for the Site to test against remedial alternatives;
- Delineate the soil vapour plume in Zones 1, 2 and 3 where the vapour inhalation pathway is exceeded in the area that the clayey silt unit thins or pinches out;
- Assess potential risks from the ingress of petroleum hydrocarbon vapours to indoor air in areas identified in the previous bullet;
- Establish a soil gas monitoring program on properties that may be at risk from vapour ingress to indoor air;
- Complete an update of the HRA and the Tier 3 Guidelines developed by Intrinsik. This update will consist of Tier 2 Site-specific Guidelines based on

the current AESRD 2014 Tier 1 Guidelines and will include gasoline and diesel fuel constituents in both the soils and groundwater;

- If LPH remains in the Hounsfield Heights area, complete removal of the LPH by refurbishing existing extraction wells, installing additional extraction wells and connecting them to the currently operating DPVE, or commissioning a second DPVE system or other technology as necessary;
- Implement additional remediation techniques to deal with the expanding dissolved phase plume. Multiple remediation approaches may be needed to address the petroleum hydrocarbon impacts;
- Review the groundwater monitoring and sampling program to ensure adequate coverage based on current conditions and trends; and,
- Apply the Tier 1 Guidelines to monitoring well locations along 11<sup>th</sup> Avenue NW, if applicable under the revised HRA, and include these wells in the groundwater monitoring and sampling program.

Once the LPH has been removed, the monitoring program and modeling activities will help to identify whether the potential reduction in contaminant concentrations was caused by natural attenuation, or a different cause (i.e., plume expansion, contaminant dilution, etc.).

If it is confirmed that the groundwater plume is no longer expanding, and after contaminant levels in the dissolved phase groundwater plume have been reduced below all appropriate Site guidelines, a confirmatory groundwater monitoring and sampling program will be implemented to verify that the groundwater beneath the Site has met these criteria. It is envisioned that the confirmatory groundwater monitoring and sampling program will last a minimum of three years and will consist of the quarterly sampling of selected indicator monitoring wells.

Following the successful completion of the confirmatory monitoring program, a request will be made to AESRD to decommission the remaining monitoring wells in the area, as well as the DPVE system (s), and any other remedial equipment associated with the Site.

It is expected that after the completion of the remedial activities, the residual hydrocarbons beneath the Site that are below all appropriate guidelines will continue to decrease over time through natural attenuation.

As part of this Updated SMP (2014), the existing communications plan will be updated to disseminate the findings of the investigations and the proposed SMP activities. The communications plan recipients will include regulators, elected officials, residents, other Stakeholders, and the GPC.

## **10.0 Closure**

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This report has been prepared and the work referred to in this report has been undertaken by Clifton Associates on behalf of Sears Canada Inc. It is intended for the sole and exclusive use of Sears Canada Inc., its affiliated companies and partners and their respective insurers, agents, employees and advisors. Any use, reliance on or decision made by any person other than Sears Canada Inc. based on this report is the sole responsibility of such other person. Sears Canada Inc. and Clifton Associates Ltd. make no representation or warranty to any other person with regard to this report and the work referred to in this report and they accept no duty of care to any other person or any liability or responsibility whatsoever for any losses, expenses, damages, fines, penalties or other harm that may be suffered or incurred by any other person as a result of the use of, reliance on, any decision made or any action taken based on this report or the work referred to in this report.

The investigation undertaken by Clifton Associates Ltd. on behalf of Sears Canada Inc. with respect to this report and any conclusions or recommendations made in this report reflect Clifton Associates Ltd.'s judgement based on the Site conditions observed at the time of the Site inspection on the date(s) set out in this report and on information available at the time of preparation of this report. This report has been prepared for specific application to this Site and it is based, in part, upon visual observation of the Site, subsurface investigation at discrete locations and depths, and specific analysis of specific chemical parameters and materials during a specific time interval, all as described in this report. Unless otherwise stated, the findings cannot be extended to previous or future Site conditions, portions of the Site that were unavailable for direct investigation, subsurface locations that were not investigated directly, or chemical parameters, materials or analysis that were not addressed.

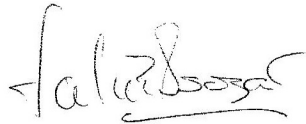
Substances other than those addressed by the investigation described in this report may exist within the Site, substances addressed by the investigation may exist in areas of the Site not investigated, and concentrations of substances addressed which are different than those reported may exist in areas other than the location from which samples were taken.

If Site conditions or applicable standards change or if any additional information becomes available at a future date, modifications to the findings, conclusions, and recommendations in this report may be necessary.

Other than by Sears Canada Inc., copying or distribution of this report or use of or reliance on the information contained herein, in whole or in part, is not permitted without the express written permission of Clifton Associates Ltd. Nothing in this report is intended to constitute or provide a legal opinion.

Yours truly,

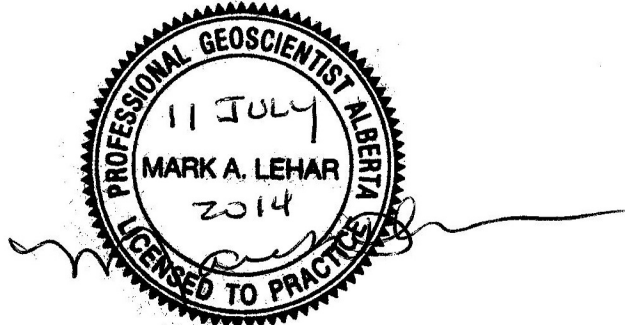
Clifton Associates Ltd.



Fabian Isaza, P.Eng.  
Project Engineer



Stephen d'Abadie, M.Eng., E.I.T.  
Project Manager



Mark A. Lehar, P.Eng.  
Regional Environmental Lead

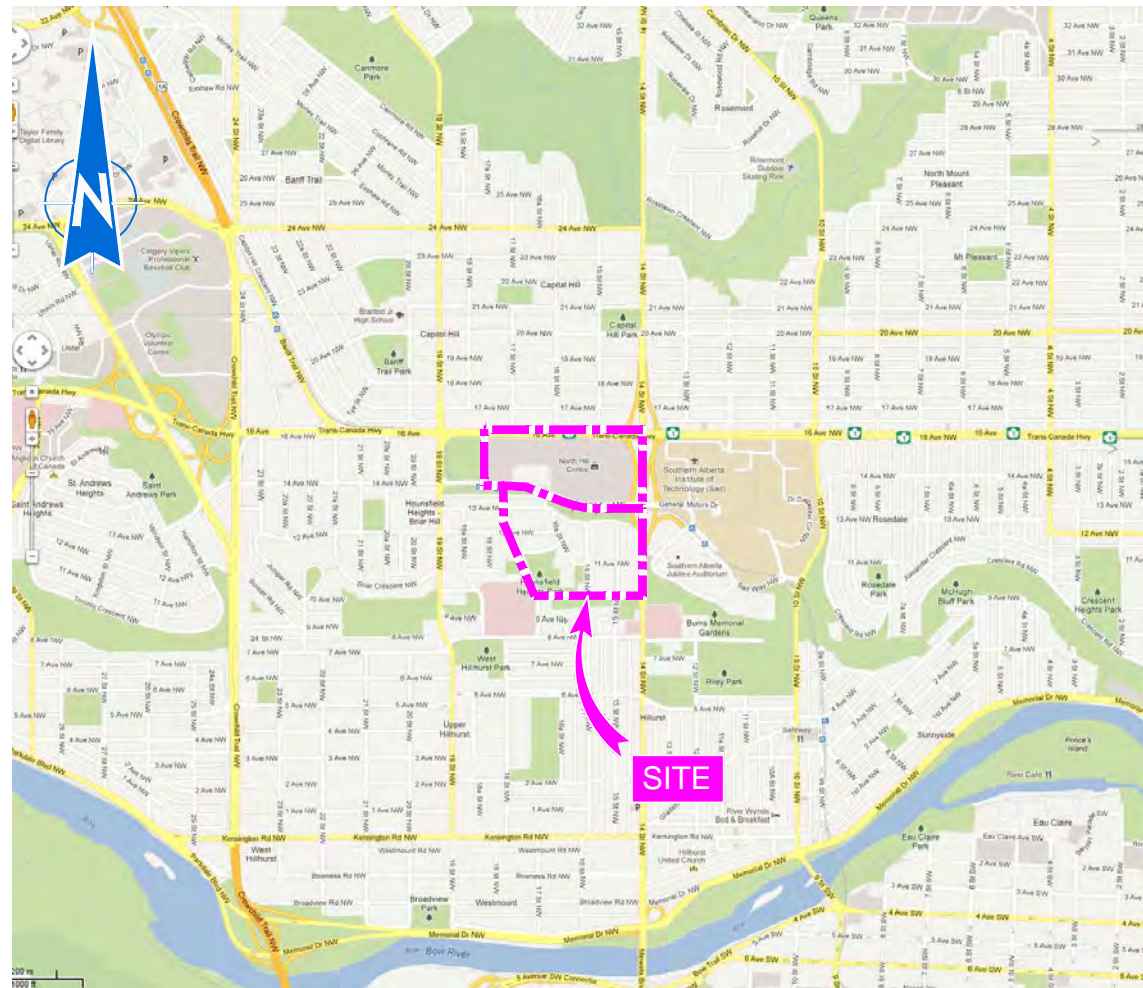
Association of Professional Engineers,  
Geologists and Geophysicists of Alberta  
Permit to Practice P4823





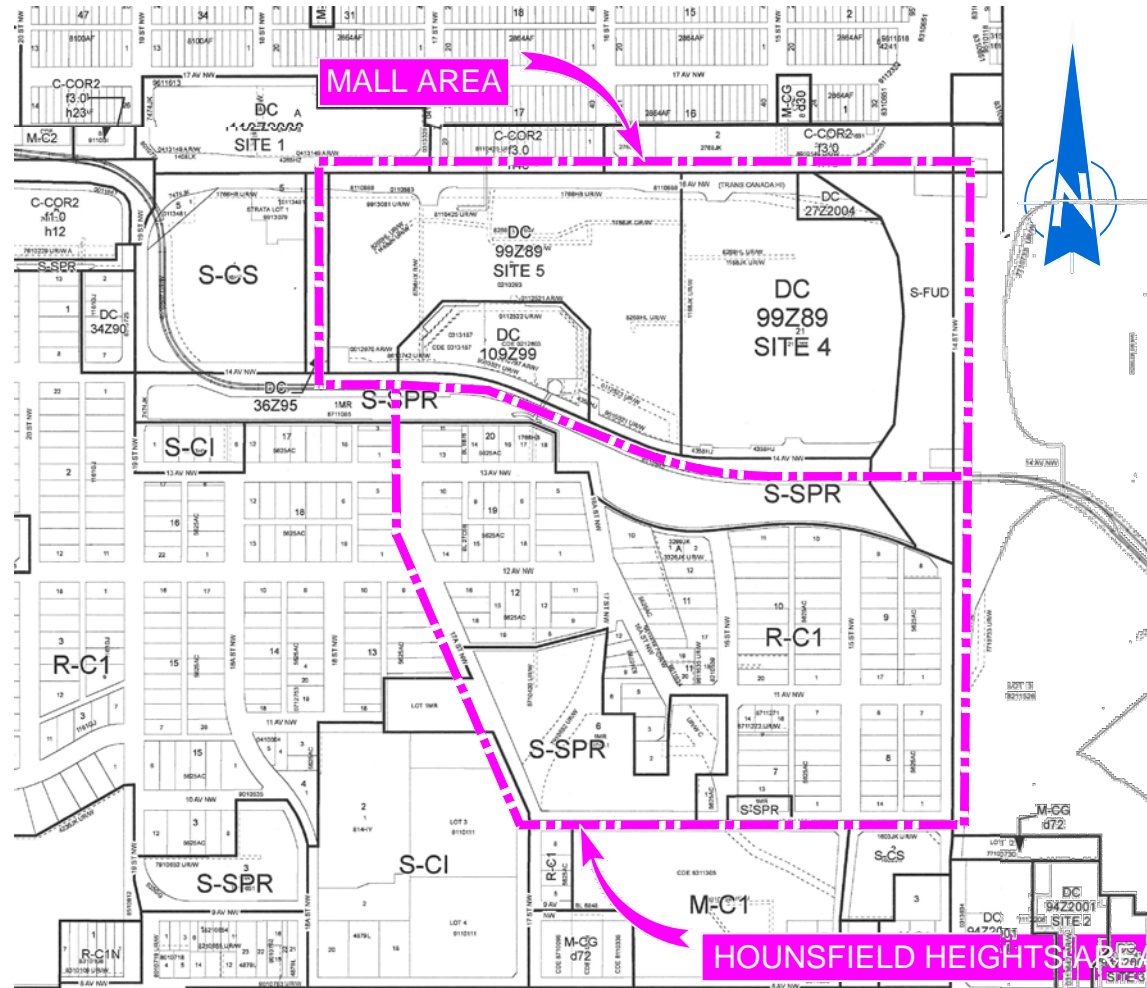
**Clifton Associates Ltd.**  
engineering science technology

**Figures**



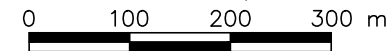
**GENERAL SITE LOCATION**

SCALE 1:30,000



**SURROUNDING LAND USE**

SCALE 1:7,500



**LEGEND:**

CITY OF CALGARY BY-LAW ZONING  
SITE BOUNDARY

**LAND USE DISTRICTS**

RESIDENTIAL – CONTEXTUAL ONE DWELLING DISTRICT  
MULTI-RESIDENTIAL – CONTEXTUAL LOW-PROFILE DISTRICT  
COMMERCIAL – LOW-PROFILE DISTRICT  
SPECIAL PURPOSE – SCHOOL, PARK, AND COMMUNITY RESERVE DISTRICT  
SPECIAL PURPOSE – COMMUNITY INSTITUTION DISTRICT  
SPECIAL PURPOSE – COMMUNITY SERVICE DISTRICT  
SPECIAL PURPOSE – FUTURE URBAN DEVELOPMENT DISTRICT  
DIRECT CONTROL DISTRICT

R-C1  
M-C1  
C-COR2  
S-SPR  
S-CI  
S-CS  
S-FUD  
DC

**NOTES:**

1. DRAWING COMPILED FROM GOOGLE MAPS (DATE UNKNOWN) & LAND USE BY-LAW MAPS PRODUCED BY THE CITY OF CALGARY.

**DRAWING REVISIONS**

REV	DESCRIPTION	BY	DATE

REV	DESCRIPTION	BY	DATE



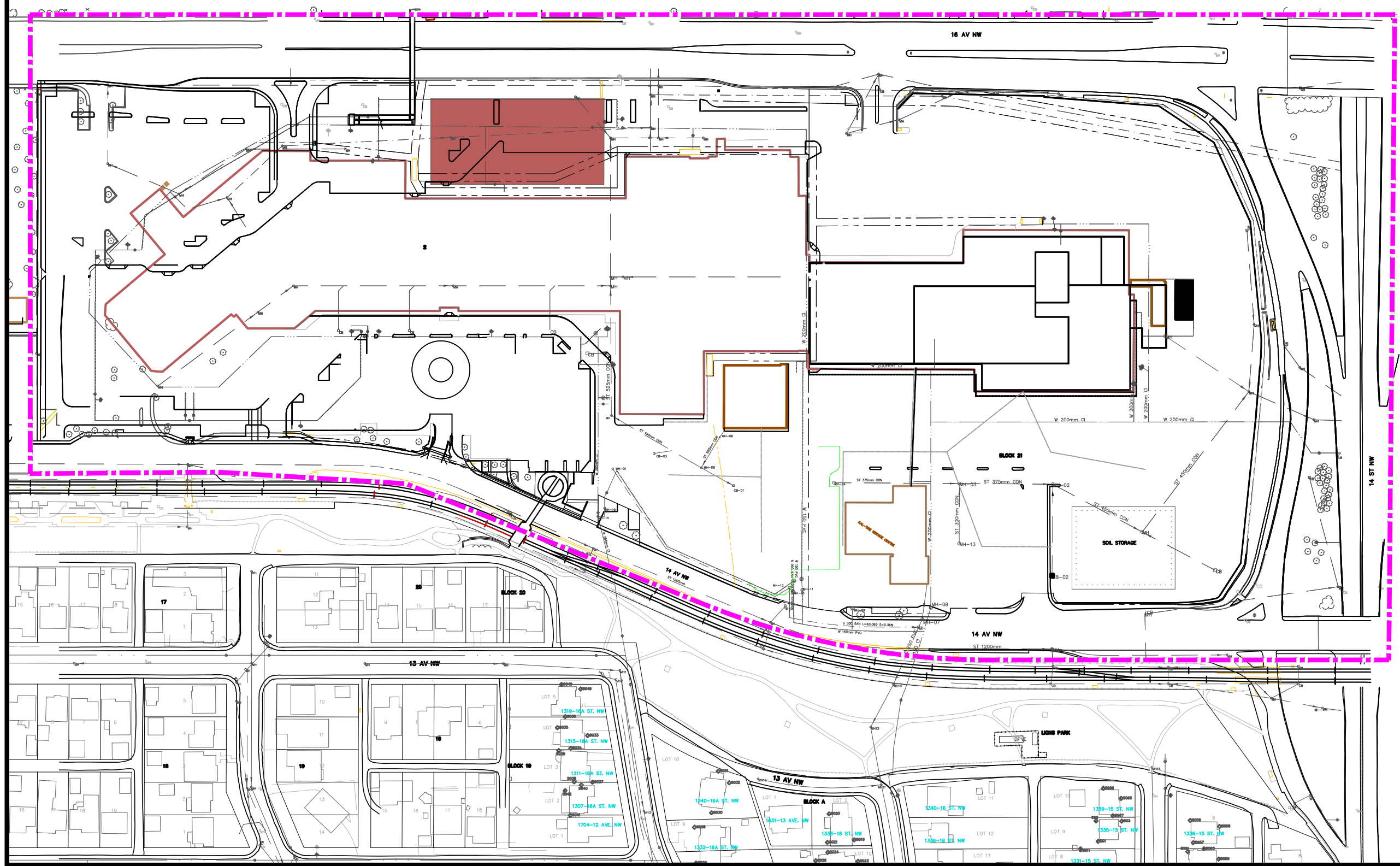
**SEARS Canada Inc.**

PROJECT UPDATED SITE MANAGEMENT PLAN (2014)  
HOUNSFIELD HEIGHTS – BRIAR HILL COMMUNITY  
CALGARY, ALBERTA

TITLE SITE LOCATION  
AND  
SURROUNDING LAND USE PLAN

DESIGN	SCALE AS SHOWN	DATE 2014-04-21
DWN. BY RD	PROJECT NO. CG2430	FIG. 1
CHECKED	FILE NAME CG2430SMP01	

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**LEGEND:**

SITE BOUNDARY - - -

**NOTES:**

1. DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES), SITE ASSESSMENT INFORMATION, AND TRONNES SURVEYS LTD SURVEY DONE JUNE 14,15 OF 2005. INC. DRAWINGS 149-5A6.DWG AND 149-5A6.DWG

**DRAWING REVISIONS**

REV	DESCRIPTION	BY	DATE



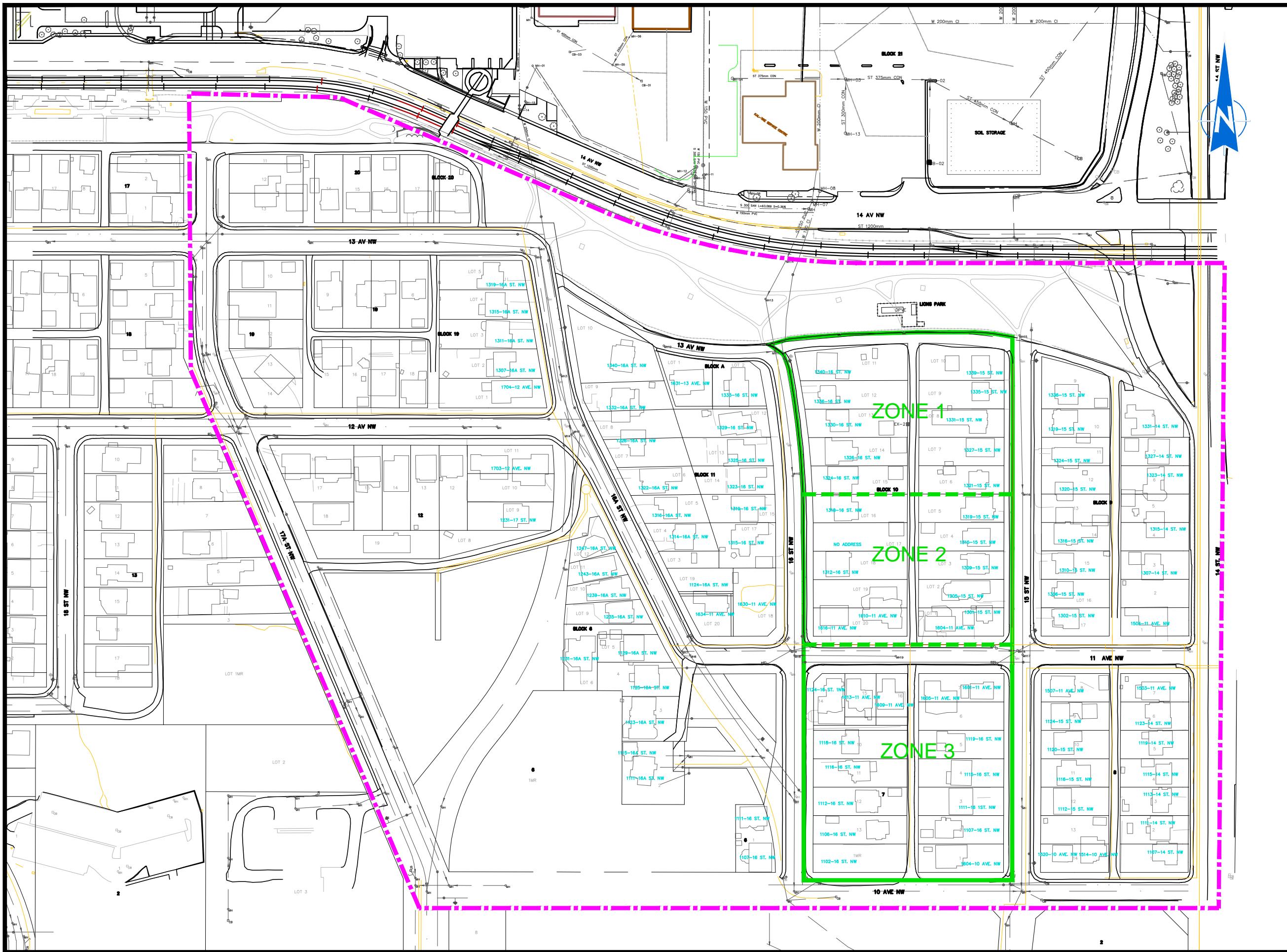
CLIENT  
**SEARS Canada Inc.**

PROJECT  
UPDATED SITE MANAGEMENT PLAN (2014)  
HOUNSFIELD HEIGHTS - BRIAR HILL COMMUNITY  
CALGARY, ALBERTA

TITLE  
**MALL AREA PLAN (UPDATED)**

DESIGN	SCALE: 1:2000	DATE: 2014-04-21
DWN. BY: RD	PROJECT NO: CG2430	FIG. 2
CHECKED	FILE NAME: CG2430SMP02	

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**LEGEND:**

SITE BOUNDARY - - - - -

**NOTES:**

- DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES), SITE ASSESSMENT INFORMATION, AND TRONNES SURVEYS LTD SURVEY DONE JUNE 14,15 OF 2005. INC. DRAWINGS 149-5A6.DWG AND 149-5A6.DWG

**DRAWING REVISIONS**

REV	DESCRIPTION	BY	DATE

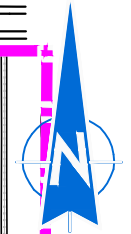
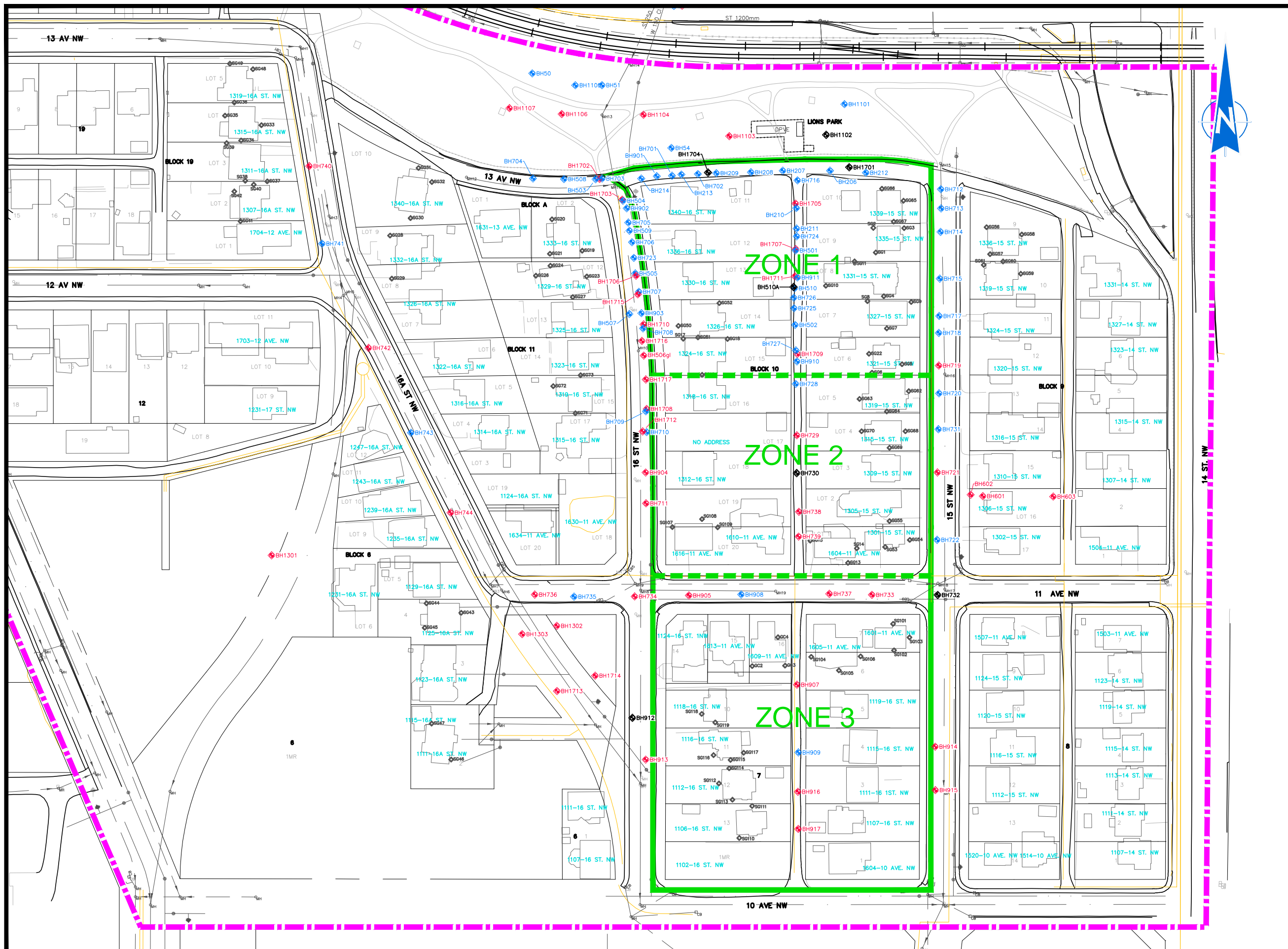
**SEARS Canada Inc.**

PROJECT UPDATED SITE MANAGEMENT PLAN (2014)  
HOUNSFIELD HEIGHTS - BRIAR HILL COMMUNITY  
CALGARY, ALBERTA

TITLE  
**HOUNSFIELD HEIGHTS AREA  
PLAN (UPDATED)**

DESIGN	SCALE 1:2000	DATE 2014-04-21
DWN. BY RD	PROJECT NO. CG2430	FIG. 3
CHECKED	FILE NAME CG2430SMP03	

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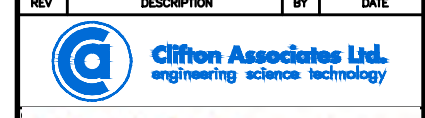
**LEGEND:**

- SITE BOUNDARY
- MONITORING WELL
- MONITORING WELL - TO BE DECOMMISSIONED
- MONITORING WELL - DECOMMISSIONED

**NOTES:**

1. DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES), SITE ASSESSMENT INFORMATION, AND TRONNES SURVEYS LTD SURVEY DONE JUNE 14,15 OF 2005. INC. DRAWINGS 149-5A6.DWG AND 149-5A6.DWG

DRAWING REVISIONS			
REV	DESCRIPTION	BY	DATE



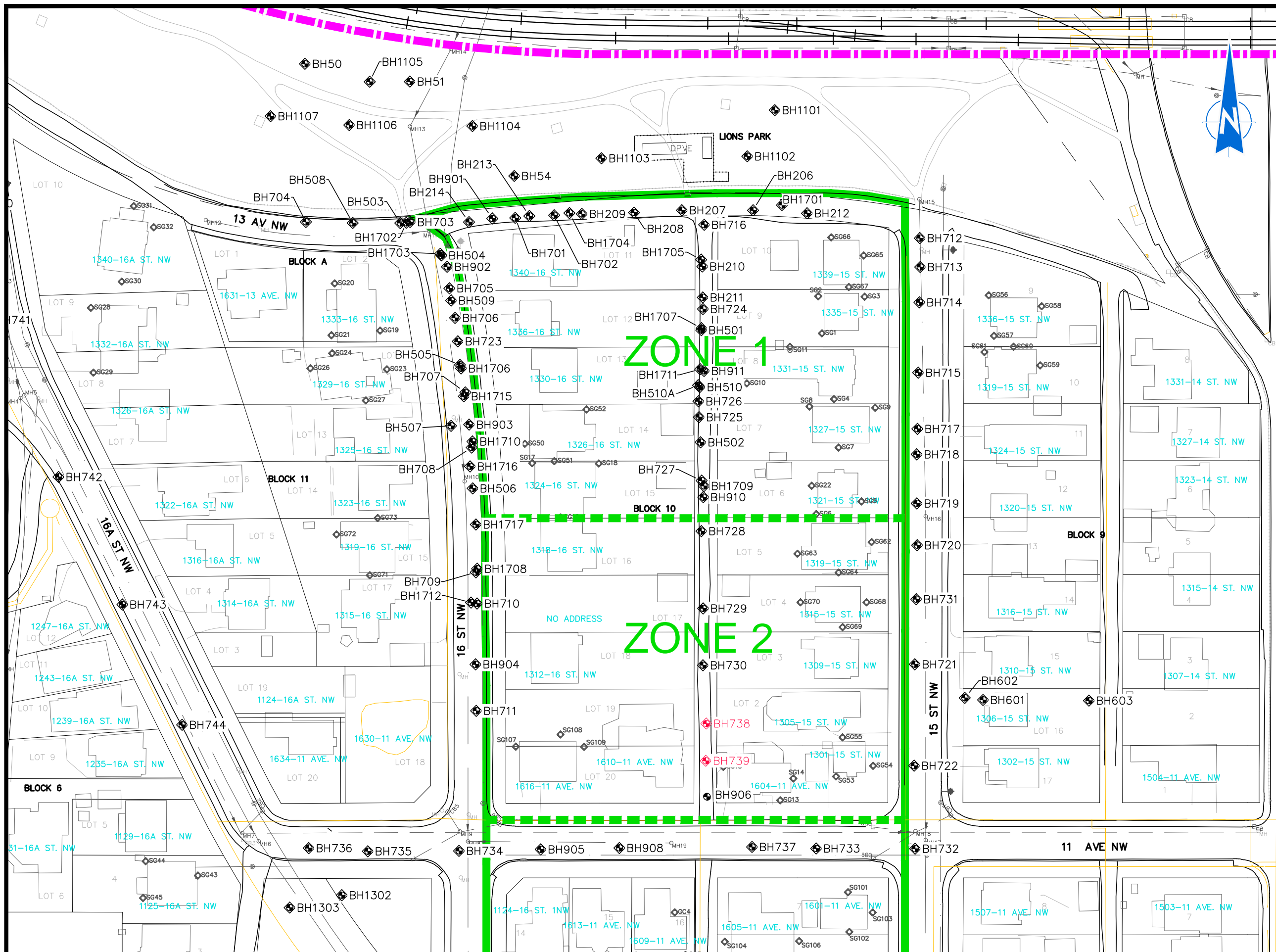
**SEARS Canada Inc.**

PROJECT UPDATED SITE MANAGEMENT PLAN (2014)  
HOUNSFIELD HEIGHTS - BRIAR HILL COMMUNITY  
CALGARY, ALBERTA

TITLE SOIL BORING AND  
MONITORING WELL LOCATION PLAN

DESIGN	SCALE 1:1500	DATE 2014-05-14
DWN. BY RD	PROJECT NO. CG2430	FIG. 4
CHECKED	FILE NAME CG2430SMP04	

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**LEGEND:**

SITE BOUNDARY

MONITORING WELL

MONITORING WELL - EXCEEDS

**NOTES:**

1. DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES), SITE ASSESSMENT INFORMATION, AND TRONNES SURVEYS LTD SURVEY DONE JUNE 14,15 OF 2005. INC. DRAWINGS 149-5A6.DWG AND 149-5A6.DWG

DRAWING REVISIONS

REV	DESCRIPTION	BY	DATE



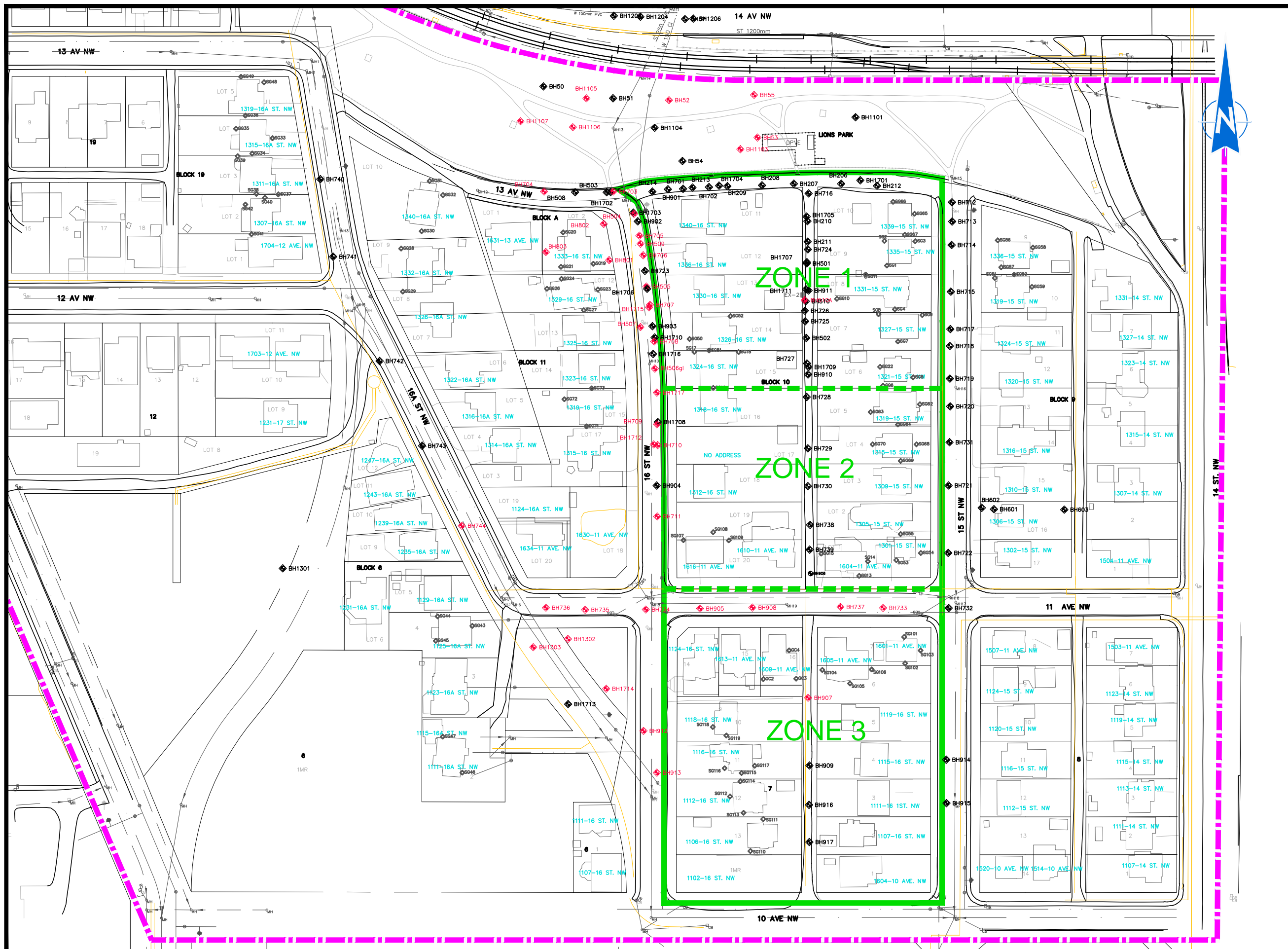
**SEARS Canada Inc.**

PROJECT UPDATED SITE MANAGEMENT PLAN (2014)  
HOUNSFIELD HEIGHTS - BRIAR HILL COMMUNITY  
CALGARY, ALBERTA

TITLE **BENZENE EXCEEDANCES IN ZONE 1 AND 2 SOILS**

DESIGN	SCALE 1:1000	DATE 2014-05-14
DWN. BY RD	PROJECT NO. CG2430	FIG. 5
CHECKED	FILE NAME CG2430SMP05	

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- LEGEND:**
- SITE BOUNDARY ---
  - MONITORING WELL ◆
  - MONITORING WELL - EXCEEDS ◆

**NOTES:**

- DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES), SITE ASSESSMENT INFORMATION, AND TRONNES SURVEYS LTD SURVEY DONE JUNE 14,15 OF 2005. INC. DRAWINGS 149-5A6.DWG AND 149-5A6.DWG

DRAWING REVISIONS			
REV	DESCRIPTION	BY	DATE



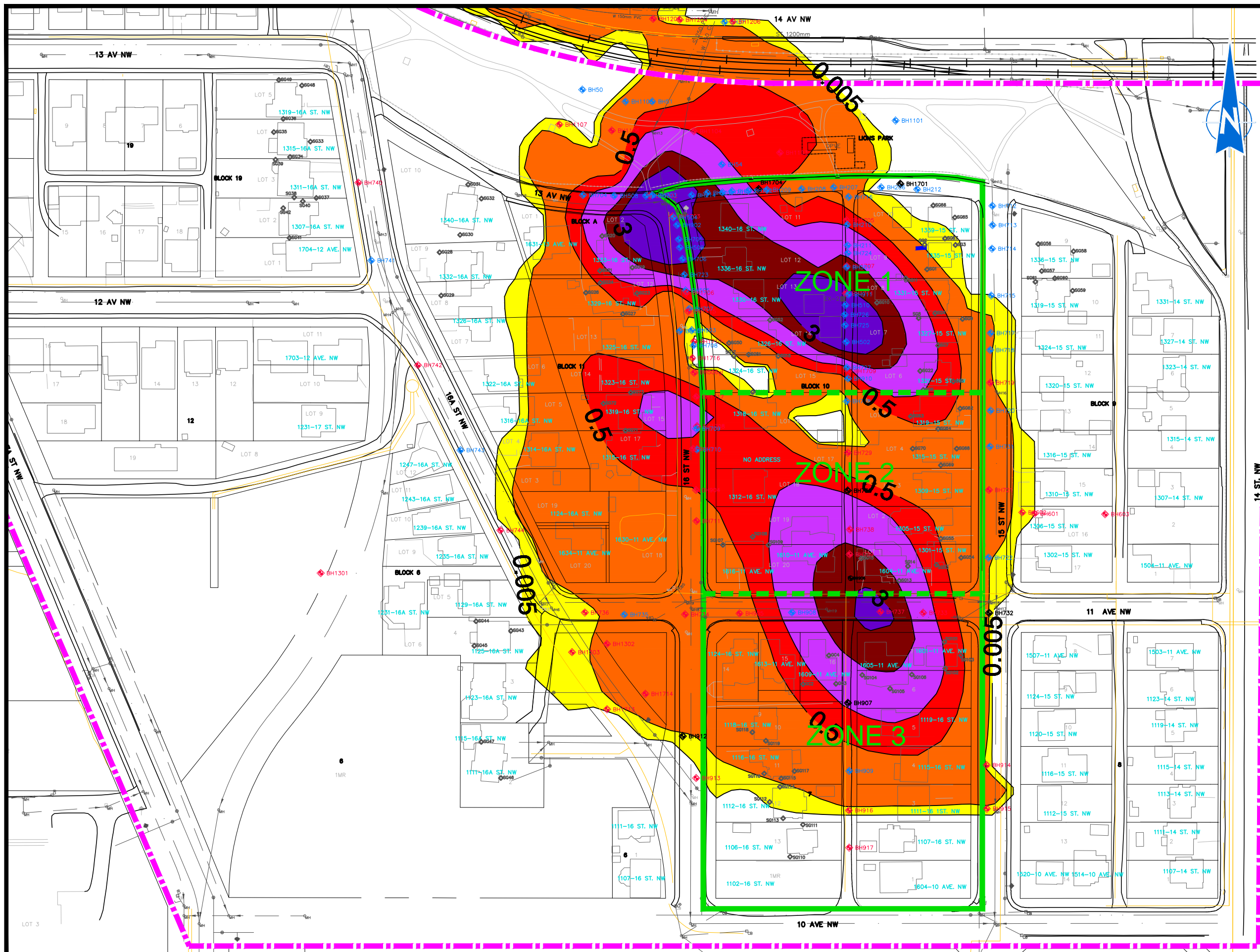
**SEARS Canada Inc.**

PROJECT UPDATED SITE MANAGEMENT PLAN (2014)  
HOUNSFIELD HEIGHTS - BRIAR HILL COMMUNITY  
CALGARY, ALBERTA

TITLE BENZENE EXCEEDANCES IN  
ZONE 3 OR AREAS SURROUNDING  
ZONES 1, 2, OR 3 SOILS

DESIGN	SCALE 1:1500	DATE 2014-04-21
DWN. BY RD	PROJECT NO. CG2430	FIG. 6
CHECKED	FILE NAME CG2430SMP06	

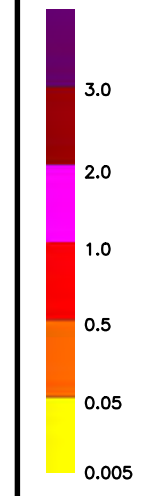
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**LEGEND:**

- SITE BOUNDARY
- MONITORING WELL
- MONITORING WELL - TO BE DECOMMISSIONED
- MONITORING WELL - DECOMMISSIONED

**BENZENE PLUME LEVELS (mg/L)**



**NOTES:**

1. DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES), SITE ASSESSMENT INFORMATION, AND TRONNES SURVEYS LTD SURVEY DONE JUNE 14,15 OF 2005. INC. DRAWINGS 149-5A6.DWG AND 149-5A6.DWG

DRAWING REVISIONS			
REV	DESCRIPTION	BY	DATE

**Clifton Associates Ltd.**  
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**SEARS Canada Inc.**

PROJECT UPDATED SITE MANAGEMENT PLAN (2014)  
 HOUNSFIELD HEIGHTS - BRIAR HILL COMMUNITY  
 CALGARY, ALBERTA

TITLE **BENZENE PLUME IN GROUNDWATER**  
**OCTOBER 2012**

DESIGN	SCALE 1:1500	DATE 2014-04-21
DWN. BY RD	PROJECT NO. CG2430	FIG. 7
CHECKED	FILE NAME CG2430SMP07	

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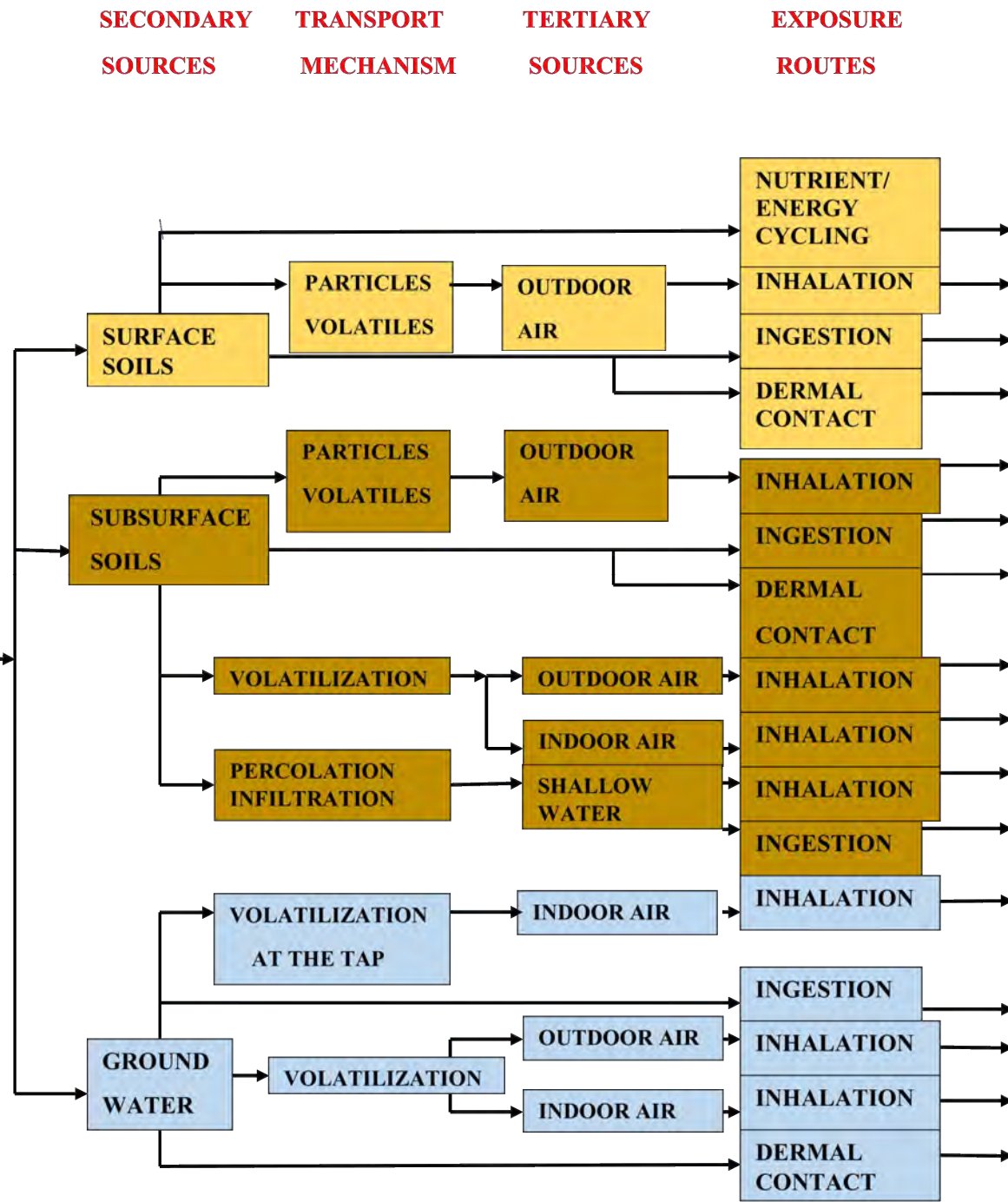


**PRIMARY SOURCE**  
**PRIMARY RELEASE MECHANISM**

<b>CONTAMINANTS OF CONCERN:</b>
PHC: F1 – F4 Petroleum Hydrocarbons
BTEX Benzene, Toluene, Ethyl Benzene, Xylenes
<b>CONTAMINANTS OF POTENTIAL CONCERN:</b>
LEAD
1,2-DICHLOROETHANE

UST → LEAKING

**LEGEND:**  
 + PATHWAY IS COMPLETE: ADVERSE EFFECTS ON HUMANS AND ENVIRONMENT POSSIBLE  
 ? PATHWAY MIGHT BE COMPLETE: FURTHER EVALUATION IS NEEDED  
 X PATHWAY IS NOT COMPLETE NO FURTHER EVALUATION IS NEEDED  
 ?<sup>1</sup> REDEPOSITION ON THE SURFACE FROM A SEEP OR SPRING SCENARIO  
 ?<sup>2</sup> CONSTRUCTION (EXCAVATION) SCENARIO  
 +<sup>3</sup> POSSIBLE ONLY IN AREAS WHERE THE MIDDLE CLAYEY SILT LAYER THINS OR PINCHES OUT



POTENTIAL RECEPTORS			
HUMAN		BIOTA	
RESIDENTS	AREA VISITORS	TERRESTRIAL	AQUATIC
? <sup>1</sup>	? <sup>1</sup>	? <sup>1</sup>	X
? <sup>1</sup>	? <sup>1</sup>	? <sup>1</sup>	X
? <sup>1</sup>	? <sup>1</sup>	? <sup>1</sup>	X
?	?	?	X
X	? <sup>2</sup>	X	X
X	? <sup>2</sup>	X	X
X	? <sup>2</sup>	X	X
X	? <sup>2</sup>	X	X
+ <sup>3</sup>	X	X	X
+ <sup>3</sup>	+ <sup>3</sup>	X	X
+ <sup>3</sup>	+ <sup>3</sup>	X	X
X	X	X	X
X	X	X	X
? <sup>1</sup>	? <sup>1</sup>	? <sup>1</sup>	X
+ <sup>3</sup>	+ <sup>3</sup>	X	X
? <sup>1,2</sup>	? <sup>1,2</sup>	? <sup>1</sup>	X

NOTE: Potential pathways in the event of a catastrophic failure of the Dual-Phase Vapour Extraction System installed in the area are not considered in the diagram.

DRAWING REVISIONS

REV	DESCRIPTION	BY	DATE

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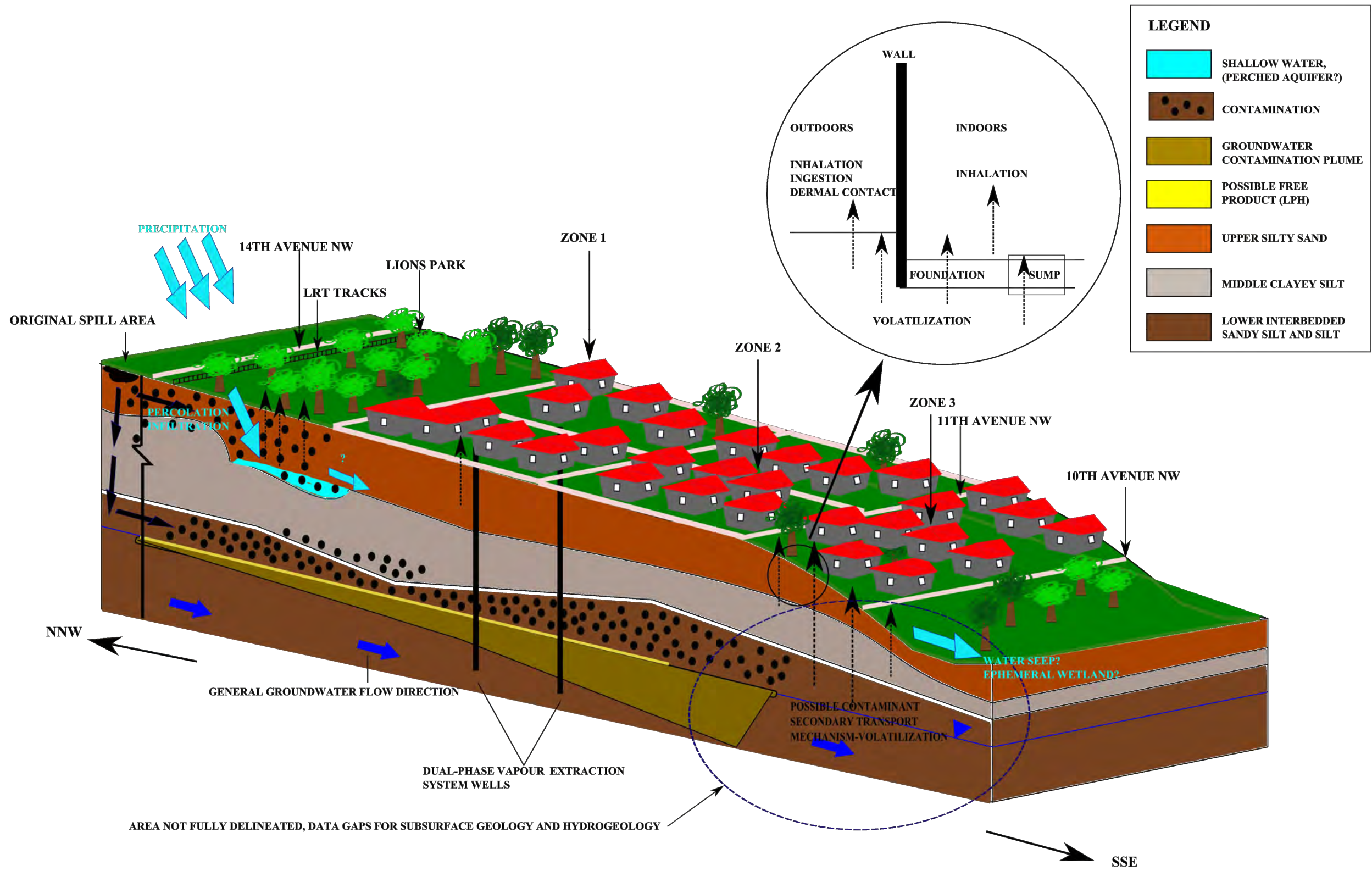
CLIENT  
**SEARS Canada Inc.**

PROJECT  
 UPDATED SITE MANAGEMENT PLAN (2014)  
 HOUNSFIELD HEIGHTS – BRIAR HILL COMMUNITY  
 CALGARY, ALBERTA

TITLE  
**CONCEPTUAL SITE MODEL DIAGRAM**


DESIGN	SCALE	DATE	2014-04-21
DWN. BY	PROJECT NO.	FIG.	8
CHECKED	FILE NAME		
	CG2430SMP08		

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AREA NOT FULLY DELINEATED, DATA GAPS FOR SUBSURFACE GEOLOGY AND HYDROGEOLOGY

DRAWING REVISIONS			
REV	DESCRIPTION	BY	DATE


**Clifton Associates Ltd.**  
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CLIENT  
**SEARS Canada Inc.**

PROJECT  
 UPDATED SITE MANAGEMENT PLAN (2014)  
 HOUNSFIELD HEIGHTS - BRIAR HILL COMMUNITY  
 CALGARY, ALBERTA

TITLE  
 IDEALIZED CONCEPTUAL 3-D  
 CROSS SECTION OF THE  
 HOUNSFIELD HEIGHTS AREA

DESIGN	SCALE	N.T.S.	DATE	2014-04-21
DWN. BY	RD	PROJECT NO.	CG2430	FIG.
CHECKED	FILE NAME	CG2430SMP09		9

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**Tables**

**TABLE 1 SUMMARY OF PHYSICAL SOIL PROPERTIES**

**Updated Site Management Plan (2014)  
Hounsfeld Heights - Briar Hill Community  
CALGARY, Alberta**

<b>Borehole (Sample Number)</b>	<b>Sample Depth</b>  (m)	<b>Soil Strata</b>	<b>Moisture Content</b>  (g/g)	<b>Specific Gravity</b>  (Unit Weight)	<b>Wet Density</b>  (g/cm <sup>3</sup> )	<b>Bulk Density (Dry)</b>  (g/cm <sup>3</sup> )	<b>Total Porosity</b>	<b>Air Filled Porosity</b>	<b>Moisture Filled Porosity</b>  (Degree of Saturation)	<b>Soil Vapour Permeability</b>  (cm <sup>2</sup> /s)	<b>Organic Carbon Fraction</b>  (%)
901-9	4.6-5.0	Upper Sand	0.2323	2.679	2.0231	1.6420	0.39	0.02	0.98	1*10 <sup>-8</sup>	0.01
901-12	6.1-6.6	Clay	0.2758	2.665	1.9858	1.5478	0.43	0.00	1.00	1*10 <sup>-12</sup>	0.34
901-14	7.6-8.1	Clay	0.3140	2.718	1.9268	1.4664	0.46	0.00	1.00		0.34
902-12	6.1-6.6	Clay	0.3199	2.766	1.9611	1.5320	0.49	0.00	1.00	1*10 <sup>-11</sup>	0.01
902-15	8.4-8.8	Clay	0.2221	2.710	1.8762	1.3755	0.43	0.21	0.79		0.10
903-12	6.1-6.6	Clay	0.2125	2.576	1.9767	1.5359	0.37	0.06	0.94	1*10 <sup>-11</sup>	0.14
903-13	6.9-7.3	Clay	0.2909	2.799	1.9439	1.4990	0.46	0.05	0.95		0.01
904-3	1.5-2.0	Upper Sand	0.1521	2.716	1.8523	1.6220	0.41	0.40	0.60	1*10 <sup>-8</sup>	0.08
904-6	3.1-3.5	Upper Sand	0.1856	2.746	2.1157	1.7719	0.35	0.05	0.95		0.28
904-9	4.6-5.0	Clay	0.3530	2.750	1.9046	1.4077	0.50	0.00	1.00	1*10 <sup>-11</sup>	0.16
904-12	6.1-6.6	Clay	0.1992	2.760	1.9867	1.5437	0.40	0.17	0.83		0.03
906-6	3.1-3.5	Lower Silt	0.3410	2.728	2.0529	1.6800	0.52	0.00	1.00	1*10 <sup>-9</sup>	0.18
906-9	4.6-5.0	Lower Silt	0.1850	2.639	1.8795	1.4132	0.40	0.26	0.74		0.10
910-3	1.5-2.0	Upper Sand	0.0950	2.701	1.7406	1.5725	0.41	0.63	0.37	1*10 <sup>-8</sup>	0.15
910-6	3.1-3.5	Upper Sand	0.1640	2.720	1.8419	1.6056	0.42	0.38	0.62		0.05
911-12	8.4-8.8	Clay	0.2520	2.709	1.8097	1.2890	0.47	0.22	0.78	1*10 <sup>-11</sup>	0.01
911-13	9.2-9.6	Clay	0.2200	2.609	1.9471	1.5540	0.39	0.10	0.90		0.06

TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
Calgary, Alberta

Monitoring Well	Date (dd-mmm-yy)	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments
BH50	9-Sep-98	1091.635	-	5.865	0.000	-	1085.775	58	
	29-Oct-98		-	6.017	0.000	-	1085.623	64	
	22-Apr-99		-	6.441	0.000	-	1085.194	20	
	10-Jun-00		-	6.283	0.000	-	1085.352	42	
	12-Sep-00		-	6.160	0.000	-	1085.475	65	
	19-Oct-00		-	6.037	0.000	-	1085.598	25	
	23-Nov-00		-	5.978	0.000	-	1085.657	72	
	26-Jul-01		-	6.551	0.000	-	1085.084	44	
	5-Dec-02	1091.627	-	6.404	0.000	-	1085.223	180	
	12-May-03		-	6.777	0.000	-	1084.850	34	white bugs on probe; bailer had to be fished out
	7-Oct-03		-	6.373	0.000	-	1085.254	28	
	20-Nov-03		-	6.592	0.000	-	1085.035	65	
	17-Dec-03		-	6.670	0.000	-	1084.957	140	
	13-Jan-04		-	6.605	0.000	-	1085.022	80	
	8-Mar-04		-	6.727	0.000	-	1084.900	10	had to be chipped
	5-Apr-04		-	6.789	0.000	-	1084.838	36	
	21-May-04		-	6.778	0.000	-	1084.849	nm	
	15-Jun-04		-	6.850	0.000	-	1084.777	70	
	13-Jul-04		-	6.830	0.000	-	1084.797	52	
	23-Aug-04		-	6.782	0.000	-	1084.845	18	
	13-Oct-04		-	6.754	0.000	-	1084.873	60	
	1-Feb-05		-	6.791	0.000	-	1084.836	12	
	28-Feb-05		-	6.785	0.000	-	1084.842	50	
	30-May-05		-	6.903	0.000	-	1084.724	90	has bailer and lock
	3-Oct-05		-	6.207	0.000	-	1085.420	86	
	17-Jan-06		-	6.324	0.000	-	1085.303	200	
	8-May-06	1091.635	-	6.634	0.000	-	1084.993	20	
	24-Jul-06		-	6.379	0.000	-	1085.248	50	
	24-Jan-07		-	6.627	0.000	-	1085.000	32	
	22-May-07		-	6.795	0.000	-	1084.832	48	
	21-Aug-07		-	6.244	0.000	-	1085.383	30	
	20-Nov-07		-	6.495	0.000	-	1085.132	18	
10-Mar-08		-	6.690	0.000	-	1084.937	30		
2-Jun-08		-	6.780	0.000	-	1084.847	16		
4-Jul-08		-	6.445	0.000	-	1085.182	40	well decommissioned on 04 July 2008	

Notes:

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  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cmm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

**TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013**

**Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
Calgary, Alberta**

Monitoring Well	Date (dd-mmm-yy)	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments
BH51	9-Sep-98	1091.055	-	5.820	0.000	-	1085.240	52	
	29-Oct-98		-	5.961	0.000	-	1085.099	50	
	22-Apr-99		-	6.287	0.000	-	1084.768	18	
	10-Jun-00		-	6.223	0.000	-	1084.832	73	
	12-Sep-00		-	6.175	0.000	-	1084.880	20	
	19-Oct-00		-	6.017	0.000	-	1085.038	20	
	23-Nov-00		-	6.011	0.000	-	1085.044	60	
	26-Jul-01		-	6.427	0.000	-	1084.628	52	
	5-Dec-02	1091.058	-	6.360	0.000	-	1084.698	220	
	12-May-03		-	6.548	0.000	-	1084.510	48	white bugs on probe; bailer had to be fished out
	7-Oct-03		-	6.380	0.000	-	1084.678	54	
	20-Nov-03		-	6.354	0.000	-	1084.704	230	
	17-Dec-03		-	6.338	0.000	-	1084.720	155	
	15-Jan-04		-	6.402	0.000	-	1084.656	88	
	8-Mar-04		-	6.410	0.000	-	1084.648	200	iced; j-plug does not have a lock (cap pulls off)
	5-Apr-04		-	6.580	0.000	-	1084.478	14	
	21-May-04		-	6.734	0.000	-	1084.324	nm	
	15-Jun-04		-	6.795	0.000	-	1084.263	70	
	13-Jul-04		-	6.768	0.000	-	1084.290	74	
	23-Aug-04		-	6.725	0.000	-	1084.333	36	
	13-Oct-04		-	6.704	0.000	-	1084.354	84	
	1-Feb-05		-	6.780	0.000	-	1084.278	52	
	28-Feb-05		-	6.800	0.000	-	1084.258	82	
	30-May-05		-	7.011	0.000	-	1084.047	180	has bailer and lock
	3-Oct-05		-	6.127	0.000	-	1084.931	64	
	17-Jan-06		-	6.372	0.000	-	1084.686	320	
	8-May-06		-	6.625	0.000	-	1084.433	160	
	24-Jul-06		-	6.413	0.000	-	1084.645	52	
	24-Jan-07		-	6.298	0.000	-	1084.760	36	
	22-May-07		-	6.773	0.000	-	1084.285	8	
	21-Aug-07		-	6.061	0.000	-	1084.997	22	
	20-Nov-07		-	6.384	0.000	-	1084.674	24	
10-Mar-08		-	6.601	0.000	-	1084.457	180		
3-Jun-08		-	6.785	0.000	-	1084.273	54		
4-Jul-08		-	6.379	0.000	-	1084.679	60	well decommissioned on 04 July 2008	

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  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cmm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

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BH52	9-Sep-98	1091.105	-	6.238	0.000	-	1084.872	52		
	29-Oct-98		-	6.435	0.000	-	1084.675	62		
	22-Apr-99		-	6.957	0.000	-	1084.148	0		
	10-Jun-00		-	6.850	0.000	-	1084.255	52		
	12-Sep-00		-	6.590	0.000	-	1084.515	80		
	19-Oct-00		-	6.509	0.000	-	1084.596	50		
	23-Nov-00		-	6.557	0.000	-	1084.548	82		
	26-Jul-01		-	7.019	0.000	-	1084.086	50		
	5-Dec-02	1091.112	-	6.968	0.000	-	1084.144	300		
	12-May-03		-	7.173	0.000	-	1083.939	54	white bugs on probe	
	7-Oct-03		-	6.888	0.000	-	1084.224	45		
	20-Nov-03		-	6.916	0.000	-	1084.196	10		
	3-Dec-03		-	6.933	0.000	-	1084.179	-		
	17-Dec-03		-	6.992	0.000	-	1084.120	180		
	13-Jan-04			dry	dry	dry	dry	90		
	15-Jan-04			-	7.101	0.000	-	1084.011	90	
	8-Mar-04			-	7.108	0.000	-	1084.004	210	
	5-Apr-04			-	7.285	0.000	-	1083.827	62	
	21-May-04			-	7.419	0.000	-	1083.693	nm	
	15-Jun-04			-	7.445	0.000	-	1083.667	42	
	13-Jul-04			-	7.309	0.000	-	1083.803	72	
	23-Aug-04			-	7.210	0.000	-	1083.902	14	One bolt missing - could not be replaced
	13-Oct-04			-	7.185	0.000	-	1083.927	74	
	1-Feb-05			-	7.420	0.000	-	1083.692	80	needs rubber flange
	28-Feb-05			-	7.447	0.000	-	1083.665	140	
	30-May-05			-	7.579	0.000	-	1083.533	100	has bailer and lock
	3-Oct-05			-	6.417	0.000	-	1084.695	10	
	17-Jan-06			-	6.924	0.000	-	1084.188	3,000	
	8-May-06			-	7.293	0.000	-	1083.819	40	
	24-Jul-06			-	6.809	0.000	-	1084.303	36	
	24-Jan-07			-	7.261	0.000	-	1083.851	40	
	22-May-07			-	7.356	0.000	-	1083.756	32	
21-Aug-07			-	6.362	0.000	-	1084.750	10		
20-Nov-07			-	6.870	0.000	-	1084.242	60		
10-Mar-08			-	7.239	0.000	-	1083.873	220		

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.



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<i>BH52 Continued</i>	2-Jun-08		-	7.440	0.000	-	1083.672	24		
BH54	4-Jul-08		-	6.754	0.000	-	1084.358	10	well decommissioned on 04-July-08	
	9-Sep-98	1089.126	-	5.574	0.000	-	1083.556	64		
	29-Oct-98		-	5.882	0.000	-	1083.240	48		
	22-Apr-99		-	6.244	0.000	-	1082.882	6		
	26-Jul-01		-	6.563	0.000	-	1082.567	46	disposable bailer inside well	
	5-Dec-02	1089.147	-	6.701	0.000	-	1082.446	220		
	12-May-03		-	6.863	0.000	-	1082.284	56		
	7-Oct-03		-	6.959	0.000	-	1082.188	50		
	20-Nov-03		-	7.005	0.000	-	1082.142	10	Needs pop-off cap	
	17-Dec-03		-	6.989	0.000	-	1082.158	160		
	13-Jan-04		-	6.978	0.000	-	1082.169	42		
	8-Mar-04			cnm	cnm	-	cnm	cnm		
	5-Apr-04			-	7.173	0.000	-	1081.974	52	no cap on well
	21-May-04			-	7.485	0.000	-	1081.662	nm	
	15-Jun-04			-	7.597	0.000	-	1081.550	54	water depth measured without collar
	13-Jul-04			-	7.699	0.000	-	1081.448	200	no collar
	23-Aug-04			-	7.755	0.000	-	1081.392	38	One bolt missing - could not be replaced
	13-Oct-04			-	7.470	0.000	-	1081.677	72	without collar
	1-Feb-05			cnm	cnm	cnm	-	cnm	cnm	outer frozen in well; one bolt note needs rewrapping; cap should be replaced with 1 also
	28-Feb-05			-	7.747	0.000	-	1081.400	72	bailer had to be fished out
	30-May-05			-	7.942	0.000	-	1081.205	200	has bailer; collar doesn't fit; measured with collar on
	3-Oct-05			-	7.377	0.000	-	1081.770	42	
	17-Jan-06			-	7.290	0.000	-	1081.857	10	Cleanout cap loose on well
8-May-06			-	7.525	0.000	-	1081.622	20		
24-Jul-06			-	7.651	0.000	-	1081.496	50		
24-Jan-07			-	7.635	0.000	-	1081.512	60		
22-May-07			-	7.755	0.000	-	1081.392	52		
21-Aug-07			-	7.075	0.000	-	1082.072	36		
20-Nov-07			-	7.355	0.000	-	1081.792	44		
10-Mar-08			-	7.495	0.000	-	1081.652	54		
2-Jun-08			-	7.705	0.000	-	1081.442	40		
4-Jul-08			-	7.435	0.000	-	1081.712	22	well decommissioned on 04 July 2008	
BH206	29-Oct-98	1088.360	-	9.076	0.000	-	1079.280	1,000		
	9-Nov-98		-	9.070	0.000	-	1079.290	5,500		

Notes:

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- Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.

LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH206 Continued</i>	22-Apr-99		-	9.323	0.000	-	1079.037	480	
	26-Jul-01		-	9.343	0.000	-	1079.017	62	
	5-Dec-02	1088.402	-	9.465	0.000	-	1078.937	480	
	12-May-03		-	9.495	0.000	-	1078.907	76	
	7-Oct-03		-	9.402	0.000	-	1079.000	200	
	20-Nov-03		-	9.429	0.000	-	1078.973	210	
	17-Dec-03		-	9.415	0.000	-	1078.987	35	
	13-Jan-04		-	9.354	0.000	-	1079.048	15	
	8-Mar-04		-	9.277	0.000	-	1079.125	230	top of RB had to be chipped out
	7-Apr-04		-	9.330	0.000	-	1079.072	20	blocked
	16-Jun-04		-	9.390	0.000	-	1079.012	200	
	14-Jul-04		-	9.405	0.000	-	1078.997	14	
	23-Aug-04		-	9.393	0.000	-	1079.009	72	
	14-Oct-04		-	9.410	0.000	-	1078.992	30	
	2-Feb-05		-	9.455	0.000	-	1078.947	320	
	2-Mar-05			cnm	cnm	cnm	cnm	cnm	
	5-Oct-05		-	9.354	0.000	-	1079.048	70	
	19-Jan-06		-	9.304	0.000	-	1079.098	280	
	11-May-06		-	9.414	0.000	-	1078.988	400	
	27-Jul-06		-	9.455	0.000	-	1078.947	68	
	25-Jan-07		-	9.390	0.000	-	1079.012	100	
	23-May-07		-	9.437	0.000	-	1078.965	72	
	23-Aug-07		-	9.233	0.000	-	1079.169	72	
	22-Nov-07		-	9.290	0.000	-	1079.112	18	
13-Mar-08		-	9.383	0.000	-	1079.019	260		
4-Jun-08		-	9.464	0.000	-	1078.938	30		
24-Jun-08		-	9.429	0.000	-	1078.973	54	well decommissioned on 24 June 2008	
<b>BH207</b>	29-Oct-98	1088.720	-	9.632	0.000	-	1079.090	>10,000	
	9-Nov-98		-	9.620	0.000	-	1079.100	11,000	
	22-Apr-99		cnm	cnm	cnm	-	cnm	1,000	
	26-Jul-01		-	9.842	0.000	-	1078.878	660	
	5-Dec-02	1088.746	-	9.952	0.000	-	1078.794	>10,000	
	12-May-03		cnm	cnm	cnm	-	cnm	>10,000	
	7-Oct-03		-	9.905	0.000	-	1078.841	7,500	
	20-Nov-03		-	9.960	0.000	-	1078.786	1,300	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH207 Continued</i>	17-Dec-03		-	9.953	0.000	-	1078.793	60		
	13-Jan-04		-	9.895	0.000	-	1078.851	320		
	8-Mar-04		cnl	cnl	cnl	-	cnl	cnl		
	6-Apr-04		cnm	cnm	cnm	-	cnm	12		
	16-Jun-04		dry	dry	dry	-	dry	1,000		
	14-Jul-04		dry	dry	dry	-	dry	180		
	23-Aug-04		dry	dry	dry	-	dry	>10,000		
	14-Oct-04		dry	dry	dry	-	dry	5,400		
	2-Feb-05		dry	dry	dry	-	dry	>10,000		
	2-Mar-05		dry	dry	dry	-	dry	4,200		
	5-Oct-05		dry	dry	dry	-	dry	2,300		
	19-Jan-06		dry	dry	dry	-	dry	6,000		
	11-May-06		dry	dry	dry	-	dry	>10,000		
	27-Jul-07		dry	dry	dry	-	dry	3,600		
	25-Jan-07		dry	dry	dry	-	dry	>10,000		
	29-May-07		dry	dry	dry	-	dry	370		
	23-Aug-07		dry	dry	dry	-	dry	1,200		
	23-Nov-07		dry	dry	dry	-	dry	>10,000		
	10-Mar-08		cnm	cnm	cnm	-	cnm	cnm	car parked over well	
	13-Mar-08		dry	dry	dry	-	dry	3,800		
	4-Jun-08		-	9.428	0.000	-	1079.318	5,200		
	24-Jun-08		dry	dry	dry	-	dry	3,800	well decommissioned on 24 June 2008	
	<b>BH208</b>	29-Oct-98	1088.910	-	9.856	0.000	-	1079.050	6,200	
		9-Nov-98		-	9.840	0.000	-	1079.070	NR	
22-Apr-99			-	10.024	0.000	-	1078.886	1,300		
26-Jul-01			-	10.067	0.000	-	1078.843	>10,000		
5-Dec-02		1088.937	cnl	cnl	cnl	-	cnl	cnl		
12-May-03			-	10.205	0.000	-	1078.732	1,200		
7-Oct-03			-	10.153	0.000	-	1078.784	>10,000		
20-Nov-03			-	10.216	0.000	-	1078.721	>10,000		
17-Dec-03			-	10.218	0.000	-	1078.719	10		
15-Jan-04			-	10.095	0.000	-	1078.842	>10,000		
10-Mar-04			-	10.165	0.000	-	1078.772	70	bailer check - no product	
6-Apr-04			-	10.131	0.000	-	1078.806	12	had to be chipped out	
16-Jun-04			-	10.170	0.000	-	1078.767	>10,000	bailer checked - no product	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH208 Continued</i>	14-Jul-04		-	10.172	0.000	-	1078.765	46	
	24-Aug-04		-	10.146	0.000	-	1078.791	3,200	
	14-Oct-04		-	10.187	0.000	-	1078.750	290	
	2-Feb-05		-	10.185	0.000	-	1078.752	5,000	
	2-Mar-05			cnm	cnm	-	cnm	>10,000	
	5-Oct-05		-	10.117	0.000	-	1078.820	>10,000	
	19-Jan-06		-	10.010	0.000	-	1078.927	4,000	
	11-May-06		-	10.060	-	-	1078.877	>10,000	
	27-Jul-06		-	10.125	-	-	1078.812	320	
	25-Jan-07		-	10.063	-	-	1078.874	>10,000	
	29-May-07		-	10.153	-	-	1078.784	50	
	23-Aug-07		-	9.971	-	-	1078.966	1,400	
	23-Nov-07		-	10.001	-	-	1078.936	2,000	
	10-Mar-08		-	10.065	-	-	1078.872	>10,000	
	4-Jun-08		-	10.125	-	-	1078.812	5,000	
	24-Jun-08		-	10.114	-	-	1078.823	>10,000	well decommissioned on 24 June 2008
	<b>BH209</b>	29-Oct-98	1088.800	-	10.056	0.000	-	1078.744	640
9-Nov-98			-	10.030	0.000	-	1078.770	880	
22-Apr-99			-	inaccessible	-	-	-	nm	
26-Jul-01			-	10.293	0.000	-	1078.507	2,200	
5-Dec-02		1089.124	-	10.390	0.000	-	1078.734	>10,000	
25-Apr-03			-	10.111	0.000	-	1079.013	n.m.	
12-May-03			-	10.413	0.000	-	1078.711	1,800	
7-Oct-03			-	10.335	0.000	-	1078.789	>10,000	
20-Nov-03			-	10.436	0.000	-	1078.688	160	
17-Dec-03			-	10.454	0.000	-	1078.670	140	
13-Jan-04			-	10.358	0.000	-	1078.766	1,200	
8-Mar-04			-	10.386	0.000	-	1078.738	1,400	
6-Apr-04				cnm	cnm	-	cnm	cnm	
16-Jun-04			-	10.404	0.000	-	1078.720	600	
14-Jul-04			-	10.388	0.000	-	1078.736	38	
24-Aug-04			-	10.347	0.000	-	1078.777	5,000	
14-Oct-04			-	10.376	0.000	-	1078.748	300	
2-Feb-05		-	10.395	0.000	-	1078.729	2,000	bailer checked: slight odour, no sheen	
2-Mar-05		-	10.369	0.000	-	1078.755	>10,000		

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

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Calgary, Alberta

Monitoring Well	Date	Top of Casing Elevation <sup>1</sup>	Depth to LPH <sup>2</sup>	Depth to Water <sup>2</sup>	Apparent Thickness of LPH	LPH Recovery Volume	Water Elevation <sup>3</sup>	Combustible Vapour Concentration <sup>4</sup>	Comments
	(dd-mmm-yy)	(m)	(m)	(m)	(m)	(L)	(m)	(ppm)	
<i>BH209 Continued</i>	5-Oct-05		-	10.319	0.000	-	1078.805	1,000	
	19-Jan-06		10.195	10.320	0.125	-	1078.904	3,400	Product
	20-Jan-06		10.175	10.178	0.003	-	1078.948	nm	Bailer checked - 1 mm
	23-Jan-06		10.165	10.425	0.260	-	1078.907	nm	Hand Bailed - 1.1 L.
	30-Jan-06		10.070	10.378	0.308	-	1078.992	nm	Hand Bailed - 700 ml.
	1-Feb-06		10.113	10.217	0.104	-	1078.990	nm	Hand Bailed - 330 ml.
	3-Feb-06		10.195	10.395	0.200	-	1078.889	nm	200 mm product in passive bailer
	3-Feb-06		10.413	10.417	0.004	-	1078.710	nm	hand bailed 400 ml product
	6-Feb-06		10.203	10.409	0.206	-	1078.880	nm	hand bailed 500 ml product
	6-Feb-06		10.405	10.409	0.004	-	1078.718	nm	
	8-Feb-06		10.204	10.407	0.203	-	1078.879	nm	hand bailed 500 ml product
	8-Feb-06		10.307	10.312	0.005	-	1078.816	nm	
	10-Feb-06		10.250	10.311	0.061	-	1078.862	nm	hand bailed 300 ml product
	10-Feb-06		10.346	10.348	0.002	-	1078.778	nm	
	27-Feb-06		10.004	10.873	0.869	-	1078.946	nm	800 ml product in P.B.
	27-Feb-06		10.505	10.514	0.009	-	1078.617	nm	hand bailed 2.1 L product
	2-Mar-06		10.197	10.480	0.283	-	1078.870	nm	hand bailed 1.2 L product
	2-Mar-06		10.451	10.459	0.008	-	1078.671	nm	
	4-Mar-06		10.164	10.169	0.005	-	1078.959	nm	
	6-Mar-06		10.135	10.331	0.196	-	1078.950	nm	hand bailed 300 ml product
	6-Mar-06		10.314	10.319	0.005	-	1078.809	nm	
	8-Mar-06		10.149	10.243	0.094	-	1078.956	nm	hand bailed 200 ml product
	8-Mar-06		10.289	10.298	0.009	-	1078.833	nm	
	10-Mar-06		cnm	cnm	cnm	-	cnm	nm	
	14-Mar-06		cnm	cnm	cnm	-	cnm	nm	
	22-Mar-06		cnm	cnm	cnm	-	cnm	nm	
	24-Mar-06		cnm	cnm	cnm	-	cnm	nm	
	27-Mar-06		cnm	cnm	cnm	-	cnm	nm	
	29-Mar-06		cnm	cnm	cnm	-	cnm	nm	
	30-Mar-06		10.073	10.885	0.812	-	1078.889	nm	Bailer checked - 1L; hand bailed 2.1 L
	31-Mar-06		cnm	cnm	cnm	-	cnm	nm	High volume traffic
	12-Apr-06		10.145	10.542	0.397	-	1078.900	nm	Hand bailed 1.1 L product
	18-Apr-06		cnm	cnm	cnm	cnm	cnm	cnm	Iced
	21-Apr-06		10.162	10.300	0.138	0.030	1078.934	nm	Hand bailed 30 ml
	26-Apr-06		10.170	10.319	0.149	0.350	1078.924	nm	Hand bailed 350 ml

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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Calgary, Alberta

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<i>BH209 Continued</i>	28-Apr-06		10.232	10.265	0.033	-	1078.885	nm	
	1-May-06		10.189	10.262	0.073	-	1078.920	nm	
	3-May-06		10.260	10.355	0.095	0.500	1078.845	nm	Hand bailed 500 ml
	9-May-06		10.257	10.400	0.143	0.500	1078.838	nm	
	7-Jun-06		9.250	9.521	0.271	0.350	1079.820	nm	Hand bailed 350 ml
	12-Jun-06		10.309	10.401	0.092	0.300	1078.797	nm	Hand bailed 300 ml
	14-Jun-06		10.236	10.287	0.051	-	1078.878	nm	
	16-Jun-06		10.268	10.315	0.047	-	1078.847	nm	
	20-Jun-06		10.275	10.350	0.075	-	1078.834	nm	
	22-Jun-06		10.303	10.351	0.048	-	1078.811	nm	0 ml product in passive bailer
	23-Jun-06		10.310	10.355	0.045	-	1078.805	nm	
	26-Jun-06		10.274	10.298	0.024	-	1078.845	nm	
	28-Jun-06		10.255	10.293	0.038	-	1078.861	nm	
	4-Jul-06		10.279	10.355	0.076	-	1078.830	nm	
	7-Jul-06		10.287	10.289	0.002	-	1078.837	nm	
	12-Jul-06		9.250	9.334	0.084	-	1079.857	nm	no passive bailer
	19-Jul-06		10.287	10.322	0.035	-	1078.830	nm	
	21-Jul-06		10.309	10.325	0.016	-	1078.812	nm	
	24-Jul-06		10.255	10.318	0.063	0.100	1078.856	nm	recovered 100 ml product
	24-Jul-06		10.262	10.269	0.007	-	1078.861	nm	
	31-Jul-06		10.265	10.297	0.032	-	1078.853	nm	
	3-Aug-06		10.295	10.364	0.069	0.040	1078.815	nm	Hand Bailed 40 ml
	9-Aug-06		10.293	10.360	0.067	0.020	1078.818	nm	Hand bailed 20 ml
	15-Aug-06		10.270	10.321	0.051	0.100	1078.844	nm	Hand bailed 100 ml
	17-Aug-06		10.293	10.295	0.002	-	1078.831	nm	
	18-Aug-06		9.285	9.330	0.045	-	1079.830	nm	
	21-Aug-06		10.267	10.320	0.053	-	1078.846	nm	
	24-Aug-06		10.275	10.310	0.035	0.100	1078.842	nm	Hand Bailed 100 ml
	25-Aug-06		10.301	10.309	0.008	-	1078.821	nm	
	28-Aug-06		10.260	10.289	0.029	-	1078.858	nm	
30-Aug-06		10.269	10.309	0.040	-	1078.847	nm		
18-Sep-06		10.275	10.276	0.001	-	1078.849	nm		
20-Sep-06		10.237	10.267	0.030	0.030	1078.881	nm	before purge - hand bailed 30 ml	
20-Sep-06		10.241	10.242	0.001	-	1078.883	nm	after purge	
22-Sep-06			10.238	10.240	0.002	-	1078.886	nm	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH209 Continued</i>	25-Sep-06		10.266	10.343	0.077	-	1078.843	nm	
	3-Oct-06		10.305	10.390	0.085	0.100	1078.802	nm	hand bailed 100 ml
	5-Oct-06		10.229	10.241	0.012	-	1078.893	nm	
	4-Dec-06		cnm	cnm	cnm	cnm	cnm	cnm	iced
	17-Apr-07		9.950	10.503	0.553	1.000	1079.063	nm	recovered 700 ml product from P.B.; hand bailed 300 ml
	24-Apr-07		10.265	10.372	0.107	1.000	1078.838	nm	hand bailed 1.0 L
	1-May-07		10.283	10.293	0.010	0.010	1078.839	nm	recovered 10 ml product from passive bailer
	4-May-07		10.260	10.300	0.040	-	1078.856	nm	
	8-May-07		10.279	10.289	0.010	0.010	1078.843	nm	recovered 10 ml product from passive bailer
	10-May-07		10.295	10.300	0.005	-	1078.828	nm	
	29-May-07		10.301	10.365	0.064	-	1078.810	>10,000	Product, not sampled
	8-Jun-07		10.255	10.286	0.031	0.050	1078.863	nm	hand bailed 50 ml
	11-Jun-07		10.239	10.245	0.006	-	1078.884	nm	
	13-Jun-07		10.245	10.326	0.081	0.050	1078.863	nm	recovered 50 ml from PB
	3-Jul-07		10.193	10.300	0.107	-	1078.910	nm	
	5-Jul-07		10.190	10.302	0.112	-	1078.912	nm	
	16-Jul-07		10.128	10.203	0.075	-	1078.981	nm	
	20-Jul-07		10.110	10.207	0.097	-	1078.995	nm	
	26-Jul-07		10.095	10.208	0.113	-	1079.006	nm	
	30-Jul-07		10.092	10.207	0.115	-	1079.009	nm	
	2-Aug-07		10.060	10.225	0.165	-	1079.031	nm	
	7-Aug-07		10.024	10.310	0.286	-	1079.043	nm	
	9-Aug-07		10.575	10.709	0.134	0.400	1078.522	nm	recovered 400 ml product from passive bailer
	24-Aug-07		10.631	10.633	0.002	0.800	1078.493	nm	recovered 800 ml product from passive bailer
	27-Aug-07		10.681	10.684	0.003	0.060	1078.442	nm	recovered 60 ml from PB
	29-Aug-07		10.670	10.672	0.002	0.100	1078.454	nm	recovered 100 ml from PB
	4-Sep-07		10.675	10.677	0.002	0.150	1078.449	nm	recovered 150 ml from PB
	6-Sep-07		10.696	10.698	0.002	0.100	1078.428	nm	recovered 100 ml from PB
	10-Sep-07		10.672	10.675	0.003	0.060	1078.451	nm	recovered 60 ml product from passive bailer
	12-Sep-07		10.553	10.557	0.004	0.100	1078.570	nm	recovered 100 ml product from passive bailer
14-Sep-07		10.680	10.684	0.004	0.100	1078.443	nm	recovered 100 ml product from passive bailer	
17-Sep-07		10.613	10.616	0.003	-	1078.510	nm		
19-Sep-07		10.688	10.692	0.004	0.250	1078.435	nm	recovered 250 ml product from passive bailer	
21-Sep-07		10.698	10.701	0.003	0.300	1078.425	nm	recovered 300 ml product from passive bailer	
24-Sep-07		10.655	10.664	0.009	0.300	1078.467	nm	recovered 300 ml from PB	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH209 Continued</i>	26-Sep-07		10.665	10.667	0.002	0.200	1078.459	nm	recovered 200 ml from PB
	28-Sep-07		10.672	10.675	0.003	0.100	1078.451	nm	recovered 100 ml from PB
	1-Oct-07		10.690	10.693	0.003	0.110	1078.433	nm	recovered 110 ml from PB
	3-Oct-07		10.688	10.690	0.002	0.050	1078.436	nm	recovered 50 ml from PB
	9-Oct-07		10.694	10.699	0.005	0.080	1078.429	nm	recovered 80 ml from PB
	12-Oct-07		10.701	10.705	0.004	0.100	1078.422	nm	recovered 100 ml from PB
	16-Oct-07		10.703	10.705	0.002	0.200	1078.421	nm	recovered 200 ml from PB
	20-Oct-07		10.725	10.728	0.003	0.100	1078.398	nm	recovered 100 ml from PB
	29-Oct-07		10.652	10.800	0.148	0.800	1078.442	nm	recovered 800 ml product from passive bailer
	1-Nov-07		10.653	10.660	0.007	0.200	1078.470	nm	recovered 200 ml product from passive bailer
	2-Nov-07		10.655	10.658	0.003	0.100	1078.468	nm	recovered 100 ml product from passive bailer
	5-Nov-07		10.725	10.741	0.016	0.450	1078.396	nm	recovered 450 ml product from passive bailer
	13-Nov-07		10.721	10.727	0.006	0.100	1078.402	nm	recovered 100 ml product from passive bailer
	19-Nov-07		10.729	10.783	0.054	0.600	1078.384	nm	recovered 600 ml product from passive bailer
	23-Nov-07		10.673	10.675	0.002	0.200	1078.451	>10,000	recovered 200 ml product from passive bailer
	26-Nov-07		10.700	10.708	0.008	0.300	1078.422	nm	recovered 300 ml product from passive bailer
	28-Nov-07		10.705	10.706	0.001	0.200	1078.419	nm	recovered 200 ml product from passive bailer
	30-Nov-07		10.714	10.716	0.002	0.080	1078.410	nm	recovered 80 ml product from passive bailer
	3-Dec-07		10.577	10.579	0.002	0.400	1078.547	nm	recovered 400 ml product from passive bailer
	5-Dec-07		10.583	10.586	0.003	0.100	1078.540	nm	recovered 100 ml product from passive bailer
	7-Dec-07		10.587	10.589	0.002	0.020	1078.537	nm	recovered 20 ml product from passive bailer
	10-Dec-07		10.583	10.589	0.006	0.200	1078.540	nm	recovered 200 ml product from passive bailer
	14-Dec-07		10.582	10.585	0.003	0.150	1078.541	nm	recovered 150 ml product from passive bailer
	17-Dec-07		10.584	10.589	0.005	0.200	1078.539	nm	recovered 200 ml product from passive bailer
	19-Dec-07		10.588	10.592	0.004	0.040	1078.535	nm	recovered 40 ml product from passive bailer
	21-Dec-07		10.591	10.593	0.002	0.010	1078.533	nm	recovered 10 ml product from passive bailer
	2-Jan-08		10.582	10.595	0.013	0.800	1078.539	nm	recovered 800 ml product from passive bailer
	4-Jan-08		10.637	10.645	0.008	0.040	1078.485	nm	recovered 40 ml product from passive bailer
	23-Jan-08		10.695	10.743	0.048	0.500	1078.419	nm	recovered 500 ml product from passive bailer
	25-Jan-08		10.700	10.703	0.003	0.040	1078.423	nm	recovered 40 ml product from passive bailer
	7-Feb-08		10.722	10.775	0.053	0.100	1078.391	nm	recovered 100 ml product from passive bailer
	9-Feb-08		10.725	10.797	0.072	0.100	1078.385	nm	recovered 100 ml product from passive bailer
	6-Mar-08		10.708	10.711	0.003	0.800	1078.415	nm	recovered 800 ml product from passive bailer
7-Apr-08		cnm	cnm	cnm	cnm	cnm	cnm	car parked over well	
9-Apr-08		cnm	cnm	cnm	cnm	cnm	cnm	well frozen	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.



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<i>BH209 Continued</i>	11-Apr-08		cnm	cnm	cnm	cnm	cnm	cnm	well frozen
	14-Apr-08		cnm	cnm	cnm	cnm	cnm	cnm	well frozen
	16-Apr-08		cnm	cnm	cnm	cnm	cnm	cnm	well frozen
	28-Apr-08		cnm	cnm	cnm	cnm	cnm	cnm	car parked over well
	30-Apr-08		cnm	cnm	cnm	cnm	cnm	cnm	car parked over well
	2-May-08		cnm	cnm	cnm	cnm	cnm	cnm	car parked over well
	5-May-08		10.723	10.777	0.054	0.100	1078.390	nm	recovered 100 ml product from passive bailer
	12-May-08		10.753	10.911	0.158	0.100	1078.339	nm	recovered 100 ml product from passive bailer
	14-May-08		10.755	10.915	0.160	0.100	1078.337	nm	recovered 100 ml product from passive bailer
	26-May-08		11.008	11.015	0.007	0.300	1078.115	nm	recovered 300 ml product from passive bailer
	28-May-08		11.002	11.017	0.015	0.100	1078.119	nm	recovered 100 ml product from passive bailer
	30-May-08		11.009	11.014	0.005	0.010	1078.114	nm	recovered 10 ml product from passive bailer
	9-Jun-08		11.045	11.069	0.024	0.100	1078.074	nm	recovered 100 ml product from passive bailer
	11-Jun-08		10.895	10.897	0.002	0.050	1078.229	nm	recovered 50 ml product from passive bailer
	13-Jun-08		10.898	10.899	0.001	0.050	1078.226	nm	recovered 50 ml product from passive bailer
	23-Jun-08		10.869	10.871	0.002	0.200	1078.255	>10,000	well decommissioned on 23 June 2008
<b>BH210</b>	29-Oct-98	1088.860	-	10.286	0.000	-	1078.570	800	
	9-Nov-98		-	10.270	0.000	-	1078.590	1,100	
	22-Apr-99		-	10.445	0.000	-	1078.415	82	
	26-Jul-01		-	10.468	0.000	-	1078.392	8	cap labelled 212
	5-Dec-02	1088.895	cnl	-	-	-	cnl	cnl	
	12-May-03		cnm	cnm	cnm	-	cnm	1,100	
	7-Oct-03		-	10.525	0.000	-	1078.370	1,100	
	20-Nov-03		-	10.600	0.000	-	1078.295	180	
	17-Dec-03		-	10.614	0.000	-	1078.281	20	
	13-Jan-04		-	10.533	0.000	-	1078.362	15	
	8-Mar-04		-	10.435	0.000	-	1078.460	1,000	iced; no bolts
	6-Apr-04		-	10.468	0.000	-	1078.427	72	well was completely frozen in
	15-Jun-04		-	10.544	0.000	-	1078.351	32	
	14-Jul-04		-	10.549	0.000	-	1078.346	8	
	23-Aug-04		-	10.515	0.000	-	1078.380	34	
	14-Oct-04		-	10.554	0.000	-	1078.341	540	
2-Feb-05		-	10.576	0.000	-	1078.319	10		
2-Mar-05		-	10.554	0.000	-	1078.341	1,200		
2-Jun-05		-	10.630	0.000	-	1078.265	1,000		

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH210 Continued</i>	5-Oct-05		-	10.524	0.000	-	1078.371	10		
	19-Jan-06		-	10.444	0.000	-	1078.451	24		
	10-May-06		-	10.518	0.000	-	1078.377	2,000		
	26-Jul-06		-	10.503	0.000	-	1078.392	>10,000		
	25-Jan-07		-	10.452	0.000	-	1078.443	1,000		
	25-May-07		-	10.480	0.000	-	1078.415	1,100		
	23-Aug-07		-	10.356	0.000	-	1078.539	2,000		
	22-Nov-07		-	10.387	0.000	-	1078.508	84		
	10-Mar-08		-	10.449	0.000	-	1078.446	260		
	4-Jun-08		-	10.487	0.000	-	1078.408	180		
	2-Jul-08		-	10.500	0.000	-	1078.395	240	well decommissioned on 02 July 2008	
	<b>BH211</b>	29-Oct-98	1089.310	-	11.014	0.000	-	1078.300	320	
		9-Nov-98		-	11.010	0.000	-	1078.300	11,000	
22-Apr-99			-	11.125	0.000	-	1078.185	200		
26-Jul-01			-	11.147	0.000	-	1078.163	28	cap labelled 210	
5-Dec-02		1089.338	-	11.252	0.000	-	1078.086	5,800		
12-May-03			-	11.257	0.000	-	1078.081	8,800		
7-Oct-03			-	11.182	0.000	-	1078.156	2,500		
20-Nov-03			-	11.247	0.000	-	1078.091	320	one bolt missing	
17-Dec-03			-	11.242	0.000	-	1078.096	40		
13-Jan-04			-	11.167	0.000	-	1078.171	15		
8-Mar-04			-	11.265	0.000	-	1078.073	440	ice	
6-Apr-04			cnm	cnm	cnm	-	cnm	12		
15-Jun-04			-	11.191	0.000	-	1078.147	4		
14-Jul-04			-	11.198	0.000	-	1078.140	30		
23-Aug-04			-	11.170	0.000	-	1078.168	800		
14-Oct-04			-	11.220	0.000	-	1078.118	6		
2-Feb-05			-	11.225	0.000	-	1078.113	1,000	no odour or sheen on probe	
2-Mar-05			-	11.210	0.000	-	1078.128	86		
2-Jun-05			-	11.294	0.000	-	1078.044	50		
5-Oct-05		-	11.182	0.000	-	1078.156	7,150			
19-Jan-06		-	11.103	0.000	-	1078.235	20			
10-May-06		-	11.180	0.000	-	1078.158	500			
26-Jul-06		-	11.154	0.000	-	1078.184	76			
25-Jan-07		-	11.120	0.000	-	1078.218	3,000			

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH211 Continued</i>	25-May-07		-	11.138	0.000	-	1078.200	68	
	23-Aug-07		-	11.004	0.000	-	1078.334	92	
	22-Nov-07		-	11.045	0.000	-	1078.293	14	
	10-Mar-08		-	11.065	0.000	-	1078.273	300	
	4-Jun-08		-	11.147	0.000	-	1078.191	62	
	3-Jul-08		-	-	0.000	-	-	1,000	well decommissioned on 03 July 2008
<b>BH212</b>	29-Oct-98	1088.070	-	9.044	0.000	-	1079.030	44	
	9-Nov-98		-	9.020	0.000	-	1079.050	200	
	22-Apr-99		-	9.350	0.000	-	1078.720	14	
	26-Jul-01		-	9.320	0.000	-	1078.750	22	cap labelled 211
	5-Dec-02	1088.127	-	9.418	0.000	-	1078.709	290	
	12-May-03		-	9.474	0.000	-	1078.653	50	
	7-Oct-03		-	9.315	0.000	-	1078.812	55	
	20-Nov-03		-	9.355	0.000	-	1078.772	210	
	17-Dec-03		-	9.310	0.000	-	1078.817	210	
	13-Jan-04		-	9.248	0.000	-	1078.879	20	
	8-Mar-04		-	8.765	0.000	-	1079.362	180	some surface water entered well (200ml)
	7-Apr-04		-	9.188	0.000	-	1078.939	120	was frozen
	16-Jun-04		-	9.300	0.000	-	1078.827	10	
	14-Jul-04		-	9.319	0.000	-	1078.808	20	
	23-Aug-04		-	9.318	0.000	-	1078.809	22	One bolt missing - could not be replaced
	14-Oct-04		-	9.349	0.000	-	1078.778	42	
	2-Feb-05		-	9.417	0.000	-	1078.710	20	
	2-Mar-05		-	9.393	0.000	-	1078.734	240	
	5-Oct-05		-	9.273	0.000	-	1078.854	65	
	19-Jan-06		-	9.235	0.000	-	1078.892	10	
	11-May-06		-	9.358	0.000	-	1078.769	220	
	25-Jan-07		-	6.284	0.000	-	1081.843	100	
	23-May-07		-	9.292	0.000	-	1078.835	68	
23-Aug-07		-	9.074	0.000	-	1079.053	74		
22-Nov-07		-	9.112	0.000	-	1079.015	160		
13-Mar-08			cnm	cnm	cnm	cnm	cnm	88	well frozen in
4-Jun-08		-	-	9.289	0.000	-	1078.838	20	
23-Jun-08		-	-	9.241	0.000	-	1078.886	55	well decommissioned on 24 June 2008
<b>BH213</b>	29-Oct-98	1088.950	9.496	9.624	0.128	-	1079.430	2,000	passive bailer

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH213 Continued</i>	3-Nov-98		9.875	9.876	0.001	-	1079.430	nm	recovered 150 ml product from P.B.	
	5-Nov-98		-	9.677	0.000	-	1079.430	nm	recovered 75 ml product from P.B.	
	13-Nov-98		-	9.630	0.000	-	1079.320	-	recovered 200 ml product from P.B.; H.B. 200 ml	
	22-Nov-98			nm	nm	nm	nm	nm	recovered 200 ml product from P.B.; H.B. 200 ml	
	26-Nov-98			-	9.648	0.000	-	1079.036	40	measured 60 mm product in bailer
	9-Dec-98			-	9.914	0.000	-	1079.036	1,200	recovered 200 ml product from passive bailer
	23-Dec-98			-	9.772	0.000	-	1079.178	nm	recovered 100 ml product from passive bailer
	4-Jan-99			-	9.705	0.000	-	1079.245	-	passive bailer
	11-Jan-99			nm	nm	nm	-	nm	nm	recovered 100 ml product from passive bailer
	29-Jan-99			nm	nm	nm	-	nm	nm	recovered 150 ml product from P.B.
	2-Feb-99			nm	nm	nm	-	nm	nm	recovered 200 ml product from P.B.
	22-Apr-99			-	10.408	0.000	-	1078.542	>10,000	passive bailer
	20-Aug-99			10.145	10.148	0.003	-	1078.804	120	
	27-Aug-99			-	10.087	0.000	-	1078.863	28	
	17-Sep-99			-	9.928	0.000	-	1079.022	nm	75 ml product in passive bailer
	22-Nov-99			-	9.766	0.000	-	1079.184	20	75 ml product in passive bailer
	20-Nov-03			-	9.724	0.000	-	1079.557	2,000	
	3-Dec-03			-	9.693	0.000	-	1079.588	nm	Heavy sheen, no LPH, no passive bailer
	8-Dec-03			-	9.725	0.000	-	1079.556	500	no passive bailer; disposable bailer shows no product
	17-Dec-03			-	9.723	0.000	-	1079.558	60	
	7-Jan-04			-	9.672	0.000	-	1079.609	nm	no passive bailer; checked with hand bailer - no product
	13-Jan-04			-	9.671	0.000	-	1079.610	60	Bailer Check - No product
	10-Mar-04			-	9.730	0.000	-	1079.551	6,000	cap broken; retrieved bailer stuck in well
	22-Mar-04			cnm	cnm	cnm	-	nm	cnm	P.B. stuck in well (frozen)
	6-Apr-04			10.183	10.185	0.002	-	1079.098	>10,000	product in well
	16-Jun-04			-	10.020	0.000	-	1079.261	70	cap broken
	14-Jul-04			-	10.147	0.000	-	1079.134	72	cap has a hole
	24-Aug-04			-	10.366	0.000	-	1078.915	1,000	
	14-Oct-04			-	10.424	0.000	-	1078.857	1,000	
	2-Feb-05			10.094	10.094	trace	-	1079.187	5,400	bailer checked: 2 mm product in well
	2-Mar-05			cnm	cnm	cnm	-	nm	cnm	well completely frozen
5-Oct-05			-	10.294	0.000	-	1078.987	1,000		
19-Jan-06			-	9.924	0.000	-	1079.357	1,000		
11-May-06		1088.950	-	10.256	-	-	1079.025	>10,000		
27-Jul-06			-	10.360	-	-	1078.921	200		

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH213 Continued</i>	25-Jan-07		-	10.334	-	-	1078.947	4,000	
	23-Aug-07		-	9.815	-	-	1079.466	200	
	23-Nov-07		-	9.823	-	-	1079.458	6,000	
	10-Mar-08		-	9.915	-	-	1079.366	240	
	4-Jun-08		-	9.945	-	-	1079.336	60	
	23-Jun-08		-	9.891	-	-	1079.390	520	well decommissioned on 23 June 2008
<b>BH214</b>	29-Oct-98	1089.100	-	8.006	0.000	-	1081.094	60	
	9-Nov-98		-	8.020	0.000	-	1081.080	1,100	
	26-Nov-98		7.946	7.963	0.017	-	1081.151	420	bailed 10 ml product
	9-Dec-98		nm	nm	0.000	-	nm	1,200	skim of product in passive bailer
	23-Dec-98		7.906	7.932	0.026	-	1081.189	nm	bailed 20 ml product
	4-Jan-99		-	7.933	0.016	-	1081.180	-	
	7-Mar-99		-	8.465	0.000	-	1080.635	-	passive bailer
	22-Apr-99		-	8.842	0.000	-	1080.258	1,200	passive bailer
	20-Aug-99		-	8.523	0.000	-	1080.577	1,000	
	27-Aug-99		-	8.489	0.000	-	1080.611	400	
	17-Sep-99		-	8.406	0.000	-	1080.694	nm	
	22-Nov-99		-	8.287	0.000	-	1080.813	600	
	10-Dec-99		-	8.235	0.000	-	1080.865	116	
	16-Dec-99		-	8.226	0.000	-	1080.874	860	
	5-Aug-03		9.187	9.211	0.024	-	1080.255	nm	
	16-Sep-03		nm	nm	nm	-	-	nm	repaired well cap and bailer chain
	7-Oct-03		-	-	-	-	-	>10,000	
	12-Nov-03		nm	nm	nm	-	nm	nm	did not measure because of P.B.; bailed 3.6 L product
	20-Nov-03		-	-	-	-	-	>10,000	CNM-PB Frozen
	3-Dec-03		-	8.979	0.000	-	1080.468	nm	
4-Dec-03		nm	nm	nm	-	nm	nm	P.B. check showed approx. 5 ml product	
8-Dec-03		-	9.310	0.000	-	1080.137	260	recovered 150 ml product from P.B.	
17-Dec-03		-	9.345	0.000	-	1080.102	7,000		
22-Dec-03		nm	nm	nm	-	nm	nm	recovered 80 ml product from P.B.	
7-Jan-04		-	9.020	0.000	-	1080.427	nm	recovered 100 ml product from P.B.	
10-Jan-04		-	9.140	0.000	-	1080.307	nm	recovered 50 ml product from passive bailer	
12-Jan-04		-	9.243	0.000	-	1080.204	nm	recovered 50 ml product from passive bailer	
15-Jan-04		-	9.210	0.000	-	1080.237	nm	recovered 100 ml product from P.B.	
20-Jan-04		-	9.335	0.000	-	1080.112	nm	recovered 100 ml product from P.B.	

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH214 Continued</i>	23-Jan-04	-	-	9.072	0.000	-	1080.375	nm	recovered 10 ml product from P.B.	
	5-Feb-04	-	-	9.342	0.000	-	1080.105	nm	recovered 100 ml product from P.B.	
	9-Feb-04	-	-	9.434	0.000	-	1080.013	nm	recovered 100 ml product from P.B.	
	19-Feb-04	-	-	8.890	0.000	-	1080.557	nm	recovered 50 ml product from passive bailer	
	23-Feb-04	-	-	8.920	0.000	-	1080.527	nm	recovered 50 ml product from passive bailer	
	26-Feb-04	-	cnm	cnm	cnm	-	cnm	cnm	iced - bailer frozen down well	
	3-Mar-04	-	cnm	cnm	cnm	-	cnm	cnm	bailer frozen down well	
	8-Mar-04	-	cnm	cnm	cnm	-	cnm	1,600	passive bailer frozen to side	
	31-Mar-04	-	-	-	9.620	0.000	-	1079.827	nm	recovered 200 ml product from P.B.
	12-Apr-04	-	-	-	9.645	0.000	-	1079.802	nm	product in P.B. is greyish black with a slight sheen
	13-Apr-04	-	-	-	9.667	0.000	-	1079.780	nm	recovered 50 ml product from passive bailer
	15-Apr-04	-	-	-	9.644	0.000	-	1079.803	nm	product is blackish; recovered 100 ml from P.B.
	16-Apr-04	-	-	-	9.659	0.000	-	1079.788	nm	product is blackish; recovered 150 ml from P.B.
	19-Apr-04	-	-	-	9.664	0.000	-	1079.783	nm	product is black; recovered 300 ml from P.B.
	22-Apr-04	-	-	-	9.693	0.000	-	1079.754	nm	recovered 350 ml black product from P.B.
	30-Apr-04	-	-	-	9.735	0.000	-	1079.712	nm	recovered 150 ml product from P.B.
	6-May-04	-	-	-	9.686	0.000	-	1079.761	nm	recovered 100 ml from passive bailer
	7-May-04	-	-	-	9.674	0.000	-	1079.773	nm	recovered 10 ml from passive bailer
	10-May-04	-	-	-	9.669	0.000	-	1079.778	nm	recovered 50 ml from passive bailer
	17-May-04	-	-	-	9.690	0.000	-	1079.757	nm	recovered 10 ml from passive bailer
	20-May-04	-	-	-	9.689	0.000	-	1079.758	nm	recovered 10 ml from passive bailer
	28-May-04	-	-	-	9.650	0.000	-	1079.797	nm	hand bailed 5 ml
	16-Jun-04	-	-	-	9.860	0.000	-	1079.587	10,000	
	18-Jun-04	-	-	-	10.860	0.000	-	1078.587	nm	passive bailer checked - no product
	14-Jul-04	-	-	-	9.920	0.000	-	1079.527	70	passive bailer checked - no product
	28-Jul-04	-	-	9.935	9.960	0.025	-	1079.507	nm	10 ml recovered
	6-Aug-04	-	-	9.935	9.982	0.047	-	1079.503	nm	10 ml recovered
	10-Aug-04	-	-	9.960	10.020	0.060	-	1079.475	nm	0 ml recovered
	11-Aug-04	-	-	9.935	10.000	0.065	-	1079.499	nm	10 ml recovered
	13-Aug-04	-	-	-	9.935	0.000	-	1079.512	nm	10 ml recovered
	18-Aug-04	-	-	-	9.955	0.000	-	1079.492	nm	10 ml recovered
	24-Aug-04	-	-	-	9.874	0.000	-	1079.573	2,800	No product in PB.
7-Sep-04	-	-	-	9.975	0.000	-	1079.472	nm	0 ml recovered	
9-Sep-04	-	-	-	9.985	0.000	-	1079.462	nm	0 ml recovered	
13-Sep-04	-	-	-	9.935	0.000	-	1079.512	nm	0 ml recovered	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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Calgary, Alberta

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	(dd-mmm-yy)	(m)	(m)	(m)	(m)	(L)	(m)	(ppm)	
<i>BH214 Continued</i>	15-Sep-04		-	9.957	0.000	-	1079.490	nm	0 ml recovered
	17-Sep-04		-	9.923	0.000	-	1079.524	nm	0 ml recovered
	20-Sep-04		9.980	10.025	0.045	-	1079.458	nm	0 ml recovered
	22-Sep-04		-	9.954	0.000	-	1079.493	nm	0 ml recovered
	24-Sep-04		-	9.975	0.000	-	1079.472	nm	0 ml recovered
	29-Sep-04		-	9.945	0.000	-	1079.502	nm	0 ml recovered
	4-Oct-04		-	9.895	0.000	-	1079.552	nm	0 ml recovered
	6-Oct-04		9.855	9.884	0.029	-	1079.586	nm	0 ml recovered
	12-Oct-04		-	9.965	0.000	-	1079.482	nm	0 ml recovered
	15-Oct-04		-	9.880	0.000	-	1079.567	nm	0 ml recovered
	5-Nov-04		9.845	9.849	0.004	-	1079.601	nm	0 ml recovered
	8-Nov-04		9.859	9.862	0.003	-	1079.587	nm	0 ml recovered
	10-Nov-04		9.986	9.988	0.002	-	1079.461	nm	0 ml recovered
	17-Nov-04		-	9.906	0.000	-	1079.541	nm	0 ml recovered
	25-Nov-04		-	9.725	0.000	-	1079.722	nm	10 ml recovered
	29-Nov-04		9.863	9.865	0.002	-	1079.584	nm	0 ml recovered
	1-Dec-04		9.899	9.901	0.002	-	1079.548	nm	0 ml recovered
	17-Jan-05		9.616	9.616	trace	-	1079.831	nm	trace product; no P.B. in well
	24-Jan-05		9.655	9.700	0.045	-	1079.783	nm	no passive bailer
	26-Jan-05		9.804	9.804	trace	-	1079.643	nm	passive bailer full of water; reset P.B.
	28-Jan-05		9.970	9.970	trace	-	1079.477	nm	recovered 2 ml product and 20 ml water from P.B.
	2-Feb-05		9.957	9.957	trace	-	1079.490	>10,000	passive bailer checked - no product; sheen on probe
	18-Feb-05		9.943	9.948	0.005	-	1079.503	nm	recovered 4 ml product and 150 ml water from P.B.
	22-Feb-05		10.004	10.006	0.002	-	1079.443	nm	recovered 5 ml product from passive bailer
	24-Feb-05		9.908	9.908	trace	-	1079.539	nm	P.B. full of water; observed 4 mm product in H.B.
	2-Mar-05		9.985	9.989	0.004	-	1079.461	>10,000	recovered 1 mm of product from P.B.
	22-Mar-05		10.010	10.015	0.005	-	1079.436	nm	recovered 10 ml product from P.B.
	24-Mar-05		10.085	10.100	0.015	-	1079.359	nm	no product in P.B.; hand bailed 10 mm product
	28-Mar-05		9.926	9.928	0.002	-	1079.521	nm	no product in P.B.
	30-Mar-05		10.053	10.055	0.002	-	1079.394	nm	no product in P.B.
	1-Apr-05		9.984	9.984	trace	-	1079.463	nm	no product in P.B.
	5-Apr-05		10.095	10.098	0.003	-	1079.351	nm	no product in P.B.
	11-Apr-05		10.036	10.038	0.002	-	1079.411	nm	no product in P.B.
	15-Apr-05		10.090	10.091	0.001	-	1079.357	nm	no product in P.B.
	18-Apr-05		10.110	10.111	0.001	-	1079.337	nm	no product in P.B.

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH214 Continued</i>	20-Apr-05		10.087	10.089	0.002	-	1079.360	nm	no product in P.B.
	22-Apr-05		10.102	10.104	0.002	-	1079.345	nm	no product in P.B.
	25-Apr-05		10.085	10.088	0.003	-	1079.361	nm	no product in P.B.
	27-Apr-05		-	10.105	0.000	-	1079.342	nm	no product in P.B.
	4-May-05		-	10.220	0.000	-	1079.227	nm	no product in P.B.
	6-May-05		-	10.375	0.000	-	1079.072	nm	no product in P.B.
	9-May-05		-	10.100	0.000	-	1079.347	nm	
	13-May-05		10.112	10.114	0.002	-	1079.335	nm	no product in P.B.
	16-May-05		-	10.029	0.000	-	1079.418	nm	no product in P.B.
	26-May-05		-	10.148	0.000	-	1079.299	nm	no product in P.B.
	10-Jun-05		10.165	10.168	0.003	-	1079.281	nm	no product in P.B.
	15-Jun-05		10.159	10.162	0.003	-	1079.287	nm	no product in P.B.
	17-Jun-05		10.150	10.159	0.009	-	1079.295	nm	no product in P.B.
	20-Jun-05		10.155	10.158	0.003	-	1079.291	nm	no product in P.B.
	22-Jun-05		10.124	10.130	0.006	-	1079.322	nm	no product in P.B.
	24-Jun-05		10.145	10.147	0.002	-	1079.302	nm	no product in P.B.
	27-Jun-05		10.124	10.126	0.002	-	1079.323	nm	no product in P.B.
	29-Jun-05		10.115	10.117	0.002	-	1079.332	nm	no product in P.B.
	6-Jul-05		9.984	9.985	0.001	-	1079.463	nm	no product in P.B.
	11-Jul-05		7.045	7.049	0.004	-	1082.401	nm	no product in P.B.
	20-Jul-05		9.989	9.992	0.003	-	1079.457	nm	no product in P.B.
	22-Jul-05		9.962	9.963	0.001	-	1079.485	nm	no product in P.B.
	28-Jul-05		9.893	9.895	0.002	-	1079.554	nm	no product in P.B.
	9-Aug-05		9.985	9.990	0.005	-	1079.461	nm	no product in P.B.
	10-Aug-05		9.976	9.978	0.002	-	1079.471	nm	no product in P.B.
	12-Aug-05		9.949	9.951	0.002	-	1079.498	nm	no product in P.B.
	16-Aug-05		9.738	9.739	0.001	-	1079.709	nm	no product in P.B.
	17-Aug-05		9.905	9.907	0.002	-	1079.542	nm	no product in P.B.
	24-Aug-05		9.758	9.759	0.001	-	1079.689	nm	no product in P.B.
	31-Aug-05		9.799	9.802	0.003	-	1079.647	nm	no product in P.B.
	6-Sep-05		9.862	9.864	0.002	-	1079.585	nm	no product in P.B.
	12-Sep-05		9.734	9.738	0.004	-	1079.712	nm	recovered 5 ml product from P.B.
14-Sep-05		9.698	9.699	0.001	-	1079.749	nm	no product in P.B.	
16-Sep-05		9.715	9.716	0.001	-	1079.732	nm	no product in P.B.	
19-Sep-05		-	9.665	0.000	-	1079.782	nm	no product in P.B.	

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cmm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.



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	(dd-mmm-yy)	(m)	(m)	(m)	(m)	(L)	(m)	(ppm)	
<i>BH214 Continued</i>	21-Sep-05		-	9.705	0.000	-	1079.742	nm	no product in P.B.
	26-Sep-05		9.607	9.608	0.001	-	1079.840	nm	recovered 10 ml product from P.B.
	28-Sep-05		9.641	9.642	0.001	-	1079.806	nm	recovered 5 ml product from P.B.
	18-Oct-05		9.560	9.562	0.002	-	1079.887	nm	recovered 10 ml product from P.B.
	24-Oct-05		-	9.537	0.000	-	1079.910	nm	recovered 10 ml product from P.B.
	1-Nov-05		9.505	9.507	0.002	-	1079.942	nm	recovered 10 ml product from P.B.
	3-Nov-05		9.628	9.629	0.001	-	1079.819	nm	recovered 50 mm dark product and 115 mm light product
	8-Nov-05		9.653	9.654	0.001	-	1079.794	nm	recovered 20 ml black product
	10-Nov-05		9.527	9.529	0.002	-	1079.920	nm	recovered 10 ml product from P.B.
	14-Nov-05		9.664	9.665	0.001	-	1079.783	nm	recovered 10 ml product from P.B.
	28-Nov-05		9.610	9.612	0.002	-	1079.837	nm	recovered 30 ml product from P.B.
	30-Nov-05		9.567	9.569	0.002	-	1079.880	nm	recovered 10 ml product from P.B.
	6-Dec-05		9.599	9.602	0.003	-	1079.847	nm	recovered 10 ml product from P.B.
	12-Dec-05		9.473	9.475	0.002	-	1079.974	nm	PB-Recovered 10 ml
	14-Dec-05		9.594	9.596	0.002	-	1079.853	nm	PB-Recovered 10 ml
	16-Dec-05		9.528	9.530	0.002	-	1079.919	nm	PB-Recovered 10 ml
	19-Dec-05		9.509	9.510	0.001	-	1079.938	nm	PB-Recovered 10 ml
	22-Dec-05		9.378	9.379	0.001	-	1080.069	nm	PB-Recovered 5 ml
	23-Dec-05		9.428	9.930	0.502	-	1079.919	nm	PB-Recovered 10 ml
	3-Jan-06		9.554	9.556	0.002	-	1079.893	nm	PB-Recovered 5 ml
	5-Jan-06		9.561	9.562	0.001	-	1079.886	nm	PB-Recovered 5 ml
	6-Jan-06		9.552	9.553	0.001	-	1079.895	nm	PB-Recovered 5 ml
	9-Jan-06		9.450	9.451	0.001	-	1079.997	nm	
	12-Jan-06		9.245	9.247	0.002	-	1080.202	nm	PB-Recovered 5 ml
	13-Jan-06		9.194	9.195	0.001	-	1080.253	nm	PB-Recovered 10 ml
	16-Jan-06		9.578	9.580	0.002	-	1079.869	nm	PB-Recovered 10 ml
	20-Jan-06		9.533	9.534	0.001	-	1079.914	nm	PB-Recovered 5 ml
	23-Jan-06		8.835	8.836	0.001	-	1080.612	nm	
	30-Jan-06		8.698	8.699	0.001	-	1080.749	nm	moved PB to 706
	1-Feb-06		8.685	8.687	0.002	-	1080.762	nm	
3-Feb-06		9.004	9.005	0.001	-	1080.443	nm		
6-Feb-06		9.101	9.102	0.001	-	1080.346	nm		
8-Feb-06		8.903	8.904	0.001	-	1080.544	nm		
10-Feb-06		9.182	9.184	0.002	-	1080.265	nm		
27-Feb-06		8.703	8.705	0.002	-	1080.744	nm		

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 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cmm could not monitor.  
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 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
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<i>BH214 Continued</i>	2-Mar-06		9.104	9.106	0.002	-	1080.343	nm	
	4-Mar-06		9.236	9.237	0.001	-	1080.211	nm	
	6-Mar-06		8.840	8.841	0.001	-	1080.607	nm	
	8-Mar-06		9.024	9.025	0.001	-	1080.423	nm	
	10-Mar-06		cnm	cnm	cnm	-	cnm	nm	
	14-Mar-06		cnm	cnm	cnm	-	cnm	nm	
	22-Mar-06		cnm	cnm	cnm	-	cnm	nm	
	24-Mar-06		cnm	cnm	cnm	-	cnm	nm	
	27-Mar-06		cnm	cnm	cnm	-	cnm	nm	
	29-Mar-06		cnm	cnm	cnm	-	cnm	nm	
	30-Mar-06		9.223	9.224	0.001	-	1080.224	nm	Chipped ice out
	31-Mar-06		cnm	cnm	cnm	-	cnm	nm	High volume of traffic
	12-Apr-06		cnm	cnm	cnm	-	cnm	nm	
	18-Apr-06		10.255	10.420	0.165	0.040	1079.159	nm	Hand bailed 40 ml
	26-Apr-06		9.145	9.147	0.002	-	1080.302	nm	
	28-Apr-06		9.320	9.321	0.001	-	1080.127	nm	
	1-May-06		9.216	9.217	0.001	-	1080.231	nm	
	3-May-06		9.432	9.433	0.001	-	1080.015	nm	
	9-May-06		9.366	9.368	0.002	-	1080.081	nm	
	7-Jun-06		9.567	9.571	0.004	-	1079.879	nm	
	12-Jun-06		9.526	9.529	0.003	-	1079.920	nm	
	14-Jun-06		9.235	9.239	0.004	-	1080.211	nm	
	16-Jun-06		9.214	9.215	0.001	-	1080.233	nm	
	20-Jun-06		9.242	9.243	0.001	-	1080.205	nm	
	22-Jun-06		9.375	9.379	0.004	-	1080.071	nm	
	23-Jun-06		9.380	9.381	0.001	-	1080.067	nm	
	26-Jun-06		9.293	9.294	0.001	-	1080.154	nm	
	28-Jun-06		9.129	9.131	0.002	-	1080.318	nm	
	4-Jul-06		9.263	9.266	0.003	-	1080.183	nm	
	7-Jul-06		9.190	9.193	0.003	-	1080.256	nm	
	12-Jul-06		9.094	9.096	0.002	-	1080.353	nm	
19-Jul-06		9.209	9.211	0.002	-	1080.238	nm		
21-Jul-06		9.268	9.269	0.001	-	1080.179	nm		
24-Jul-06		9.065	9.067	0.002	-	1080.382	nm		
31-Jul-06		9.095	9.096	0.001	-	1080.352	nm		

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

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<i>BH214 Continued</i>	3-Aug-06		9.245	9.246	0.001	-	1080.202	nm	
	9-Aug-06		9.213	9.214	0.001	-	1080.234	nm	
	15-Aug-06		9.082	9.084	0.002	-	1080.365	nm	
	17-Aug-06		11.355	11.356	0.001	-	1078.092	nm	
	18-Aug-06		9.173	9.175	0.002	-	1080.274	nm	
	21-Aug-06		9.157	9.159	0.002	-	1080.290	nm	
	24-Aug-06		9.191	9.193	0.002	-	1080.256	nm	
	25-Aug-06		9.274	9.275	0.001	-	1080.173	nm	
	28-Aug-06		9.233	9.234	0.001	-	1080.214	nm	
	30-Aug-06		9.134	9.136	0.002	-	1080.313	nm	
	18-Sep-06		9.330	9.331	0.001	-	1080.117	nm	
	20-Sep-06		9.165	9.167	0.002	-	1080.282	nm	
	22-Sep-06		9.160	9.162	0.002	-	1080.287	nm	
	25-Sep-06		9.215	9.218	0.003	-	1080.231	nm	
	3-Oct-06		9.329	9.330	0.001	-	1080.118	nm	
	5-Oct-06		9.054	9.056	0.002	-	1080.393	nm	
	4-Dec-06		8.709	8.731	0.022	-	1080.734	nm	
	17-Apr-07		8.705	8.728	0.023	-	1080.737	nm	
	24-Apr-07		8.970	8.982	0.012	-	1080.475	nm	
	1-May-07		8.923	8.928	0.005	0.005	1080.523	nm	recovered 5 ml product from passive bailer
	4-May-07		8.865	8.869	0.004	-	1080.581	nm	
	8-May-07		8.935	8.944	0.009	-	1080.510	nm	
	10-May-07		9.005	9.009	0.004	-	1080.441	nm	
	8-Jun-07		cnm	cnm	cnm	cnm	cnm	cnm	car parked over well
	3-Jul-07		8.105	8.127	0.022	-	1081.338	nm	
	5-Jul-07		8.111	8.130	0.019	-	1081.332	nm	
	16-Jul-07		8.063	8.082	0.019	-	1081.380	nm	
	20-Jul-07		8.065	8.069	0.004	-	1081.381	nm	
	26-Jul-07		8.150	8.155	0.005	-	1081.296	nm	
	30-Jul-07		8.155	8.174	0.019	-	1081.288	nm	
	2-Aug-07		8.160	8.172	0.012	-	1081.285	nm	
	7-Aug-07		8.115	8.123	0.008	-	1081.330	nm	
9-Aug-07		8.009	8.038	0.029	-	1081.432	nm		
24-Aug-07		8.347	8.355	0.008	-	1081.098	nm		
27-Aug-07		8.360	8.388	0.028	-	1081.081	nm		

Notes:

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- Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.

LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

Updated Site Management Plan (2014)  
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<i>BH214 Continued</i>	29-Aug-07		8.355	8.392	0.037	-	1081.085	nm	
	4-Sep-07		8.382	8.389	0.007	-	1081.064	nm	
	6-Sep-07		8.385	8.391	0.006	-	1081.061	nm	
	10-Sep-07		10.700	10.705	0.005	-	1078.746	nm	
	12-Sep-07		10.523	10.525	0.002	-	1078.924	nm	
	14-Sep-07		10.491	10.493	0.002	-	1078.956	nm	
	17-Sep-07		10.711	10.715	0.004	0.010	1078.735	nm	recovered 10 ml product from passive bailer
	19-Sep-07		10.450	10.453	0.003	-	1078.996	nm	
	21-Sep-07		10.500	10.503	0.003	-	1078.946	nm	
	24-Sep-07		cnm	cnm	cnm	cnm	cnm	cnm	car parked over well
	26-Sep-07		cnm	cnm	cnm	cnm	cnm	cnm	car parked over well
	28-Sep-07		cnm	cnm	cnm	cnm	cnm	cnm	car parked over well
	1-Oct-07		8.395	8.399	0.004	-	1081.051	nm	
	3-Oct-07		8.399	8.402	0.003	-	1081.047	nm	no recovery
	9-Oct-07		8.392	8.396	0.004	-	1081.054	nm	
	12-Oct-07		8.382	8.387	0.005	-	1081.064	nm	
	16-Oct-07		8.503	8.508	0.005	-	1080.943	nm	
	20-Oct-07		8.557	8.559	0.002	-	1080.890	nm	
	29-Oct-07		8.414	8.417	0.003	-	1081.032	nm	
	1-Nov-07		8.410	8.412	0.002	-	1081.037	nm	
	2-Nov-07		8.412	8.416	0.004	-	1081.034	nm	
	5-Nov-07		nm	nm	nm	nm	nm	nm	
	13-Nov-07		8.441	8.445	0.004	-	1081.005	nm	
	19-Nov-07		8.376	8.379	0.003	-	1081.070	nm	
	23-Nov-07		8.338	8.340	0.002	-	1081.109	4,000	
	26-Nov-07		8.368	8.372	0.004	-	1081.078	nm	
	28-Nov-07		8.371	8.374	0.003	-	1081.075	nm	
	30-Nov-07		8.381	8.385	0.004	-	1081.065	nm	
	3-Dec-07		8.100	8.104	0.004	-	1081.346	nm	
	5-Dec-07		8.115	8.117	0.002	-	1081.332	nm	
	7-Dec-07		8.119	8.121	0.002	-	1081.328	nm	
	10-Dec-07		8.201	8.203	0.002	-	1081.246	nm	
	14-Dec-07		8.205	8.207	0.002	-	1081.242	nm	
	17-Dec-07		8.207	8.209	0.002	-	1081.240	nm	
	19-Dec-07		8.207	8.209	0.002	-	1081.240	nm	

Notes:

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  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

**TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013**

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Calgary, Alberta**

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<i>BH214 Continued</i>	21-Dec-07		8.203	8.205	0.002	-	1081.244	nm	
	2-Jan-08		8.200	8.201	0.001	-	1081.247	nm	
	4-Jan-08		8.152	8.155	0.003	-	1081.294	nm	
	23-Jan-08		8.343	8.359	0.016	-	1081.101	nm	
	25-Jan-08		8.340	8.352	0.012	-	1081.105	nm	
	7-Feb-08		nm	nm	nm	nm	nm	nm	
	9-Feb-08		nm	nm	nm	nm	nm	nm	
	6-Mar-08		cnm	cnm	cnm	cnm	cnm	cnm	car parked over well
	7-Apr-08		8.523	8.538	0.015	-	1080.921	nm	
	9-Apr-08		8.525	8.537	0.012	-	1080.920	nm	
	11-Apr-08		8.524	8.535	0.011	-	1080.921	nm	
	14-Apr-08		8.480	8.489	0.009	-	1080.965	nm	
	16-Apr-08		8.472	8.475	0.003	-	1080.974	nm	
	28-Apr-08		8.601	8.606	0.005	-	1080.845	nm	
	30-Apr-08		8.603	8.608	0.005	-	1080.843	nm	
	2-May-08		8.600	8.606	0.006	-	1080.846	nm	
	5-May-08		nm	nm	nm	nm	nm	nm	
	12-May-08		8.548	8.559	0.011	-	1080.897	nm	
	14-May-08		8.550	8.560	0.010	-	1080.895	nm	
	26-May-08		8.450	8.455	0.005	-	1080.996	nm	
	28-May-08		8.455	8.458	0.003	-	1080.991	nm	
	30-May-08		8.460	8.462	0.002	-	1080.987	nm	
	9-Jun-08		8.384	8.387	0.003	-	1081.062	nm	
	11-Jun-08		nm	nm	nm	nm	nm	nm	
	13-Jun-08		8.390	8.393	0.003	-	1081.056	nm	
	23-Jun-08		8.345	8.357	0.012	-	1081.100	>10,000	well decommissioned on June 23, 2008
<b>BH501</b>	5-Dec-02	1090.027	-	12.065	0.000	-	1077.962	>10,000	
	12-May-03		-	12.078	0.000	-	1077.949	>10,000	
	7-Oct-03		-	12.010	0.000	-	1078.017	>10,000	
	12-Nov-03		-	12.074	0.000	-	1077.953	nm	no odour, no sheen
	20-Nov-03		-	12.099	0.000	-	1077.928	1,300	
	17-Dec-03		-	12.104	0.000	-	1077.923	70	
	13-Jan-04		-	12.012	0.000	-	1078.015	80	
	8-Mar-04		-	11.965	0.000	-	1078.062	>10,000	inside of well had to be chipped out
6-Apr-04		-	11.950	0.000	-	1078.077	480		

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH501 Continued</i>	15-Jun-04		-	12.015	0.000	-	1078.012	40	
	18-Jun-04		11.705	11.745	0.040	-	1078.314	nm	0.5 L recovered from passive bailer before hand bailing hand bailed 200 ml
	18-Jun-04		-	11.570	0.000	-	1078.457	nm	
	14-Jul-04		-	12.020	0.000	-	1078.007	700	
	23-Aug-04		-	11.985	0.000	-	1078.042	6,200	
	14-Oct-04		-	12.025	0.000	-	1078.002	>10,000	
	2-Feb-05		-	12.035	0.000	-	1077.992	40	
	2-Mar-05		-	12.050	0.000	-	1077.977	9,200	
	2-Jun-05		-	10.089	0.000	-	1079.938	8,000	
	5-Oct-05		-	11.986	0.000	-	1078.041	1,210	
	11-Oct-05		-	11.986	0.000	-	1078.041	nm	
	19-Jan-06		-	11.913	0.000	-	1078.114	14	
	10-May-06		-	11.973	0.000	-	1078.054	200	
	26-Jul-06		-	11.959	0.000	-	1078.068	10	
	25-Jan-07		-	11.895	0.000	-	1078.132	6,000	
	25-May-07		-	11.929	0.000	-	1078.098	2,200	
	23-Aug-07		-	10.820	0.000	-	1079.207	1,100	
	22-Nov-07		-	11.847	0.000	-	1078.180	280	
	10-Mar-08		-	11.893	0.000	-	1078.134	1,000	
	4-Jun-08		-	11.938	0.000	-	1078.089	200	
4-Jul-08		-	11.890	0.000	-	1078.137	>10,000	well decommissioned on 04 July 2008	
<b>BH502</b>	5-Dec-02	1091.439	-	13.913	0.000	-	1077.526	>10,000	
	12-May-03		-	13.848	0.000	-	1077.591	>10,000	
	7-Oct-03		-	13.860	0.000	-	1077.579	>10,000	
	20-Nov-03		-	13.964	0.000	-	1077.475	180	
	17-Dec-03		-	14.010	0.000	-	1077.429	212	
	13-Jan-04		-	13.908	0.000	-	1077.531	20	
	8-Mar-04		-	13.965	0.000	-	1077.474	900	bailer checked - no visible product
	6-Apr-04		-	13.905	0.000	-	1077.534	140	
	15-Jun-04		-	13.954	0.000	-	1077.485	140	
	14-Jul-04		-	13.935	0.000	-	1077.504	64	
	23-Aug-04		-	13.885	0.000	-	1077.554	7,600	
	14-Oct-04		-	13.923	0.000	-	1077.516	2,600	bailer checked; no product
	11-Jan-05		-	13.908	0.000	-	1077.531	5,100	checked bailer - no visible product
	2-Feb-05		-	13.966	0.000	-	1077.473	9,200	no odour or sheen on probe

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH502 Continued</i>	2-Mar-05	1091.458	-	13.983	0.000	-	1077.475	4,000	checked bailer - no visible product; well resurveyed
	1-Jun-05		-	14.027	0.000	-	1077.431	1,000	
	5-Oct-05		-	13.907	0.000	-	1077.551	2,970	
	11-Oct-05		-	13.943	0.000	-	1077.515	nm	
	19-Jan-06		-	13.844	0.000	-	1077.614	7,200	
	10-May-06		-	13.867	0.000	-	1077.591	1,000	
	26-Jul-06		-	13.838	0.000	-	1077.620	240	
	25-Jan-07		-	13.780	0.000	-	1077.678	>10,000	
	29-May-07		-	13.867	0.000	-	1077.591	200	
	23-Aug-07		-	13.715	0.000	-	1077.743	3,400	
	22-Nov-07		-	13.723	0.000	-	1077.735	1,200	
	10-Mar-08		-	13.747	0.000	-	1077.711	1,800	
	4-Jun-08		-	13.791	0.000	-	1077.667	580	
	3-Jul-08		-	13.766	0.000	-	1077.692	>10,000	
	<b>BH503</b>	5-Dec-02	1090.007	dry	dry	dry	-	dry	
19-Feb-03			-	10.227	0.000	-	1079.780	n.m.	
12-May-03			-	10.213	0.000	-	1079.794	5,600	
24-Jul-03			-	10.214	0.000	-	1079.793	nm	
7-Oct-03			dry	dry	dry	-	dry	3,500	
20-Nov-03			dry	dry	dry	-	dry	220	
17-Dec-03			cnm	cnm	cnm	-	cnm	200	
13-Jan-04			dry	dry	dry	-	dry	120	
8-Mar-04			dry	dry	dry	-	dry	220	
5-Apr-04			-	10.245	0.000	-	1079.762	78	
16-Jun-04			dry	dry	dry	-	dry	180	
13-Jul-04			dry	dry	dry	-	dry	53	
23-Aug-04			dry	dry	dry	-	dry	5,200	
13-Oct-04			dry	dry	dry	-	dry	170	
1-Feb-05			dry	dry	dry	-	dry	360	
2-Mar-05			dry	dry	dry	-	dry	54	
31-May-05			dry	dry	dry	-	dry	220	
3-Oct-05			dry	dry	dry	-	dry	10	
18-Jan-06		dry	dry	dry	-	dry	1,000		
10-May-06		dry	dry	dry	-	dry	190		
27-Jul-06		-	10.245	0.000	-	1079.762	60		

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH503 Continued</i>	24-Jan-07		dry	dry	dry	-	dry	50	
	23-May-07		-	10.255	0.000	-	1079.752	10	Not enough water to sample
	21-Aug-07		-	10.342	0.000	-	1079.665	70	
	22-Nov-07		-	10.061	0.000	-	1079.946	90	
	13-Mar-08			dry	dry	dry	dry	42	
	2-Jun-08			dry	dry	dry	dry	58	
	27-Jun-08			dry	dry	dry	dry	30	well decommissioned on 27 June 2008
<b>BH504</b>	5-Dec-02	1089.713	dry	dry	dry	-	dry	>10,000	
	19-Feb-03		dry	dry	dry	-	dry	n.m.	
	12-May-03		dry	dry	dry	-	dry	>10,000	
	24-Jul-03		dry	dry	dry	-	dry	-	
	7-Oct-03		dry	dry	dry	-	dry	9,500	
	20-Nov-03		dry	dry	dry	-	dry	2,200	
	17-Dec-03		dry	dry	dry	-	dry	1,400	
	13-Jan-04		dry	dry	dry	-	dry	2,000	
	8-Mar-04		dry	dry	dry	-	dry	4,600	
	6-Apr-04		dry	dry	dry	-	dry	5,400	
	15-Jun-04		dry	dry	dry	-	dry	320	
	14-Jul-04		dry	dry	dry	-	dry	680	
	23-Aug-04		dry	dry	dry	-	dry	>10,000	
	13-Oct-04		dry	dry	dry	-	dry	3,600	
	2-Feb-05		dry	dry	dry	-	dry	1,000	
	2-Mar-05		dry	dry	dry	-	dry	4,600	
	6-May-05		dry	dry	dry	-	dry	nm	
	1-Jun-05		dry	dry	dry	-	dry	>10,000	
	5-Oct-05		dry	dry	dry	-	dry	>10,000	
	19-Jan-06		dry	dry	dry	-	dry	1,000	
	10-May-06		dry	dry	dry	-	dry	240	
	25-Jul-06		dry	dry	dry	-	dry	2,200	
	25-Jan-07		dry	dry	dry	-	dry	160	
23-May-07		dry	dry	dry	-	dry	62		
21-Aug-07		dry	dry	dry	-	dry	88		
22-Nov-07		dry	dry	dry	-	dry	140		
13-Mar-08		dry	dry	dry	-	dry	36		
4-Jun-08		dry	dry	dry	-	dry	60		

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

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<i>BH504 Continued</i>	25-Jun-08		dry	dry	dry	-	dry	12	well decommissioned on 27 June 2008
<b>BH505</b>	5-Dec-02	1089.378	-	11.396	0.000	-	1077.982	>10,000	
	12-May-03		-	11.217	0.000	-	1078.161	>10,000	
	7-Oct-03		-	11.222	0.000	-	1078.156	>10,000	
	20-Nov-03		-	11.397	0.000	-	1077.981	8	
	17-Dec-03		-	11.391	0.000	-	1077.987	8,000	
	19-Dec-03		-	-	0.000	-	-	-	
	13-Jan-04		-	11.327	0.000	-	1078.051	300	
	8-Mar-04		-	11.367	0.000	-	1078.011	2,000	
	6-Apr-04		-	11.252	0.000	-	1078.126	>10,000	
	15-Jun-04		-	11.319	0.000	-	1078.059	4,000	checked bailer - no visible product
	13-Jul-04		-	11.255	0.000	-	1078.123	4,800	
	23-Aug-04		-	11.824	0.000	-	1077.554	>10,000	
	13-Oct-04		-	11.217	0.000	-	1078.161	>10,000	checked bailer - no visible product
	2-Nov-04		-	11.313	0.000	-	1078.065	nm	
	1-Feb-05		-	11.375	0.000	-	1078.003	1,000	
	2-Mar-05		-	11.405	0.000	-	1077.973	1,800	
	1-Jun-05		-	11.423	0.000	-	1077.955	300	
	5-Oct-05		-	11.139	0.000	-	1078.239	6,600	
	18-Jan-06		-	11.195	0.000	-	1078.183	>10,000	
	10-May-06		-	11.256	0.000	-	1078.122	280	
	27-Jul-06		-	11.230	0.000	-	1078.148	2,000	
	25-Jan-07		-	11.005	0.000	-	1079.373	1,400	
	23-May-07		-	11.236	0.000	-	1078.142	380	
	21-Aug-07		-	11.100	0.000	-	1078.278	88	
	21-Nov-07		-	11.173	0.000	-	1078.205	2,000	
	14-Mar-08		-	11.200	0.000	-	1078.178	400	
	4-Jun-08		-	11.329	0.000	-	1078.049	280	
	1-Jul-08		-	11.175	0.000	-	1078.203	80	well decommissioned on 01 July 2008
<b>BH506</b>	5-Dec-02	1088.878	-	11.368	0.000	-	1077.510	>10,000	
	12-May-03		-	11.302	0.000	-	1077.576	2,100	
	7-Oct-03		-	11.331	0.000	-	1077.547	5,000	
	20-Nov-03		-	11.437	0.000	-	1077.441	40	
	17-Dec-03		-	11.412	0.000	-	1077.466	40	
	13-Jan-04		-	11.378	0.000	-	1077.500	30	

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- 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.

LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

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<i>BH506 Continued</i>	8-Mar-04		-	11.530	0.000	-	1077.348	58	
	6-Apr-04		-	11.416	0.000	-	1077.462	76	
	15-Jun-04		-	11.450	0.000	-	1077.428	90	
	13-Jul-04		-	11.400	0.000	-	1077.478	46	
	23-Aug-04		-	11.415	0.000	-	1077.463	94	
	13-Oct-04		-	11.379	0.000	-	1077.499	68	
	2-Nov-04		-	11.485	0.000	-	1077.393	nm	
	1-Feb-05		-	11.469	0.000	-	1077.409	280	
	1-Mar-05		-	11.442	0.000	-	1077.436	80	
	1-Jun-05		-	11.465	0.000	-	1077.413	120	
	4-Oct-05		-	11.365	0.000	-	1077.513	115	
	11-Oct-05		-	11.337	0.000	-	1077.541	nm	
	18-Jan-06		-	11.269	0.000	-	1077.609	340	
	10-May-06		-	11.357	0.000	-	1077.521	120	
	27-Jul-06		-	11.285	0.000	-	1077.593	76	
	24-Jan-07		-	11.335	0.000	-	1077.543	72	
	23-May-07		-	11.280	0.000	-	1077.598	30	
	21-Aug-07		-	11.132	0.000	-	1077.746	28	
	21-Nov-07		-	11.184	0.000	-	1077.694	44	
	18-Mar-08		-	11.225	0.000	-	1077.653	260	
	4-Jun-08		-	11.287	0.000	-	1077.591	52	
	23-Sep-10			cnl	cnl	cnl	cnl	cnl	cnl
	4-Oct-10		-	11.455	0.000	-	-11.455	18	
	13-Sep-11		-	11.31	0.000	-	1077.568	5	
	13-Dec-11			cnl	cnl	cnl	cnl	cnl	cnl
	22-Mar-12		-	11.385	0.000	-	1077.493	10	
	4-Oct-12		-	11.375	0.000	-	1077.503	0	
30-Apr-13		-	11.440	0.000	-	1077.438	10		
<b>BH507</b>	5-Dec-02	1089.101	-	11.418	0.000	-	1077.683	>10,000	
	12-May-03		-	11.396	0.000	-	1077.705	>10,000	
	7-Oct-03		-	11.398	0.000	-	1077.703	4,600	
	20-Nov-03		-	11.457	0.000	-	1077.644	400	
	17-Dec-03		-	11.448	0.000	-	1077.653	760	
	13-Jan-04		-	11.433	0.000	-	1077.668	1,200	
	8-Mar-04		-	11.458	0.000	-	1077.643	680	
	6-Apr-04		-	11.403	0.000	-	1077.698	98	

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
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<i>BH507 Continued</i>	15-Jun-04		-	11.437	0.000	-	1077.664	200	
	13-Jul-04		-	11.397	0.000	-	1077.704	42	
	23-Aug-04		-	11.385	0.000	-	1077.716	>10,000	
	13-Oct-04		-	11.401	0.000	-	1077.700	160	
	2-Nov-04		-	11.400	0.000	-	1077.701	nm	
	1-Feb-05		-	11.459	0.000	-	1077.642	360	
	2-Mar-05		-	11.443	0.000	-	1077.658	26	
	1-Jun-05		-	11.945	0.000	-	1077.156	70	
	4-Oct-05		-	11.323	0.000	-	1077.778	110	
	18-Jan-06		-	11.238	0.000	-	1077.863	360	
	17-May-06		-	11.282	0.000	-	1077.819	84	
	27-Jul-06		-	11.249	0.000	-	1077.852	160	
	25-Jan-07		-	11.247	0.000	-	1077.854	75	
	23-May-07		-	11.263	0.000	-	1077.838	56	
	21-Aug-07		-	11.150	0.000	-	1077.951	50	
	21-Nov-07		-	11.215	0.000	-	1077.886	60	
	14-Mar-08		-	11.247	0.000	-	1077.854	220	
	4-Jun-08		-	11.274	0.000	-	1077.827	60	
	2-Jul-08		-	11.220	0.000	-	1077.881	32	well decommissioned on 02 July 2008
	<b>BH508</b>	5-Dec-02	1091.176	-	11.818	0.000	-	1079.358	180
12-May-03			-	11.634	0.000	-	1079.542	48	
7-Oct-03			-	12.035	0.000	-	1079.141	60	
20-Nov-03			-	12.004	0.000	-	1079.172	170	
17-Dec-03			-	11.965	0.000	-	1079.211	160	
13-Jan-04			cnm	cnm	cnm	-	cnm	180	CNM - Plugged with ice
8-Mar-04			-	11.729	0.000	-	1079.447	220	
5-Apr-04			-	11.640	0.000	-	1079.536	96	
16-Jun-04			-	11.785	0.000	-	1079.391	84	
13-Jul-04			-	11.804	0.000	-	1079.372	48	
23-Aug-04			-	11.795	0.000	-	1079.381	48	
13-Oct-04			-	11.895	0.000	-	1079.281	84	
2-Nov-04			-	11.804	0.000	-	1079.372	nm	
1-Feb-05			-	11.676	0.000	-	1079.500	20	
2-Mar-05			-	11.538	0.000	-	1079.638	2	
31-May-05		-	11.892	0.000	-	1079.284	220	has bailer	

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
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<i>BH508 Continued</i>	3-Oct-05		-	11.444	0.000	-	1079.732	62		
	18-Jan-06		-	11.071	0.000	-	1080.105	390		
	10-May-06		-	10.695	0.000	-	1080.481	84		
	25-Jul-06		-	10.803	0.000	-	1080.373	90		
	24-Jan-07		-	9.205	0.000	-	1081.971	118		
	23-May-07		-	9.405	0.000	-	1081.771	65		
	21-Aug-07		-	8.965	0.000	-	1082.211	80		
	22-Nov-07		-	8.817	0.000	-	1082.359	74		
	13-Mar-08		-	8.699	0.000	-	1082.477	200		
	3-Jun-08		-	8.743	0.000	-	1082.433	82		
	26-Jun-08		-	8.613	0.000	-	1082.563	58	well decommissioned on June 26, 2008	
	<b>BH509</b>	5-Dec-02	1089.588	-	11.194	0.029	-	1078.417	>10,000	P.B. installed from BH213
		14-Jan-03		11.793	11.854	0.061	-	1077.783	nm	recovered 400 ml product from P.B.
		19-Feb-03		11.783	11.814	0.031	-	1077.799	nm	recovered 400 mL
7-Mar-03			11.755	11.815	0.060	-	1077.821	nm	recovered 500 ml from P.B.	
25-Apr-03			11.2	11.255	0.055	-	1078.377	nm	recovered 800 mL	
29-Apr-03			-	11.761	0.000	-	1077.827	nm	recovered 300 mL	
12-May-03			11.68	11.682	0.002	-	1077.908	-	recovered 200 ml product from P.B.	
28-May-03			11.536	11.538	0.002	-	1078.052	nm	recovered 200 ml product from P.B.	
4-Jun-03			nm	nm	nm	-	nm	nm	recovered 300 ml product from P.B.	
1-Jul-03			11.567	11.580	0.013	-	1078.018	nm	recovered 200 ml product from P.B.	
24-Jul-03			11.568	11.573	0.005	-	1078.019	nm	recovered 300 ml product from P.B.	
5-Aug-03			11.686	11.689	0.003	-	1077.901	-	recovered 300 ml product from P.B.	
16-Sep-03			nm	nm	nm	-	-	nm	recovered 200 ml product from P.B.	
12-Nov-03			nm	nm	nm	-	nm	nm	bailed 100 ml of clear orange product	
20-Nov-03			11.162	11.602	0.440	-	1078.338	1,200		
3-Dec-03			11.535	11.795	0.260	-	1078.001	nm		
4-Dec-03			11.685	11.690	0.005	-	1077.902	-		
8-Dec-03			-	11.848	0.000	-	1077.740	260	recovered 800 ml from P.B. and 500 ml from H.B.	
17-Dec-03		-	11.830	0.000	-	1077.758	1,600			
22-Dec-03		nm	nm	nm	-	nm	nm	recovered 250 ml product from P.B.		
7-Jan-04		-	11.730	0.000	-	1077.858	nm	recovered 750 ml product from P.B.		
10-Jan-04		-	11.615	0.000	-	1077.973	nm	recovered 100 ml product from P.B.		
12-Jan-04		-	11.605	0.000	-	1077.983	nm	recovered 100 ml product from P.B.		
15-Jan-04		cnm	cnm	cnm	-	cnm	cnm	CNM - Plugged with ice		

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

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<i>BH509 Continued</i>	16-Jan-04	-	-	11.170	0.000	-	1078.418	nm	bailer was caught on ice and not set at depth
	20-Jan-04	-	-	11.540	0.000	-	1078.048	nm	recovered 50 ml product from P.B.
	23-Jan-04	-	-	10.703	0.000	-	1078.885	nm	recovered 300 ml product from P.B.
	5-Feb-04	-	-	11.779	0.000	-	1077.809	nm	recovered 500 ml from P.B.
	9-Feb-04	-	-	11.823	0.000	-	1077.765	nm	recovered 300 ml product from P.B.
	19-Feb-04	-	-	11.655	0.000	-	1077.933	nm	recovered 300 ml product from P.B.
	23-Feb-04	-	-	11.650	0.000	-	1077.938	nm	recovered 300 ml product from P.B.
	26-Feb-04	-	-	11.682	0.000	-	1077.906	nm	recovered 200 ml from passive bailer
	3-Mar-04	-	-	11.773	0.000	-	1077.815	nm	recovered 150 ml product from P.B.
	22-Mar-04	-	cnm	cnm	cnm	-	cnm	cnm	P.B. stuck in well; unable to retrieve
	31-Mar-04	-	11.626	11.823	0.197	-	1077.923	nm	300 ml product recovered from P.B. - before hand bailing
	31-Mar-04	-	11.740	11.793	0.053	-	1077.837	nm	350 ml product recovered by hand bailer
	12-Apr-04	-	11.592	11.660	0.068	-	1077.982	nm	recovered 200 ml product from P.B.; H.B. 50 ml
	13-Apr-04	-	11.565	11.608	0.043	-	1078.014	nm	recovered 150 ml from P.B.; not enough to hand bail
	15-Apr-04	-	11.635	11.645	0.010	-	1077.951	nm	recovered 350 ml product from P.B.
	16-Apr-04	-	-	11.695	0.000	-	1077.893	nm	recovered 200 ml product from P.B.
	19-Apr-04	-	11.570	11.580	0.010	-	1078.016	nm	recovered 250 ml product from P.B.; not enough to H.B.
	22-Apr-04	-	11.754	11.756	0.002	-	1077.834	nm	recovered 300 ml product from P.B.
	30-Apr-04	-	-	11.688	0.000	-	1077.900	nm	recovered 50 ml product from P.B.; H.B. 1 mm product
	6-May-04	-	-	11.760	0.000	-	1077.828	nm	recovered 250 ml from passive bailer
	7-May-04	-	-	11.653	0.000	-	1077.935	nm	recovered 30 ml from passive bailer
	10-May-04	-	-	11.685	0.000	-	1077.903	nm	recovered 250 ml from passive bailer
	17-May-04	-	-	11.748	0.000	-	1077.840	nm	recovered 200 ml from passive bailer
	20-May-04	-	-	11.680	0.000	-	1077.908	nm	recovered 150 ml from passive bailer
	28-May-04	-	11.595	11.600	0.005	-	1077.992	nm	300 ml recovered from passive bailer
	15-Jun-04	-	-	11.704	0.000	-	1077.884	6,000	800 ml recovered; hand bailer checked - no visible product
	18-Jun-04	-	-	11.759	0.000	-	1077.829	nm	bailer checked; no visible product
	14-Jul-04	-	-	11.742	0.000	-	1077.846	>10,000	600 ml recovered
	28-Jul-04	-	11.754	11.760	0.006	-	1077.833	nm	700 ml recovered
	6-Aug-04	-	-	11.690	0.000	-	1077.898	nm	150 ml recovered
10-Aug-04	-	-	11.760	0.000	-	1077.828	nm	100 ml recovered	
11-Aug-04	-	-	11.754	0.000	-	1077.834	nm	10 ml recovered	
13-Aug-04	-	-	11.765	0.000	-	1077.823	nm	10 ml recovered	
18-Aug-04	-	-	11.785	0.000	-	1077.803	nm	100 ml recovered	
24-Aug-04	-	-	11.664	0.000	-	1077.924	>10,000	300ml product in PB. Bailer check showed 1mm in bailer.	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

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<i>BH509 Continued</i>	7-Sep-04		-	11.723	0.000	-	1077.865	nm	500 ml recovered	
	9-Sep-04		-	11.715	0.000	-	1077.873	nm	50 ml recovered	
	13-Sep-04		-	11.659	0.000	-	1077.929	nm	200 ml recovered	
	15-Sep-04		-	11.667	0.000	-	1077.921	nm	50 ml recovered	
	17-Sep-04		-	11.623	0.000	-	1077.965	nm	100 ml recovered	
	20-Sep-04			11.700	11.701	0.001	-	1077.888	nm	75 ml recovered
	22-Sep-04		-	11.705	0.000	-	1077.883	nm	50 ml recovered	
	24-Sep-04		-	11.733	0.000	-	1077.855	nm	25 ml recovered	
	29-Sep-04		-	11.735	0.000	-	1077.853	nm	150 ml recovered	
	4-Oct-04		-	11.757	0.000	-	1077.831	nm	150 ml recovered	
	6-Oct-04		-	11.693	0.000	-	1077.895	nm	25 ml recovered	
	12-Oct-04		-	11.805	0.000	-	1077.783	nm	200 ml recovered	
	15-Oct-04		-	11.743	0.000	-	1077.845	nm	50 ml recovered	
	5-Nov-04		-	11.719	0.000	-	1077.869	nm	650 ml recovered	
	8-Nov-04		-	11.725	0.000	-	1077.863	nm	150 ml recovered	
	10-Nov-04		-	11.795	0.000	-	1077.793	nm	20 ml recovered	
	17-Nov-04		-	11.775	0.000	-	1077.813	nm	150 ml recovered	
	25-Nov-04		-	11.688	0.000	-	1077.900	nm	200 ml recovered	
	29-Nov-04		-	11.713	0.000	-	1077.875	nm	50 ml recovered	
	1-Dec-04		-	11.755	0.000	-	1077.833	nm	50 ml product recovered from P.B.	
	17-Jan-05			11.775	11.780	0.005	-	1077.812	nm	800 ml product recovered from P.B.
	24-Jan-05			11.755	11.755	trace	-	1077.833	nm	200 ml product recovered from P.B.
	26-Jan-05			11.665	11.665	trace	-	1077.923	nm	20 ml product recovered from P.B.
	28-Jan-05			11.767	11.767	trace	-	1077.821	nm	20 ml product recovered from P.B.
	2-Feb-05			11.746	11.746	trace	-	1077.842	>10,000	recovered 150 ml product from P.B.
	18-Feb-05			11.150	11.175	0.025	-	1078.433	nm	check of bailer showed no visible product
	22-Feb-05			11.502	11.540	0.038	-	1078.078	nm	recovered 10 ml product from P.B.
	24-Feb-05			11.796	11.796	trace	-	1077.792	nm	recovered 150 ml product from P.B.; H.B. 1 mm product
	2-Mar-05			11.790	11.791	0.001	-	1077.798	2,600	recovered 50 ml product from P.B.
	22-Mar-05			11.854	11.855	0.001	-	1077.734	nm	recovered 400 ml product from P.B.
	24-Mar-05			11.835	11.839	0.004	-	1077.752	nm	recovered 10 ml product from P.B.; H.B. 2 mm product
	28-Mar-05			11.674	11.675	0.001	-	1077.914	nm	recovered 20 ml product from P.B.
	30-Mar-05			11.822	11.823	0.001	-	1077.766	nm	recovered 50 ml product from P.B.
1-Apr-05			11.736	11.738	0.002	-	1077.852	nm	recovered 20 ml product from P.B.	
5-Apr-05			11.859	11.860	0.001	-	1077.729	nm	recovered 100 ml product from P.B.	

Notes:

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- Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.

LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH509 Continued</i>	11-Apr-05		11.790	11.791	0.001	-	1077.798	nm	recovered 100 ml product from P.B.	
	15-Apr-05		-	11.826	0.000	-	1077.762	nm	recovered 50 ml product from P.B.	
	18-Apr-05		11.856	11.857	0.001	-	1077.732	nm	recovered 25 ml product from P.B.	
	20-Apr-05		11.818	11.819	0.001	-	1077.770	nm	recovered 10 ml product from P.B.	
	22-Apr-05		-	11.834	0.000	-	1077.754	nm	recovered 10 ml product from P.B.	
	25-Apr-05		11.822	11.823	0.000	-	1077.765	nm	recovered 50 ml product from P.B.	
	27-Apr-05		11.863	11.864	0.001	-	1077.725	nm	recovered 20 ml product from P.B.	
	4-May-05		11.881	11.882	0.001	-	1077.707	nm	recovered 200 ml product from P.B.	
	6-May-05		11.523	11.524	0.001	-	1078.065	nm	recovered 10 ml product from P.B.; H.B. 0 mm product	
	9-May-05		-	11.817	0.000	-	1077.771	nm	recovered 10 ml product from P.B.	
	13-May-05		-	11.805	0.000	-	1077.783	nm	recovered 20 ml product from P.B.	
	16-May-05		-	11.764	0.000	-	1077.824	nm	recovered 100 ml product from P.B.	
	26-May-05			11.880	11.880	0.000	-	1077.708	nm	recovered 100 ml product from P.B.
	2-Jun-05			11.846	11.847	0.001	-	1077.742	>10,000	recovered 150 ml product from P.B.
	10-Jun-05			11.854	11.855	0.001	-	1077.734	nm	recovered 70 ml product from P.B.
	15-Jun-05			11.860	11.860	trace	-	1077.728	nm	recovered 100 ml product from P.B.
	17-Jun-05			11.810	11.810	trace	-	1077.778	nm	recovered 75 ml product from P.B.
	20-Jun-05			11.845	11.845	trace	-	1077.743	nm	recovered 10 ml product from P.B.
	22-Jun-05			11.783	11.783	trace	-	1077.805	nm	recovered 10 ml product from P.B.
	24-Jun-05			-	11.800	0.000	-	1077.788	nm	recovered 25 ml product from P.B.; H.B. conf no product in well.
	27-Jun-05			11.180	11.185	0.005	-	1078.407	nm	
	29-Jun-05			11.173	11.174	0.001	-	1078.415	nm	hand bailer had 2 mm of product
	6-Jul-05			11.120	11.128	0.008	-	1078.466	nm	Installed Passive bailer from BH706
	11-Jul-05			11.543	11.595	0.052	-	1078.035	nm	
	20-Jul-05			11.435	11.495	0.060	-	1078.141	nm	recovered 10 ml product from P.B., H.B. 300ml product
	22-Jul-05			11.423	11.503	0.080	-	1078.149	nm	65ml hand bailed, PB reset
	28-Jul-05			11.307	11.308	0.001	-	1078.281	nm	10 ml recovered from PB; H.B. 100 ml
	9-Aug-05			11.425	11.436	0.011	-	1078.161	nm	recovered 500 ml product from P.B.
	10-Aug-05			11.495	11.497	0.002	-	1078.093	nm	recovered 200 ml product from P.B.
	12-Aug-05			11.568	11.572	0.004	-	1078.019	nm	recovered 520 ml product from P.B.
	16-Aug-05			11.485	11.487	0.002	-	1078.103	nm	recovered 200 ml product from P.B.
	17-Aug-05			11.570	11.572	0.002	-	1078.018	nm	recovered 250 ml product from P.B.
	24-Aug-05			11.544	11.547	0.003	-	1078.043	nm	recovered 300 ml product from P.B.
	31-Aug-05			11.509	11.558	0.049	-	1078.069	nm	recovered 500 ml product from P.B.
6-Sep-05			11.535	11.610	0.075	-	1078.038	nm	recovered 330 ml product from P.B. H.B 30 mm	
12-Sep-05			11.354	11.358	0.004	-	1078.233	nm	recovered 220 ml product from P.B.	
14-Sep-05			11.159	11.162	0.003	-	1078.428	nm	recovered 240 ml product from P.B.	

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LPH liquid petroleum hydrocarbons.  
 trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

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<i>BH509 Continued</i>	16-Sep-05		11.347	11.470	0.123	-	1078.216	nm	recovered 240 ml product from P.B.
	19-Sep-05		11.159	11.325	0.166	-	1078.396	nm	recovered 300 ml product from P.B.
	21-Sep-05		11.186	11.303	0.117	-	1078.379	nm	recovered 300 ml product from P.B.
	26-Sep-05		11.077	11.175	0.098	-	1078.491	nm	recovered 800 ml product from P.B.
	28-Sep-05		11.116	11.185	0.069	-	1078.458	nm	recovered 230 ml product from P.B.
	5-Oct-05		11.089	11.380	0.291	-	1078.441	nm	passive bailer = 0 ml reset
	18-Oct-05		10.967	11.505	0.538	-	1078.513	nm	passive bailer checked = 1000 mm, hand bailed 5.5L
	24-Oct-05		11.405	11.509	0.104	-	1078.162	nm	P.B. full of water; hand bailed 4.3 L product
	24-Oct-05		11.230	11.242	0.012	-	1078.356	nm	reset bailer after hand bailing as above
	1-Nov-05		10.966	11.500	0.534	-	1078.515	nm	0 ml product in P.B.; hand bailed 2.8 L
	1-Nov-05		11.185	11.195	0.010	-	1078.401	nm	reset passive bailer
	3-Nov-05		11.029	11.038	0.009	-	1078.557	nm	recovered 500 ml product from P.B.
	8-Nov-05		10.988	11.195	0.207	-	1078.559	nm	0 ml product in P.B.; H.B. 500 ml product
	10-Nov-05		11.105	11.314	0.209	-	1078.441	nm	0 ml product in P.B.
	14-Nov-05		cnm	cnm	cnm	-	cnm	cnm	P.B. fell in well; could not retrieve
	28-Nov-05		cnm	cnm	cnm	-	cnm	cnm	blocked with P.B. @ 9.970; P.B. retrieved
	30-Nov-05		10.865	10.887	0.022	-	1078.719	nm	P.B. full of water; reset
	6-Dec-05		10.848	11.325	0.477	-	1078.645	nm	P.B. had 100 ml product and 700 ml water
	12-Dec-05		10.818	10.827	0.009	-	1078.768	nm	PB-Recovered 100 ml
	14-Dec-05		10.836	10.840	0.004	-	1078.751	nm	PB-Recovered 100 ml
	16-Dec-05		10.837	10.854	0.017	-	1078.748	nm	PB-Recovered 10 ml
	19-Dec-05		10.853	10.859	0.006	-	1078.734	nm	PB-Recovered 20 ml
	22-Dec-05		10.840	10.923	0.083	-	1078.731	nm	PB-Recovered 20 ml
	23-Dec-05		10.853	10.597	-0.256	-	1078.786	nm	PB-Recovered 0 ml - PB reset
	3-Jan-06		10.851	10.987	0.136	-	1078.710	nm	PB-Recovered 800 ml
	5-Jan-06		10.863	10.967	0.104	-	1078.704	nm	PB-Recovered 800 ml
	6-Jan-06		11.870	12.101	0.231	-	1077.672	nm	PB-Recovered 800 ml
	9-Jan-06		10.857	10.960	0.103	-	1078.710	nm	PB-Recovered 800 ml
	12-Jan-06		10.864	10.978	0.114	-	1078.701	nm	PB-Recovered 800 ml
	13-Jan-06		11.863	11.983	0.120	-	1077.701	nm	PB-Recovered 800 ml. Hand bailed 6 L
	16-Jan-06		10.935	11.595	0.660	-	1078.521	nm	PB-Recovered 800 ml.
19-Jan-06		10.906	11.670	0.764	-	1078.529	>10,000		

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.



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	(dd-mmm-yy)	(m)	(m)	(m)	(m)	(L)	(m)	(ppm)	
<i>BH509 Continued</i>	20-Jan-06		11.910	12.768	0.858	-	1077.506	nm	PB-Recovered 800 ml.
	23-Jan-06		10.904	11.700	0.796	-	1078.525	nm	PB-Recovered 800 ml. Hand bailed 5.9 L
	30-Jan-06		10.905	11.507	0.602	-	1078.563	nm	PB-Recovered 800 ml. Hand bailed 4 L
	1-Feb-06		10.975	11.077	0.102	-	1078.593	nm	PB-Recovered 800 ml.
	3-Feb-06		10.960	11.477	0.517	-	1078.525	nm	P.B. had 0 ml product; bailer checked - 150 mm
	3-Feb-06		11.173	11.189	0.016	-	1078.412	nm	hand bailed 3 L product
	6-Feb-06		11.005	11.113	0.108	-	1078.561	nm	P.B. had 800 ml product; reset bailer
	8-Feb-06		11.049	11.347	0.298	-	1078.479	nm	P.B. had 800 ml product
	8-Feb-06		11.107	11.119	0.012	-	1078.479	nm	hand bailed 900 ml product
	10-Feb-06		11.158	11.163	0.005	-	1078.429	nm	P.B. had 200 ml product
	27-Feb-06		10.915	11.409	0.494	-	1078.574	nm	recovered 10 ml product from P.B.
	2-Mar-06		10.934	11.003	0.069	-	1078.640	nm	recovered 500 ml product from P.B.
	4-Mar-06		10.947	11.480	0.533	-	1078.534	nm	no product recovery in P.B.
	6-Mar-06		10.905	11.902	0.997	-	1078.484	nm	hand bailed 6.0 L product
	6-Mar-06		11.362	11.384	0.022	-	1078.222	nm	P.B. had 0 ml product; reset
	8-Mar-06		10.999	11.017	0.018	-	1078.585	nm	recovered 700 ml product from P.B.
	10-Mar-06		11.035	11.097	0.062	-	1078.541	nm	recovered 800 ml product from P.B.
	14-Mar-06		11.047	11.069	0.022	-	1078.537	nm	recovered 800 ml product from P.B.
	22-Mar-06		11.028	11.560	0.532	-	1078.454	nm	no product recovery in P.B.
	24-Mar-06		10.975	11.372	0.397	-	1078.534	nm	no product recovery in P.B.
	27-Mar-06		10.970	11.500	0.530	-	1078.512	nm	no product recovery in P.B.; switched bailers with 706
	29-Mar-06		10.964	11.535	0.571	-	1078.510	nm	recovered 150 ml product from P.B.
	31-Mar-06		10.954	11.594	0.640	-	1078.506	nm	recovered 50 ml product from P.B.
	7-Apr-06		10.957	11.505	0.548	-	1078.521	nm	no product recovery in P.B.
	12-Apr-06		10.966	11.583	0.617	-	1078.499	nm	recovered 800 ml product from P.B.
	17-Apr-06		10.970	11.595	0.625	0.800	1078.493	nm	recovered 800 ml product from P.B.
	18-Apr-06		11.003	11.665	0.662	0.650	1078.453	nm	recovered 650 ml product from P.B.
	21-Apr-06		10.985	11.584	0.599	0.750	1078.483	nm	recovered 750 ml product from P.B.
	26-Apr-06		10.930	11.194	0.264	-	1078.605	nm	recovered 0 ml product from P.B. Reset PB.
	28-Apr-06		10.993	11.602	0.609	0.300	1078.473	nm	recovered 300 ml product from P.B.
	1-May-06		10.998	11.605	0.607	1.000	1078.469	nm	recovered 1 L ml product from P.B.
	3-May-06		11.155	11.740	0.585	0.800	1078.316	nm	recovered 800 ml product from P.B.
	9-May-06		11.150	11.634	0.484	0.800	1078.341	nm	recovered 800 ml product from P.B.
	7-Jun-06		11.317	11.612	0.295	0.800	1078.212	nm	recovered 800 ml product from P.B.
	12-Jun-06		11.357	11.500	0.143	0.700	1078.202	nm	recovered 700 ml product from P.B.

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

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<i>BH509 Continued</i>	14-Jun-06		11.196	11.216	0.020	0.400	1078.388	nm	recovered 400 ml product from P.B.
	16-Jun-06		11.266	11.267	0.001	0.100	1078.322	nm	recovered 100 ml product from P.B.
	20-Jun-06		11.334	11.335	0.001	0.250	1078.254	nm	recovered 250 ml product from P.B.
	22-Jun-06		11.309	11.326	0.017	0.000	1078.276	nm	recovered 0 ml product from P.B.
	23-Jun-06		11.338	11.339	0.001	0.050	1078.250	nm	recovered 50 ml product from P.B.
	26-Jun-06		11.313	11.314	0.001	0.150	1078.275	nm	recovered 150 ml product from P.B.
	28-Jun-06		11.248	11.249	0.001	0.050	1078.340	nm	recovered 50 ml product from P.B.
	4-Jul-06		11.292	11.295	0.003	0.300	1078.295	nm	recovered 300 ml product from P.B.
	7-Jul-06		11.309	11.310	0.001	0.200	1078.279	nm	recovered 200 ml product from P.B.
	12-Jul-06		11.109	11.165	0.056	0.200	1078.468	nm	recovered 200 ml product from P.B.
	19-Jul-06		11.075	11.155	0.080	-	1078.497	nm	
	21-Jul-06		11.289	11.291	0.002	0.500	1078.299	nm	recovered 500 ml product from P.B.
	24-Jul-06		11.215	11.232	0.017	0.200	1078.370	nm	recovered 200 ml product from P.B.
	31-Jul-06		11.175	11.187	0.012	0.600	1078.411	nm	Hand bailed 600 ml of product
	3-Aug-06		11.246	11.248	0.002	0.250	1078.342	nm	Hand bailed 250 ml of product
	9-Aug-06		11.214	11.216	0.002	0.400	1078.374	nm	Hand Bailed 400 ml
	15-Aug-06		11.116	11.480	0.364	0.250	1078.399	nm	Hand Bailed 250 ml
	17-Aug-06		11.232	11.234	0.002	0.150	1078.356	nm	hand Bailed 150 ml
	18-Aug-06		11.245	11.246	0.001	0.100	1078.343	nm	Hand Bailed 100ml
	21-Aug-06		11.246	11.247	0.001	0.150	1078.342	nm	Hand Bailed 150ml
	24-Aug-06		11.204	11.207	0.003	0.200	1078.383	nm	Hand Bailed 200 ml
	25-Aug-06		11.285	11.286	0.001	0.050	1078.303	nm	Hand Bailed 50 ml
	28-Aug-06		11.233	11.236	0.003	0.110	1078.354	nm	Hand Bailed 110 ml
	30-Aug-06		11.195	11.196	0.001	0.150	1078.393	nm	Hand Bailed 150 ml
	18-Sep-06		11.233	11.234	0.001	0.010	1078.355	nm	hand bailed 10 ml
	20-Sep-06		11.189	11.190	0.001	0.005	1078.399	nm	hand bailed 5 ml
	22-Sep-06		11.188	11.192	0.004	0.050	1078.399	nm	recovered 50 ml product from passive bailer
	25-Sep-06		11.269	11.271	0.002	0.005	1078.319	nm	recovered 5 ml product from passive bailer
	3-Oct-06		11.255	11.256	0.001	0.010	1078.333	nm	recovered 10 ml product from passive bailer
	5-Oct-06		11.155	11.158	0.003	0.010	1078.432	nm	recovered 10 ml product from passive bailer
	4-Dec-06		11.029	11.485	0.456	2.800	1078.468	nm	HB - 2.3 L product - bailer checked 500ml
	19-Jan-07		11.060	11.520	0.460	-	1078.436	nm	
	22-Jan-07		11.070	11.400	0.330	0.100	1078.452	nm	recovered 100 ml product from passive bailer
	12-Mar-07		11.010	11.475	0.465	0.050	1078.485	nm	recovered 50 ml product from passive bailer
	15-Mar-07		10.995	11.203	0.208	0.050	1078.551	nm	recovered 50 ml product from passive bailer

Notes:

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- 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.

LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
Calgary, Alberta

Monitoring Well	Date	Top of Casing Elevation <sup>1</sup>	Depth to LPH <sup>2</sup>	Depth to Water <sup>2</sup>	Apparent Thickness of LPH	LPH Recovery Volume	Water Elevation <sup>3</sup>	Combustible Vapour Concentration <sup>4</sup>	Comments
	(dd-mmm-yy)	(m)	(m)	(m)	(m)	(L)	(m)	(ppm)	
<i>BH509 Continued</i>	17-Apr-07		11.010	11.420	0.410	-	1078.496	nm	passive bailer full of water; reset
	24-Apr-07		11.015	11.347	0.332	-	1078.507	nm	
	1-May-07		10.997	11.120	0.123	0.800	1078.566	nm	recovered 800 ml product from passive bailer
	4-May-07		11.063	11.195	0.132	-	1078.499	nm	
	8-May-07		11.215	11.224	0.009	0.800	1078.371	nm	recovered 800 ml product from passive bailer
	10-May-07		11.234	11.236	0.002	0.400	1078.354	nm	recovered 400 ml product from passive bailer
	8-Jun-07		11.100	11.110	0.010	0.750	1078.486	nm	recovered 750 ml product from passive bailer
	11-Jun-07		11.061	11.063	0.002	0.300	1078.527	nm	recovered 300 ml product from passive bailer
	13-Jun-07		11.050	11.055	0.005	0.120	1078.537	nm	recovered 120 ml product from passive bailer
	3-Jul-07		11.010	11.015	0.005	0.800	1078.577	nm	recovered 800 ml product from passive bailer
	5-Jul-07		11.016	11.019	0.003	0.300	1078.571	nm	recovered 300 ml product from passive bailer
	16-Jul-07		10.907	11.297	0.390	0.800	1078.603	nm	recovered 800 ml product from passive bailer
	20-Jul-07		10.883	11.010	0.127	0.200	1078.680	nm	recovered 200 ml product from passive bailer
	26-Jul-07		10.845	10.851	0.006	0.050	1078.742	nm	recovered 50 ml product from passive bailer
	30-Jul-07		10.845	11.000	0.155	0.210	1078.712	nm	recovered 210 ml product from passive bailer
	2-Aug-07		10.825	11.012	0.187	0.250	1078.726	nm	recovered 250 ml product from P.B.
	7-Aug-07		10.795	11.002	0.207	0.020	1078.752	nm	recovered 20 ml product from passive bailer
	9-Aug-07		10.870	11.201	0.331	0.100	1078.652	nm	recovered 100 ml product from P.B.
	24-Aug-07		10.895	11.435	0.540	0.750	1078.585	nm	recovered 750 ml product from passive bailer
	27-Aug-07		10.895	11.205	0.310	0.800	1078.631	nm	recovered 800 ml product from P.B.
	29-Aug-07		10.925	11.639	0.714	0.800	1078.520	nm	recovered 800 ml product from P.B.
	4-Sep-07		10.975	11.619	0.644	0.800	1078.484	nm	recovered 800 ml product from P.B.
	6-Sep-07		10.955	11.615	0.660	0.800	1078.501	nm	recovered 800 ml product from P.B.
	10-Sep-07		11.092	11.511	0.419	0.800	1078.412	nm	recovered 800 ml product from passive bailer
	12-Sep-07		10.974	11.530	0.556	0.800	1078.503	nm	recovered 800 ml product from passive bailer
	14-Sep-07		11.030	11.501	0.471	0.800	1078.464	nm	recovered 800 ml product from passive bailer
	17-Sep-07		11.005	11.521	0.516	0.510	1078.480	nm	recovered 510 ml product from passive bailer
	19-Sep-07		11.101	11.508	0.407	0.800	1078.406	nm	recovered 800 ml product from passive bailer
	21-Sep-07		11.040	11.455	0.415	0.800	1078.465	nm	recovered 800 ml product from passive bailer
	24-Sep-07		11.030	11.541	0.511	0.800	1078.456	nm	recovered 800 ml product from P.B.
	26-Sep-07		11.041	11.486	0.445	0.700	1078.458	nm	recovered 700 ml product from P.B.
	28-Sep-07		11.051	11.273	0.222	0.650	1078.493	nm	recovered 650 ml product from P.B.
	1-Oct-07		11.025	11.481	0.456	0.800	1078.472	nm	recovered 800 ml product from P.B.
3-Oct-07		11.030	11.423	0.393	0.650	1078.479	nm	recovered 650 ml product from P.B.	
9-Oct-07		11.022	11.489	0.467	0.800	1078.473	nm	recovered 800 ml product from P.B.	

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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	(dd-mmm-yy)	(m)	(m)	(m)	(m)	(L)	(m)	(ppm)	
<i>BH509 Continued</i>	12-Oct-07		11.100	11.512	0.412	0.800	1078.406	nm	recovered 800 ml product from P.B.
	16-Oct-07		11.002	11.510	0.508	0.800	1078.484	nm	recovered 800 ml product from P.B.
	20-Oct-07		11.000	11.571	0.571	0.800	1078.474	nm	recovered 800 ml product from P.B.
	29-Oct-07		11.047	11.667	0.620	0.800	1078.417	nm	recovered 800 ml product from P.B.
	1-Nov-07		11.061	11.478	0.417	0.800	1078.444	nm	recovered 800 ml product from P.B.
	2-Nov-07		11.050	11.792	0.742	0.800	1078.390	nm	recovered 800 ml product from P.B.
	5-Nov-07		11.125	11.783	0.658	0.800	1078.331	nm	recovered 800 ml product from P.B.
	13-Nov-07		11.131	11.685	0.554	0.800	1078.346	nm	recovered 800 ml product from P.B.
	19-Nov-07		11.050	11.703	0.653	0.800	1078.407	nm	recovered 800 ml product from P.B.
	23-Nov-07		11.085	11.600	0.515	-	1078.400	nm	
	26-Nov-07		11.171	11.570	0.399	0.800	1078.337	nm	recovered 800 ml product from P.B.
	28-Nov-07		11.175	11.562	0.387	0.800	1078.336	nm	recovered 800 ml product from P.B.
	30-Nov-07		11.179	11.571	0.392	0.800	1078.331	nm	recovered 800 ml product from P.B.
	3-Dec-07		10.972	11.482	0.510	0.800	1078.514	nm	recovered 800 ml product from P.B.
	5-Dec-07		10.980	11.305	0.325	0.500	1078.543	nm	recovered 500 ml product from P.B.
	7-Dec-07		10.984	11.311	0.327	0.600	1078.539	nm	recovered 600 ml product from passive bailer
	10-Dec-07		10.973	11.507	0.534	0.800	1078.508	nm	recovered 800 ml product from passive bailer
	14-Dec-07		10.977	11.308	0.331	0.450	1078.545	nm	recovered 450 ml product from passive bailer
	17-Dec-07		10.976	11.409	0.433	0.800	1078.525	nm	recovered 800 ml product from passive bailer
	19-Dec-07		10.979	11.301	0.322	0.500	1078.545	nm	recovered 500 ml product from P.B.
	21-Dec-07		10.983	11.284	0.301	0.450	1078.545	nm	recovered 450 ml product from passive bailer
	2-Jan-08		10.974	11.478	0.504	0.800	1078.513	nm	recovered 800 ml product from passive bailer
	4-Jan-08		11.040	11.382	0.342	0.650	1078.480	nm	recovered 650 ml product from P.B.
	23-Jan-08		11.135	11.510	0.375	0.800	1078.378	nm	recovered 800 ml product from passive bailer
	25-Jan-08		11.160	11.295	0.135	0.500	1078.401	nm	recovered 500 ml product from P.B.
	7-Feb-08		11.416	11.420	0.004	0.100	1078.171	nm	recovered 100 ml product from P.B.
	9-Feb-08		11.419	11.423	0.004	0.200	1078.168	nm	recovered 200 ml product from passive bailer
	6-Mar-08		11.167	11.642	0.475	0.600	1078.326	nm	recovered 600 ml product from passive bailer
	7-Apr-08		11.295	11.302	0.007	0.400	1078.292	nm	recovered 400 ml product from passive bailer
	9-Apr-08		11.301	11.304	0.003	0.300	1078.286	nm	recovered 300 ml product from passive bailer
	11-Apr-08		11.304	11.307	0.003	0.200	1078.283	nm	recovered 200 ml product from passive bailer
	14-Apr-08		11.328	11.332	0.004	0.200	1078.259	nm	recovered 200 ml product from passive bailer
	16-Apr-08		11.415	11.417	0.002	0.500	1078.173	nm	recovered 500 ml product from P.B.
	28-Apr-08		11.633	11.645	0.012	0.350	1077.953	nm	recovered 350 ml product from P.B.
	30-Apr-08		11.638	11.649	0.011	0.250	1077.948	nm	recovered 250 ml product from passive bailer

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH509 Continued</i>	2-May-08		11.641	11652.000	0.011	0.300	1077.945	nm	recovered 300 ml product from passive bailer	
	5-May-08		11.412	11.416	0.004	0.200	1078.175	nm	recovered 200 ml product from passive bailer	
	12-May-08		11.396	11.399	0.003	0.100	1078.191	nm	recovered 100 ml product from passive bailer	
	14-May-08		11.399	11.401	0.002	0.050	1078.189	nm	recovered 50 ml product from passive bailer	
	26-May-08		11.388	11.397	0.009	0.150	1078.198	nm	recovered 150 ml product from passive bailer	
	28-May-08		11.392	11.395	0.003	0.050	1078.195	nm	recovered 50 ml product from passive bailer	
	30-May-08		11.394	11.397	0.003	0.050	1078.193	nm	recovered 50 ml product from passive bailer	
	9-Jun-08		11.363	11.369	0.006	0.020	1078.224	nm	recovered 20 ml product from P.B.	
	11-Jun-08		11.309	11.313	0.004	0.100	1078.278	nm	recovered 100 ml product from P.B.	
	13-Jun-08		11.311	11.315	0.004	0.050	1078.276	nm	recovered 50 ml product from passive bailer	
	27-Jun-08			10.975	10.977	0.002	-	1078.613	>10,000	well decommissioned on 27 June 2008
	<b>BH510</b>	5-Dec-02	1091.037	-	13.352	0.000	-	1077.685	>10,000	
		12-May-03		13.377	13.468	0.091	-	1077.642	>10,000	amber coloured LPH
28-May-03			13.371	13.462	0.091	-	1077.648	n.m.	passive bailer installed from BH214.	
4-Jun-03			nm	nm	-	-	nm	nm	recovered 400 ml product from P.B.	
1-Jul-03			13.612	13.614	0.002	-	1077.425	n.m.	recovered 300 ml product from P.B.	
24-Jul-03			-	13.604	0.000	-	1077.433	-	moved passive bailer to BH214	
5-Aug-03			-	13.408	0.000	-	1077.629	-		
7-Oct-03			-	13.295	0.000	-	1077.742	>10,000		
13-Nov-03			13.321	13.335	0.014	-	1077.713	-	measured approx. 4 mm of clear pinkish product in bailer	
20-Nov-03			13.412	13.432	0.020	-	1077.621	7,400		
3-Dec-03			13.377	13.413	0.036	-	1077.653	-		
4-Dec-03			nm	nm	nm	-	nm	nm	recovered 100 ml product from P.B.	
8-Dec-03			-	13.584	0.000	-	1077.453	6,200	recovered 250 ml product from P.B.	
17-Dec-03			-	13.673	0.000	-	1077.364	>10,000		
22-Dec-03			nm	nm	nm	-	nm	nm	recovered 40 ml product from P.B.	
7-Jan-04			-	13.508	0.000	-	1077.529	nm	recovered 100 ml product from P.B.	
10-Jan-04			-	13.524	0.000	-	1077.513	nm	recovered 50 ml product from P.B.	
12-Jan-04		-	13.578	0.000	-	1077.459	nm	recovered 50 ml product from P.B.		
15-Jan-04		-	13.500	0.000	-	1077.537	nm	recovered 50 ml product from P.B.		
20-Jan-04		-	14.234	0.000	-	1076.803	nm	water level too low; recovered 100 ml product from P.B.		
23-Jan-04		-	13.523	0.000	-	1077.514	nm	recovered 20 ml product from P.B.		
5-Feb-04		-	13.587	0.000	-	1077.450	nm	recovered 200 ml product from P.B.		
9-Feb-04		-	13.565	0.000	-	1077.472	nm	recovered 25 ml product from P.B.		

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- Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.

LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH510 Continued</i>	19-Feb-04		-	13.550	0.000	-	1077.487	nm	recovered 50 ml product from P.B.
	23-Feb-04		-	13.450	0.000	-	1077.587	nm	recovered 50 ml product from P.B.
	26-Feb-04		-	13.284	0.000	-	1077.753	nm	check of bailer showed no visible product
	3-Mar-04		-	13.368	0.000	-	1077.669	nm	check of bailer showed no visible product
	8-Mar-04		-	13.265	0.000	-	1077.772	>10,000	iced; check of bailer showed no visible product
	31-Mar-04		13.360	13.367	0.007	-	1077.670	nm	not enough to hand bail
	12-Apr-04		-	13.307	0.000	-	1077.730	nm	no passive bailer; H.B. 2 ml product
	13-Apr-04		-	13.355	0.000	-	1077.682	nm	no passive bailer
	15-Apr-04		-	13.310	0.000	-	1077.727	nm	no passive bailer
	16-Apr-04		-	13.355	0.000	-	1077.682	nm	no passive bailer
	19-Apr-04		-	13.310	0.000	-	1077.727	nm	no passive bailer
	22-Apr-04		13.395	13.397	0.002	-	1077.640	nm	no passive bailer
	30-Apr-04		13.395	13.400	0.005	-	1077.637	nm	no P.B.; hand bailed 1 cm product
	6-May-04		-	13.388	0.000	-	1077.649	nm	no P.B.; hand bailed 3 ml product
	7-May-04		-	13.345	0.000	-	1077.692	nm	no passive bailer
	10-May-04		-	13.336	0.000	-	1077.701	nm	no passive bailer
	17-May-04		-	13.367	0.000	-	1077.670	nm	no P.B.; hand bailed 1 ml product
	28-May-04		13.318	13.320	0.002	-	1077.717	nm	hand bailed 3 ml product
	15-Jun-04		-	13.389	0.000	-	1077.648	18	
	18-Jun-04		-	13.380	0.000	-	1077.657	nm	no passive bailer
	14-Jul-04		-	13.368	0.000	-	1077.669	2,000	bailer checked: 3 mm product
	28-Jul-04		13.355	13.360	0.005	-	1077.677	nm	no passive bailer
	6-Aug-04		13.359	13.363	0.004	-	1077.674	nm	no passive bailer
	10-Aug-04		13.375	13.380	0.005	-	1077.657	nm	no passive bailer
	11-Aug-04		13.355	13.357	0.002	-	1077.680	nm	no passive bailer
	13-Aug-04		-	13.360	0.000	-	1077.677	nm	no passive bailer
	18-Aug-04		-	13.375	0.000	-	1077.662	nm	no passive bailer
	24-Aug-04		-	13.313	0.000	-	1077.724	>10,000	Bailer check showed 2mm product
	7-Sep-04		-	13.355	0.000	-	1077.682	nm	no passive bailer
	9-Sep-04		-	13.364	0.000	-	1077.673	nm	no passive bailer
13-Sep-04		-	13.328	0.000	-	1077.709	nm	no passive bailer	
15-Sep-04		-	13.340	0.000	-	1077.697	nm	no passive bailer	
17-Sep-04		-	13.320	0.000	-	1077.717	nm	no passive bailer	
20-Sep-04		13.395	13.410	0.015	-	1077.627	nm	no passive bailer	
22-Sep-04		13.355	13.360	0.005	-	1077.677	nm	no passive bailer	

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cmm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

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<i>BH510 Continued</i>	24-Sep-04		13.368	13.370	0.002	-	1077.667	nm	no passive bailer	
	29-Sep-04		-	13.343	0.000	-	1077.694	nm		
	4-Oct-04		-	13.310	0.000	-	1077.727	nm		
	6-Oct-04			13.312	13.315	0.003	-	1077.722	nm	no passive bailer
	12-Oct-04		-	13.448	0.000	-	1077.589	nm	bailer checked; 3 ml recovered	
	15-Oct-04		-	13.332	0.000	-	1077.705	nm	no passive bailer	
	5-Nov-04		-	13.320	0.000	-	1077.717	nm	no passive bailer; disposable bailer had 1 mm product	
	8-Nov-04		-	13.324	0.000	-	1077.713	nm	no passive bailer	
	10-Nov-04			13.448	13.450	0.002	-	1077.587	nm	no passive bailer
	17-Nov-04			13.144	13.146	0.002	-	1077.891	nm	no passive bailer
	25-Nov-04		-	13.355	0.000	-	1077.682	nm	no passive bailer	
	29-Nov-04		-	13.335	0.000	-	1077.702	nm	no passive bailer	
	1-Dec-04			13.384	13.386	0.002	-	1077.651	nm	no passive bailer
	11-Jan-05		-	13.364	0.000	-	1077.673	>10,000	bailer check showed no visible product	
	17-Jan-05		-	13.375	0.000	-	1077.662	nm	no passive bailer	
	24-Jan-05			13.413	13.413	trace	-	1077.624	nm	no passive bailer
	26-Jan-05		-	13.436	0.000	-	1077.601	nm	no passive bailer	
	28-Jan-05		-	13.439	0.000	-	1077.598	nm	no passive bailer	
	2-Feb-05			13.417	13.417	trace	-	1077.620	5,000	slight odour; slight sheen on probe
	18-Feb-05			13.419	13.420	0.001	-	1077.617	nm	no passive bailer
	22-Feb-05			13.450	13.452	0.002	-	1077.585	nm	no passive bailer
	24-Feb-05			13.431	13.431	trace	-	1077.606	nm	no visible product in P.B.; sheen present
	2-Mar-05		1091.086	-	13.455	0.000	-	1077.631	5,400	checked bailer - sheen on water; well resurveyed
	22-Mar-05		-	13.485	0.000	-	1077.601	nm		
	24-Mar-05		-	13.484	0.000	-	1077.602	nm	checked bailer - no visible product	
	28-Mar-05		-	13.375	0.000	-	1077.711	nm		
	30-Mar-05		-	13.490	0.000	-	1077.596	nm		
	1-Apr-05		-	13.415	0.000	-	1077.671	nm		
	5-Apr-05		-	13.520	0.000	-	1077.566	nm		
	11-Apr-05		-	13.455	0.000	-	1077.631	nm		
	15-Apr-05		-	13.494	0.000	-	1077.592	nm		
	18-Apr-05		-	13.518	0.000	-	1077.568	nm		
20-Apr-05		-	13.490	0.000	-	1077.596	nm			
22-Apr-05		-	13.487	0.000	-	1077.599	nm			
25-Apr-05		-	13.475	0.000	-	1077.611	nm			

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH510 Continued</i>	27-Apr-05		-	13.513	0.000	-	1077.573	nm		
	4-May-05		-	13.505	0.000	-	1077.581	nm		
	6-May-05		-	13.464	0.000	-	1077.622	nm	checked bailer - no visible product	
	9-May-05		-	13.475	0.000	-	1077.611	nm		
	13-May-05		-	13.498	0.000	-	1077.588	nm		
	16-May-05		-	13.404	0.000	-	1077.682	nm		
	26-May-05		-	13.525	0.000	-	1077.561	nm		
	2-Jun-05		-	13.479	0.000	-	1077.607	40		
	10-Jun-05		-	13.467	0.000	-	1077.619	nm		
	15-Jun-05		-	13.469	0.000	-	1077.617	nm		
	17-Jun-05			13.460	13.461	0.001	-	1077.625	nm	checked bailer - no visible product
	20-Jun-05		-	13.505	0.000	-	1077.581	nm		
	22-Jun-05		-	13.430	0.000	-	1077.656	nm		
	24-Jun-05		-	13.490	0.000	-	1077.596	nm	well could be slightly shortened or j-plug installed	
	27-Jun-05		-	13.472	0.000	-	1077.614	nm		
	29-Jun-05		-	13.470	0.000	-	1077.616	nm		
	6-Jul-05		-	13.410	0.000	-	1077.676	nm		
	11-Jul-05		-	13.461	0.000	-	1077.625	nm		
	20-Jul-05		-	13.448	0.000	-	1077.638	nm		
	22-Jul-05		-	13.423	0.000	-	1077.663	nm		
	28-Jul-05		-	13.405	0.000	-	1077.681	nm		
	9-Aug-05		-	13.425	0.000	-	1077.661	nm		
	10-Aug-05		-	13.430	0.000	-	1077.656	nm		
	12-Aug-05		-	13.435	0.000	-	1077.651	nm		
	16-Aug-05		-	13.377	0.000	-	1077.709	nm		
	17-Aug-05		-	13.409	0.000	-	1077.677	nm		
	24-Aug-05		-	13.385	0.000	-	1077.701	nm		
	31-Aug-05		-	13.395	0.000	-	1077.691	nm		
	6-Sep-05		-	13.406	0.000	-	1077.680	nm		
	12-Sep-05		-	13.368	0.000	-	1077.718	nm		
14-Sep-05		-	13.343	0.000	-	1077.743	nm			
16-Sep-05		-	13.375	0.000	-	1077.711	nm			
19-Sep-05		-	13.337	0.000	-	1077.749	nm	well needs clean-out cap replaced with j-plug		
21-Sep-05		-	13.375	0.000	-	1077.711	nm			
26-Sep-05		-	13.311	0.000	-	1077.775	nm			

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.



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<i>BH510 Continued</i>	28-Sep-05		-	13.348	0.000	-	1077.738	nm	
	18-Oct-05		-	13.347	0.000	-	1077.739	nm	
	24-Oct-05		-	13.309	0.000	-	1077.777	nm	
	1-Nov-05		-	13.297	0.000	-	1077.789	nm	
	3-Nov-05		-	13.268	0.000	-	1077.818	nm	0 ml product in P.B.
	8-Nov-05		-	13.334	0.000	-	1077.752	nm	
	10-Nov-05		-	13.325	0.000	-	1077.761	nm	
	14-Nov-05		-	13.352	0.000	-	1077.734	nm	
	28-Nov-05		-	13.339	0.000	-	1077.747	nm	
	30-Nov-05		-	13.298	0.000	-	1077.788	nm	
	6-Dec-05		-	13.323	0.000	-	1077.763	nm	
	12-Dec-05		-	13.238	0.000	-	1077.848	nm	
	14-Dec-05		-	13.327	0.000	-	1077.759	nm	
	16-Dec-05		-	13.284	0.000	-	1077.802	nm	
	19-Dec-05		-	13.270	0.000	-	1077.816	nm	
	22-Dec-05		-	13.195	0.000	-	1077.891	nm	
	23-Dec-05		-	13.309	0.000	-	1077.777	nm	
	3-Jan-06		-	13.298	0.000	-	1077.788	nm	
	5-Jan-06		-	13.274	0.000	-	1077.812	nm	
	6-Jan-06		-	13.265	0.000	-	1077.821	nm	
	9-Jan-06		-	13.229	0.000	-	1077.857	nm	
	12-Jan-06		-	13.308	0.000	-	1077.778	nm	
	13-Jan-06		-	13.238	0.000	-	1077.848	nm	
	16-Jan-06		-	13.292	0.000	-	1077.794	nm	
	20-Jan-06		-	13.262	0.000	-	1077.824	nm	
	23-Jan-06		-	13.264	0.000	-	1077.822	nm	
	30-Jan-06		-	13.187	0.000	-	1077.899	nm	
	1-Feb-06		-	13.193	0.000	-	1077.893	nm	
	3-Feb-06		-	13.323	0.000	-	1077.763	nm	
	6-Feb-06		-	13.337	0.000	-	1077.749	nm	
	8-Feb-06		-	13.268	0.000	-	1077.818	nm	
	10-Feb-06		-	13.368	0.000	-	1077.718	nm	
	27-Feb-06		-	13.187	0.000	-	1077.899	nm	
2-Mar-06		-	13.343	0.000	-	1077.743	nm		
4-Mar-06		-	13.279	0.000	-	1077.807	nm		

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH510 Continued</i>	6-Mar-06		-	13.242	0.000	-	1077.844	nm	
	8-Mar-06		-	13.305	0.000	-	1077.781	nm	
	10-Mar-06		-	13.301	0.000	-	1077.785	nm	
	14-Mar-06		-	13.267	0.000	-	1077.819	nm	
	22-Mar-06		cnm	cnm	cnm	-	cnm	cnm	iced up
	24-Mar-06		-	13.268	0.000	-	1077.818	nm	
	27-Mar-06		-	13.320	0.000	-	1077.766	nm	
	29-Mar-06		-	13.273	0.000	-	1077.813	nm	
	31-Mar-06		cnm	cnm	cnm	-	cnm	cnm	High volume traffic
	12-Apr-06		-	13.307	0.000	-	1077.779	nm	
	19-Jul-06		-	13.350	0.000	-	1077.736	nm	
	21-Jul-06		-	13.370	0.000	-	1077.716	nm	
	24-Jul-06		-	13.295	0.000	-	1077.791	nm	
	31-Jul-06		-	13.316	0.000	-	1077.770	nm	
	3-Aug-06		-	13.355	0.000	-	1077.731	nm	
	9-Aug-06		-	13.338	0.000	-	1077.748	nm	
	15-Aug-06		-	13.323	0.000	-	1077.763	nm	
	17-Aug-06		-	13.340	0.000	-	1077.746	nm	
	18-Aug-06		-	13.335	0.000	-	1077.751	nm	
	21-Aug-06		-	13.316	0.000	-	1077.770	nm	
	24-Aug-06		-	13.321	0.000	-	1077.765	nm	
	25-Aug-06		-	13.349	0.000	-	1077.737	nm	
	28-Aug-06		-	13.308	0.000	-	1077.778	nm	
	30-Aug-06		-	13.307	0.000	-	1077.779	nm	
	18-Sep-06		-	13.324	0.000	-	1077.762	nm	
	20-Sep-06		-	13.268	0.000	-	1077.818	nm	
	22-Sep-06		-	13.266	0.000	-	1077.820	nm	
	25-Sep-06		-	13.319	0.000	-	1077.767	nm	
	3-Oct-06		-	13.360	0.000	-	1077.726	nm	
	5-Oct-06		-	13.259	0.000	-	1077.827	nm	
	4-Dec-06		cnm	cnm	cnm	cnm	cnm	cnm	iced
	25-Jan-07		-	13.259	0.000	-	1077.827	>10,000	No bailer
15-Mar-07		-	13.201	0.000	-	1077.885	nm		
17-Apr-07		-	13.296	0.000	-	1077.790	nm		
24-Apr-07		-	13.307	0.000	-	1077.779	nm		

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH510 Continued</i>	1-May-07		-	13.295	0.000	-	1077.791	nm	
	4-May-07		-	13.272	0.000	-	1077.814	nm	
	8-May-07		-	13.299	0.000	-	1077.787	nm	
	10-May-07		-	13.324	0.000	-	1077.762	nm	
	8-Jun-07		-	13.270	0.000	-	1077.816	nm	
	11-Jun-07		-	13.250	0.000	-	1077.836	nm	
	13-Jun-07		-	13.266	0.000	-	1077.820	nm	
	3-Jul-07		-	13.235	0.000	-	1077.851	nm	
	5-Jul-07		-	13.235	0.000	-	1077.851	nm	
	16-Jul-07		-	13.190	0.000	-	1077.896	nm	
	20-Jul-07		-	13.194	0.000	-	1077.892	nm	
	26-Jul-07		-	13.215	0.000	-	1077.871	nm	
	30-Jul-07		-	13.205	0.000	-	1077.881	nm	
	7-Aug-07		-	13.133	0.000	-	1077.953	nm	
	9-Aug-07		-	13.121	0.000	-	1077.965	nm	
	24-Aug-07		-	13.177	0.000	-	1077.909	nm	
	27-Aug-07		-	13.177	0.000	-	1077.909	nm	
	29-Aug-07		-	13.178	0.000	-	1077.908	nm	
	4-Sep-07		-	13.193	0.000	-	1077.893	nm	
	6-Sep-07		-	13.183	0.000	-	1077.903	nm	
	10-Sep-07		-	13.186	0.000	-	1077.900	nm	
	12-Sep-07		-	13.103	0.000	-	1077.983	nm	
	14-Sep-07		-	13.222	0.000	-	1077.864	nm	
	17-Sep-07		-	13.195	0.000	-	1077.891	nm	
	19-Sep-07		-	13.193	0.000	-	1077.893	nm	
	21-Sep-07		-	13.214	0.000	-	1077.872	nm	
	24-Sep-07		-	13.100	0.000	-	1077.986	nm	
	26-Sep-07		-	13.155	0.000	-	1077.931	nm	
	28-Sep-07		-	13.110	0.000	-	1077.976	nm	
	1-Oct-07		-	13.153	0.000	-	1077.933	nm	
3-Oct-07		-	13.152	0.000	-	1077.934	nm		
9-Oct-07		-	13.144	0.000	-	1077.942	nm		
12-Oct-07		-	13.150	0.000	-	1077.936	nm		
16-Oct-07		-	13.190	0.000	-	1077.896	nm		
20-Oct-07		-	13.210	0.000	-	1077.876	nm		

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH510 Continued</i>	29-Oct-07		-	13.207	0.000	-	1077.879	nm	
	1-Nov-07		-	13.204	0.000	-	1077.882	nm	
	2-Nov-07		-	13.200	0.000	-	1077.886	nm	
	5-Nov-07		-	13.181	0.000	-	1077.905	nm	
	13-Nov-07		-	13.184	0.000	-	1077.902	nm	
	19-Nov-07		-	13.228	0.000	-	1077.858	nm	
	23-Nov-07		-	13.179	0.000	-	1077.907	5,000	
	26-Nov-07		-	13.215	0.000	-	1077.871	nm	
	28-Nov-07		-	13.228	0.000	-	1077.858	nm	
	30-Nov-07		-	13.232	0.000	-	1077.854	nm	
	3-Dec-07		-	13.180	0.000	-	1077.906	nm	
	5-Dec-07		-	13.182	0.000	-	1077.904	nm	
	7-Dec-07		-	13.185	0.000	-	1077.901	nm	
	10-Dec-07		-	13.188	0.000	-	1077.898	nm	
	14-Dec-07		-	13.185	0.000	-	1077.901	nm	
	17-Dec-07		-	13.188	0.000	-	1077.898	nm	
	19-Dec-07		-	13.189	0.000	-	1077.897	nm	
	21-Dec-07		-	13.192	0.000	-	1077.894	nm	
	2-Jan-08		-	13.183	0.000	-	1077.903	nm	
	4-Jan-08		-	13.251	0.000	-	1077.835	nm	
	23-Jan-08		-	13.176	0.000	-	1077.910	nm	
	25-Jan-08		-	13.185	0.000	-	1077.901	nm	
	7-Feb-08		-	13.297	0.000	-	1077.789	nm	
	9-Feb-08		-	13.295	0.000	-	1077.791	nm	
	6-Mar-08		-	13.279	0.000	-	1077.807	nm	
	6-Mar-08		-	13.254	0.000	-	1077.832	nm	
	10-Mar-08		-	13.235	0.000	-	1077.851	1,300	
	7-Apr-08		-	13.239	0.000	-	1077.847	nm	
	9-Apr-08		-	13.242	0.000	-	1077.844	nm	
	11-Apr-08		-	13.243	0.000	-	1077.843	nm	
	14-Apr-08		-	13.242	0.000	-	1077.844	nm	
	16-Apr-08		-	13.254	0.000	-	1077.832	nm	
	28-Apr-08		-	13.303	0.000	-	1077.783	nm	
	30-Apr-08		-	13.309	0.000	-	1077.777	nm	
	2-May-08		-	13.315	0.000	-	1077.771	nm	

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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Monitoring Well	Date	Top of Casing Elevation <sup>1</sup>	Depth to LPH <sup>2</sup>	Depth to Water <sup>2</sup>	Apparent Thickness of LPH	LPH Recovery Volume	Water Elevation <sup>3</sup>	Combustible Vapour Concentration <sup>4</sup>	Comments
	(dd-mmm-yy)	(m)	(m)	(m)	(m)	(L)	(m)	(ppm)	
	5-May-08		-	13.292	0.000	-	1077.794	nm	
	12-May-08		-	13.298	0.000	-	1077.788	nm	
	14-May-08		-	13.300	0.000	-	1077.786	nm	
	26-May-08		-	13.227	0.000	-	1077.859	nm	
	28-May-08		-	13.230	0.000	-	1077.856	nm	
	30-May-08		-	13.240	0.000	-	1077.846	nm	
	9-Jun-08		-	13.260	0.000	-	1077.826	nm	
	11-Jun-08		-	13.258	0.000	-	1077.828	nm	
	13-Jun-08		-	13.262	0.000	-	1077.824	nm	
	3-Jul-08		-	13.227	0.000	-	1077.859	>10,000	well decommissioned on 03 July 2008
<b>BH510A</b>	11-Jan-05	1091.090	-	13.450	0.000	-	1077.640	>10,000	bailer check showed no product
	2-Feb-05		-	13.517	0.000	-	1077.573	6,200	4 inch well
	18-Feb-05		13.504	13.506	0.002	-	1077.586	nm	no P.B.; 4 inch well
	22-Feb-05		-	13.565	0.000	-	1077.525	nm	4 inch well
	24-Feb-05		-	13.529	0.000	-	1077.561	nm	bailer check showed no product, no sheen
	2-Mar-05		-	13.535	0.000	-	1077.555	8,200	checked bailer - sheen on water; well surveyed
	22-Mar-05		-	13.585	0.000	-	1077.505	nm	
	24-Mar-05		-	13.572	0.000	-	1077.518	nm	checked bailer - no product
	28-Mar-05		-	13.474	0.000	-	1077.616	nm	
	30-Mar-05		-	13.588	0.000	-	1077.502	nm	
	1-Apr-05		-	13.499	0.000	-	1077.591	nm	
	5-Apr-05		-	13.624	0.000	-	1077.466	nm	
	11-Apr-05		-	13.545	0.000	-	1077.545	nm	
	15-Apr-05		-	13.585	0.000	-	1077.505	nm	
	18-Apr-05		-	13.616	0.000	-	1077.474	nm	
	20-Apr-05		-	13.584	0.000	-	1077.506	nm	
	22-Apr-05		-	13.579	0.000	-	1077.511	nm	
	25-Apr-05		-	13.569	0.000	-	1077.521	nm	
	27-Apr-05		-	13.607	0.000	-	1077.483	nm	
	4-May-05		-	13.601	0.000	-	1077.489	nm	
	6-May-05		-	13.560	0.000	-	1077.530	nm	checked bailer - no product
	9-May-05		-	13.566	0.000	-	1077.524	nm	
	13-May-05		-	13.598	0.000	-	1077.492	nm	
	16-May-05		-	13.495	0.000	-	1077.595	nm	
	26-May-05		-	13.625	0.000	-	1077.465	nm	
	2-Jun-05		-	13.575	0.000	-	1077.515	>10,000	

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
Calgary, Alberta

Monitoring Well	Date (dd-mmm-yy)	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments
<i>BH510A Continued</i>	10-Jun-05		-	13.562	0.000	-	1077.528	nm	
	15-Jun-05		-	13.563	0.000	-	1077.527	nm	
	17-Jun-05		-	13.538	0.000	-	1077.552	nm	
	20-Jun-05		-	13.600	0.000	-	1077.490	nm	
	22-Jun-05		-	13.525	0.000	-	1077.565	nm	
	24-Jun-05		-	13.585	0.000	-	1077.505	nm	
	27-Jun-05		-	13.571	0.000	-	1077.519	nm	
	29-Jun-05		-	13.568	0.000	-	1077.522	nm	
	6-Jul-05		-	13.502	0.000	-	1077.588	nm	
	11-Jul-05		-	13.563	0.000	-	1077.527	nm	
	20-Jul-05		-	13.543	0.000	-	1077.547	nm	
	22-Jul-05		-	13.510	0.000	-	1077.580	nm	
	28-Jul-05		-	13.498	0.000	-	1077.592	nm	
	9-Aug-05		-	13.519	0.000	-	1077.571	nm	
	10-Aug-05		-	13.528	0.000	-	1077.562	nm	
	12-Aug-05		-	13.536	0.000	-	1077.554	nm	
	16-Aug-05		-	13.473	0.000	-	1077.617	nm	
	17-Aug-05		-	13.506	0.000	-	1077.584	nm	
	24-Aug-05		-	13.483	0.000	-	1077.607	nm	
	31-Aug-05		-	13.487	0.000	-	1077.603	nm	
	6-Sep-05		-	13.505	0.000	-	1077.585	nm	
	12-Sep-05		-	13.472	0.000	-	1077.618	nm	
	14-Sep-05		-	13.435	0.000	-	1077.655	nm	
	16-Sep-05		-	13.473	0.000	-	1077.617	nm	
	19-Sep-05		-	13.437	0.000	-	1077.653	nm	
	21-Sep-05		-	13.474	0.000	-	1077.616	nm	
	26-Sep-05		-	13.395	0.000	-	1077.695	nm	
	28-Sep-05		-	13.434	0.000	-	1077.656	nm	
	18-Oct-05		-	13.440	0.000	-	1077.650	nm	
	24-Oct-05		-	13.408	0.000	-	1077.682	nm	
	1-Nov-05		-	13.390	0.000	-	1077.700	nm	
	3-Nov-05		-	13.364	0.000	-	1077.726	nm	
8-Nov-05		-	13.419	0.000	-	1077.671	nm		
10-Nov-05		-	13.313	0.000	-	1077.777	nm		
14-Nov-05		-	13.457	0.000	-	1077.633	nm		

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

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Calgary, Alberta

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	(dd-mmm-yy)	(m)	(m)	(m)	(m)	(L)	(m)	(ppm)	
<i>BH510A Continued</i>	28-Nov-05		-	13.430	0.000	-	1077.660	nm	
	30-Nov-05		-	13.400	0.000	-	1077.690	nm	
	6-Dec-05		-	13.419	0.000	-	1077.671	nm	
	12-Dec-05		-	13.337	0.000	-	1077.753	nm	
	14-Dec-05		-	13.425	0.000	-	1077.665	nm	
	16-Dec-05		-	13.380	0.000	-	1077.710	nm	
	19-Dec-05		-	13.368	0.000	-	1077.722	nm	
	22-Dec-05		-	13.287	0.000	-	1077.803	nm	
	23-Dec-05		-	13.408	0.000	-	1077.682	nm	
	3-Jan-06		-	13.395	0.000	-	1077.695	nm	
	5-Jan-06		-	13.366	0.000	-	1077.724	nm	
	6-Jan-06		-	13.354	0.000	-	1077.736	nm	
	9-Jan-06		-	13.323	0.000	-	1077.767	nm	
	12-Jan-06		-	13.407	0.000	-	1077.683	nm	
	13-Jan-06		-	13.065	0.000	-	1078.025	nm	
	16-Jan-06		-	13.386	0.000	-	1077.704	nm	
	20-Jan-06		-	13.359	0.000	-	1077.731	nm	
	23-Jan-06		-	13.363	0.000	-	1077.727	nm	
	30-Jan-06		-	13.285	0.000	-	1077.805	nm	
	1-Feb-06		-	13.288	0.000	-	1077.802	nm	
	3-Feb-06		-	13.422	0.000	-	1077.668	nm	
	6-Feb-06		-	13.426	0.000	-	1077.664	nm	
	8-Feb-06		-	13.370	0.000	-	1077.720	nm	
	10-Feb-06		-	13.459	0.000	-	1077.631	nm	
	27-Feb-06		-	13.278	0.000	-	1077.812	nm	
	2-Mar-06		-	13.432	0.000	-	1077.658	nm	
	4-Mar-06		-	13.374	0.000	-	1077.716	nm	
	6-Mar-06		-	13.334	0.000	-	1077.756	nm	
	8-Mar-06		-	13.217	0.000	-	1077.873	nm	
	10-Mar-06		-	13.395	0.000	-	1077.695	nm	
14-Mar-06		-	13.356	0.000	-	1077.734	nm		
22-Mar-06		-	13.425	0.000	-	1077.665	nm		
24-Mar-06		-	13.360	0.000	-	1077.730	nm		
27-Mar-06		-	13.414	0.000	-	1077.676	nm		
29-Mar-06		-	13.366	0.000	-	1077.724	nm		

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH510A Continued</i>	31-Mar-06		-	cnm	cnm	-	cnm	cnm	
	12-Apr-06		-	13.397	0.000	-	1077.693	nm	
	19-Jul-06	1091.086	-	13.446	0.000	-	1077.644	nm	
	21-Jul-06		-	13.465	0.000	-	1077.625	nm	
	24-Jul-06		-	13.391	0.000	-	1077.699	nm	
	31-Jul-06		-	13.412	0.000	-	1077.678	nm	
	3-Aug-06		-	13.450	0.000	-	1077.640	nm	
	9-Aug-06		-	14.435	0.000	-	1076.655	nm	
	15-Aug-06		-	13.415	0.000	-	1077.675	nm	
	17-Aug-06		-	13.436	0.000	-	1077.654	nm	
	18-Aug-06		-	13.428	0.000	-	1077.662	nm	
	21-Aug-06		-	13.412	0.000	-	1077.678	nm	
	24-Aug-06		-	13.416	0.000	-	1077.674	nm	
	25-Aug-06		-	13.447	0.000	-	1077.643	nm	
	28-Aug-06		-	13.400	0.000	-	1077.690	nm	
	30-Aug-06		-	13.400	0.000	-	1077.690	nm	
	18-Sep-06		-	13.418	0.000	-	1077.672	nm	
	20-Sep-06		-	13.355	0.000	-	1077.735	nm	
	22-Sep-06		-	13.355	0.000	-	1077.735	nm	
	25-Sep-06		-	13.409	0.000	-	1077.681	nm	
	3-Oct-06		-	13.456	0.000	-	1077.634	nm	
	5-Oct-06		-	13.349	0.000	-	1077.741	nm	
	4-Dec-06		cnm	cnm	cnm	cnm	cnm	cnm	iced
	25-Jan-07		-	13.350	0.000	-	1077.740	>10,000	no bailer
	15-Mar-07		-	13.294	0.000	-	1077.796	nm	
	17-Apr-07		-	13.395	0.000	-	1077.695	nm	
	24-Apr-07		cnm	cnm	cnm	cnm	cnm	cnm	blocked with ice at 1.5 m below top of pipe
	1-May-07		-	13.390	0.000	-	1077.700	nm	
	4-May-07		-	12.360	0.000	-	1078.730	nm	
	8-May-07		-	13.390	0.000	-	1077.700	nm	
	10-May-07		-	13.416	0.000	-	1077.674	nm	
	8-Jun-07		-	13.365	0.000	-	1077.725	nm	
	11-Jun-07		-	13.346	0.000	-	1077.744	nm	
	13-Jun-07		-	13.257	0.000	-	1077.833	nm	
	3-Jul-07		-	13.330	0.000	-	1077.760	nm	

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.



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<i>BH510A Continued</i>	5-Jul-07		-	13.342	0.000	-	1077.748	nm	
	16-Jul-07		-	13.288	0.000	-	1077.802	nm	
	20-Jul-07		-	13.290	0.000	-	1077.800	nm	
	26-Jul-07		-	13.306	0.000	-	1077.784	nm	
	30-Jul-07		-	13.300	0.000	-	1077.790	nm	
	7-Aug-07		-	13.224	0.000	-	1077.866	nm	
	9-Aug-07		-	13.210	0.000	-	1077.880	nm	
	24-Aug-07		-	13.279	0.000	-	1077.811	nm	
	27-Aug-07		-	13.280	0.000	-	1077.810	nm	
	29-Aug-07		-	13.273	0.000	-	1077.817	nm	
	4-Sep-07		-	13.288	0.000	-	1077.802	nm	
	6-Sep-07		-	13.280	0.000	-	1077.810	nm	
	10-Sep-07		-	13.288	0.000	-	1077.802	nm	
	12-Sep-07		-	13.210	0.000	-	1077.880	nm	
	14-Sep-07		-	13.243	0.000	-	1077.847	nm	
	17-Sep-07		-	13.294	0.000	-	1077.796	nm	
	19-Sep-07		-	13.211	0.000	-	1077.879	nm	
	21-Sep-07		-	13.225	0.000	-	1077.865	nm	
	24-Sep-07		-	13.201	0.000	-	1077.889	nm	
	26-Sep-07		-	13.249	0.000	-	1077.841	nm	
	28-Sep-07		-	13.209	0.000	-	1077.881	nm	
	1-Oct-07		-	13.250	0.000	-	1077.840	nm	
	3-Oct-07		-	13.253	0.000	-	1077.837	nm	
	9-Oct-07		-	13.240	0.000	-	1077.850	nm	
	12-Oct-07		-	13.247	0.000	-	1077.843	nm	
	16-Oct-07		-	13.291	0.000	-	1077.799	nm	
	20-Oct-07		-	13.295	0.000	-	1077.795	nm	
	29-Oct-07		-	13.288	0.000	-	1077.802	nm	
	1-Nov-07		-	13.295	0.000	-	1077.795	nm	
	2-Nov-07		-	13.296	0.000	-	1077.794	nm	
	5-Nov-07		-	13.280	0.000	-	1077.810	nm	
	13-Nov-07		-	13.287	0.000	-	1077.803	nm	
	19-Nov-07		-	13.331	0.000	-	1077.759	nm	
	23-Nov-07		-	13.270	0.000	-	1077.820	4,800	
	26-Nov-07		-	13.317	0.000	-	1077.773	nm	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH510A Continued</i>	28-Nov-07	-	-	13.321	0.000	-	1077.769	nm	
	30-Nov-07	-	-	13.333	0.000	-	1077.757	nm	
	3-Dec-07	-	-	13.081	0.000	-	1078.009	nm	
	5-Dec-07	-	-	13.084	0.000	-	1078.006	nm	
	7-Dec-07	-	-	13.091	0.000	-	1077.999	nm	
	10-Dec-07	-	-	13.091	0.000	-	1077.999	nm	
	14-Dec-07	-	-	13.090	0.000	-	1078.000	nm	
	17-Dec-07	-	-	13.097	0.000	-	1077.993	nm	
	19-Dec-07	-	-	13.093	0.000	-	1077.997	nm	
	21-Dec-07	-	-	13.100	0.000	-	1077.990	nm	
	2-Jan-08	-	-	13.083	0.000	-	1078.007	nm	
	4-Jan-08	-	-	13.162	0.000	-	1077.928	nm	
	23-Jan-08	-	-	13.263	0.000	-	1077.827	nm	
	25-Jan-08	-	-	13.301	0.000	-	1077.789	nm	
	7-Feb-08	-	-	13.429	0.000	-	1077.661	nm	
	9-Feb-08	-	-	13.434	0.000	-	1077.656	nm	
	6-Mar-08	-	-	13.367	0.000	-	1077.723	nm	
	7-Apr-08	-	-	13.378	0.000	-	1077.712	nm	
	9-Apr-08	-	-	13.380	0.000	-	1077.710	nm	
	11-Apr-08	-	-	13.380	0.000	-	1077.710	nm	
	14-Apr-08	-	-	13.382	0.000	-	1077.708	nm	
	16-Apr-08	-	-	13.390	0.000	-	1077.700	nm	
	28-Apr-08	-	-	13.451	0.000	-	1077.639	nm	
	30-Apr-08	-	-	13.450	0.000	-	1077.640	nm	
	2-May-08	-	-	13.455	0.000	-	1077.635	nm	
	5-May-08	-	-	13.430	0.000	-	1077.660	nm	
	12-May-08	-	-	13.349	0.000	-	1077.741	nm	
	14-May-08	-	-	13.348	0.000	-	1077.742	nm	
	26-May-08	-	-	13.361	0.000	-	1077.729	nm	
	28-May-08	-	-	13.365	0.000	-	1077.725	nm	
30-May-08	-	-	13.367	0.000	-	1077.723	nm		
9-Jun-08	-	-	13.391	0.000	-	1077.699	nm		
11-Jun-08	-	-	13.388	0.000	-	1077.702	nm		
13-Jun-08	-	-	13.398	0.000	-	1077.692	nm		
23-Sep-10	-	-	13.590	0.000	-	1077.496	70		

Notes:

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- 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.

LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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Monitoring Well	Date (dd-mmm-yy)	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments
<i>BH510A Continued</i>	4-Oct-10		-	13.724	0.000	-	1077.362	10	4 inch well
	8-Apr-11		-	13.625	0.000	-	1077.461	69	4 inch well
	1-Jun-11		-	13.561	0.000	-	1077.525	100	4 inch well
	13-Sep-11		-	13.560	0.000	-	1077.526	10	4 inch well
	20-Dec-11		-	13.479	0.000	-	1077.607	230	4 inch well
	2-Oct-12		-	13.616	0.000	-	1077.470	0	4 inch well, good condition
	1-May-13		-	13.719	0.000	-	1077.367	10	
<b>BH601</b>	13-Aug-03		-	9.665	0.000	-	-	nm	before purge
	13-Aug-03		-	14.430	0.000	-	-	nm	after purge
	14-Aug-03		-	9.653	0.000	-	-	75	
<b>BH602</b>	13-Aug-03		-	9.310	0.000	-	-	nm	before purge
	13-Aug-03		-	11.750	0.000	-	-	nm	after purge
	14-Aug-03		-	9.362	0.000	-	-	120	
<b>BH603</b>	13-Aug-03		-	12.101	0.000	-	-	nm	before purge
	13-Aug-03		-	12.663	0.000	-	-	nm	after purge
	14-Aug-03		-	12.123	0.000	-	-	20	
<b>BH701</b>	7-Oct-03	1089.328	-	10.704	0.000	-	1078.624	640	
	20-Nov-03		-	10.613	0.000	-	1078.715	160	
	3-Dec-03		-	10.597	0.000	-	1078.731	-	
	17-Dec-03		-	10.671	0.000	-	1078.657	240	
	13-Jan-04		-	10.582	0.000	-	1078.746	25	
	8-Mar-04		-	10.465	0.000	-	1078.863	2,800	
	6-Apr-04		-	10.535	0.000	-	1078.793	120	
	7-Apr-04		-	10.535	0.000	-	1078.793	1,000	
	16-Jun-04		-	10.625	0.000	-	1078.703	200	
	14-Jul-04		-	10.595	0.000	-	1078.733	200	
	24-Aug-04		-	10.525	0.000	-	1078.803	220	
	14-Oct-04		-	10.560	0.000	-	1078.768	68	
	2-Feb-05		-	10.580	0.000	-	1078.748	400	
	2-Mar-05		-	10.586	0.000	-	1078.742	660	
	5-Oct-05		-	10.458	0.000	-	1078.870	200	
19-Jan-06		-	10.405	0.000	-	1078.923	280		
11-May-06		-	10.744	0.000	-	1078.584	400		
27-Jul-06		-	10.515	0.000	-	1078.813	180		
25-Jan-07		-	10.505	0.000	-	1078.823	92		
29-May-07		-	10.529	0.000	-	1078.799	90		

Notes:

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
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<i>BH701 Continued</i>	23-Aug-07		-	10.317	0.000	-	1079.011	200		
	23-Nov-07		-	10.355	0.000	-	1078.973	660		
	10-Mar-08		-	10.422	0.000	-	1078.906	360		
	4-Jun-08		-	10.472	0.000	-	1078.856	58		
	23-Jun-08		-	10.436	0.000	-	1078.892	56	well decommissioned on 23 June 2008	
<b>BH702</b>	7-Oct-03	1089.187	-	10.440	0.000	-	1078.747	3,000		
	20-Nov-03		-	10.694	0.000	-	1078.493	130		
	17-Dec-03		-	10.545	0.000	-	1078.642	400		
	13-Jan-04		-	10.468	0.000	-	1078.719	40		
	11-Mar-04		-	10.436	0.000	-	1078.751	>10,000	iced; bailer stuck	
	6-Apr-04		-	10.459	0.000	-	1078.728	76		
	16-Jun-04		-	10.510	0.000	-	1078.677	200		
	14-Jul-04		-	10.495	0.000	-	1078.692	52		
	24-Aug-04		-	10.443	0.000	-	1078.744	500		
	14-Oct-04		-	10.483	0.000	-	1078.704	76		
	2-Feb-05		-	10.516	0.000	-	1078.671	200		
	2-Mar-05		-	10.518	0.000	-	1078.669	1,000		
	5-Oct-05		-	10.395	0.000	-	1078.792	200		
	19-Jan-06		-	10.325	0.000	-	1078.862	700		
	11-May-06		-	10.371	0.000	-	1078.816	100		
	27-Jul-06		-	10.396	0.000	-	1078.791	200		
	23-Nov-07			10.185	10.344	0.159	0.200	1078.970	>10,000	recovered 200 ml product from passive bailer
	23-Nov-07			10.445	10.448	0.003	0.700	1078.741		hand bailed 700 ml product
	25-Jan-07			10.339	10.343	0.004	-	1078.847	300	
	29-May-07			10.415	10.427	0.012	-	1078.770	210	product in well
	23-Aug-07			-	10.197	0.000	-	1078.990	160	
28-Nov-07			10.289	10.295	0.006	-	1078.897	nm		
30-Nov-07			10.293	10.297	0.004	0.040	1078.893	nm	recovered 40 ml product from passive bailer	
3-Dec-07			10.592	10.597	0.005	0.080	1078.594	nm	recovered 80 ml product from passive bailer	
5-Dec-07			10.598	10.601	0.003	0.030	1078.588	nm	recovered 30 ml product from passive bailer	
7-Dec-07			10.602	10.604	0.002	0.010	1078.585	nm	recovered 10 ml product from passive bailer	
10-Dec-07			10.607	10.610	0.003	0.100	1078.579	nm	recovered 100 ml product from passive bailer	
14-Dec-07			10.609	10.611	0.002	0.040	1078.578	nm	recovered 40 ml product from passive bailer	
17-Dec-07			10.608	10.610	0.002	0.100	1078.579	nm	recovered 100 ml product from passive bailer	
19-Dec-07			10.612	10.614	0.002	0.030	1078.575	nm	recovered 30 ml product from passive bailer	

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH702 Continued</i>	21-Dec-07		10.615	10.617	0.002	0.020	1078.572	nm	recovered 20 ml product from passive bailer
	2-Jan-08		10.605	10.608	0.003	0.050	1078.581	nm	recovered 50 ml product from passive bailer
	4-Jan-08		10.665	10.705	0.040	0.010	1078.514	nm	recovered 10 ml product from passive bailer
	23-Jan-08		10.710	10.719	0.009	0.030	1078.475	nm	recovered 30 ml product from passive bailer
	25-Jan-08		10.710	10.712	0.002	0.020	1078.477	nm	recovered 20 ml product from passive bailer
	7-Feb-08		10.783	10.795	0.012	0.050	1078.402	nm	recovered 50 ml product from passive bailer
	9-Feb-08		10.785	10.799	0.014	0.030	1078.399	nm	recovered 30 ml product from passive bailer
	6-Mar-08		10.562	10.617	0.055	-	1078.614	nm	
	7-Apr-08		10.645	10.679	0.034	0.020	1078.535	nm	recovered 20 ml product from passive bailer
	9-Apr-08		10.649	10.678	0.029	0.010	1078.532	nm	recovered 10 ml product from passive bailer
	11-Apr-08		10.643	10.650	0.007	0.010	1078.543	nm	recovered 10 ml product from passive bailer
	14-Apr-08		10.701	10.706	0.005	0.030	1078.485	nm	recovered 30 ml product from passive bailer
	16-Apr-08		10.740	10.744	0.004	0.020	1078.446	nm	recovered 20 ml product from passive bailer
	28-Apr-08		cnm	cnm	cnm	cnm	cnm	cnm	car parked over well
	30-Apr-08		cnm	cnm	cnm	cnm	cnm	cnm	car parked over well
	2-May-08		cnm	cnm	cnm	cnm	cnm	cnm	car parked over well
	5-May-08		10.780	10.791	0.011	0.100	1078.405	nm	recovered 100 ml product from passive bailer
	12-May-08		10.910	10.914	0.004	0.200	1078.276	nm	recovered 200 ml product from passive bailer
	14-May-08		10.913	10.915	0.002	0.150	1078.274	nm	recovered 150 ml product from passive bailer
	26-May-08		10.901	10.910	0.009	0.050	1078.284	nm	recovered 50 ml product from passive bailer
	28-May-08		10.905	10.909	0.004	0.010	1078.281	nm	recovered 10 ml product from passive bailer
	30-May-08		10.908	10.910	0.002	0.010	1078.279	nm	recovered 10 ml product from passive bailer
	9-Jun-08		10.980	10.983	0.003	0.020	1078.206	nm	recovered 20 ml product from passive bailer
	11-Jun-08		10.971	10.973	0.002	0.010	1078.216	nm	recovered 10 ml product from passive bailer
	13-Jun-08		10.975	10.979	0.004	0.010	1078.211	nm	recovered 10 ml product from passive bailer
	23-Jun-08		10.949	10.950	0.001	-	1078.238	>10,000	well decommissioned on 24 June 2008
<b>BH703</b>	7-Oct-03	1090.172	-	11.395	0.000	-	1078.777	60	
	20-Nov-03		-	11.446	0.000	-	1078.726	175	
	17-Dec-03		-	11.459	0.000	-	1078.713	120	
	13-Jan-04		-	11.405	0.000	-	1078.767	40	
	11-Mar-04		-	11.358	0.000	-	1078.814	220	
	5-Apr-04		-	11.333	0.000	-	1078.839	70	
	16-Jun-04		-	11.405	0.000	-	1078.767	200	
	13-Jul-04		-	11.351	0.000	-	1078.821	54	
	23-Aug-04		-	11.320	0.000	-	1078.852	54	

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 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
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<i>BH703 Continued</i>	13-Oct-04		-	11.363	0.000	-	1078.809	170		
	2-Nov-04		-	11.345	0.000	-	1078.827	nm		
	1-Feb-05		-	11.442	0.000	-	1078.730	400		
	2-Mar-05		-	11.409	0.000	-	1078.763	44		
	31-May-05		-	11.469	0.000	-	1078.703	220	has bailer	
	3-Oct-05		-	11.300	0.000	-	1078.872	98		
	18-Jan-06		-	11.156	0.000	-	1079.016	320		
	10-May-06		-	11.323	0.000	-	1078.849	220		
	24-Jan-07		-	11.274	0.000	-	1078.898	72		
	23-May-07		-	11.280	0.000	-	1078.892	75		
	21-Aug-07		-	11.087	0.000	-	1079.085	80		
	22-Nov-07		-	11.210	0.000	-	1078.962	78		
	13-Mar-08		-	11.210	0.000	-	1078.962	200		
	3-Jun-08		-	11.194	0.000	-	1078.978	64		
	27-Jun-08		-	11.201	0.000	-	1078.971	58	well decommissioned on 27 June 2008	
	<b>BH704</b>	7-Oct-03	1092.368	-	13.095	0.000	-	1079.273	55	
		20-Nov-03		-	13.111	0.000	-	1079.257	48	
17-Dec-03			-	13.115	0.000	-	1079.253	50		
13-Jan-04			-	13.031	0.000	-	1079.337	42		
11-Mar-04			-	13.042	0.000	-	1079.326	160	iced	
5-Apr-04			-	12.965	0.000	-	1079.403	84		
16-Jun-04			-	13.085	0.000	-	1079.283	70		
13-Jul-04			-	12.924	0.000	-	1079.444	38		
23-Aug-04			-	12.833	0.000	-	1079.535	32		
13-Oct-04			-	12.960	0.000	-	1079.408	82		
2-Nov-04			-	12.853	0.000	-	1079.515	nm		
1-Feb-05			-	12.965	0.000	-	1079.403	54		
2-Mar-05			-	12.844	0.000	-	1079.524	8		
31-May-05			-	12.995	0.000	-	1079.373	190		
3-Oct-05			-	12.609	0.000	-	1079.759	50		
18-Jan-06			-	12.347	0.000	-	1080.021	220		
10-May-06			-	12.487	0.000	-	1079.881	64		
25-Jul-06		-	12.385	0.000	-	1079.983	70			
24-Jan-07		-	12.206	0.000	-	1080.162	48			
23-May-07		-	12.650	0.000	-	1079.718	50			

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cmm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
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<i>BH704 Continued</i>	21-Aug-07		-	12.142	0.000	-	1080.226	60	
	22-Nov-07		-	12.039	0.000	-	1080.329	62	
	13-Mar-08		-	11.198	0.000	-	1081.170	210	
	3-Jun-08		-	11.059	0.000	-	1081.309	52	
	26-Jun-08		-	10.791	0.000	-	1081.577	52	well decommissioned on 26 June 2008
<b>BH705</b>	7-Oct-03	1089.614	-	11.046	0.000	-	1078.568	>10,000	
	20-Nov-03		10.985	10.987	trace	-	1078.629	1,200	
	17-Dec-03		10.99	11.615	0.625	-	1078.499	5,000	Bailed 800 mm with disposable bailer ~ 0.75L
	19-Dec-03		nm	nm	nm	-	nm	nm	Bailer check- 100 mm in bailer
	13-Jan-04		11.010	cnm	cnm	-	cnm	8,000	Depth to water not established due to probe malfunction
	9-Feb-04		nm	nm	nm	-	nm	nm	recovered 1.3 L product by hand bailing
	23-Feb-04		10.940	11.410	0.470	-	1078.580	nm	before installation of P.B.
	23-Feb-04		11.175	11.580	0.405	-	1078.358	nm	recovered 300 ml 5 minutes after installation of P.B.
	23-Feb-04		-	11.233	0.000	-	1078.381	nm	recovered 400 ml 15 minutes after installation of P.B.
	26-Feb-04		-	11.254	0.000	-	1078.360	nm	recovered 800 ml product from P.B.
	26-Feb-04		-	11.469	0.000	-	1078.145	nm	70 minutes later recovered 400 ml product from P.B.
	3-Mar-04		-	11.407	0.000	-	1078.207	nm	recovered 800 ml product from P.B.
	3-Mar-04		-	11.423	0.000	-	1078.191	nm	recovered 150 ml after hand bailing
	31-Mar-04		11.575	11.609	0.034	-	1078.032	nm	recovered 300 ml from P.B.; not enough to H.B.
	12-Apr-04		11.485	11.494	0.009	-	1078.127	nm	recovered 300 ml from passive bailer (before H.B.)
	12-Apr-04		-	11.505	0.000	-	1078.109	nm	recovered 100 ml product after hand bailing
	13-Apr-04		11.514	11.530	0.016	-	1078.097	nm	recovered 300 ml product from P.B.; not enough to H.B.
	15-Apr-04		-	11.490	0.000	-	1078.124	nm	recovered 250 ml from P.B.
	16-Apr-04		-	11.475	0.000	-	1078.139	nm	recovered 250 ml from P.B.
	19-Apr-04		11.515	11.529	0.014	-	1078.096	nm	recovered 300 ml from P.B.; not enough to H.B.
	22-Apr-04		-	11.565	0.000	-	1078.049	nm	recovered 400 ml product from P.B.
	30-Apr-04		-	11.555	0.000	-	1078.059	nm	no product in P.B.; H.B.- no product
	6-May-04		-	11.639	0.000	-	1077.975	nm	recovered 300 ml from passive bailer
7-May-04		-	11.614	0.000	-	1078.000	nm	recovered 100 ml from passive bailer	
10-May-04		-	11.638	0.000	-	1077.976	nm	recovered 300 ml from passive bailer	
17-May-04		-	11.656	0.000	-	1077.958	nm	recovered 350 ml from passive bailer	
20-May-04		-	11.635	0.000	-	1077.979	nm	recovered 350 ml from passive bailer	
28-May-04		11.637	11.667	0.030	-	1077.971	nm	recovered 400 ml from passive bailer	
15-Jun-04		11.460	11.429	0.031	-	1078.210	1,000	800 ml recovered	
15-Jun-04		-	11.545	0.000	-	1078.069	-	hand bailed - 1.5 L recovered	

Notes:

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- 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.

LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
Calgary, Alberta

Monitoring Well	Date (dd-mmm-yy)	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments	
<i>BH705 Continued</i>	14-Jul-04		cnm	11.505	cnm	-	cnm	3,400	1.6 L recovered before hand bailing.	
	14-Jul-04		cnm	11.055	cnm	-	cnm	3,400	0.4 L recovered by hand bailing	
	28-Jul-04		11.470	11.859	0.389	-	1078.066	nm	800 ml recovered - before hand bailing	
	28-Jul-04		11.645	11.649	0.004	-	1077.968	nm	800 ml recovered by hand bailing	
	6-Aug-04		11.640	11.700	0.060	-	1077.962	nm	400 ml recovered	
	10-Aug-04		11.726	11.785	0.059	-	1077.876	nm	400 ml recovered	
	11-Aug-04		11.675	11.680	0.005	-	1077.938	nm	400 ml recovered	
	13-Aug-04		-	11.695	0.000	-	1077.919	nm	300 ml recovered	
	18-Aug-04		11.695	11.725	0.030	-	1077.913	nm	350 ml recovered	
	24-Aug-04		11.443	11.565	0.122	-	1078.147	>10,000	400ml product in PB. HB 100ml.	
	7-Sep-04		-	11.462	0.000	-	1078.152	nm	800 ml recovered	
	9-Sep-04		-	11.605	0.000	-	1078.009	nm	hand bailer had 2 ml product	
	13-Sep-04		-	11.605	0.000	-	1078.009	nm	500 ml recovered	
	15-Sep-04		-	11.626	0.000	-	1077.988	nm	200 ml recovered	
	17-Sep-04		-	11.625	0.000	-	1077.989	nm	200 ml recovered	
	20-Sep-04		-	11.609	0.000	-	1078.005	nm	350 ml recovered	
	22-Sep-04		-	11.615	0.000	-	1077.999	nm	150 ml recovered	
	24-Sep-04		-	11.639	0.000	-	1077.975	nm	150 ml recovered	
	29-Sep-04		-	11.627	0.000	-	1077.987	nm	425 ml product recovered from passive bailer	
	4-Oct-04		-	11.640	0.000	-	1077.974	nm	450 ml product recovered from passive bailer	
	6-Oct-04		-	11.620	0.000	-	1077.994	nm	150 ml product recovered fro P.B.	
	12-Oct-04		-	11.613	0.000	-	1078.001	nm	650 ml product recovered from P.B.	
	15-Oct-04		-	11.595	0.000	-	1078.019	nm	300 ml product recovered from passive bailer	
	5-Nov-04			11.486	11.802	0.316	-	1078.065	nm	800 ml recovered from passive bailer
	5-Nov-04			11.670	11.685	0.015	-	1077.941	nm	hand bailed following removal of PB; recovered 700 ml
	8-Nov-04			-	11.603	0.000	-	1078.011	nm	recovered 600 ml
	10-Nov-04			-	11.653	0.000	-	1077.961	nm	recovered 100 ml
	17-Nov-04			-	11.612	0.000	-	1078.002	nm	recovered 750 ml
	25-Nov-04			-	11.615	0.000	-	1077.999	nm	recovered 650 ml
	29-Nov-04			-	11.625	0.000	-	1077.989	nm	recovered 350 ml
1-Dec-04			-	11.636	0.000	-	1077.978	nm	recovered 150 ml product from P.B.	
17-Jan-05			11.519	11.519	trace	-	1078.095	nm	recovered 200 ml product from P.B.	
17-Jan-05			-	11.510	0.000	-	1078.104	nm	recovered 300 ml product by H.B.	
24-Jan-05			11.519	11.650	0.131	-	1078.069	nm	recovered 800 ml product from P.B. - before H.B.	
24-Jan-05			11.455	11.500	0.045	-	1078.150	nm	recovered 600 ml product by H.B.	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

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<i>BH705 Continued</i>	26-Jan-05		11.583	11.583	trace	-	1078.031	nm	recovered 300 ml product from P.B.
	28-Jan-05		11.615	11.615	trace	-	1077.999	nm	recovered 200 ml product from P.B.
	2-Feb-05		11.598	11.598	trace	-	1078.016	>10,000	recovered 300 ml product from P.B.
	18-Feb-05		11.570	11.594	0.024	-	1078.039	nm	recovered 800 ml product from P.B.
	22-Feb-05		11.609	11.612	0.003	-	1078.004	nm	recovered 350 ml product from P.B.
	24-Feb-05		11.573	11.573	0.002	-	1078.043	nm	100 ml from P.B.; bailer checked - no product; sheen present.
	2-Mar-05		11.508	11.509	0.001	-	1078.106	>10,000	recovered 500 ml product from passive bailer
	22-Mar-05		11.605	11.660	0.055	-	1077.998	nm	recovered 800 ml product from passive bailer
	24-Mar-05		11.619	11.635	0.016	-	1077.992	nm	recovered 200 ml product from P.B.; 7 mm in H.B.
	28-Mar-05		11.565	11.566	0.001	-	1078.049	nm	recovered 350 ml product from P.B.
	30-Mar-05		11.618	11.620	0.002	-	1077.996	nm	recovered 100 ml product from P.B.
	1-Apr-05		11.615	11.616	0.001	-	1077.999	nm	recovered 50 ml product from P.B.
	5-Apr-05		11.635	11.636	0.001	-	1077.979	nm	recovered 300 ml product from P.B.
	11-Apr-05		11.615	11.616	0.001	-	1077.999	nm	recovered 200 ml product from P.B.
	15-Apr-05		-	11.637	0.000	-	1077.977	nm	recovered 250 ml product from P.B.
	18-Apr-05		11.633	11.634	0.001	-	1077.981	nm	recovered 150 ml product from P.B.
	20-Apr-05		11.644	11.645	0.001	-	1077.970	nm	recovered 10 ml product from P.B.
	22-Apr-05		11.640	11.641	0.001	-	1077.974	nm	recovered 40 ml product from P.B.
	25-Apr-05		11.635	11.636	0.001	-	1077.979	nm	recovered 200 ml product from P.B.
	27-Apr-05		11.651	11.653	0.002	-	1077.963	nm	recovered 10 ml product from P.B.
	4-May-05		11.686	11.687	0.001	-	1077.928	nm	recovered 250 ml product from P.B.
	6-May-05		11.508	11.509	0.001	-	1078.106	nm	recovered 100 ml product from P.B.
	9-May-05		11.615	11.635	0.020	-	1077.995	nm	recovered 10 ml product from P.B.
	13-May-05		-	11.615	0.000	-	1077.999	nm	recovered 170 ml product from P.B.
	16-May-05		-	11.605	0.000	-	1078.009	nm	recovered 100 ml product from P.B.
	26-May-05		-	11.665	0.000	-	1077.949	nm	recovered 300 ml product from P.B.
	2-Jun-05		11.633	11.634	0.001	-	1077.981	20	recovered 300 ml product from P.B.
	10-Jun-05		11.665	11.666	0.001	-	1077.949	nm	recovered 300 ml product from P.B.
	15-Jun-05		11.645	11.645	trace	-	1077.969	nm	recovered 150 ml product from P.B.
	17-Jun-05		11.834	11.842	0.008	-	1077.778	nm	recovered 50 ml product from P.B.
20-Jun-05		11.653	11.658	0.005	-	1077.960	nm	recovered 120 ml product from P.B.	
22-Jun-05		11.615	11.615	trace	-	1077.999	nm	recovered 50 ml product from P.B.	
24-Jun-05		-	11.605	0.000	-	1078.009	nm	recovered 50 ml product from P.B.; hand bailer -no LPH	
27-Jun-05		11.617	11.617	trace	-	1077.997	nm	recovered 100 ml product from P.B.	
29-Jun-05		11.615	11.615	trace	-	1077.999	nm	recovered 100 ml product from P.B.	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH705 Continued</i>	6-Jul-05		11.500	11.500	trace	-	1078.114	nm	recovered 300 ml product from P.B.
	11-Jul-05		11.605	11.605	trace	-	1078.009	nm	recovered 300 ml product from P.B.
	20-Jul-05		11.575	11.577	0.002	-	1078.039	nm	recovered 500 ml product from P.B.
	22-Jul-05		11.567	11.568	0.001	-	1078.047	nm	recovered 100 ml product from P.B.
	28-Jul-05		11.518	11.519	0.001	-	1078.096	nm	recovered 360 ml product from P.B.
	9-Aug-05		11.569	11.569	trace	-	1078.045	nm	recovered 1L product from P.B.
	10-Aug-05		11.604	11.605	0.001	-	1078.010	nm	recovered 100 ml product from P.B.
	12-Aug-05		11.578	11.579	0.001	-	1078.036	nm	recovered 100 ml product from P.B.
	17-Aug-05		11.548	11.549	0.001	-	1078.066	nm	recovered 130 ml product from P.B.
	17-Aug-05		11.546	11.547	0.001	-	1078.068	nm	recovered 200 ml product from P.B.
	24-Aug-05		11.565	11.567	0.002	-	1078.049	nm	recovered 510 ml product from P.B.
	31-Aug-05		11.532	11.534	0.002	-	1078.082	nm	recovered 520 ml product from P.B.
	6-Sep-05		11.488	11.489	0.001	-	1078.126	nm	recovered 470 ml product from P.B.
	12-Sep-05		11.520	11.522	0.002	-	1078.094	nm	recovered 500 ml product from P.B.
	14-Sep-05		11.497	11.499	0.002	-	1078.117	nm	recovered 200 ml product from P.B.
	16-Sep-05		11.503	11.506	0.003	-	1078.110	nm	recovered 200 ml product from P.B.
	19-Sep-05		11.456	11.457	0.001	-	1078.158	nm	recovered 300 ml product from P.B.
	21-Sep-05		11.506	11.507	0.001	-	1078.108	nm	recovered 200 ml product from P.B.
	26-Sep-05		11.441	11.442	0.001	-	1078.173	nm	recovered 600 ml product from P.B.
	28-Sep-05		11.483	11.485	0.002	-	1078.131	nm	recovered 220 ml product from P.B.
	5-Oct-05		11.482	11.484	0.002	-	1078.132	nm	recovered 800 ml product from P.B.
	18-Oct-05		11.427	11.435	0.008	-	1078.185	nm	recovered 800 ml product from P.B.
	24-Oct-05		11.302	11.312	0.010	-	1078.310	nm	recovered 800 ml product from P.B.
	1-Nov-05		11.312	11.334	0.022	-	1078.298	nm	recovered 800 ml product from P.B.
	3-Nov-05		11.308	11.310	0.002	-	1078.306	nm	recovered 800 ml product from P.B.
	8-Nov-05		11.326	11.329	0.003	-	1078.287	nm	recovered 600 ml product from P.B.
	10-Nov-05		11.265	11.269	0.004	-	1078.348	nm	recovered 250 ml product from P.B.
	14-Nov-05		11.385	11.387	0.002	-	1078.229	nm	recovered 350 ml product from P.B.
	28-Nov-05		11.268	11.279	0.011	-	1078.344	nm	recovered 800 ml product from P.B.
	30-Nov-05		11.293	11.294	0.001	-	1078.321	nm	recovered 750 ml product from P.B.
6-Dec-05		11.319	11.321	0.002	-	1078.295	nm	recovered 800 ml product from P.B.	
12-Dec-05		11.304	11.308	0.004	-	1078.309	nm	PB-Recovered 800 ml.	
14-Dec-05		11.364	11.366	0.002	-	1078.250	nm	PB-Recovered 350 ml.	
16-Dec-05		11.348	11.350	0.002	-	1078.266	nm	PB-Recovered 250 ml.	
19-Dec-05		11.301	11.303	0.002	-	1078.313	nm	PB-Recovered 320 ml.	

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cmm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
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<i>BH705 Continued</i>	22-Dec-05		11.243	11.245	0.002	-	1078.371	nm	PB-Recovered 350 ml.
	23-Dec-05		11.329	11.331	0.002	-	1078.285	nm	PB-Recovered 100 ml.
	3-Jan-06		11.233	11.245	0.012	-	1078.379	nm	PB-Recovered 800 ml.
	5-Jan-06		11.375	11.379	0.004	-	1078.238	nm	PB-Recovered 400 ml.
	6-Jan-06		11.363	11.365	0.002	-	1078.251	nm	PB-Recovered 200 ml.
	9-Jan-06		11.304	11.306	0.002	-	1078.310	nm	PB-Recovered 400 ml.
	12-Jan-06		11.375	11.378	0.003	-	1078.238	nm	PB-Recovered 300 ml.
	13-Jan-06		11.286	11.289	0.003	-	1078.327	nm	PB-Recovered 200 ml.
	16-Jan-06		11.360	11.362	0.002	-	1078.254	nm	PB-Recovered 250 ml.
	20-Jan-06		11.387	11.389	0.002	-	1078.227	nm	PB-Recovered 300 ml.
	23-Jan-06		11.180	11.181	0.001	-	1078.434	nm	PB-Recovered 100 ml.
	30-Jan-06		11.254	11.256	0.002	-	1078.360	nm	PB-Recovered 500 ml.
	1-Feb-06		11.293	11.295	0.002	-	1078.321	nm	PB-Recovered 100 ml.
	3-Feb-06		11.307	11.308	0.001	-	1078.307	nm	10 ml product from P.B.; bailer check yielded 1 mm product
	6-Feb-06		11.168	11.169	0.001	-	1078.446	nm	recovered 200 ml product from P.B.
	8-Feb-06		11.214	11.219	0.005	-	1078.399	nm	recovered 20 ml product from P.B.
	10-Feb-06		11.107	11.111	0.004	-	1078.506	nm	recovered 10 ml product from P.B.
	27-Feb-06		11.186	11.217	0.031	-	1078.422	nm	recovered 500 ml product from P.B.
	2-Mar-06		11.403	11.407	0.004	-	1078.210	nm	recovered 400 ml product from P.B.
	4-Mar-06		11.140	11.171	0.031	-	1078.468	nm	No product recovered; reset
	6-Mar-06		11.326	11.327	0.001	-	1078.288	nm	recovered 200 ml product from P.B.
	8-Mar-06		11.265	11.268	0.003	-	1078.348	nm	recovered 100 ml product from P.B.
	10-Mar-06		11.115	11.124	0.009	-	1078.497	nm	recovered 10 ml product from P.B.
	14-Mar-06		11.065	11.089	0.024	-	1078.544	nm	
	22-Mar-06		11.223	11.300	0.077	-	1078.376	nm	recovered 10 ml product from P.B.
	24-Mar-06		11.215	11.216	0.001	-	1078.399	nm	recovered 10 ml product from P.B.
	27-Mar-06		11.176	11.197	0.021	-	1078.434	nm	recovered 10 ml product from P.B.
	29-Mar-06		11.161	11.163	0.002	-	1078.453	nm	No product recovered; reset
	31-Mar-06		11.040	11.062	0.022	-	1078.570	nm	recovered 50 ml product from P.B.
	7-Apr-06		11.215	11.332	0.117	-	1078.376	nm	No product recovered; reset
12-Apr-06		11.225	11.227	0.002	-	1078.389	nm	recovered 150 ml product from P.B.	
17-Apr-06		11.182	11.199	0.017	0.400	1078.429	nm	recovered 400 ml product from P.B.	
18-Apr-06		11.304	11.307	0.003	0.010	1078.309	nm	recovered 10 ml product from P.B.	
21-Apr-06		11.267	11.268	0.001	0.010	1078.347	nm	recovered 10 ml product from P.B.	
26-Apr-06		11.217	11.311	0.094	0.100	1078.378	nm	recovered 100 ml product from P.B. Reset PB	

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 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cmm could not monitor.  
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	(dd-mmm-yy)	(m)	(m)	(m)	(m)	(L)	(m)	(ppm)	
<i>BH705 Continued</i>	28-Apr-06		11.029	11.034	0.005	0.400	1078.584	nm	recovered 400 ml product from P.B.
	1-May-06		10.923	10.952	0.029	-	1078.685	nm	recovered 0 ml product from P.B.
	3-May-06		11.323	11.329	0.006	0.010	1078.290	nm	recovered 10 ml product from P.B.
	9-May-06		11.284	11.303	0.019	0.150	1078.326	nm	recovered 150 ml product from P.B.
	7-Jun-06		11.421	11.428	0.007	0.600	1078.192	nm	recovered 600 ml product from P.B.
	12-Jun-06		11.433	11.500	0.067	0.200	1078.168	nm	recovered 200 ml product from P.B.
	14-Jun-06		11.398	11.404	0.006	0.050	1078.215	nm	recovered 50 ml product from P.B.
	16-Jun-06		11.437	11.439	0.002	0.750	1078.177	nm	recovered 750 ml product from P.B.
	20-Jun-06		11.382	11.384	0.002	0.150	1078.232	nm	recovered 150 ml product from P.B.
	22-Jun-06		11.392	11.398	0.006	0.010	1078.221	nm	recovered 10 ml product from P.B.
	23-Jun-06		11.449	11.452	0.003	0.020	1078.164	nm	recovered 20 ml product from P.B.
	26-Jun-06		11.377	11.378	0.001	0.050	1078.237	nm	recovered 50 ml product from P.B.
	28-Jun-06		11.351	11.353	0.002	0.050	1078.263	nm	recovered 50 ml product from P.B.
	4-Jul-06		11.389	11.390	0.001	0.100	1078.225	nm	recovered 100 ml product from P.B.
	7-Jul-06		11.382	11.386	0.004	0.075	1078.231	nm	recovered 75 ml product from P.B.
	12-Jul-06		11.256	11.265	0.009	0.200	1078.356	nm	recovered 200 ml product from P.B.
	19-Jul-06		11.355	11.357	0.002	0.200	1078.259	nm	recovered 200 ml product from P.B.
	21-Jul-06		11.365	11.367	0.002	0.050	1078.249	nm	recovered 50 ml product from P.B.
	24-Jul-06		11.241	11.249	0.008	0.100	1078.371	nm	recovered 100 ml product from P.B.
	18-Sep-06		11.372	11.374	0.002	0.400	1078.242	nm	recovered 400 ml product from P.B.
	20-Sep-06		11.386	11.387	0.001	0.030	1078.228	nm	recovered 30 ml product from P.B.
	22-Sep-06		11.388	11.389	0.001	0.050	1078.226	nm	recovered 50 ml product from P.B.
	25-Sep-06		11.403	11.404	0.001	0.100	1078.211	nm	recovered 100 ml product from P.B.
	3-Oct-06		11.404	11.406	0.002	0.300	1078.210	nm	recovered 300 ml product from P.B.
	5-Oct-06		11.329	11.331	0.002	0.100	1078.285	nm	recovered 100 ml product from P.B.
	4-Dec-06		11.312	11.314	0.002	0.600	1078.302	nm	recovered 600 ml product from P.B.
	12-Mar-07		cnm	cnm	cnm	cnm	cnm	cnm	passive bailer stuck in well
	15-Mar-07		10.844	10.846	0.002	0.000	1078.770	nm	passive bailer stuck in well
	17-Apr-07		10.883	10.892	0.009	0.000	1078.729	nm	passive bailer stuck in well
	24-Apr-07		cnm	cnm	cnm	cnm	cnm	cnm	passive bailer stuck in well
	23-Nov-07		cnm	cnm	cnm	cnm	cnm	cnm	Blocked at 9.580 m below top of pipe
	19-Jan-07		11.389	11.391	0.002	0.500	1078.225	nm	recovered 500 ml product from passive bailer
	22-Jan-07		11.345	11.346	0.001	0.050	1078.269	nm	recovered 50 ml product from passive bailer
	27-Jun-08		cnm	cnm	cnm	cnm	cnm	>10,000	Well decommissioned on 27 June 2008
<b>BH706</b>	7-Oct-03	1089.518	-	11.223	0.000	-	1078.295	>10,000	

Notes:

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  - Depth relative to top of standpipe.
  - Water elevation referenced to Geodetic. Water elevation adjusted for presence of LPHs (using LPH density of 0.8).
  - Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
Calgary, Alberta

Monitoring Well	Date	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments	
<i>BH706 Continued</i>	20-Nov-03		11.206	11.208	0.002	-	1078.312	2,900		
	17-Dec-03		-	11.192	trace	-	1078.326	>10,000	Bailed 5 mm with disposable bailer	
	13-Jan-04		-	11.189	0.000	-	1078.329	800		
	8-Mar-04		-	11.198	0.000	-	1078.320	120	checked bailer - trace product (1-2 mm)	
	6-Apr-04		-	11.150	0.000	-	1078.368	>10,000		
	15-Jun-04		-	11.170	0.000	-	1078.348	2,000	bailer checked, 10 ml product	
	14-Jul-04		-	11.165	0.000	-	1078.353	>10,000	bailer checked; 1 mm of product	
	24-Aug-04		-	11.143	0.000	-	1078.375	>10,000	Bailer check showed 3mm product	
	13-Oct-04		-	11.192	0.000	-	1078.326	>10,000	bailer checked, 7 ml product	
	1-Feb-05		11.239	11.239	trace	-	1078.279	700		
	2-Mar-05		-	11.207	0.000	-	1078.311	>10,000	checked bailer - 10 mm of product	
	27-Apr-05		-	11.285	0.000	-	1078.233	nm		
	1-Jun-05		-	11.244	trace	-	1078.274	5,000	checked bailer - 15 mm product	
	24-Jun-05			11.225	11.259	0.034	-	1078.286	nm	installed PB from BH509; recovered 25 ml product from P.B.
	27-Jun-05		1088.878	11.255	11.260	0.005	-	1077.622	nm	checked bailer - no visible product
	29-Jun-05			11.619	11.621	0.002	-	1077.259	nm	recovered 5 ml product from passive bailer
	5-Oct-05			11.076	11.105	0.029	-	1077.796	>10,000	bailer checked, 35 mm product
	19-Jan-06			10.840	11.004	0.164	-	1078.005	1,000	
	20-Jan-06			10.827	11.833	1.006	-	1077.850	nm	PB-Recovered 800 ml. Hand bailed 1.4 L
	23-Jan-06			11.240	11.351	0.111	-	1077.616	nm	PB-Recovered 900 ml.
	30-Jan-06			11.076	11.265	0.189	-	1077.764	nm	PB-Recovered 330 ml. Hand bailed 600 ml
	1-Feb-06			11.145	11.303	0.158	-	1077.701	nm	PB-Recovered 220 ml. Hand bailed 250 ml
	3-Feb-06			11.290	11.500	0.210	-	1077.546	nm	0 ml product in P.B.; bailer check yielded 150 mm
	3-Feb-06			11.299	11.335	0.036	-	1077.572	nm	recovered 200 ml product from P.B.
	6-Feb-06			11.255	11.283	0.028	-	1077.617	nm	recovered 10 ml product from P.B.; reset bailer
	8-Feb-06			11.225	11.301	0.076	-	1077.638	nm	recovered 50 ml product from P.B.
	10-Feb-06			11.345	11.475	0.130	-	1077.507	nm	recovered 100 ml product from P.B.
	27-Feb-06			11.347	11.368	0.021	-	1077.527	nm	recovered 800 ml product from P.B.
	2-Mar-06			11.485	11.488	0.003	-	1077.392	nm	recovered 250 ml product from P.B.
	4-Mar-06			11.355	11.382	0.027	-	1077.518	nm	
	6-Mar-06			11.467	11.468	0.001	-	1077.411	nm	recovered 150 ml product from P.B.
	8-Mar-06			11.452	11.454	0.002	-	1077.426	nm	recovered 100 ml product from P.B.
10-Mar-06			11.472	11.474	0.002	-	1077.406	nm	recovered 150 ml product from P.B.	
14-Mar-06			11.447	11.448	0.001	-	1077.431	nm	recovered 100 ml product from P.B.	
22-Mar-06			11.464	11.475	0.011	-	1077.412	nm	recovered 250 ml product from P.B.	

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH706 Continued</i>	24-Mar-06		11.465	11.467	0.002	-	1077.413	nm	recovered 300 ml product from P.B.
	27-Mar-06		11.486	11.487	0.001	-	1077.392	nm	recovered 300 ml product from P.B.
	29-Mar-06		11.405	11.417	0.012	-	1077.471	nm	recovered 10 ml product from P.B.
	31-Mar-06		11.394	11.439	0.045	-	1077.475	nm	recovered 10 ml product from P.B.
	7-Apr-06		11.369	11.385	0.016	-	1077.506	nm	recovered 100 ml product from P.B.
	12-Apr-06		11.365	11.500	0.135	-	1077.486	nm	recovered 50 ml product from P.B.
	17-Apr-06		11.455	11.478	0.023	0.600	1077.418	nm	recovered 600 ml product from P.B.
	18-Apr-06		11.386	11.392	0.006	0.010	1077.491	nm	recovered 10 ml product from P.B.
	21-Apr-06		11.433	11.439	0.006	0.250	1077.444	nm	recovered 250 ml product from P.B.
	26-Apr-06		11.356	11.365	0.009	0.300	1077.520	nm	recovered 300 ml product from P.B.
	28-Apr-06		11.130	11.133	0.003	-	1077.747	nm	
	1-May-06		11.167	11.184	0.017	-	1077.708	nm	
	3-May-06		11.476	11.481	0.005	0.020	1077.401	nm	recovered 20 ml product from P.B.
	9-May-06		11.415	11.434	0.019	0.300	1077.459	nm	recovered 300 ml product from P.B.
	7-Jun-06		11.364	11.455	0.091	0.350	1077.496	nm	recovered 350 ml product from P.B.
	12-Jun-06		11.385	11.550	0.165	0.100	1077.460	nm	recovered 100 ml product from P.B.
	14-Jun-06		11.332	11.348	0.016	0.600	1077.543	nm	recovered 600 ml product from P.B.
	16-Jun-06		11.575	11.577	0.002	0.050	1077.303	nm	recovered 50 ml product from P.B.
	20-Jun-06		11.556	11.557	0.001	0.020	1077.322	nm	recovered 20 ml product from P.B.
	22-Jun-06		11.503	11.504	0.001	0.050	1077.375	nm	recovered 50 ml product from P.B.
	23-Jun-06		-	11.372	0.000	-	1077.506	nm	
	26-Jun-06		11.584	11.585	0.001	0.010	1077.294	nm	recovered 10 ml product from P.B.
	28-Jun-06		11.516	11.518	0.002	0.200	1077.362	nm	recovered 200 ml product from P.B.
	4-Jul-06		11.375	11.376	0.001	0.010	1077.503	nm	recovered 10 ml product from P.B.
	7-Jul-06		11.523	11.527	0.004	0.150	1077.354	nm	recovered 150 ml product from P.B.
	12-Jul-06		11.321	11.326	0.005	-	1077.556	nm	
	19-Jul-06		11.533	11.535	0.002	0.100	1077.345	nm	recovered 100 ml product from P.B.
	21-Jul-06		11.531	11.532	0.001	0.010	1077.347	nm	recovered 10 ml product from P.B.
	24-Jul-06		11.237	11.239	0.002	0.200	1077.641	nm	recovered 200 ml product from P.B.
	31-Jul-06		11.490	11.491	0.001	0.050	1077.388	nm	Hand bailed 50 ml of product
	3-Aug-06		11.515	11.516	0.001	0.100	1077.363	nm	Hand Bailed 100 ml of product
	9-Aug-06		11.525	11.527	0.002	0.020	1077.353	nm	Hand Bailed 20 ml of product
	15-Aug-06		11.545	11.546	0.001	0.050	1077.333	nm	Hand Bailed 50 ml of product
	17-Aug-06		11.530	11.531	0.001	0.010	1077.348	nm	Hand Bailed 10 ml of product
18-Aug-06		11.553	11.554	0.001	0.050	1077.325	nm	Hand Bailed 50 ml of product	

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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	(dd-mmm-yy)	(m)	(m)	(m)	(m)	(L)	(m)	(ppm)	
<i>BH706 Continued</i>	21-Aug-06		11.550	11.552	0.002	0.020	1077.328	nm	Hand Bailed 20ml of product
	24-Aug-06		11.560	11.562	0.002	0.010	1077.318	nm	Hand Bailed 10 ml of product
	25-Aug-06		11.493	11.495	0.002	0.050	1077.385	nm	Hand bailed 50 ml of product
	28-Aug-06		11.517	11.519	0.002	0.100	1077.361	nm	Hand Bailed 100 ml of product
	30-Aug-06		11.531	11.532	0.001	0.010	1077.347	nm	Hand Bailed 10 ml of product
	18-Sep-06		11.627	11.628	0.001	0.200	1077.251	nm	recovered 200 ml product from P.B.
	20-Sep-06		11.575	11.577	0.002	0.020	1077.303	nm	recovered 20 ml product from P.B.
	22-Sep-06		11.573	11.575	0.002	0.050	1077.305	nm	recovered 50 ml product from P.B.
	25-Sep-06		11.574	11.575	0.001	0.010	1077.304	nm	recovered 10 ml product from P.B.
	3-Oct-06		11.554	11.556	0.002	0.200	1077.324	nm	recovered 200 ml product from P.B.
	5-Oct-06		11.535	11.537	0.002	0.050	1077.343	nm	recovered 50 ml product from P.B.
	4-Dec-06		11.485	11.489	0.004	0.600	1077.392	nm	recovered 600 ml product from P.B.
	19-Jan-07		11.673	11.674	0.001	0.030	1077.205	nm	recovered 30 ml product from passive bailer
	22-Jan-07		11.617	11.619	0.002	0.010	1077.261	nm	recovered 10 ml product from passive bailer
	12-Mar-07		11.537	11.542	0.005	0.600	1077.340	nm	recovered 600 ml product from passive bailer
	15-Mar-07		11.523	11.526	0.003	0.300	1077.354	nm	recovered 300 ml product from passive bailer
	17-Apr-07		11.585	11.587	0.002	0.010	1077.293	nm	recovered 10 ml product from P.B.
	24-Apr-07		11.584	11.589	0.005	0.020	1077.293	nm	recovered 20 ml product from passive bailer
	1-May-07		11.603	11.605	0.002	0.030	1077.275	nm	recovered 30 ml product from P.B.
	4-May-07		11.559	11.560	0.001	-	1077.319	nm	
	8-May-07		11.589	11.594	0.005	0.010	1077.288	nm	recovered 10 ml product from P.B.
	10-May-07		11.532	11.539	0.007	-	1077.345	nm	
	8-Jun-07		11.545	11.549	0.004	0.300	1077.332	nm	recovered 300 ml product from passive bailer
	11-Jun-07		11.500	11.512	0.012	0.010	1077.376	nm	recovered 10 ml product from P.B.
	13-Jun-07		11.509	11.511	0.002	0.030	1077.369	nm	recovered 30 ml product from P.B.
	3-Jul-07		11.479	11.482	0.003	0.250	1077.398	nm	recovered 250 ml product from P.B.
	5-Jul-07		11.483	11.488	0.005	0.120	1077.394	nm	recovered 120 ml product from P.B.
	16-Jul-07		11.309	11.312	0.003	0.020	1077.568	nm	recovered 20 ml product from P.B.
	20-Jul-07		11.311	11.317	0.006	0.020	1077.566	nm	recovered 20 ml product from P.B.
	26-Jul-07		11.373	11.382	0.009	0.150	1077.503	nm	recovered 150 ml product from P.B.
	30-Jul-07		11.376	11.379	0.003	0.020	1077.501	nm	recovered 20 ml product from P.B.
	2-Aug-07		11.405	11.409	0.004	0.200	1077.472	nm	recovered 200 ml product from P.B.
7-Aug-07		11.243	11.292	0.049	0.100	1077.625	nm	recovered 100 ml product from P.B.	
9-Aug-07		11.415	11.419	0.004	0.150	1077.462	nm	recovered 150 ml product from P.B.	
24-Aug-07		11.468	11.470	0.002	0.100	1077.410	nm	recovered 100 ml product from passive bailer	

Notes:

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  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cmm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
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	(dd-mmm-yy)	(m)	(m)	(m)	(m)	(L)	(m)	(ppm)	
<i>BH706 Continued</i>	27-Aug-07		11.480	11.482	0.002	0.150	1077.398	nm	recovered 150 ml product from P.B.
	29-Aug-07		11.466	11.468	0.002	0.010	1077.412	nm	recovered 10 ml product from P.B.
	4-Sep-07		11.475	11.480	0.005	0.100	1077.402	nm	recovered 100 ml product from P.B.
	6-Sep-07		11.456	11.458	0.002	0.075	1077.422	nm	recovered 75 ml product from P.B.
	10-Sep-07		11.482	11.486	0.004	0.030	1077.395	nm	recovered 30 ml product from passive bailer
	12-Sep-07		11.450	11.453	0.003	0.100	1077.427	nm	recovered 100 ml product from passive bailer
	14-Sep-07		11.485	11.488	0.003	0.050	1077.392	nm	recovered 50 ml product from passive bailer
	17-Sep-07		11.512	11.515	0.003	0.300	1077.365	nm	recovered 300 ml product from passive bailer
	19-Sep-07		11.453	11.456	0.003	0.080	1077.424	nm	recovered 80 ml product from passive bailer
	21-Sep-07		11.470	11.473	0.003	0.100	1077.407	nm	recovered 100 ml product from passive bailer
	24-Sep-07		11.475	11.479	0.004	0.080	1077.402	nm	recovered 80 ml product from P.B.
	26-Sep-07		11.462	11.469	0.007	0.020	1077.415	nm	recovered 20 ml product from P.B.
	28-Sep-07		11.435	11.438	0.003	0.080	1077.442	nm	recovered 80 ml product from P.B.
	1-Oct-07		11.456	11.457	0.001	0.060	1077.422	nm	recovered 60 ml product from P.B.
	3-Oct-07		11.455	11.457	0.002	0.050	1077.423	nm	recovered 50 ml product from P.B.
	9-Oct-07		11.451	11.455	0.004	0.050	1077.426	nm	recovered 50 ml product from P.B.
	12-Oct-07		11.407	11.410	0.003	0.300	1077.470	nm	recovered 300 ml product from P.B.
	16-Oct-07		11.500	11.504	0.004	0.100	1077.377	nm	recovered 100 ml product from P.B.
	20-Oct-07		11.510	11.512	0.002	0.080	1077.368	nm	recovered 80 ml product from P.B.
	29-Oct-07		11.150	11.163	0.013	0.250	1077.725	nm	recovered 250 ml product from passive bailer
	1-Nov-07		11.146	11.152	0.006	0.200	1077.731	nm	recovered 200 ml product from passive bailer
	2-Nov-07		11.159	11.161	0.002	0.100	1077.719	nm	recovered 100 ml product from passive bailer
	5-Nov-07		11.583	11.587	0.004	0.080	1077.294	nm	recovered 80 ml product from passive bailer
	13-Nov-07		11.581	11.584	0.003	0.030	1077.296	nm	recovered 30 ml product from passive bailer
	19-Nov-07		11.434	11.438	0.004	0.100	1077.443	nm	recovered 100 ml product from passive bailer
	23-Nov-07		11.516	11.518	0.002	0.120	1077.362	nm	recovered 120 ml product from passive bailer
	26-Nov-07		11.263	11.274	0.011	0.100	1077.613	nm	recovered 100 ml product from passive bailer
	28-Nov-07		11.269	11.274	0.005	0.080	1077.608	nm	recovered 80 ml product from passive bailer
	30-Nov-07		11.271	11.275	0.004	0.050	1077.606	nm	recovered 50 ml product from passive bailer
	3-Dec-07		11.473	11.475	0.002	0.200	1077.405	nm	recovered 200 ml product from passive bailer
	5-Dec-07		11.478	11.481	0.003	0.080	1077.399	nm	recovered 80 ml product from passive bailer
	7-Dec-07		11.480	11.482	0.002	0.040	1077.398	nm	recovered 40 ml product from passive bailer
	10-Dec-07		11.484	11.486	0.002	0.100	1077.394	nm	recovered 100 ml product from passive bailer
14-Dec-07		11.488	11.492	0.004	0.150	1077.389	nm	recovered 150 ml product from passive bailer	
17-Dec-07		11.488	11.490	0.002	0.180	1077.390	nm	recovered 180 ml product from passive bailer	

Notes:

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- 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.

LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.



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Monitoring Well	Date (dd-mmm-yy)	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments
<i>BH706 Continued</i>	19-Dec-07		11.490	11.492	0.002	0.100	1077.388	nm	recovered 100 ml product from passive bailer
	21-Dec-07		11.494	11.496	0.002	0.080	1077.384	nm	recovered 80 ml product from passive bailer
	2-Jan-08		11.485	11.489	0.004	0.200	1077.392	nm	recovered 200 ml product from passive bailer
	4-Jan-08		11.445	11.447	0.002	0.020	1077.433	nm	recovered 20 ml product from passive bailer
	23-Jan-08		11.580	11.583	0.003	0.200	1077.297	nm	recovered 200 ml product from passive bailer
	25-Jan-08		11.502	11.505	0.003	0.050	1077.375	nm	recovered 50 ml product from passive bailer
	7-Feb-08		11.613	11.617	0.004	0.200	1077.264	nm	recovered 200 ml product from passive bailer
	9-Feb-08		11.615	11.618	0.003	0.100	1077.262	nm	recovered 100 ml product from passive bailer
	6-Mar-08		11.625	11.627	0.002	0.600	1077.253	nm	recovered 600 ml product from passive bailer
	7-Apr-08		11.480	11.489	0.009	0.010	1077.396	nm	recovered 10 ml product from passive bailer
	9-Apr-08		11.485	11.488	0.003	0.010	1077.392	nm	recovered 10 ml product from passive bailer
	11-Apr-08		11.484	11.488	0.004	0.010	1077.393	nm	recovered 10 ml product from passive bailer
	14-Apr-08		11.491	11.496	0.005	0.010	1077.386	nm	recovered 10 ml product from passive bailer
	16-Apr-08		11.500	11.504	0.004	0.010	1077.377	nm	recovered 10 ml product from passive bailer
	28-Apr-08		11.545	11.581	0.036	0.030	1077.326	nm	recovered 30 ml product from passive bailer
	30-Apr-08		11.548	11.578	0.030	0.020	1077.324	nm	recovered 20 ml product from passive bailer
	2-May-08		11.545	11.582	0.037	0.010	1077.326	nm	recovered 10 ml product from passive bailer
	5-May-08		11.611	11.615	0.004	0.350	1077.266	nm	recovered 350 ml product from passive bailer
	12-May-08		11.590	11.598	0.008	0.010	1077.286	nm	recovered 10 ml product from passive bailer
	14-May-08		11.594	11.596	0.002	-	1077.284	nm	no recovery from passive bailer; reset
	26-May-08		11.628	11.640	0.012	0.200	1077.248	nm	recovered 200 ml product from passive bailer
	28-May-08		11.632	11.635	0.003	0.100	1077.245	nm	recovered 100 ml product from passive bailer
	30-May-08		11.634	11.636	0.002	0.050	1077.244	nm	recovered 50 ml product from passive bailer
	9-Jun-08		11.575	11.580	0.005	0.050	1077.302	nm	recovered 50 ml product from passive bailer
	11-Jun-08		11.600	11.603	0.003	0.020	1077.277	nm	recovered 20 ml product from passive bailer
	13-Jun-08		11.603	11.605	0.002	0.010	1077.275	nm	recovered 10 ml product from passive bailer
	2-Jul-08			11.480	11.485	0.005	-	1077.397	>10,000
<b>BH707</b>	7-Oct-03	1089.309	-	11.423	0.000	-	1077.886	6,500	
	20-Nov-03		-	11.492	0.000	-	1077.817	580	
	17-Dec-03		-	11.492	0.000	-	1077.817	15	
	13-Jan-04		-	11.463	0.000	-	1077.846	15	Bolt Required for RoadBox
	8-Mar-04		-	11.567	0.000	-	1077.742	36	bailer checked - no product
	6-Apr-04		-	11.439	0.000	-	1077.870	4,200	
	15-Jun-04		-	11.475	0.000	-	1077.834	240	
	13-Jul-04		-	11.455	0.000	-	1077.854	1,300	

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  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cmm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

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<i>BH707 Continued</i>	23-Aug-04		-	11.440	0.000	-	1077.869	4,000		
	13-Oct-04		-	11.472	0.000	-	1077.837	3,000	bailer checked; no product	
	2-Nov-04		-	11.454	0.000	-	1077.855	nm		
	1-Feb-05		-	11.519	0.000	-	1077.790	720		
	2-Mar-05		-	11.507	0.000	-	1077.802	260		
	1-Jun-05		-	11.533	0.000	-	1077.776	2,000	bailer checked - no product	
	5-Oct-05		-	11.324	0.000	-	1077.985	540		
	18-Jan-06		-	11.245	0.000	-	1078.064	320		
	10-May-06		-	11.305	0.000	-	1078.004	300		
	27-Jul-06		-	11.278	0.000	-	1078.031	200		
	25-Jan-07		-	11.272	0.000	-	1078.037	2,000		
	23-May-07		-	11.287	0.000	-	1078.022	180		
	21-Aug-07		-	11.175	0.000	-	1078.134	90		
	21-Nov-07		-	11.236	0.000	-	1078.073	280		
	14-Mar-08		-	11.255	0.000	-	1078.054	>10,000		
	4-Jun-08		-	11.321	0.000	-	1077.988	200		
	1-Jul-08		-	11.270	0.000	-	1078.039	22	well decommissioned on 01 July 2008	
	<b>BH708</b>	7-Oct-03	1089.171	-	11.515	0.000	-	1077.656	6,200	
		20-Nov-03		-	11.577	0.000	-	1077.594	150	
17-Dec-03			-	11.563	0.000	-	1077.608	270		
13-Jan-04			-	11.549	0.000	-	1077.622	20		
8-Mar-04			-	11.600	0.000	-	1077.571	18	bailer checked - no product	
11-Mar-04			-	11.700	0.000	-	1077.471	200	bailer checked - no product	
6-Apr-04			-	11.519	0.000	-	1077.652	82		
15-Jun-04			-	11.554	0.000	-	1077.617	100		
13-Jul-04			-	11.519	0.000	-	1077.652	42		
23-Aug-04			-	11.513	0.000	-	1077.658	140		
13-Oct-04			-	11.523	0.000	-	1077.648	70		
2-Nov-04			-	11.519	0.000	-	1077.652	nm		
1-Feb-05			-	11.586	0.000	-	1077.585	160		
1-Mar-05			-	11.557	0.000	-	1077.614	82		
1-Jun-05			-	11.600	0.000	-	1077.571	80		
4-Oct-05			-	11.442	0.000	-	1077.729	125		
10-May-06			-	11.423	0.000	-	1077.748	nm		
27-Jul-06		-	11.367	0.000	-	1077.804	88			

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cmm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

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<i>BH708 Continued</i>	25-Jan-07		-	11.365	0.000	-	1077.806	82	
	23-May-07		-	11.374	0.000	-	1077.797	50	
	21-Aug-07		-	11.273	0.000	-	1077.898	50	
	21-Nov-07		-	11.331	0.000	-	1077.840	58	
	4-Jun-08		-	11.393	0.000	-	1077.778	58	
	1-Jul-08		-	11.356	0.000	-	1077.815	64	well decommissioned on 02 July 2008
<b>BH709</b>	7-Oct-03	1087.951	0	10.820	0.000	-	1077.131	7,500	
	20-Nov-03		0	10.960	0.000	-	1076.991	1,100	
	17-Dec-03		0	10.938	0.000	-	1077.013	3,100	
	19-Dec-03		nm	nm	nm	-	nm	nm	Bailer check - no product
	13-Jan-04		-	10.894	0.000	-	1077.057	1,150	
	8-Mar-04		-	11.016	0.000	-	1076.935	420	
	6-Apr-04		-	10.897	0.000	-	1077.054	1,100	
	15-Jun-04		-	10.931	0.000	-	1077.020	98	
	13-Jul-04		-	10.885	0.000	-	1077.066	190	
	23-Aug-04		-	10.858	0.000	-	1077.093	4,000	White bugs on probe
	13-Oct-04		-	10.882	0.000	-	1077.069	320	
	2-Nov-04		-	10.873	0.000	-	1077.078	nm	
	2-Feb-05		-	10.970	0.000	-	1076.981	120	
	1-Mar-05		-	10.909	0.000	-	1077.042	140	
	1-Jun-05		-	10.919	0.000	-	1077.032	200	
	4-Oct-05		-	10.741	0.000	-	1077.210	40	
	18-Jan-06		-	10.657	0.000	-	1077.294	50	
	10-May-06		-	10.773	0.000	-	1077.178	200	
	27-Jul-06		-	10.510	0.000	-	1077.441	160	
	24-Jan-07		-	10.750	0.000	-	1077.201	90	
23-May-07		-	10.655	0.000	-	1077.296	56		
21-Aug-07		-	10.497	0.000	-	1077.454	66		
21-Nov-07		-	10.617	0.000	-	1077.334	66		
14-Mar-08		-	10.723	0.000	-	1077.228	280		
4-Jun-08		-	10.736	0.000	-	1077.215	10		
1-Jul-08		-	10.615	0.000	-	1077.336	84	well decommissioned on 02 July 2008	
<b>BH710</b>	7-Oct-03	1087.464	-	10.565	0.000	-	1076.899	>10,000	
	20-Nov-03		-	10.696	0.000	-	1076.768	1,000	
	17-Dec-03		-	10.695	0.000	-	1076.769	1,600	

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 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cmm could not monitor.  
 cnl could not locate.  
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<i>BH710 Continued</i>	13-Jan-04		-	10.630	0.000	-	1076.834	1,200	
	8-Mar-04		-	10.676	0.000	-	1076.788	32	bailer checked - no product
	6-Apr-04		-	10.610	0.000	-	1076.854	280	
	15-Jun-04		-	10.659	0.000	-	1076.805	10	
	13-Jul-04		-	10.621	0.000	-	1076.843	60	
	23-Aug-04		-	10.579	0.000	-	1076.885	1,400	
	13-Oct-04		-	10.615	0.000	-	1076.849	180	
	2-Nov-04		-	10.604	0.000	-	1076.860	nm	
	2-Feb-05		-	10.700	0.000	-	1076.764	12	
	1-Mar-05		-	10.645	0.000	-	1076.819	160	
	1-Jun-05		-	10.657	0.000	-	1076.807	180	
	4-Oct-05		-	10.512	0.000	-	1076.952	10	
	18-Jan-06		-	10.453	0.000	-	1077.011	360	
	10-May-06		-	10.572	0.000	-	1076.892	40	
	27-Jul-06		-	10.437	0.000	-	1077.027	40	
	24-Jan-07		-	10.514	0.000	-	1076.950	180	
	23-May-07		-	10.458	0.000	-	1077.006	20	
	21-Aug-07		-	10.310	0.000	-	1077.154	20	
	21-Nov-07		-	10.426	0.000	-	1077.038	42	
	14-Mar-08		-	10.485	0.000	-	1076.979	280	
4-Jun-08		-	10.448	0.000	-	1077.016	26		
2-Jul-08		-	10.365	0.000	-	1077.099	50	well decommissioned on 01 July 2008	
<b>BH711</b>	7-Oct-03	1085.195	-	9.205	0.000	-	1075.990	3,000	
	20-Nov-03		-	9.367	0.000	-	1075.828	38	
	17-Dec-03		-	9.380	0.000	-	1075.815	1,000	
	13-Jan-04		-	9.294	0.000	-	1075.901	50	
	1-Mar-04		-	9.270	0.000	-	1075.925	56	
	8-Mar-04		-	9.442	0.000	-	1075.753	26	bailer checked - no product
	6-Apr-04		-	9.253	0.000	-	1075.942	42	
	15-Jun-04		-	9.304	0.000	-	1075.891	92	pad lock with non-Clifton key
	13-Jul-04		-	9.259	0.000	-	1075.936	62	
	23-Aug-04		-	9.210	0.000	-	1075.985	60	
	13-Oct-04		-	9.257	0.000	-	1075.938	74	
	2-Nov-04		-	9.228	0.000	-	1075.967	nm	
	2-Feb-05		-	9.350	0.000	-	1075.845	180	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

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<i>BH711 Continued</i>	1-Jun-05		-	9.255	0.000	-	1075.940	80	
	4-Oct-05		-	9.089	0.000	-	1076.106	120	
	18-Jan-06		-	9.033	0.000	-	1076.162	260	
	10-May-06		-	9.212	0.000	-	1075.983	60	
	26-Jul-06		-	8.989	0.000	-	1076.206	26	
	24-Jan-07		-	9.132	0.000	-	1076.063	88	
	23-May-07		-	9.059	0.000	-	1076.136	64	
	21-Aug-07		-	8.905	0.000	-	1076.290	78	
	21-Nov-07		-	9.105	0.000	-	1076.090	50	
	14-Mar-08		-	9.105	0.000	-	1076.090	180	
	4-Jun-08		-	9.095	0.000	-	1076.100	180	
	23-Sep-10		-	9.235	0.000	-	1075.960	60	
	4-Oct-10		-	9.254	0.000	-	-9.254	44	
	5-Apr-11		-	9.290	0.000	-	-9.290	40	
	2-Jun-11		-	9.139	0.000	-	-9.139	40	
	13-Sep-11		-	9.232	0.000	-	1075.963	5	
	13-Dec-11		-	9.158	0.000	-	1076.037	20	
	22-Mar-12		-	9.350	0.000	-	1075.845	50	
	4-Oct-12		-	9.351	0.000	-	1075.844	95	good condition, old bailer removed
	30-Apr-13		-	9.442	0.000	-	1075.753	85	
<b>BH712</b>	7-Oct-03	1087.901	-	9.304	0.000	-	1078.597	50	
	20-Nov-03		-	9.229	0.000	-	1078.672	190	
	4-Dec-03		-	9.177	0.000	-	1078.724	-	
	17-Dec-03		-	9.135	0.000	-	1078.766	100	
	13-Jan-04		-	9.017	0.000	-	1078.884	73	
	8-Mar-04		-	9.986	0.000	-	1077.915	180	iced
	5-Apr-04		-	9.058	0.000	-	1078.843	28	
	14-Jun-04		-	9.110	0.000	-	1078.791	70	
	13-Jul-04		-	9.228	0.000	-	1078.673	160	
	23-Aug-04		-	9.266	0.000	-	1078.635	44	
	13-Oct-04		-	9.320	0.000	-	1078.581	80	
	3-Nov-04		-	9.357	0.000	-	1078.544	nm	
	2-Feb-05		-	9.435	0.000	-	1078.466	480	
	1-Mar-05		-	9.430	0.000	-	1078.471	64	had to be chipped out
	31-May-05		-	9.514	0.000	-	1078.387	240	has bailer
	4-Oct-05		-	9.275	0.000	-	1078.626	10	

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  - 2 Depth relative to top of standpipe.
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  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

**TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013**

**Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
Calgary, Alberta**

Monitoring Well	Date (dd-mmm-yy)	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments
<i>BH712 Continued</i>	11-Oct-05		-	9.260	0.000	-	1078.641	nm	
	18-Jan-06		-	9.268	0.000	-	1078.633	86	
	9-May-06		-	9.437	0.000	-	1078.464	90	
	25-Jul-06		-	9.432	0.000	-	1078.469	42	
	24-Jan-07		-	9.148	0.000	-	1078.753	138	
	22-May-07		-	9.132	0.000	-	1078.769	55	
	21-Aug-07		-	8.837	0.000	-	1079.064	54	
	21-Nov-07		-	9.048	0.000	-	1078.853	260	
	18-Mar-08		-	9.310	0.000	-	1078.591	40	
	3-Jun-08		-	9.385	0.000	-	1078.516	64	
	23-Sep-10		-	9.548	0.000	-	1078.353	68	
	4-Oct-10		-	9.565	0.000	-	1078.336	52	
	20-Dec-11			cnl	cnl	cnl	cnl	cnl	cnl
<b>BH713</b>	7-Oct-03	1088.498	-	10.130	0.000	-	1078.368	65	
	20-Nov-03		-	10.104	0.000	-	1078.394	160	
	17-Dec-03		-	10.045	0.000	-	1078.453	45	
	13-Jan-04		-	9.942	0.000	-	1078.556	65	
	8-Mar-04		-	9.965	0.000	-	1078.533	50	iced
	5-Apr-04		-	9.971	0.000	-	1078.527	26	
	14-Jun-04		-	10.012	0.000	-	1078.486	100	
	13-Jul-04		-	10.064	0.000	-	1078.434	160	
	23-Aug-04		-	10.080	0.000	-	1078.418	48	
	13-Oct-04		-	10.129	0.000	-	1078.369	78	
	2-Feb-05		-	10.235	0.000	-	1078.263	84	
	1-Mar-05		-	10.235	0.000	-	1078.263	90	
	31-May-05		-	10.305	0.000	-	1078.193	220	has bailer
	4-Oct-05		-	10.068	0.000	-	1078.430	25	
	18-Jan-06		-	10.060	0.000	-	1078.438	92	
	9-May-06		-	10.223	0.000	-	1078.275	100	
	24-Jan-07		-	9.988	0.000	-	1078.510	74	
	22-May-07		-	9.979	0.000	-	1078.519	39	
	21-Aug-07		-	9.743	0.000	-	1078.755	38	
	21-Nov-07		-	9.879	0.000	-	1078.619	260	
12-Mar-08		-	10.090	0.000	-	1078.408	34		
3-Jun-08		-	10.175	0.000	-	1078.323	64		

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH712 Continued</i>	24-Jun-08		-	10.180	0.000	-	1078.318	52	well decommissioned on 24 June 2008
<b>BH714</b>	7-Oct-03	1089.078	-	10.869	0.000	-	1078.209	65	
	20-Nov-03		-	10.847	0.000	-	1078.231	130	
	17-Dec-03		-	10.810	0.000	-	1078.268	32	
	13-Jan-04		-	10.716	0.000	-	1078.362	47	
	8-Mar-04		-	10.745	0.000	-	1078.333	180	iced
	5-Apr-04		-	10.693	0.000	-	1078.385	38	J-plug
	14-Jun-04		-	10.734	0.000	-	1078.344	80	
	13-Jul-04		-	10.727	0.000	-	1078.351	140	
	23-Aug-04		-	10.776	0.000	-	1078.302	50	
	13-Oct-04		-	10.817	0.000	-	1078.261	60	
	2-Feb-05		-	10.911	0.000	-	1078.167	320	
	1-Mar-05		-	10.909	0.000	-	1078.169	160	had to be chipped out
	31-May-05		-	10.988	0.000	-	1078.090	240	has bailer
	4-Oct-05		-	10.758	0.000	-	1078.320	10	
	18-Jan-06		-	10.740	0.000	-	1078.338	240	
	9-May-06		-	10.907	0.000	-	1078.171	60	
	25-Jul-06		-	10.891	0.000	-	1078.187	60	
	24-Jan-07		-	10.716	0.000	-	1078.362	64	
	22-May-07		-	10.710	0.000	-	1078.368	45	
	21-Aug-07		-	10.470	0.000	-	1078.608	41	
	21-Nov-07		-	10.601	0.000	-	1078.477	220	
	12-Mar-08		-	10.785	0.000	-	1078.293	46	
	3-Jun-08		-	10.852	0.000	-	1078.226	62	
	24-Jun-08		-	10.895	0.000	-	1078.183	76	well decommissioned on 24 June 2008
<b>BH715</b>	7-Oct-03	1089.690	-	12.055	0.000	-	1077.635	50	
	20-Nov-03		-	12.090	0.000	-	1077.600	140	
	17-Dec-03		-	12.084	0.000	-	1077.606	42	
	13-Jan-04		-	12.004	0.000	-	1077.686	70	
	8-Mar-04		-	12.045	0.000	-	1077.645	200	iced
	5-Apr-04		-	12.000	0.000	-	1077.690	36	
	14-Jun-04		-	12.024	0.000	-	1077.666	8	
	13-Jul-04		-	12.036	0.000	-	1077.654	100	
	23-Aug-04		-	12.029	0.000	-	1077.661	34	
	13-Oct-04		-	12.054	0.000	-	1077.636	78	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH715 Continued</i>	2-Feb-05		-	12.157	0.000	-	1077.533	280	
	1-Mar-05		-	12.142	0.000	-	1077.548	40	had to be chipped out
	31-May-05		-	12.192	0.000	-	1077.498	280	has bailer
	4-Oct-05		-	12.015	0.000	-	1077.675	10	
	18-Jan-06		-	11.964	0.000	-	1077.726	160	
	9-May-06		-	12.110	0.000	-	1077.580	100	
	25-Jul-06		-	12.094	0.000	-	1077.596	74	
	24-Jan-07		-	12.006	0.000	-	1077.684	52	
	22-May-07		-	12.009	0.000	-	1077.681	92	
	21-Aug-07		-	11.801	0.000	-	1077.889	56	
	21-Nov-07		-	11.873	0.000	-	1077.817	180	
	12-Mar-08		-	12.003	0.000	-	1077.687	24	
	3-Jun-08		-	12.050	0.000	-	1077.640	42	
	23-Sep-10			cnl	cnl	cnl	cnl	cnl	
	20-Dec-11			cnl	cnl	cnl	cnl	cnl	cnl
	<b>BH716</b>	7-Oct-03	1088.589	-	9.850	0.000	-	1078.739	>10,000
20-Nov-03			cnm	cnm	cnm	-	cnm	cnm	CNM - Frozen
4-Dec-03			-	9.928	0.000	-	1078.661	nm	
17-Dec-03			-	9.965	0.000	-	1078.624	120	
13-Jan-04			-	9.873	0.000	-	1078.716	3,200	
8-Mar-04			-	9.767	0.000	-	1078.822	>10,000	sheen on water accumulated on top of well lid
6-Apr-04			cnm	cnm	cnm	-	cnm	1,800	frozen @approx. 0.5m
15-Jun-04			-	9.860	0.000	-	1078.729	30	
14-Jul-04			-	9.855	0.000	-	1078.734	60	
23-Aug-04			-	9.813	0.000	-	1078.776	7,000	
14-Oct-04			-	9.883	0.000	-	1078.706	1,600	
2-Feb-05			-	9.904	0.000	-	1078.685	12	
2-Mar-05			-	9.914	0.000	-	1078.675	5,400	had to be chipped out
2-Jun-05			-	9.970	0.000	-	1078.619	>10,000	
5-Oct-05			-	9.789	0.000	-	1078.800	10	
19-Jan-06		-	9.745	0.000	-	1078.844	3,400		
<b>BH717</b>	7-Oct-03	1089.656	-	12.498	0.000	-	1077.158	40	
	20-Nov-03		-	12.491	0.000	-	1077.165	10	
	17-Dec-03		-	12.496	0.000	-	1077.160	15	
	13-Jan-04		-	12.430	0.000	-	1077.226	58	

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
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<i>BH717 Continued</i>	8-Mar-04		-	12.462	0.000	-	1077.194	10	bailer submerged
	5-Apr-04		-	12.434	0.000	-	1077.222	32	
	14-Jun-04		-	12.449	0.000	-	1077.207	20	
	13-Jul-04		-	12.455	0.000	-	1077.201	140	
	23-Aug-04		-	12.435	0.000	-	1077.221	46	
	13-Oct-04		-	12.467	0.000	-	1077.189	60	
	2-Feb-05		-	12.543	0.000	-	1077.113	10	
	1-Mar-05		-	12.507	0.000	-	1077.149	40	
	31-May-05		-	12.566	0.000	-	1077.090	180	has bailer
	4-Oct-05		-	12.394	0.000	-	1077.262	10	
	18-Jan-06		-	12.335	0.000	-	1077.321	82	
	9-May-06		-	12.482	0.000	-	1077.174	20	
	25-Jul-06		-	12.441	0.000	-	1077.215	50	
	24-Jan-07		-	12.412	0.000	-	1077.244	10	
	22-May-07		-	12.412	0.000	-	1077.244	20	
	21-Aug-07		-	12.347	0.000	-	1077.309	43	
	21-Nov-07		-	12.036	0.000	-	1077.620	190	
	12-Mar-08		-	12.410	0.000	-	1077.246	38	
	25-Jun-08		-	12.436	0.000	-	1077.220	26	well decommissioned on 25 June 2008
	<b>BH718</b>	7-Oct-03	1089.554	-	12.505	0.000	-	1077.049	45
20-Nov-03			-	12.537	0.000	-	1077.017	10	
17-Dec-03			-	12.525	0.000	-	1077.029	20	
13-Jan-04			-	12.473	0.000	-	1077.081	76	
8-Mar-04			-	12.475	0.000	-	1077.079	16	vapour reading not immed; iced up; missing well cap
5-Apr-04			-	12.508	0.000	-	1077.046	38	
14-Jun-04			-	12.505	0.000	-	1077.049	22	
13-Jul-04			-	12.515	0.000	-	1077.039	100	
23-Aug-04			-	12.495	0.000	-	1077.059	46	
13-Oct-04			-	12.529	0.000	-	1077.025	62	
2-Feb-05			-	12.153	0.000	-	1077.401	10	
1-Mar-05			-	12.578	0.000	-	1076.976	20	had to be chipped out
31-May-05			-	12.625	0.000	-	1076.929	240	has bailer
4-Oct-05			-	12.444	0.000	-	1077.110	25	
18-Jan-06			-	12.380	0.000	-	1077.174	160	
9-May-06		-	12.517	0.000	-	1077.037	20		

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 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
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<i>BH718 Continued</i>	25-Jul-06		-	12.483	0.000	-	1077.071	56	
	24-Jan-07		-	12.464	0.000	-	1077.090	10	
	22-May-07		-	12.468	0.000	-	1077.086	30	
	21-Aug-07		-	12.301	0.000	-	1077.253	28	
	21-Nov-07		-	12.374	0.000	-	1077.180	190	
	12-Mar-08		-	12.455	0.000	-	1077.099	66	
	25-Jun-08		-	12.485	0.000	-	1077.069	38	well decommissioned on 25 June 2008
<b>BH719</b>	7-Oct-03	1089.127	-	12.538	0.000	-	1076.589	55	
	20-Nov-03		-	11.108	0.000	-	1078.019	90	
	17-Dec-03		-	12.564	0.000	-	1076.563	20	
	13-Jan-04		-	12.538	0.000	-	1076.589	73	
	8-Mar-04		-	12.557	0.000	-	1076.570	10	iced up; vapour reading not immed.
	5-Apr-04		-	12.548	0.000	-	1076.579	22	
	14-Jun-04		-	12.542	0.000	-	1076.585	10	
	13-Jul-04		-	12.562	0.000	-	1076.565	120	
	23-Aug-04		-	12.547	0.000	-	1076.580	44	
	13-Oct-04		-	12.573	0.000	-	1076.554	72	
	3-Nov-04		-	12.574	0.000	-	1076.553	nm	
	2-Feb-05		-	12.604	0.000	-	1076.523	not detected	
	1-Mar-05		-	12.589	0.000	-	1076.538	74	
	31-May-05		-	12.585	0.000	-	1076.542	240	has bailer
	4-Oct-05		-	12.457	0.000	-	1076.670	60	
	11-Oct-05		-	12.435	0.000	-	1076.692	nm	
	18-Jan-06		-	12.388	0.000	-	1076.739	80	
	9-May-06		-	12.455	0.000	-	1076.672	86	
	25-Jul-06		-	12.385	0.000	-	1076.742	32	
	24-Jan-07		-	12.394	0.000	-	1076.733	10	
	22-May-07		-	12.377	0.000	-	1076.750	24	
21-Aug-07		-	12.274	0.000	-	1076.853	34		
21-Nov-07		-	12.282	0.000	-	1076.845	190		
18-Mar-08		-	12.365	0.000	-	1076.762	12		
3-Jun-08		-	12.423	0.000	-	1076.704	48		
23-Sep-10		-	12.560	0.000	-	1076.567	56		
4-Oct-10		-	12.600	0.000	-	1076.527	22		
8-Apr-11		-	12.655	0.000	-	1076.472	52		

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

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<i>BH719 Continued</i>	2-Jun-11		-	12.611	0.000	-	1076.516	50	
	13-Sep-11		-	12.517	0.000	-	1076.610	10	
	20-Dec-11		-	12.482	0.000	-	1076.645	45	
	21-Mar-12		-	12.585	0.000	-	1076.542	74	
	2-Oct-12		-	12.545	0.000	-	1076.582	0	new j-plug installed
	29-Apr-13		-	12.612	0.000	-	1076.515	55	
<b>BH720</b>	7-Oct-03	1088.371	-	12.035	0.000	-	1076.336	50	
	20-Nov-03		-	12.032	0.000	-	1076.339	4	
	17-Dec-03		-	12.055	0.000	-	1076.316	15	
	13-Jan-04		-	12.004	0.000	-	1076.367	25	
	8-Mar-04		-	12.050	0.000	-	1076.321	60	iced
	5-Apr-04		-	12.028	0.000	-	1076.343	2	
	6-Apr-04		dry	dry	dry	-	dry	200	
	14-Jun-04		-	12.033	0.000	-	1076.338	36	
	13-Jul-04		-	12.039	0.000	-	1076.332	160	
	23-Aug-04		-	12.015	0.000	-	1076.356	44	
	13-Oct-04		-	12.003	0.000	-	1076.368	56	
	2-Feb-05		-	12.057	0.000	-	1076.314	32	
	1-Mar-05		-	12.050	0.000	-	1076.321	44	
	31-May-05		-	12.075	0.000	-	1076.296	160	has bailer
	4-Oct-05		-	11.893	0.000	-	1076.478	65	
	18-Jan-06		-	11.810	0.000	-	1076.561	30	
	9-May-06		-	11.909	0.000	-	1076.462	18	
	26-Jul-06		-	11.878	0.000	-	1076.493	20	
24-Jan-07		-	11.898	0.000	-	1076.473	108		
22-May-07		-	11.922	0.000	-	1076.449	32		
21-Nov-07		-	11.794	0.000	-	1076.577	94		
<b>BH721</b>	7-Oct-03	1085.091	-	9.390	0.000	-	1075.701	50	
	20-Nov-03		-	9.457	0.000	-	1075.634	2	
	17-Dec-03		-	9.412	0.000	-	1075.679	44	
	13-Jan-04		-	9.437	0.000	-	1075.654	25	
	8-Mar-04		-	9.504	0.000	-	1075.587	40	some ice in pipe, had to chip
	5-Apr-04		-	9.478	0.000	-	1075.613	6	
	14-Jun-04		-	9.477	0.000	-	1075.614	34	
	13-Jul-04		-	9.478	0.000	-	1075.613	88	
	23-Aug-04		-	9.465	0.000	-	1075.626	34	

Notes:

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
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 - no data available.

**TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013**

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Calgary, Alberta**

Monitoring Well	Date (dd-mmm-yy)	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments
<i>BH721 Continued</i>	13-Oct-04		-	9.483	0.000	-	1075.608	50	
	2-Feb-05		-	9.549	0.000	-	1075.542	2	
	1-Mar-05		-	9.537	0.000	-	1075.554	54	
	31-May-05		-	9.542	0.000	-	1075.549	160	has bailer
	4-Oct-05		-	9.277	0.000	-	1075.814	40	
	18-Jan-06		-	9.205	0.000	-	1075.886	42	
	9-May-06		-	9.385	0.000	-	1075.706	10	
	26-Jul-06		-	9.283	0.000	-	1075.808	10	
	24-Jan-07		-	9.386	0.000	-	1075.705	20	
	22-May-07		-	9.366	0.000	-	1075.725	111	
	21-Aug-07		-	9.195	0.000	-	1075.896	10	
	21-Nov-07		-	9.288	0.000	-	1075.803	64	
	12-Mar-08		-	9.389	0.000	-	1075.702	32	
	3-Jun-08		-	9.360	0.000	-	1075.731	44	
	23-Sep-10			cnl	cnl	cnl	cnl	cnl	
	20-Dec-11			cnl	cnl	cnl	cnl	cnl	cnl
3-Oct-12			cnl	cnl	cnl	cnl	cnl	under asphalt	
<b>BH722</b>	7-Oct-03	1082.362	-	8.060	0.000	-	1074.302	55	
	20-Nov-03		-	7.660	0.000	-	1074.702	46	
	17-Dec-03		-	7.585	0.000	-	1074.777	75	
	13-Jan-04		-	7.600	0.000	-	1074.762	50	
	8-Mar-04		-	7.692	0.000	-	1074.670	30	
	5-Apr-04		-	7.663	0.000	-	1074.699	24	
	14-Jun-04		-	7.645	0.000	-	1074.717	100	
	13-Jul-04		-	7.649	0.000	-	1074.713	180	
	23-Aug-04		-	7.629	0.000	-	1074.733	42	
	13-Oct-04		-	7.625	0.000	-	1074.737	56	
	2-Feb-05		-	7.681	0.000	-	1074.681	200	
	1-Mar-05		-	7.665	0.000	-	1074.697	56	
	31-May-05		-	7.675	0.000	-	1074.687	200	has bailer
	4-Oct-05		-	7.295	0.000	-	1075.067	125	
	18-Jan-06		-	7.243	0.000	-	1075.119	280	
	9-May-06		-	7.541	0.000	-	1074.821	200	
26-Jul-06		-	7.318	0.000	-	1075.044	76		
24-Jan-07		-	7.542	0.000	-	1074.820	44		

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cmm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
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<i>BH722 Continued</i>	22-May-07		-	7.460	0.000	-	1074.902	66	
	21-Aug-07		-	7.314	0.000	-	1075.048	70	
	21-Nov-07		-	7.422	0.000	-	1074.940	200	
	12-Mar-08		-	7.540	0.000	-	1074.822	72	
	3-Jun-08		-	7.475	0.000	-	1074.887	46	
	23-Jun-08		-	7.339	0.000	-	1075.023	74	well decommissioned on 25 June 2008
<b>BH723</b>	7-Oct-03	1089.470	dry	dry	dry	-	dry	225	
	20-Nov-03		dry	dry	dry	-	dry	590	
	17-Dec-03		dry	dry	dry	-	dry	600	
	13-Jan-04		dry	dry	dry	-	dry	400	dry; blocked @ 5.999
	8-Mar-04		dry	dry	dry	-	dry	140	
	6-Apr-04		dry	dry	dry	-	dry	400	
	15-Jun-04		dry	dry	dry	-	dry	200	
	14-Jul-04		dry	dry	dry	-	dry	74	
	24-Aug-04		dry	dry	dry	-	dry	60	
	13-Oct-04		dry	dry	dry	-	dry	76	dry; blocked at 5.991
	1-Feb-05		dry	dry	dry	-	dry	600	
	2-Mar-05		dry	dry	dry	-	dry	300	
	1-Jun-05		dry	dry	dry	-	dry	94	
	5-Oct-05		-	5.960	0.000	-	1083.510	70	Not enough water to sample
	19-Jan-06		-	5.978	0.000	-	1083.492	560	
	10-May-06		-	5.980	0.000	-	1083.490	180	
	27-Jul-06		dry	dry	dry	-	dry	300	
	23-May-07		-	5.934	0.000	-	1083.536	10	
	21-Aug-07		dry	dry	dry	-	dry	10	
	23-Nov-07		dry	dry	dry	-	dry	2,000	
25-Jan-07		dry	dry	dry	-	dry	500		
14-Mar-08		dry	dry	dry	-	dry	22		
4-Jun-08		dry	dry	dry	-	dry	58		
1-Jul-08		dry	dry	dry	-	dry	64	well decommissioned on 01 July 2008	
<b>BH724</b>	7-Oct-03	1089.571	-	11.540	0.000	-	1078.031	5,500	
	20-Nov-03		-	11.606	0.000	-	1077.965	900	
	17-Dec-03		-	11.593	0.000	-	1077.978	20	
	13-Jan-04		-	11.519	0.000	-	1078.052	20	
	8-Mar-04		-	11.464	0.000	-	1078.107	3,800	ice + water; bailer fell into well

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH724 Continued</i>	6-Apr-04		-	11.435	0.000	-	1078.136	200	J-plug
	15-Jun-04		-	11.505	0.000	-	1078.066	26	
	14-Jul-04		-	11.513	0.000	-	1078.058	500	
	23-Aug-04		-	11.486	0.000	-	1078.085	2,400	
	14-Oct-04		-	11.520	0.000	-	1078.051	300	
	2-Feb-05		-	11.545	0.000	-	1078.026	10	
	2-Mar-05		-	11.529	0.000	-	1078.042	700	
	2-Jun-05		-	11.626	0.000	-	1077.945	400	
	5-Oct-05		-	11.453	0.000	-	1078.118	420	
	19-Jan-06		-	11.421	0.000	-	1078.150	50	
	10-May-06		-	11.527	0.000	-	1078.044	420	
	26-Jul-06		-	11.500	0.000	-	1078.071	44	
	25-Jan-07		-	11.435	0.000	-	1078.136	400	
	25-May-07		-	11.457	0.000	-	1078.114	180	
	23-Aug-07		-	11.325	0.000	-	1078.246	80	
	22-Nov-07		-	11.366	0.000	-	1078.205	89	
	10-Mar-08		-	11.450	0.000	-	1078.121	260	
	4-Jun-08		-	11.471	0.000	-	1078.100	54	
	4-Jul-08		-	11.430	0.000	-	1078.141	300	well decommissioned on 04 July 2008
	<b>BH725</b>	7-Oct-03	1091.321	-	13.652	0.000	-	1077.669	>10,000
13-Nov-03			13.534	13.965	0.431	-	1077.701	-	measured approx. 4 cm of product in bailer
20-Nov-03			13.553	14.302	0.749	-	1077.618	>10,000	
3-Dec-03			13.444	14.313	0.869	-	1077.703	nm	
9-Dec-03			14.01	14.040	0.030	-	1077.305	1,900	800 ml product from P.B.; 300 ml product from H.B.
10-Dec-03			13.884	13.965	0.081	-	1077.421	nm	monitored at 8:15 a.m.
10-Dec-03			-	14.009	0.000	-	1077.223	nm	monitored at 4:50 p.m.
11-Dec-03			-	14.163	0.000	-	1077.158	nm	monitored at 7:15 a.m.
11-Dec-03			-	14.173	0.000	-	1077.148	nm	monitored at 3:15 p.m.
12-Dec-03			14.156	14.221	0.065	-	1077.152	nm	monitored at 7:30 a.m.
12-Dec-03			-	14.162	0.000	-	1077.159	nm	monitored at 1:40 p.m.
15-Dec-03			-	14.440	0.000	-	1076.881	nm	
17-Dec-03			-	14.061	0.000	-	1077.260	>10,000	
19-Dec-03			14.12	14.392	0.272	-	1077.147	-	monitored at 10:05 a.m.
19-Dec-03			14.285	14.370	0.085	-	1077.019	-	monitored at 10:15 a.m.
19-Dec-03		-	14.264	0.000	-	1077.057	-	monitored at 10:30 a.m.	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

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<i>BH725 Continued</i>	22-Dec-03		nm	nm	nm	-	nm	nm	recovered 150 ml product from P.B.
	24-Dec-03		nm	nm	nm	-	nm	nm	recovered 100 ml product from P.B.
	7-Jan-04		14.170	14.365	0.000	-	1076.956	nm	recovered 750 ml product from P.B.
	7-Jan-04		-	14.265	0.000	-	1077.056	nm	after 20 minutes recovered 300 ml product from P.B.
	10-Jan-04		-	14.288	0.000	-	1077.033	nm	recovered 250 ml product from P.B.
	12-Jan-04		-	14.355	0.000	-	1076.966	nm	recovered 350 ml product from P.B.
	15-Jan-04		14.220	14.335	0.115	-	1077.078	nm	recovered 650 ml product from P.B.
	15-Jan-04		-	14.200	0.000	-	1077.121	nm	after 10 minutes, recovered 300 ml product from P.B.
	20-Jan-04		-	14.296	0.000	-	1077.025	nm	recovered 600 ml product from P.B.
	23-Jan-04		-	14.197	0.000	-	1077.124	nm	recovered 300 ml product from P.B.
	23-Jan-04		-	13.938	0.000	-	1077.383	nm	after 34 minutes, checked P.B.; no product
	5-Feb-04		-	13.888	0.000	-	1077.433	nm	recovered 600 ml product from P.B.
	5-Feb-04		-	14.100	0.000	-	1077.221	nm	75 minutes later recovered 100 ml product from P.B.
	9-Feb-04		14.085	14.204	0.119	-	1077.212	nm	recovered 400 ml product from P.B.;
	9-Feb-04		-	14.289	0.000	-	1077.032	nm	25 minutes later recovered 500 ml product from P.B.
	19-Feb-04		14.111	14.350	0.239	-	1077.162	nm	recovered 750 ml product from P.B.
	23-Feb-04		14.105	14.250	0.145	-	1077.187	nm	recovered 750 ml product from P.B.
	23-Feb-04		-	13.570	0.000	-	1077.751	nm	10 minutes later recovered 100 ml from P.B.
	26-Feb-04		-	13.963	0.000	-	1077.358	nm	recovered 800 ml product from P.B.
	26-Feb-04		-	14.088	0.000	-	1077.233	nm	17 minutes later recovered 50 ml product from P.B.
	3-Mar-04		-	13.443	0.000	-	1077.878	nm	recovered 30 ml product from P.B.
	3-Mar-04		-	13.499	0.000	-	1077.822	nm	no product in P.B.
	8-Mar-04		13.375	14.075	0.700	-	1077.806	>10,000	recovered 800 ml from passive bailer before H.B.
	8-Mar-04		13.955	14.110	0.155	-	1077.335	>10,000	hand bailed 150 ml product
	22-Mar-04		14.010	14.595	0.585	-	1077.194	nm	P.B. full of water; no product before H.B.
	22-Mar-04		14.135	14.203	0.068	-	1077.172	nm	hand bailed 1.4 L of product
	23-Mar-04		14.105	14.110	0.005	-	1077.215	nm	recovered 250 ml product from P.B.; H.B. had 1 cm product
	24-Mar-04		-	14.998	0.000	-	1076.323	nm	recovered 150 ml from P.B.; H.B. had 1.5 cm. product
	26-Mar-04		14.190	14.225	0.035	-	1077.124	nm	recovered 350 ml product from P.B.
	29-Mar-04		14.110	14.585	0.475	-	1077.116	nm	recovered 800 ml product from P.B.
	30-Mar-04		14.175	14.464	0.289	-	1077.088	nm	recovered 800 ml product from P.B. - before H.B.
30-Mar-04		14.437	14.475	0.038	-	1076.876	nm	recovered 600 ml from hand bailing	
31-Mar-04		14.327	14.329	0.002	-	1076.994	nm	recovered 100 ml product from P.B.	
12-Apr-04		14.252	14.535	0.283	-	1077.012	nm	recovered 800 ml product from P.B. - before H.B.	
12-Apr-04		14.440	14.530	0.090	-	1076.863	nm	recovered 500 ml product after hand bailing	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

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<i>BH725 Continued</i>	13-Apr-04		14.375	14.390	0.015	-	1076.943	nm	recovered 300 ml product from P.B.; not enough to H.B.
	15-Apr-04		14.305	14.310	0.005	-	1077.015	nm	recovered 350 ml product from P.B.; not enough to H.B.
	16-Apr-04		-	14.239	0.000	-	1077.082	nm	recovered 250 ml product from P.B.; H.B. 1 mm prod.
	19-Apr-04		14.316	14.329	0.013	-	1077.002	nm	recovered 400 ml product from P.B.; not enough to H.B.
	22-Apr-04		14.422	14.465	0.043	-	1076.890	nm	recovered 650 ml product from P.B.
	30-Apr-04		-	14.319	0.000	-	1077.002	nm	recovered 600 ml from P.B.; H.B. 1 mm product
	6-May-04		-	14.374	0.000	-	1076.947	nm	recovered 10 ml from passive bailer
	7-May-04		-	14.334	0.000	-	1076.987	nm	recovered 5 ml from P.B.; hand bailed dry @ 6.0 L
	10-May-04		-	14.339	0.000	-	1076.982	nm	recovered 5 ml product from P.B.; no product HB
	17-May-04		-	14.355	0.000	-	1076.966	nm	recovered 350 ml from P.B.; hand bailed 1 ml product
	20-May-04		-	14.385	0.000	-	1076.936	nm	recovered 400 ml from passive bailer; H.B. 50 ml
	28-May-04		14.175	14.179	0.004	-	1077.145	nm	recovered 200 ml from passive bailer
	15-Jun-04		cnm	cnm	cnm	-	cnm	>10,000	probe not reading product; PB - 800 ml product
	15-Jun-04		-	14.435	0.000	-	1076.886	>10,000	bailer checked, 0.5 L recovered; hand bailed 1.0 L
	18-Jun-04		14.275	14.285	0.010	-	1077.044	nm	600 ml recovered
	14-Jul-04		-	12.217	0.000	-	1079.104	>10,000	passive bailer; bailer check showed 4 mm product.
	28-Jul-04		14.184	14.215	0.031	-	1077.131	nm	500 ml recovered
	6-Aug-04		14.092	14.100	0.008	-	1077.227	nm	50 ml recovered
	10-Aug-04		14.175	14.180	0.005	-	1077.145	nm	750 ml recovered
	11-Aug-04		14.110	14.112	0.002	-	1077.211	nm	50 ml recovered
	13-Aug-04		-	14.115	0.000	-	1077.206	nm	20ml recovered
	18-Aug-04		14.115	14.117	0.002	-	1077.206	nm	50 ml recovered
	24-Aug-04		-	14.017	0.000	-	1077.304	>10,000	100ml product in PB. Bailer check showed 2mm product
	7-Sep-04		-	14.135	0.000	-	1077.186	nm	200 ml recovered
	9-Sep-04		-	14.054	0.000	-	1077.267	nm	50 ml recovered
	13-Sep-04		14.035	14.064	0.029	-	1077.280	nm	100 ml recovered
	15-Sep-04		14.085	14.090	0.005	-	1077.235	nm	50 ml recovered
	17-Sep-04		-	14.045	0.000	-	1077.276	nm	75 ml recovered
	20-Sep-04		14.149	14.154	0.005	-	1077.171	nm	100 ml recovered
	22-Sep-04		14.115	14.119	0.004	-	1077.205	nm	100 ml recovered
	24-Sep-04		14.096	14.100	0.004	-	1077.224	nm	75 ml recovered
	29-Sep-04		14.075	14.078	0.003	-	1077.245	nm	200 ml recovered
4-Oct-04		-	14.015	0.000	-	1077.306	--	200 ml recovered	
6-Oct-04		14.085	14.090	0.005	-	1077.235	nm	100 ml recovered	
12-Oct-04		-	14.142	0.000	-	1077.179	nm	bailer checked, 100 ml recovered; PB - 800 ml recovered	

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.



TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

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Calgary, Alberta

Monitoring Well	Date	Top of Casing Elevation <sup>1</sup>	Depth to LPH <sup>2</sup>	Depth to Water <sup>2</sup>	Apparent Thickness of LPH	LPH Recovery Volume	Water Elevation <sup>3</sup>	Combustible Vapour Concentration <sup>4</sup>	Comments
	(dd-mmm-yy)	(m)	(m)	(m)	(m)	(L)	(m)	(ppm)	
<i>BH725 Continued</i>	15-Oct-04		-	14.130	0.000	-	1077.191	nm	
	5-Nov-04		14.123	14.125	0.002	-	1077.198	nm	800 ml recovered
	8-Nov-04		-	14.105	0.000	-	1077.216	nm	350 ml recovered
	10-Nov-04		14.204	14.209	0.005	-	1077.116	nm	700 ml recovered
	17-Nov-04		14.167	14.170	0.003	-	1077.153	nm	100 ml recovered
	25-Nov-04		14.120	14.122	0.002	-	1077.201	nm	400 ml recovered
	29-Nov-04		14.058	14.060	0.002	-	1077.263	nm	30 ml recovered
	1-Dec-04		14.131	14.139	0.008	-	1077.188	nm	recovered 75 ml product from P.B.
	11-Jan-05		13.680	13.705	0.025	-	1077.636	>10,000	
	17-Jan-05		13.669	13.700	0.031	-	1077.646	nm	no passive bailer; P.B. installed following monitoring
	24-Jan-05		13.740	13.740	trace	-	1077.581	nm	no product in P.B.; checked H.B. - 20 mm product
	26-Jan-05		13.823	13.850	0.027	-	1077.493	nm	recovered 800 ml product from P.B.
	28-Jan-05		13.815	13.815	trace	-	-	nm	0 ml product from P.B.; H.B. check showed 2 mm product
	2-Feb-05		13.574	13.574	trace	-	1077.747	1,000	P.B. full of water; ice inside well; HB had 10 mm product
	18-Feb-05		13.782	13.784	0.002	-	1077.539	nm	recovered 10 ml product from P.B.
	22-Feb-05		13.835	13.835	trace	-	1077.486	nm	recovered 5 ml product from P.B.
	24-Feb-05		13.799	13.799	trace	-	1077.522	nm	checked bailer - no visible product; sheen present
	2-Mar-05	1091.295	-	13.795	0.000	-	1077.500	3,800	checked bailer - sheen on water; well resurveyed
	22-Mar-05		-	13.805	0.000	-	1077.490	nm	checked bailer - no product; reset P.B.
	24-Mar-05		-	13.835	0.000	-	1077.460	nm	checked bailer - no product
	28-Mar-05		-	13.705	0.000	-	1077.590	nm	checked bailer - no product
	30-Mar-05		-	13.886	0.000	-	1077.409	nm	checked bailer - no product
	1-Apr-05		-	13.783	0.000	-	1077.512	nm	checked bailer - no product
	5-Apr-05		-	13.895	0.000	-	1077.400	nm	checked bailer - no product
	11-Apr-05		-	13.824	0.000	-	1077.471	nm	checked bailer - no product
	15-Apr-05		-	13.865	0.000	-	1077.430	nm	checked bailer - no product
	18-Apr-05		-	13.890	0.000	-	1077.405	nm	checked bailer - no product
	20-Apr-05		-	13.861	0.000	-	1077.434	nm	checked bailer - no product
	22-Apr-05		-	13.849	0.000	-	1077.446	nm	checked bailer - no product
	25-Apr-05		-	13.840	0.000	-	1077.455	nm	checked bailer - no product
	27-Apr-05		-	13.870	0.000	-	1077.425	nm	recovered 25 ml product from P.B.; H.B. 0 ml product
	4-May-05		-	13.876	0.000	-	1077.419	nm	recovered 150 ml product from P.B.
	6-May-05		-	13.835	0.000	-	1077.460	nm	recovered 50 ml product from P.B.; H.B. 0 ml product
	9-May-05		-	13.837	0.000	-	1077.458	nm	recovered 110 ml product from P.B.
13-May-05		-	13.867	0.000	-	1077.428	nm	recovered 100 ml product from P.B.	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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	(dd-mmm-yy)	(m)	(m)	(m)	(m)	(L)	(m)	(ppm)	
<i>BH725 Continued</i>	16-May-05		-	13.765	0.000	-	1077.530	nm	recovered 100 ml product from P.B.
	26-May-05		-	13.888	0.000	-	1077.407	nm	recovered 500 ml product from P.B. - 4" well
	10-Jun-05		13.839	13.841	0.002	-	1077.456	nm	recovered 400 ml product from P.B.
	15-Jun-05		13.842	13.842	trace	-	1077.453	nm	recovered 300 ml product from P.B.
	17-Jun-05		13.818	13.818	trace	-	1077.477	nm	recovered 150 ml product from P.B.
	20-Jun-05		-	13.876	0.000	-	1077.419	nm	checked bailer - no product
	22-Jun-05		13.814	13.814	trace	-	1077.481	nm	recovered 250 ml product from P.B.
	24-Jun-05		-	13.862	0.000	-	1077.433	nm	
	27-Jun-05		13.853	13.853	trace	-	1077.442	nm	recovered 200 ml from passive bailer
	29-Jun-05		13.855	13.855	trace	-	1077.440	nm	recovered 150 ml product from P.B.
	6-Jul-05		13.795	13.795	trace	-	1077.500	nm	recovered 400 ml product from P.B.
	11-Jul-05		13.845	13.850	0.005	-	1077.449	nm	recovered 100 ml product from P.B.
	20-Jul-05		13.825	13.827	0.002	-	1077.470	nm	recovered 500 ml product from P.B.
	22-Jul-05		-	13.807	0.000	-	1077.488	nm	recovered 200 ml product from P.B.
	28-Jul-05		13.794	13.796	0.002	-	1077.501	nm	recovered 300 ml product from P.B.
	9-Aug-05		13.719	13.875	0.156	-	1077.545	nm	100 ml product from P.B. & 900 ml water - Reset bailer
	10-Aug-05		13.805	nm	0.000	-	1091.295	nm	
	12-Aug-05		13.824	13.826	0.002	-	1077.471	nm	recovered 620 ml product from P.B.
	16-Aug-05		13.784	13.786	0.002	-	1077.511	nm	recovered 140 ml product from P.B.
	17-Aug-05		13.807	13.811	0.004	-	1077.487	nm	recovered 200 ml product from P.B.
	24-Aug-05		13.763	13.770	0.007	-	1077.531	nm	recovered 150 ml product and 350 ml water from P.B.
	31-Aug-05		13.738	13.772	0.034	-	1077.550	nm	
	6-Sep-05		13.797	13.799	0.002	-	1077.498	nm	recovered 80 ml product from P.B.
	12-Sep-05		13.725	13.736	0.011	-	1077.568	nm	recovered 100 ml product from P.B.
	14-Sep-05		13.746	13.748	0.002	-	1077.549	nm	recovered 800 ml product from P.B.
	16-Sep-05		13.787	13.789	0.002	-	1077.508	nm	recovered 200 ml product from P.B.
	19-Sep-05		-	13.740	0.000	-	1077.555	nm	recovered 200 ml product & 100 ml water from P.B.
	21-Sep-05		-	13.788	0.000	-	1077.507	nm	recovered 50 ml product & 25 ml water from P.B.
	26-Sep-05		13.706	13.707	0.001	-	1077.589	nm	recovered 320 ml product from P.B.
	5-Oct-05		13.775	13.777	0.002	-	1077.520	nm	recovered 360 ml product from P.B.
	18-Oct-05		13.735	13.746	0.011	-	1077.558	nm	recovered 600 ml product from P.B.
	24-Oct-05		13.726	13.729	0.003	-	1077.568	nm	recovered 600 ml product from P.B.
1-Nov-05		-	13.703	0.000	-	1077.592	nm	recovered 650 ml product from P.B.	
3-Nov-05		13.684	13.684	0.000	-	1077.611	nm	recovered 20 ml product from P.B.; H.B. 0 mm	
8-Nov-05		13.737	13.748	0.011	-	1077.556	nm	recovered 500 ml product from P.B.	
10-Nov-05		13.624	13.627	0.003	-	1077.670	nm	recovered 350 ml product from P.B.	

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

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<i>BH725 Continued</i>	14-Nov-05		13.789	13.793	0.004	-	1077.505	nm	recovered 350 ml product from P.B.
	28-Nov-05		13.729	13.739	0.010	-	1077.564	nm	recovered 450 ml product from P.B.
	30-Nov-05		13.712	13.719	0.007	-	1077.582	nm	recovered 400 ml product from P.B.
	6-Dec-05		13.724	13.726	0.002	-	1077.571	nm	recovered 750 ml product from P.B.
	12-Dec-05		13.639	13.641	0.002	-	1077.656	nm	PB-Recovered 450 ml.
	14-Dec-05		13.728	13.737	0.009	-	1077.565	nm	PB-Recovered 300 ml.
	16-Dec-05		13.688	13.691	0.003	-	1077.606	nm	PB-Recovered 300 ml.
	19-Dec-05		13.665	13.668	0.003	-	1077.629	nm	PB-Recovered 300 ml.
	22-Dec-05		13.582	13.583	0.001	-	1077.713	nm	PB-Recovered 300 ml.
	23-Dec-05		13.703	13.709	0.006	-	1077.591	nm	PB-Recovered 100 ml.
	3-Jan-06		13.679	13.683	0.004	-	1077.615	nm	PB-Recovered 800 ml.
	5-Jan-06		13.655	13.657	0.002	-	1077.640	nm	PB-Recovered 700 ml.
	6-Jan-06		13.644	13.646	0.002	-	1077.651	nm	PB-Recovered 10 ml.
	9-Jan-06		13.600	13.603	0.003	-	1077.694	nm	PB-Recovered 5 ml.
	12-Jan-06		13.703	13.706	0.003	-	1077.591	nm	PB-Recovered 350 ml.
	13-Jan-06		13.624	13.626	0.002	-	1077.671	nm	PB-Recovered 400 ml.
	16-Jan-06		13.654	13.665	0.011	-	1077.639	nm	PB-Recovered 10 ml.
	20-Jan-06		13.615	13.619	0.004	-	1077.679	nm	PB-Recovered 10 ml. Hand bailed 5 mm.
	23-Jan-06		13.647	13.649	0.002	-	1077.648	nm	PB-Recovered 750 ml.
	30-Jan-06		13.545	13.547	0.002	-	1077.750	nm	PB-Recovered 500 ml.
	1-Feb-06		13.574	13.575	0.001	-	1077.721	nm	PB-Recovered 10 ml.
	3-Feb-06		13.694	13.696	0.002	-	1077.601	nm	recovered 300 ml product from P.B.
	6-Feb-06		13.699	13.701	0.002	-	1077.596	nm	recovered 300 ml product from P.B.
	8-Feb-06		13.649	13.652	0.003	-	1077.645	nm	recovered 100 ml product from P.B.
	10-Feb-06		13.725	13.726	0.001	-	1077.570	nm	recovered 100 ml product from P.B.
	27-Feb-06		13.535	13.544	0.009	-	1077.758	nm	recovered 700 ml product from P.B.
	2-Mar-06		13.690	13.692	0.002	-	1077.605	nm	recovered 500 ml product from P.B.
	4-Mar-06		cnm	cnm	cnm	-	cnm	nm	Iced - P.B. stuck in well
	6-Mar-06		13.593	13.595	0.002	-	1077.702	nm	recovered 200 ml product from P.B.
	8-Mar-06		13.569	13.571	0.002	-	1077.726	nm	P.B. full of water; reset
10-Mar-06		13.629	13.630	0.001	-	1077.666	nm	No recovery from P.B.; reset	
14-Mar-06		13.573	13.575	0.002	-	1077.722	nm	No recovery from P.B.; reset	
22-Mar-06		13.619	13.647	0.028	-	1077.670	nm	recovered 20 ml product from P.B.	
24-Mar-06		13.579	13.583	0.004	-	1077.715	nm	recovered 30 ml product from P.B.	
27-Mar-06		13.572	13.593	0.021	-	1077.719	nm	recovered 10 ml product from P.B.	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

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<i>BH725 Continued</i>	29-Mar-06		cnm	cnm	cnm	-	cnm	nm	Iced
	31-Mar-06		cnm	cnm	cnm	-	cnm	nm	High volume traffic
	12-Apr-06		13.630	13.632	0.002	-	1077.665	nm	recovered 100 ml product from P.B.
	18-Apr-06		13.705	13.718	0.013	0.400	1077.587	nm	recovered 400 ml product from P.B.
	21-Apr-06		13.601	13.642	0.041	0.800	1077.686	nm	recovered 800 ml product from P.B.
	26-Apr-06		13.592	13.600	0.008	0.900	1077.701	nm	recovered 900 ml product from P.B.
	28-Apr-06		13.649	13.651	0.002	0.200	1077.646	nm	recovered 200 ml product from P.B.
	1-May-06		13.603	13.607	0.004	0.200	1077.691	nm	recovered 200 ml product from P.B.
	3-May-06		13.693	13.699	0.006	0.250	1077.601	nm	recovered 250 ml product from P.B.
	9-May-06		13.694	13.699	0.005	0.300	1077.626	nm	recovered 300 ml product from P.B.
	7-Jun-06		13.684	13.756	0.072	0.600	1077.597	nm	recovered 600 ml product from P.B.
	12-Jun-06		13.694	13.699	0.005	0.600	1077.600	nm	recovered 600 ml product from P.B.
	14-Jun-06		13.602	13.614	0.012	0.400	1077.691	nm	recovered 400 ml product from P.B.
	16-Jun-06		13.665	13.666	0.001	0.010	1077.630	nm	recovered 10 ml product from P.B.
	20-Jun-06		13.662	13.664	0.002	-	1077.633	nm	4" well
	22-Jun-06		13.693	13.696	0.003	0.350	1077.601	nm	recovered 350 ml product from P.B.
	23-Jun-06		13.696	13.699	0.003	0.100	1077.598	nm	recovered 100 ml product from P.B.
	26-Jun-06		13.659	13.660	0.001	0.400	1077.636	nm	recovered 400 ml product from P.B.
	28-Jun-06		13.615	13.616	0.001	0.010	1077.680	nm	recovered 10 ml product from P.B.
	4-Jul-06		13.654	13.671	0.017	0.300	1077.638	nm	recovered 300 ml product from P.B.
	7-Jul-06		13.671	13.679	0.008	0.500	1077.622	nm	recovered 500 ml product from P.B.
	12-Jul-06		13.616	13.620	0.004	0.300	1077.678	nm	recovered 300 ml product from P.B.
	19-Jul-06		13.662	13.665	0.003	0.400	1077.632	nm	recovered 400 ml product from P.B.
	21-Jul-06		13.685	13.688	0.003	0.300	1077.609	nm	recovered 300 ml product from P.B.
	24-Jul-06		-	13.611	0.000	0.150	1077.684	nm	recovered 150 ml product from P.B.
	31-Jul-06		13.613	13.619	0.006	0.400	1077.681	nm	recovered 400 ml of product from PB
	3-Aug-06		13.640	13.641	0.001	0.010	1077.655	nm	recovered 10 ml of product from PB
	9-Aug-06		13.635	13.637	0.002	0.600	1077.660	nm	recovered 600 ml of product from PB
	15-Aug-06		13.615	13.617	0.002	0.350	1077.680	nm	recovered 350 ml of product from PB
	17-Aug-06		13.633	13.636	0.003	0.300	1077.661	nm	recovered 300 ml of product from PB
18-Aug-06		13.836	13.838	0.002	0.200	1077.459	nm	recovered 200 ml of product from PB	
21-Aug-06		13.613	13.615	0.002	0.070	1077.682	nm	recovered 70 ml of product from PB	
24-Aug-06		13.620	13.622	0.002	0.010	1077.675	nm	recovered 10 ml of product from PB	
25-Aug-06		13.643	13.645	0.002	0.300	1077.652	nm	recovered 300 ml of product from PB	
28-Aug-06		13.600	13.602	0.002	0.300	1077.695	nm	recovered 300 ml of product from PB	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

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	(dd-mmm-yy)	(m)	(m)	(m)	(m)	(L)	(m)	(ppm)	
<i>BH725 Continued</i>	30-Aug-06		13.605	13.606	0.001	0.010	1077.690	nm	recovered 10 ml of product from PB
	18-Sep-06		13.595	13.598	0.003	0.750	1077.699	nm	recovered 750 ml product from P.B.
	20-Sep-06		13.557	13.560	0.003	0.400	1077.737	nm	recovered 400 ml product from P.B.
	22-Sep-06		13.555	13.556	0.001	0.350	1077.740	nm	recovered 350 ml product from P.B.
	25-Sep-06		13.624	13.626	0.002	0.300	1077.671	nm	recovered 300 ml product from P.B.
	3-Oct-06		13.675	13.689	0.014	0.300	1077.617	nm	recovered 300 ml product from P.B.
	5-Oct-06		-	13.566	0.000	0.550	1077.729	nm	recovered 550 ml product from P.B.
	4-Dec-06		13.523	13.576	0.053	0.450	1077.761	nm	recovered 450 ml product from P.B.
	19-Jan-07		13.560	13.562	0.002	0.300	1077.735	nm	recovered 300 ml product from passive bailer
	22-Jan-07		13.536	13.537	0.001	0.030	1077.759	nm	recovered 30 ml product from passive bailer
	15-Mar-07		13.494	13.510	0.016	0.010	1077.798	nm	recovered 10 ml product from passive bailer
	17-Apr-07		13.520	13.543	0.023	-	1077.770	nm	passive bailer full of water; reset
	24-Apr-07		13.543	13.567	0.024	0.050	1077.747	nm	recovered 50 ml product from passive bailer
	1-May-07		13.495	13.499	0.004	0.010	1077.799	nm	recovered 10 ml product from passive bailer
	4-May-07		13.509	13.511	0.002	0.300	1077.786	nm	recovered 300 ml product from P.B.
	8-May-07		13.532	13.535	0.003	0.010	1077.762	nm	recovered 10 ml product from passive bailer
	10-May-07		13.543	13.548	0.005	0.010	1077.751	nm	recovered 10 ml product from passive bailer
	8-Jun-07		13.485	13.487	0.002	-	1077.810	nm	no recovery from passive bailer - reset
	11-Jun-07		13.468	13.469	0.001	0.010	1077.827	nm	recovered 10 ml of product from PB
	13-Jun-07		13.476	13.477	0.001	-	1077.819	nm	No recovery from P.B.; reset
	3-Jul-07		13.448	13.449	0.001	0.010	1077.847	nm	recovered 10 ml of product from PB
	5-Jul-07		13.503	13.505	0.002	0.010	1077.792	nm	recovered 10 ml of product from PB
	16-Jul-07		13.406	13.408	0.002	0.010	1077.889	nm	recovered 10 ml of product from PB
	20-Jul-07		13.404	13.407	0.003	0.010	1077.890	nm	recovered 10 ml of product from PB
	26-Jul-07		13.415	13.417	0.002	0.010	1077.880	nm	recovered 10 ml of product from PB
	30-Jul-07		13.425	13.427	0.002	0.010	1077.870	nm	recovered 10 ml of product from PB
	7-Aug-07		13.362	13.363	0.001	-	1077.933	nm	No recovery from P.B.; reset
	9-Aug-07		13.354	13.355	0.001	-	1077.941	nm	No recovery from P.B.; reset
	23-Aug-07		-	13.707	0.000	-	1077.588	26	
	24-Aug-07		13.255	13.256	0.001	-	1078.040	nm	
	27-Aug-07		13.303	13.305	0.002	-	1077.992	nm	No recovery from P.B.; reset
	29-Aug-07		13.293	13.295	0.002	-	1078.002	nm	No recovery from P.B.; reset
	4-Sep-07		13.270	13.272	0.002	-	1078.025	nm	No recovery from P.B.; reset
	6-Sep-07		13.275	13.277	0.002	-	1078.020	nm	No recovery from P.B.; reset
	10-Sep-07		13.271	13.273	0.002	-	1078.024	nm	

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

**TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013**

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Monitoring Well	Date (dd-mmm-yy)	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments
<i>BH725 Continued</i>	12-Sep-07		13.118	13.120	0.002	-	1078.177	nm	
	14-Sep-07		13.343	13.345	0.002	-	1077.952	nm	
	17-Sep-07		13.211	13.214	0.003	-	1078.083	nm	
	19-Sep-07		13.202	13.204	0.002	-	1078.093	nm	
	21-Sep-07		13.312	13.314	0.002	-	1077.983	nm	
	24-Sep-07		13.103	13.107	0.004	-	1078.191	nm	
	26-Sep-07		13.225	13.227	0.002	-	1078.070	nm	
	28-Sep-07		13.109	13.111	0.002	-	1078.186	nm	
	1-Oct-07		13.221	13.225	0.004	-	1078.073	nm	
	3-Oct-07		13.224	13.227	0.003	-	1078.070	nm	
	9-Oct-07		13.210	13.213	0.003	-	1078.084	nm	
	12-Oct-07		13.217	13.219	0.002	-	1078.078	nm	
	16-Oct-07		13.303	13.305	0.002	-	1077.992	nm	
	20-Oct-07		13.311	13.315	0.004	-	1077.983	nm	
	29-Oct-07		13.255	13.259	0.004	-	1078.039	nm	
	1-Nov-07		13.260	13.264	0.004	-	1078.034	nm	
	2-Nov-07		13.261	13.265	0.004	-	1078.033	nm	
	5-Nov-07		13.289	13.291	0.002	-	1078.006	nm	
	13-Nov-07		13.292	13.294	0.002	-	1078.003	nm	
	19-Nov-07		13.293	13.294	0.001	-	1078.002	nm	
	23-Nov-07		13.239	13.241	0.002	-	1078.056	nm	
	26-Nov-07		13.288	13.291	0.003	-	1078.006	nm	
	28-Nov-07		13.295	13.297	0.002	-	1078.000	nm	
	30-Nov-07		13.305	13.307	0.002	-	1077.990	nm	
	3-Dec-07		13.161	13.162	0.001	-	1078.134	nm	
	5-Dec-07		13.163	13.165	0.002	-	1078.132	nm	
	7-Dec-07		13.165	13.167	0.002	-	1078.130	nm	
	10-Dec-07		13.170	13.172	0.002	-	1078.125	nm	
	14-Dec-07		13.167	13.170	0.003	-	1078.127	nm	
	17-Dec-07		13.170	13.172	0.002	-	1078.125	nm	
	19-Dec-07		13.172	13.174	0.002	-	1078.123	nm	
	21-Dec-07		13.170	13.172	0.002	-	1078.125	nm	
	2-Jan-08		13.165	13.166	0.001	-	1078.130	nm	
	4-Jan-08		13.514	13.515	0.001	-	1077.781	nm	
	23-Jan-08		13.210	13.211	0.001	-	1078.085	nm	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH725 Continued</i>	25-Jan-08		13.216	13.218	0.002	-	1078.079	nm	
	7-Feb-08		13.463	13.464	0.001	-	1077.832	nm	
	9-Feb-08		13.465	13.466	0.001	-	1077.830	nm	
	6-Mar-08		13.333	13.334	0.001	-	1077.962	nm	
	7-Apr-08		13.354	13.355	0.001	-	1077.941	nm	
	9-Apr-08		13.356	13.357	0.001	-	1077.939	nm	
	11-Apr-08		13.359	13.360	0.001	-	1077.936	nm	
	14-Apr-08		13.411	13.412	0.001	-	1077.884	nm	
	16-Apr-08		13.433	13.434	0.001	-	1077.862	nm	
	28-Apr-08		13.468	13.470	0.002	-	1077.827	nm	
	30-Apr-08		13.470	13.471	0.001	-	1077.825	nm	
	2-May-08		13.478	13.479	0.001	-	1077.817	nm	
	5-May-08		13.461	13.462	0.001	-	1077.834	nm	
	12-May-08		13.453	13.454	0.001	-	1077.842	nm	
	14-May-08		13.450	13.452	0.002	-	1077.845	nm	
	26-May-08		13.358	13.359	0.001	-	1077.937	nm	
	28-May-08		13.364	13.366	0.002	-	1077.931	nm	
	30-May-08		13.366	13.367	0.001	-	1077.929	nm	
	9-Jun-08		13.365	13.366	0.001	-	1077.930	nm	
	11-Jun-08		13.363	13.364	0.001	-	1077.932	nm	
13-Jun-08		13.370	13.371	0.001	-	1077.925	nm		
3-Jul-08		-	13.335	0.000	-	1077.960	90	well decommissioned on 03 July 2008	
<b>BH726</b>	7-Oct-03	1091.178	dry	dry	0.000	-	dry	1,900	
	20-Nov-03		dry	dry	dry	-	dry	480	
	17-Dec-03		dry	dry	dry	-	dry	220	
	13-Jan-04		dry	dry	dry	-	dry	250	dry; blocked at 5.740
	8-Mar-04		dry	dry	dry	-	dry	800	dry
	6-Apr-04		dry	dry	dry	-	dry	200	
	6-May-04		dry	dry	dry	-	dry		blocked at 5.715 m
	15-Jun-04		dry	dry	dry	-	dry	42	dry
	14-Jul-04		dry	dry	dry	-	dry	60	dry
	24-Aug-04		dry	dry	dry	-	dry	72	
	14-Oct-04		dry	dry	dry	-	dry	74	dry
	2-Feb-05		dry	dry	dry	-	dry	320	
	2-Mar-05		dry	dry	dry	-	dry	240	

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH726 Continued</i>	2-Jun-05		dry	dry	dry	-	dry	50	
	19-Jan-06		dry	dry	dry	-	dry	400	
	10-May-06		dry	dry	dry	-	dry	200	
	25-Jan-07		dry	dry	dry	-	dry	600	
	23-Nov-07		dry	dry	dry	-	dry	84	
	10-Mar-08		dry	dry	dry	-	dry	200	
	4-Jun-08		dry	dry	dry	-	dry	44	
	3-Jul-08		dry	dry	dry	-	dry	100	well decommissioned on 03 July 2008
<b>BH727</b>	7-Oct-03	1091.331	-	13.955	0.000	-	1077.376	2,500	
	20-Nov-03		-	14.063	0.000	-	1077.268	40	
	17-Dec-03		-	14.050	0.000	-	1077.281	30	
	13-Jan-04		-	14.978	0.000	-	1076.353	55	road box missing one bolt
	8-Mar-04		-	14.020	0.000	-	1077.311	200	checked bailer - no product
	6-Apr-04		-	13.987	0.000	-	1077.344	52	
	15-Jun-04		-	14.004	0.000	-	1077.327	80	
	14-Jul-04		-	13.982	0.000	-	1077.349	52	
	23-Aug-04		-	13.924	0.000	-	1077.407	26	Under large puddle of water
	14-Oct-04		-	13.979	0.000	-	1077.352	30	
	3-Nov-04		-	14.073	0.000	-	1077.258	nm	
	2-Feb-05		-	13.987	0.000	-	1077.344	200	
	9-Mar-05		-	14.011	0.000	-	1077.320	36	ice in well; had to chip out
	1-Jun-05		-	14.019	0.000	-	1077.312	200	
	5-Oct-05		-	13.861	0.000	-	1077.470	70	
	11-Oct-05		-	13.851	0.000	-	1077.480	nm	
	19-Jan-06		-	13.862	0.000	-	1077.469	160	
	10-May-06		-	13.887	0.000	-	1077.444	90	
	26-Jul-06		-	13.778	0.000	-	1077.553	44	
	25-Jan-07		-	13.729	0.000	-	1077.602	80	
	29-May-07		-	13.809	0.000	-	1077.522	40	
	22-Nov-07		-	13.705	0.000	-	1077.626	48	
	10-Mar-08			cnm	cnm	cnm	-	cnm	cnm
18-Mar-08			cnm	cnm	cnm	-	cnm	cnm	well frozen in
4-Jun-08			-	13.753	0.000	-	1077.578	22	
3-Jul-08			-	13.670	0.000	-	1077.661	200	well decommissioned on 03 July 2008
7-Oct-03		1090.553	-	13.700	0.000	-	1076.853	>10,000	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.



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BH728	20-Nov-03		-	13.767	0.000	-	1076.836	4,800	
	17-Dec-03		-	13.768	0.000	-	1076.785	210	
	13-Jan-04		-	13.707	0.000	-	1076.846	850	
	8-Mar-04		-	13.793	0.000	-	1076.760	140	checked bailer - no product
	6-Apr-04		-	13.724	0.000	-	1076.829	62	
	15-Jun-04		-	13.755	0.000	-	1076.798	10	
	13-Jul-04		-	13.750	0.000	-	1076.803	600	
	23-Aug-04		-	13.733	0.000	-	1076.820	4,900	
	14-Oct-04		-	13.755	0.000	-	1076.798	90	
	2-Feb-05			13.766	13.766	trace	1076.787	2,000	bailer checked; slight sheen and odour
	2-Mar-05			-	13.775	0.000	1076.778	600	
	1-Jun-05			-	13.824	0.000	1076.729	64	
	5-Oct-05			-	13.625	0.000	1076.928	200	
	11-Oct-05			-	13.635	0.000	1076.918	nm	
	19-Jan-06			-	13.583	0.000	1076.970	480	
	11-May-06		1090.553	-	13.641	0.000	1076.912	600	
	26-Jul-06			-	13.529	0.000	1077.024	90	
	25-Jan-07			-	13.505	0.000	1077.048	1,000	
	29-May-07			-	13.653	0.000	1076.900	10	
	23-Aug-07			-	13.457	0.000	1077.096	88	
	22-Nov-07			-	13.509	0.000	1077.044	58	
	10-Mar-08			-	13.673	0.000	1076.880	260	
	4-Jun-08			-	13.571	0.000	1076.982	32	
3-Jul-08			-	13.500	0.000	1077.053	2,000	well decommissioned on 03 July 2008	
BH729	7-Oct-03	1088.514	-	11.998	0.000	-	1076.516	>10,000	
	20-Nov-03		-	12.096	0.000	-	1076.418	2	
	17-Dec-03		-	12.124	0.000	-	1076.390	20	
	13-Jan-04		-	12.065	0.000	-	1076.449	24	
	8-Mar-04		-	12.123	0.000	-	1076.391	16	checked bailer - no product
	6-Apr-04		-	12.092	0.000	-	1076.422	14	
	15-Jun-04		-	12.102	0.000	-	1076.412	6	
	13-Jul-04		-	12.066	0.000	-	1076.448	140	
	30-Jul-04		-	12.082	0.000	-	1076.432	6	
	23-Aug-04		-	12.060	0.000	-	1076.454	180	
	14-Oct-04		-	12.090	0.000	-	1076.424	2	

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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	(dd-mmm-yy)	(m)	(m)	(m)	(m)	(L)	(m)	(ppm)	
<i>BH729 Continued</i>	2-Feb-05		-	12.124	0.000	-	1076.390	400	
	2-Mar-05		-	12.127	0.000	-	1076.387	20	
	1-Jun-05		-	12.169	0.000	-	1076.345	10	
	5-Oct-05		-	11.866	0.000	-	1076.648	3,960	
	11-Oct-05		-	11.866	0.000	-	1076.648	nm	
	19-Jan-06		-	11.886	0.000	-	1076.628	96	
	11-May-06		-	11.895	0.000	-	1076.619	200	
	26-Jul-06		-	11.804	0.000	-	1076.710	54	
	25-Jan-07		-	11.770	0.000	-	1076.744	200	
	29-May-07		-	11.899	0.000	-	1076.615	25	New bailer
	23-Aug-07		-	11.706	0.000	-	1076.808	18	
	22-Nov-07		-	11.795	0.000	-	1075.719	14	
	10-Mar-08			cnm	cnm	-	cnm	cnm	well frozen in
	4-Jun-08		-	11.830	0.000	-	1076.684	68	
	23-Sep-10		-	12.065	0.000	-	1076.449	22	
	4-Oct-10		-	12.145	0.000	-	1076.369	10	Air blowing out well
	8-Apr-11		-	-	0.000	-	-	-	Blocked at 0.1m
	1-Jun-11		-	17.834	0.000	-	1070.680	38	data not consistent with previous findings
	13-Sep-11		-	11.994	0.000	-	1076.520	10	
	20-Dec-11		-	11.937	0.000	-	1076.577	50	
	23-Mar-12		-	12.132	0.000	-	1076.382	42	
	2-Oct-12		-	12.015	0.000	-	1076.499	0	
	1-May-13		-	12.187	0.000	-	1076.297	0	Top of pipe elevation w/o collar is 1088.484m
<b>BH730</b>	7-Oct-03	1086.744	-	10.538	0.000	-	1076.206	2,500	
	20-Nov-03		-	10.123	0.000	-	1076.621	16	
	17-Dec-03		-	10.707	0.000	-	1076.037	70	
	13-Jan-04		-	10.657	0.000	-	1076.087	52	
	8-Mar-04		-	10.738	0.000	-	1076.006	30	checked bailer - no product
	6-Apr-04		-	10.713	0.000	-	1076.031	16	
	15-Jun-04		-	10.707	0.000	-	1076.037	4	
	13-Jul-04		-	10.635	0.000	-	1076.109	50	
	30-Jul-04		-	10.730	0.000	-	1076.014	10	
	23-Aug-04		-	10.649	0.000	-	1076.095	30	
	14-Oct-04		-	10.622	0.000	-	1076.122	38	
	2-Feb-05		-	10.731	0.000	-	1076.013	84	
	2-Mar-05		-	10.685	0.000	-	1076.059	44	

Notes:

- 1 Elevations are geodetic based on ASCM 75838 elevation 1091.349. Coordinates are 3TM NAD 83.
  - 2 Depth relative to top of standpipe.
  - 3 Water elevation referenced to Geodetic. Water elevation adjusted for presence of LPHs (using LPH density of 0.8).
  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

**TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013**

**Updated Site Management Plan (2014)  
Hounsfeld Heights - Briar Hill Community  
Calgary, Alberta**

Monitoring Well	Date (dd-mmm-yy)	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments	
<i>BH730 Continued</i>	1-Jun-05		-	10.805	0.000	-	1075.939	20		
	5-Oct-05		-	10.358	0.000	-	1076.386	120		
	19-Jan-06		-	10.368	0.000	-	1076.376	50		
	11-May-06		-	10.407	0.000	-	1076.337	80		
	26-Jul-06		-	10.328	0.000	-	1076.416	70		
	25-Jan-07			cnm	cnm	cnm	cnm	cnm	Appears to be destroyed	
	29-May-07			cnm	cnm	cnm	cnm	cnm	Found road box on pile of dirt in adjacent yard	
	23-Aug-07			-	10.147	0.000	-	1076.597	20	
	22-Nov-07			-	10.170	0.000	-	1076.574	68	
	10-Mar-08			cnm	cnm	cnm	cnm	cnm	well frozen in	
	4-Jun-08			-	10.300	0.000	-	1076.444	60	
	23-Sep-10			cnl	cnl	cnl	cnl	cnl		
	20-Dec-11			cnl	cnl	cnl	cnl	cnl	cnl (removed from future monitoring events)	
	2-Oct-12			cnl	cnl	cnl	cnl	cnl	cnl	
<b>BH731</b>	7-Oct-03	1087.050	-	10.970	0.000	-	1076.080	40		
	20-Nov-03		-	11.020	0.000	-	1076.030	7		
	17-Dec-03		-	10.979	0.000	-	1076.071	30		
	13-Jan-04		-	10.987	0.000	-	1076.063	21		
	5-Apr-04		-	10.977	0.000	-	1076.073	12		
	14-Jun-04		-	10.978	0.000	-	1076.072	20		
	13-Jul-04		-	10.992	0.000	-	1076.058	84		
	23-Aug-04		-	10.964	0.000	-	1076.086	18		
	13-Oct-04		-	10.984	0.000	-	1076.066	70		
	2-Feb-05		-	11.045	0.000	-	1076.005	300		
	1-Mar-05		-	11.047	0.000	-	1076.003	60		
	31-May-05		-	11.063	0.000	-	1075.987	180	has bailer	
	4-Oct-05		-	10.861	0.000	-	1076.189	40		
	18-Jan-06		-	10.776	0.000	-	1076.274	10		
	9-May-06		-	10.917	0.000	-	1076.133	10		
	26-Jul-06		-	10.839	0.000	-	1076.211	10		
	24-Jan-07		-	10.910	0.000	-	1076.140	10		
	22-May-07		-	10.883	0.000	-	1076.167	14		
21-Aug-07		-	10.723	0.000	-	1076.327	10			
21-Nov-07		-	10.768	0.000	-	1076.282	58			
12-Mar-08		-	10.850	0.000	-	1076.200	22			

Notes:

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- Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.

LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
Calgary, Alberta

Monitoring Well	Date	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments
<i>BH731 Continued</i>	3-Jun-08		-	10.857	0.000	-	1076.193	42	
	25-Jun-08		-	10.831	0.000	-	1076.219	50	well decommissioned on 26 June 2008
<b>BH732</b>	7-Oct-03	1080.541	-	6.189	0.000	-	1074.352	60	
	20-Nov-03		-	6.263	0.000	-	1074.278	57	
	17-Dec-03		-	6.260	0.000	-	1074.281	76	
	13-Jan-04		-	6.281	0.000	-	1074.260	54	
	8-Mar-04		-	6.365	0.000	-	1074.176	200	some ice
	6-Apr-04		-	6.381	0.000	-	1074.160	12	
	14-Jun-04		-	6.333	0.000	-	1074.208	8	
	13-Jul-04		-	6.351	0.000	-	1074.190	41	
	23-Aug-04		-	6.385	0.000	-	1074.156	32	
	13-Oct-04		-	6.365	0.000	-	1074.176	54	
	3-Nov-04		-	6.362	0.000	-	1074.179	nm	
	1-Feb-05		-	6.432	0.000	-	1074.109	20	
	28-Feb-05		-	6.415	0.000	-	1074.126	60	
	31-May-05		-	6.413	0.000	-	1074.128	180	has bailer
	4-Oct-05		-	5.957	0.000	-	1074.584	20	
	11-Oct-05		-	5.945	0.000	-	1074.596	nm	
	18-Jan-06		-	5.805	0.000	-	1074.736	260	
	9-May-06		-	6.173	0.000	-	1074.368	180	
	26-Jul-06		-	6.071	0.000	-	1074.470	20	
	24-Jan-07		-	6.254	0.000	-	1074.287	82	
	22-May-07		-	6.157	0.000	-	1074.384	42	
	21-Aug-07		-	6.041	0.000	-	1074.500	30	
	21-Nov-07		-	6.153	0.000	-	1074.388	50	
	18-Mar-08		-	6.286	0.000	-	1074.255	10	bailer lost down well; could not be fished out
	3-Jun-08		-	6.245	0.000	-	1074.296	28	
	23-Sep-10		-	6.274	0.000	-	1074.267	64	
	4-Oct-10		-	6.297	0.000	-	1074.244	52	Needs new R.B.
	5-Apr-11		-	6.410	0.000	-	1074.131	30	missing metal lid
	2-Jun-11		-	6.233	0.000	-	1074.308	40	
	12-Sep-11		-	6.095	0.000	-	1074.446	25	
	19-Dec-11		-	6.192	0.000	-	1074.349	40	no road box lid
	21-Mar-12		-	6.330	0.000	-	1074.211	82	repaired
	1-Oct-12		-	6.270	0.000	-	1074.271	0	
	29-Apr-13		-	6.388	0.000	-	1074.153	85	

Notes:

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  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

**TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013**

**Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
Calgary, Alberta**

Monitoring Well	Date (dd-mmm-yy)	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments
BH733	7-Oct-03	1080.609	-	5.872	0.000	-	1074.737	60	
	20-Nov-03		-	6.085	0.000	-	1074.524	88	
	17-Dec-03		-	6.025	0.000	-	1074.584	65	
	13-Jan-04		-	6.026	0.000	-	1074.583	60	
	10-Mar-04		-	6.105	0.000	-	1074.504	180	iced
	5-Apr-04		-	6.076	0.000	-	1074.533	54	
	15-Jun-04		-	6.096	0.000	-	1074.513	32	
	13-Jul-04		-	6.086	0.000	-	1074.523	38	
	23-Aug-04		-	6.109	0.000	-	1074.500	36	
	13-Oct-04		-	6.078	0.000	-	1074.531	70	
	2-Nov-04		-	6.061	0.000	-	1074.548	nm	
	1-Feb-05		-	6.138	0.000	-	1074.471	22	
	28-Feb-05		-	6.115	0.000	-	1074.494	74	
	31-May-05		-	6.170	0.000	-	1074.439	76	
	4-Oct-05		-	5.687	0.000	-	1074.922	60	
	18-Jan-06		-	5.672	0.000	-	1074.937	220	
	9-May-06		-	5.980	0.000	-	1074.629	98	
	26-Jul-06		-	5.840	0.000	-	1074.769	70	
	24-Jan-07		-	6.015	0.000	-	1074.594	160	
	23-May-07		-	5.960	0.000	-	1074.649	54	
	23-Aug-07		-	5.815	0.000	-	1074.794	46	
	21-Nov-07		-	5.967	0.000	-	1074.642	120	
	14-Mar-08		-	6.070	0.000	-	1074.539	80	
	3-Jun-08		-	5.973	0.000	-	1074.636	44	
	23-Sep-10		-	6.019	0.000	-	1074.590	66	
	4-Oct-10		-	5.991	0.000	-	1074.618	42	
	5-Apr-11		-	6.035	0.000	-	1074.574	52	
	2-Jun-11		-	5.921	0.000	-	1074.688	60	
	12-Sep-11		-	5.635	0.000	-	1074.974	20	
	19-Dec-11		-	5.737	0.000	-	1074.872	20	
21-Mar-12		-	5.935	0.000	-	1074.674	22		
1-Oct-12		-	5.828	0.000	-	1074.781	50		
29-Apr-13		-	6.002	0.000	-	1074.577	75	Top of pipe elevation w/o collar was 1080.579m.	
BH734	7-Oct-03	1082.607	-	7.460	0.000	-	1075.147	60	
	20-Nov-03		-	7.665	0.000	-	1074.942	180	
	17-Dec-03		-	7.540	0.000	-	1075.067	62	

Notes:

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  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
Calgary, Alberta

Monitoring Well	Date	Top of Casing Elevation <sup>1</sup>	Depth to LPH <sup>2</sup>	Depth to Water <sup>2</sup>	Apparent Thickness of LPH	LPH Recovery Volume	Water Elevation <sup>3</sup>	Combustible Vapour Concentration <sup>4</sup>	Comments	
	(dd-mmm-yy)	(m)	(m)	(m)	(m)	(L)	(m)	(ppm)		
<i>BH734 Continued</i>	13-Jan-04		-	7.590	0.000	-	1075.017	15		
	8-Mar-04		-	7.744	0.000	-	1074.863	8	checked bailer - no product	
	5-Apr-04		-	7.588	0.000	-	1075.019	46		
	15-Jun-04		-	7.586	0.000	-	1075.021	14		
	13-Jul-04		-	7.542	0.000	-	1075.065	32		
	23-Aug-04		-	7.520	0.000	-	1075.087	32		
	13-Oct-04		-	7.619	0.000	-	1074.988	74		
	3-Nov-04		-	7.658	0.000	-	1074.949	nm		
	1-Feb-05		-	7.674	0.000	-	1074.933	220		
	28-Feb-05		-	7.623	0.000	-	1074.984	300		
	31-May-05		-	7.567	0.000	-	1075.040	240	has bailer	
	4-Oct-05		-	7.300	0.000	-	1075.307	10		
	11-Oct-05		-	7.235	0.000	-	1075.372	nm		
	18-Jan-06		-	7.352	0.000	-	1075.255	500		
	10-May-06		-	7.535	0.000	-	1075.072	80		
	26-Jul-06		-	7.235	0.000	-	1075.372	100		
	24-Jan-07		-	7.510	0.000	-	1075.097	160		
	23-May-07		-	7.329	0.000	-	1075.278	125		
	23-Aug-07		-	7.314	0.000	-	1075.293	44		
	21-Nov-07		-	7.547	0.000	-	1075.060	180		
	18-Mar-08			cnm	cnm		cnm	cnm	320	well frozen in at approximately 1.0 m below top of pipe
	3-Jun-08		-	7.369	0.000	-	1075.238	50		
	23-Sep-10		-	7.579	0.000	-	1075.028	48		
	4-Oct-10		-	7.589	0.000	-	1075.018	50		
	5-Apr-11		-	7.585	0.000	-	1075.022	70		
	2-Jun-11		-	7.396	0.000	-	1075.211	50		
	12-Sep-11		-	7.500	0.000	-	1075.107	80		
	13-Dec-11		-	7.507	0.000	-	1075.100	65		
	21-Mar-12		-	7.675	0.000	-	1074.932	18		
1-Oct-12		-	7.570	0.000	-	1075.037	170			
29-Apr-13		-	7.554	0.000	-	1075.023	0	Top of pipe elevation w/o collar is 1082.577m.		
<b>BH735</b>	7-Oct-03	1083.894	-	8.653	0.000	-	1075.241	45		
	20-Nov-03		-	8.805	0.000	-	1075.089	58		
	17-Dec-03		-	8.753	0.000	-	1075.141	30		
	13-Jan-04		-	9.774	0.000	-	1074.120	20		
	8-Mar-04		-	8.885	0.000	-	1075.009	50	iced	

Notes:

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  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

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Calgary, Alberta**

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<i>BH735 Continued</i>	5-Apr-04		-	8.698	0.000	-	1075.196	28		
	15-Jun-04		cnm	cnm	cnm	-	cnm	cnm	under trailer	
	13-Jul-04		-	5.683	0.000	-	1078.211	39		
	23-Aug-04		-	8.670	0.000	-	1075.224	36		
	13-Oct-04		-	8.737	0.000	-	1075.157	50		
	3-Nov-04		-	8.702	0.000	-	1075.192	nm		
	1-Feb-05		-	8.831	0.000	-	1075.063	4		
	28-Feb-05		-	8.743	0.000	-	1075.151	86	clean out frost-heaved	
	31-May-05		-	8.708	0.000	-	1075.186	80		
	4-Oct-05		-	8.367	0.000	-	1075.527	10		
	18-Jan-06		-	8.435	0.000	-	1075.459	20		
	10-May-06		-	8.616	0.000	-	1075.278	38		
	26-Jul-06		-	8.245	0.000	-	1075.649	60		
	24-Jan-07		-	8.708	0.000	-	1075.186	68		
	23-May-07		-	8.460	0.000	-	1075.434	120		
	21-Aug-07		-	8.583	0.000	-	1075.311	60		
	21-Nov-07		-	8.777	0.000	-	1075.117	220		
	13-Mar-08		-	8.738	0.000	-	1075.156	260		
	3-Jun-08		-	8.534	0.000	-	1075.360	18		
	25-Jun-08		-	8.377	0.000	-	1075.517	60	well decommissioned on 25 June 2008	
	<b>BH736</b>	7-Oct-03	1084.519	-	9.134	0.000	-	1075.385	45	
		20-Nov-03		-	9.278	0.000	-	1075.241	28	
		17-Dec-03		-	9.218	0.000	-	1075.301	40	
		13-Jan-04		-	9.230	0.000	-	1075.289	75	
		8-Mar-04		-	9.320	0.000	-	1075.199	90	bailer check
5-Apr-04			-	9.199	0.000	-	1075.320	30		
15-Jun-04			-	9.187	0.000	-	1075.332	62		
13-Jul-04			-	9.097	0.000	-	1075.422	42		
23-Aug-04			-	9.093	0.000	-	1075.426	48		
13-Oct-04			-	9.133	0.000	-	1075.386	52		
2-Nov-04			-	9.096	0.000	-	1075.423	nm		
1-Feb-05			-	9.273	0.000	-	1075.246	240		
28-Feb-05			-	9.183	0.000	-	1075.336	84		
31-May-05			-	9.060	0.000	-	1075.459	140		
4-Oct-05			-	8.714	0.000	-	1075.805	22		

Notes:

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- 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.

LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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Hounsfield Heights - Briar Hill Community  
Calgary, Alberta

Monitoring Well	Date (dd-mmm-yy)	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments
<i>BH736 Continued</i>	18-Jan-06		-	8.190	0.000	-	1076.329	240	
	10-May-06		-	9.082	0.000	-	1075.437	82	
	26-Jul-06		-	8.845	0.000	-	1075.674	92	
	24-Jan-07		-	9.054	0.000	-	1075.465	56	
	23-May-07		-	8.955	0.000	-	1075.564	10	
	21-Aug-07		-	8.942	0.000	-	1075.577	58	
	21-Nov-07		-	9.053	0.000	-	1075.466	180	
	13-Mar-08		-	8.968	0.000	-	1075.551	90	
	3-Jun-08		-	8.993	0.000	-	1075.526	50	
	23-Sep-10		-	9.149	0.000	-	1075.370	20	
	4-Oct-10		-	9.245	0.000	-	1075.274	30	
	5-Apr-11		-	9.230	0.000	-	1075.289	80	Missing cap (needs cut down)
	2-Jun-11		-	8.949	0.000	-	1075.570	60	
	12-Sep-11		-	9.222	0.000	-	1075.297	10	
	20-Dec-11		-	9.230	0.000	-	1075.289	25	
	21-Mar-12		-	9.345	0.000	-	1075.174	20	
	1-Oct-12		-	9.272	0.000	-	1075.247	155	cap was broken, casing was cut down and j-plug installed
	29-Apr-13		-	9.200	0.000	-	1075.289	270	Top of pipe elevation w/o collar was 1084.489m.
<b>BH737</b>	7-Oct-03	1080.693	-	5.715	0.000	-	1074.978	55	
	20-Nov-03		-	5.776	0.000	-	1074.917	160	
	17-Dec-03		-	5.785	0.000	-	1074.908	75	
	13-Jan-04		-	5.821	0.000	-	1074.872	73	
	5-Apr-04		-	5.892	0.000	-	1074.801	16	
	15-Jun-04		-	5.890	0.000	-	1074.803	28	
	13-Jul-04		-	5.848	0.000	-	1074.845	40	
	23-Aug-04		-	5.828	0.000	-	1074.865	38	
	13-Oct-04		-	5.833	0.000	-	1074.860	70	
	2-Nov-04		-	5.823	0.000	-	1074.870	nm	
	1-Feb-05		-	5.923	0.000	-	1074.770	62	
	28-Feb-05		-	5.893	0.000	-	1074.800	74	
	31-May-05		-	5.917	0.000	-	1074.776	22	
	4-Oct-05		-	5.248	0.000	-	1075.445	10	
	18-Jan-06		-	5.368	0.000	-	1075.325	200	
	9-May-06		-	5.695	0.000	-	1074.998	32	
	26-Jul-06		-	5.333	0.000	-	1075.360	92	
24-Jan-07		-	5.644	0.000	-	1075.049	60		

Notes:

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  - 2 Depth relative to top of standpipe.
  - 3 Water elevation referenced to Geodetic. Water elevation adjusted for presence of LPHs (using LPH density of 0.8).
  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.



TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
Calgary, Alberta

Monitoring Well	Date (dd-mmm-yy)	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments
<i>BH737 Continued</i>	23-May-07		-	5.583	0.000	-	1075.110	32	
	23-Aug-07		-	5.253	0.000	-	1075.440	38	
	21-Nov-07		-	5.540	0.000	-	1075.153	60	
	10-Mar-08		cnl	cnl	cnl	cnl	cnl	cnl	
	14-Mar-08		-	5.650	0.000	-	1075.043	20	
	3-Jun-08		-	5.665	0.000	-	1075.028	46	
	23-Sep-10		-	7.757	0.000	-	1072.936	68	
	4-Oct-10		-	5.576	0.000	-	1075.117	24	
	5-Apr-11		-	5.868	0.000	-	1074.825	54	
	2-Jun-11		-	5.747	0.000	-	1074.946	48	
	12-Sep-11		-	5.490	0.000	-	1075.203	25	
	19-Dec-11		cnm	cnm	cnm	cnm	cnm	15	inaccessible
	21-Mar-12		-	5.820	0.000	-	1074.873	34	
	2-Oct-12		-	5.670	0.000	-	1075.023	55	
29-Apr-13		-	5.886	0.000	-	1074.777	125	Top of pipe elevation w/o collar was 1080.663m.	
<b>BH738</b>	7-Oct-03	1084.778	-	9.024	0.000	-	1075.754	75	
	20-Nov-03		-	9.084	0.000	-	1075.694	4	
	17-Dec-03		-	9.140	0.000	-	1075.638	40	
	13-Jan-04		-	9.130	0.000	-	1075.648	15	
	8-Mar-04		-	9.234	0.000	-	1075.544	10	
	6-Apr-04		-	9.203	0.000	-	1075.575	12	
	15-Jun-04		-	9.225	0.000	-	1075.553	8	
	13-Jul-04		-	9.185	0.000	-	1075.593	70	
	23-Aug-04		-	9.149	0.000	-	1075.629	46	
	14-Oct-04		-	9.153	0.000	-	1075.625	42	
	2-Feb-05		-	9.227	0.000	-	1075.551	10	
	2-Mar-05		-	9.216	0.000	-	1075.562	64	
	1-Jun-05		-	9.250	0.000	-	1075.528	10	
	5-Oct-05		-	8.774	0.000	-	1076.004	70	
	11-Oct-05		-	8.785	0.000	-	1075.993	nm	
	19-Jan-06		-	8.839	0.000	-	1075.939	200	
	11-May-06		-	8.990	0.000	-	1075.788	180	
26-Jul-06		-	8.735	0.000	-	1076.043	76		
25-Jan-07		-	9.005	0.000	-	1075.773	10		
29-May-07		-	8.875	0.000	-	1075.903	60		
23-Aug-07		-	8.625	0.000	-	1076.153	48		

Notes:

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  - 3 Water elevation referenced to Geodetic. Water elevation adjusted for presence of LPHs (using LPH density of 0.8).
  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

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Calgary, Alberta

Monitoring Well	Date (dd-mmm-yy)	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments
<i>BH738 Continued</i>	22-Nov-07		-	8.777	0.000	-	1076.001	54	
	10-Mar-08		-	8.982	0.000	-	1075.796	160	
	4-Jun-08		-	8.988	0.000	-	1075.790	56	
	23-Sep-10		cnl	cnl	cnl	cnl	cnl	cnl	
	20-Dec-11		cnl	cnl	cnl	cnl	cnl	cnl	cnl
	2-Oct-12		cnl	cnl	cnl	cnl	cnl	cnl	cnl
<b>BH739</b>	7-Oct-03	1083.178	-	7.600	0.000	-	1075.578	60	
	20-Nov-03		-	7.763	0.000	-	1075.415	ND	lid not on tightly
	17-Dec-03		-	7.815	0.000	-	1075.363	25	
	13-Jan-04		-	7.823	0.000	-	1075.355	10	Well collar needs repair
	6-Apr-04		-	7.817	0.000	-	1075.361	4	no collar or cap
	15-Jun-04		-	7.860	0.000	-	1075.318	20	missing 1 bolt, missing collar
	13-Jul-04		-	7.800	0.000	-	1075.378	64	missing collar; cap not on
	23-Aug-04		-	7.749	0.000	-	1075.429	42	
	14-Oct-04		-	7.775	0.000	-	1075.403	14	well against side of traffic box
	2-Feb-05		-	7.882	0.000	-	1075.296	14	
	2-Mar-05		cnm	cnm	cnm	-	cnm	50	bailer frozen in well
	1-Jun-05		-	7.906	0.000	-	1075.272	50	MW pushed to side of RB; no collar no cap; fish out bailer
	5-Oct-05		-	7.325	0.000	-	1075.853	0	no cap, needs a j plug
	19-Jan-06		-	7.444	0.000	-	1075.734	20	needs a j-plug
	11-May-06		-	7.630	0.000	-	1075.548	100	
	26-Jul-06		-	7.277	0.000	-	1075.901	10	
	25-Jan-07		cnl	cnl	cnl	cnl	cnl	cnl	
	29-May-07		cnl	cnl	cnl	cnl	cnl	cnl	well possibly destroyed
	10-Mar-08		cnl	cnl	cnl	cnl	cnl	cnl	
	23-Sep-10		cnl	cnl	cnl	cnl	cnl	cnl	
20-Dec-11		cnl	cnl	cnl	cnl	cnl	cnl	cnl	
2-Oct-12		cnl	cnl	cnl	cnl	cnl	cnl	cnl	
<b>BH740</b>	7-Oct-03	1090.953	-	11.255	0.000	-	1079.698	45	
	20-Nov-03		-	11.343	0.000	-	1079.610	190	
	4-Dec-03		-	11.502	0.000	-	1079.451	nm	
	17-Dec-03		-	11.285	0.000	-	1079.668	35	
	13-Jan-04		-	11.290	0.000	-	1079.663	82	
	11-Mar-04		-	11.348	0.000	-	1079.605	180	iced
	5-Apr-04		-	11.268	0.000	-	1079.685	28	

Notes:

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- 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.

LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH740 Continued</i>	15-Jun-04		-	11.393	0.000	-	1079.560	82		
	13-Jul-04		-	11.294	0.000	-	1079.659	42		
	23-Aug-04		-	11.229	0.000	-	1079.724	44		
	13-Oct-04		cnm	cnm	cnm	-	cnm	cnm	under car	
	1-Feb-05		cnm	cnm	cnm	-	cnm	cnm	under car	
	9-Mar-05		-	11.244	0.000	-	1079.709	20	ice in well - had to chip out	
	31-May-05		-	11.268	0.000	-	1079.685	70	has bailer	
	4-Oct-05		-	10.996	0.000	-	1079.957	160		
	19-Jan-06		-	10.942	0.000	-	1080.011	200		
	11-May-06		-	10.643	0.000	-	1080.310	200		
	26-Jul-06		-	10.678	0.000	-	1080.275	94		
	24-Jan-07		-	10.225	0.000	-	1080.728	160		
	23-May-07		-	10.205	0.000	-	1082.748	50		
	21-Aug-07		-	9.765	0.000	-	1081.188	56		
	21-Nov-07		-	10.448	0.000	-	1080.505	180		
	13-Mar-08		-	10.095	0.000	-	1080.858	26		
	4-Jun-08		-	10.167	0.000	-	1080.786	16		
	23-Sep-10		-	9.455	0.000	-	1081.498	60		
	4-Oct-10		-	8.570	0.000	-	1082.383	40		
	5-Apr-11		-	9.415	0.000	-	1081.538	90		
	1-Jun-11		-	9.023	0.000	-	1081.930	40		
	12-Sep-11		-	7.905	0.000	-	1083.048	30		
	20-Dec-11			cnl	cnl	cnl	cnl	cnl	cnl	under vehicle
	21-Mar-12			cnl	cnl	cnl	cnl	cnl	cnl	under vehicle
	2-Oct-12			-	7.160	0.000	-	1083.793	50	
	29-Apr-13			-	10.510	0.000	-	1080.388	185	Top of pipe elevation w/o collar was 1090.898m.
<b>BH741</b>	7-Oct-03	1090.784	-	11.756	0.000	-	1079.028	49		
	20-Nov-03		-	11.811	0.000	-	1078.973	190		
	17-Dec-03		-	11.731	0.000	-	1079.053	82		
	13-Jan-04		-	11.707	0.000	-	1079.077	86		
	11-Mar-04		cnm	cnm	cnm	-	cnm	cnm	bailer & fish hook in well	
	5-Apr-04		-	11.685	0.000	-	1079.099	70		
	15-Jun-04		-	11.755	0.000	-	1079.029	100		
	13-Jul-04		-	11.664	0.000	-	1079.120	36		
	23-Aug-04		-	11.611	0.000	-	1079.173	32		
	13-Oct-04		-	11.731	0.000	-	1079.053	54		

Notes:

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  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

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<i>BH741 Continued</i>	2-Nov-04		-	11.643	0.000	-	1079.141	nm		
	1-Feb-05		cnm	cnm	cnm	-	cnm	cnm	well is frozen	
	9-Mar-05		-	11.760	0.000	-	1079.024	18	ice in well; had to chip out	
	31-May-05		-	11.563	0.000	-	1079.221	80	has bailer	
	4-Oct-05		-	11.134	0.000	-	1079.650	76		
	18-Jan-06		-	11.298	0.000	-	1079.486	260		
	10-May-06		-	11.449	0.000	-	1079.335	64		
	26-Jul-06		-	11.360	0.000	-	1079.424	92		
	24-Jan-07		-	11.465	0.000	-	1079.319	10		
	23-May-07		-	10.948	0.000	-	1080.836	40		
	21-Aug-07		-	11.029	0.000	-	1079.755	62		
	21-Nov-07		-	11.337	0.000	-	1079.447	220		
	13-Mar-08			cnm	cnm	cnm	cnm	64	well frozen in; bottom of bailer stuck in well	
	4-Jun-08			-	10.772	0.000	-	1080.012	14	
	26-Jun-08			-	10.272	0.000	-	1080.512	38	well decommissioned on 26 June 2008
	<b>BH742</b>	7-Oct-03	1090.484	-	12.384	0.000	-	1078.100	62	
		20-Nov-03		-	12.485	0.000	-	1077.999	6	
17-Dec-03			-	12.384	0.000	-	1078.100	220		
13-Jan-04			cnm	cnm	cnm	-	cnm	cnm	under car	
10-Mar-04			cnm	cnm	cnm	-	cnm	cnm	blocked	
5-Apr-04			-	12.475	0.000	-	1078.009	58		
15-Jun-04			cnm	cnm	cnm	-	cnm	cnm	under car	
13-Jul-04			-	12.246	0.000	-	1078.238	22		
23-Aug-04			-	12.275	0.000	-	1078.209	30		
13-Oct-04			-	12.388	0.000	-	1078.096	50	under car	
3-Nov-04			-	12.460	0.000	-	1078.024	nm		
1-Feb-05			-	12.457	0.000	-	1078.027	40		
28-Feb-05			-	12.730	0.000	-	1077.754	42		
31-May-05			-	12.360	0.000	-	1078.124	60		
4-Oct-05			-	12.113	0.000	-	1078.371	84		
18-Jan-06			-	12.024	0.000	-	1078.460	12		
10-May-06			-	12.234	0.000	-	1078.250	70		
26-Jul-06		-	12.018	0.000	-	1078.466	70			
24-Jan-07		-	12.248	0.000	-	1078.236	30			
23-May-07		-	12.700	0.000	-	1077.784	10			

Notes:

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
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<i>BH742 Continued</i>	21-Aug-07		-	12.133	0.000	-	1078.351	34	
	21-Nov-07		-	12.343	0.000	-	1078.141	49	
	13-Mar-08		cnm		cnm	cnm		cnm	well frozen in
	4-Jun-08		-	11.821	0.000	-	1078.663	18	
	23-Sep-10		-	11.803	0.000	-	1078.681	26	
	4-Oct-10		-	11.980	0.000	-	1078.504	22	
	5-Apr-11		-	11.940	0.000	-	1078.544	400	
	1-Jun-11		-	11.366	0.000	-	1079.118	34	
	12-Sep-11		-	11.775	0.000	-	1078.709	75	
	20-Dec-11		-	11.907	0.000	-	1078.577	65	
	21-Mar-12		-	12.225	0.000	-	1078.259	10	
	2-Oct-12		-	12.243	0.000	-	1078.241	0	
	29-Apr-13		-	12.023	0.000	-	1078.431	105	Top of pipe elevation w/o collar was 1090.454m.
	<b>BH743</b>	7-Oct-03	1088.873	-	11.174	0.000	-	1077.699	25
20-Nov-03			-	11.309	0.000	-	1077.564	74	
17-Dec-03			-	11.214	0.000	-	1077.659	53	
13-Jan-04			-	11.254	0.000	-	1077.619	53	
5-Apr-04			-	11.163	0.000	-	1077.710	10	
15-Jun-04			-	11.167	0.000	-	1077.706	34	
13-Jul-04			-	11.105	0.000	-	1077.768	38	
23-Aug-04			-	11.085	0.000	-	1077.788	40	
13-Oct-04			-	11.223	0.000	-	1077.650	60	
2-Nov-04			-	11.169	0.000	-	1077.704	nm	
1-Feb-05			-	11.289	0.000	-	1077.584	300	
28-Feb-05			-	11.183	0.000	-	1077.690	62	
31-May-05			-	11.170	0.000	-	1077.703	76	
7-Oct-05			-	10.385	0.000	-	1078.488	90	
18-Jan-06			-	10.919	0.000	-	1077.954	220	
10-May-06			-	11.115	0.000	-	1077.758	70	
26-Jul-06			-	10.808	0.000	-	1078.065	40	
24-Jan-07			-	11.144	0.000	-	1077.729	50	
23-May-07			-	10.842	0.000	-	1078.031	50	
21-Aug-07			-	10.923	0.000	-	1077.950	54	
21-Nov-07		-	11.203	0.000	-	1077.670	160		
13-Mar-08		-	11.083	0.000	-	1077.790	30		
4-Jun-08		-	10.749	0.000	-	1078.124	16		

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
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<i>BH743 Continued</i>	25-Jun-08		-	10.507	0.000	-	1078.366	42	well decommissioned on 26 June 2008
<b>BH744</b>	7-Oct-03	1086.464	-	7.431	0.000	-	1079.033	25	
	20-Nov-03		-	8.958	0.000	-	1077.506	10	
	17-Dec-03		-	8.122	0.000	-	1078.342	60	
	20-Jan-04		-	8.124	0.000	-	1078.340	91	
	11-Mar-04		-	8.995	0.000	-	1077.469	40	ice in well; blocked
	5-Apr-04		-	8.821	0.000	-	1077.643	8	
	15-Jun-04		-	8.006	0.000	-	1078.458	30	
	13-Jul-04		-	8.028	0.000	-	1078.436	18	
	23-Aug-04		-	8.323	0.000	-	1078.141	10	
	13-Oct-04		-	8.568	0.000	-	1077.896	36	
	2-Nov-04		-	8.708	0.000	-	1077.756	nm	
	1-Feb-05		cnm	cnm	cnm	-	cnm	cnm	under car
	28-Feb-05		-	8.905	0.000	-	1077.559	30	
	31-May-05		-	8.510	0.000	-	1077.954	24	
	4-Oct-05		-	6.774	0.000	-	1079.690	10	
	11-Oct-05		-	6.752	0.000	-	1079.712	nm	
	18-Jan-06		-	8.120	0.000	-	1078.344	180	
	10-May-06		-	8.067	0.000	-	1078.397	10	
	26-Jul-06		-	6.847	0.000	-	1079.617	74	
	24-Jan-07		-	9.055	0.000	-	1077.409	36	
	23-May-07		-	6.826	0.000	-	1079.638	25	
	21-Aug-07		-	7.753	0.000	-	1078.711	30	
	21-Nov-07		-	8.427	0.000	-	1078.037	24	
	18-Mar-08		-	9.214	0.000	-	1077.250	10	
	4-Jun-08		-	6.604	0.000	-	1079.860	10	
	23-Sep-10		-	6.660	0.000	-	1079.804	30	
	4-Oct-10		-	6.849	0.000	-	1079.615	20	
	5-Apr-11		cnm	cnm	cnm	cnm	cnm	cnm	well under car
	13-Sep-11		-	6.081	0.000	-	1080.383	25	
	20-Dec-11		-	7.980	0.000	-	1078.484	5	
	21-Mar-12		cnm	cnm	cnm	cnm	cnm	cnm	well under car
	2-Oct-12		-	8.630	0.000	-	1077.834	0	
	29-Apr-13		-	7.808	0.000	-	1078.626	150	Top of pipe elevation w/o collar was 1086.434m.
<b>BH801</b>	7-Oct-03	1090.264	-	11.970	0.000	-	1078.294	2,000	
	20-Nov-03		-	12.027	0.000	-	1078.237	14	

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 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
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<i>BH801 Continued</i>	8-Mar-04		-	5.915	0.000	-	1084.349	180	front lawn
	14-Jun-04		-	12.018	0.000	-	1078.246	74	front yard
	14-Jul-04		-	11.996	0.000	-	1078.268	32	
	23-Aug-04		-	11.958	0.000	-	1078.306	8,800	
	15-Oct-04		-	11.994	0.000	-	1078.270	90	front yard
	2-Nov-04		-	11.990	0.000	-	1078.274	nm	
	2-Feb-05		-	12.034	0.000	-	1078.230	56	2 inches of ice on top of road box
	3-Mar-05		-	12.053	0.000	-	1078.211	56	
	2-Jun-05		-	12.077	0.000	-	1078.187	74	
	19-Jan-06		-	11.803	0.000	-	1078.461	160	
	<b>BH802</b>	7-Oct-03	1090.300	-	11.593	0.000	-	1078.707	40
20-Nov-03			-	11.766	0.000	-	1078.524	220	
8-Mar-04			-	11.973	0.000	-	1078.327	1,000	Driveway
16-Jun-04			-	11.736	0.000	-	1078.564	180	Driveway
14-Jul-04			-	11.719	0.000	-	1078.581	44	
23-Aug-04			-	11.660	0.000	-	1078.640	50	
15-Oct-04			-	11.687	0.000	-	1078.613	140	Driveway
2-Nov-04			-	11.691	0.000	-	1078.609	nm	
2-Feb-05			-	11.740	0.000	-	1078.560	78	
3-Mar-05			-	11.755	0.000	-	1078.545	52	
2-Jun-05			-	11.809	0.000	-	1078.491	72	
19-Jan-06		-	11.550	0.000	-	1078.750	320		
<b>BH803</b>	7-Oct-03	1090.871	-	11.919	0.000	-	1078.952	35	
	20-Nov-03		-	12.333	0.000	-	1078.538	42	
	8-Mar-04		-	12.245	0.000	-	1078.626	160	back yard
	16-Jun-04		-	12.319	0.000	-	1078.552	92	back yard
	14-Jul-04		-	12.245	0.000	-	1078.626	28	
	23-Aug-04		-	12.144	0.000	-	1078.727	36	
	15-Oct-04		-	12.229	0.000	-	1078.642	94	back yard
	2-Nov-04		-	12.233	0.000	-	1078.638	nm	
	2-Feb-05		-	12.264	0.000	-	1078.607	56	4 inches of snow on top of road box
	3-Mar-05		-	12.292	0.000	-	1078.579	54	
	19-Jan-06		-	11.921	0.000	-	1078.950	54	
<b>BH901</b>	8-Mar-04	1089.537	cnm	cnm	cnm	-	cnm	200	blocked
	7-Apr-04		dry	dry	dry	-	dry	60	dry or blocked

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
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<i>BH901 Continued</i>	16-Jun-04		dry	dry	dry	-	dry	160	
	14-Jul-04		dry	dry	dry	-	dry	42	
	24-Aug-04		dry	dry	dry	-	dry	42	
	14-Oct-04		dry	dry	dry	-	dry	72	
	2-Feb-05		dry	dry	dry	-	dry	300	
	2-Mar-05		dry	dry	dry	-	dry	58	
	5-Oct-05		dry	dry	dry	-	dry	180	
	19-Jan-06		dry	dry	dry	-	dry	260	
	11-May-06		dry	dry	dry	-	dry	220	
	27-Jul-06		dry	dry	dry	-	dry	200	
	25-Jan-07		dry	dry	dry	-	dry	115	
	23-May-07		dry	dry	dry	-	dry	70	
	23-Aug-07		-	7.095	0.000	-	1082.442	42	
	22-Nov-07		dry	dry	dry	-	dry	68	
	10-Mar-08		dry	dry	dry	-	dry	92	
	4-Jun-08		dry	dry	dry	-	dry	50	
	23-Jun-08		dry	dry	dry	-	dry	42	well decommissioned on 23 June 2008
<b>BH902</b>	8-Mar-04	1089.729	dry	dry	dry	-	dry	220	
	6-Apr-04		dry	dry	dry	-	dry	240	
	15-Jun-04		dry	dry	dry	-	dry	100	
	14-Jul-04		dry	dry	dry	-	dry	52	
	23-Aug-04		dry	dry	dry	-	dry	200	
	13-Oct-04		cnm	cnm	cnm	-	cnm	84	blocked at 7.421
	2-Feb-05		dry	dry	dry	-	dry	360	
	2-Mar-05		dry	dry	dry	-	dry	20	
	27-Apr-05		dry	dry	dry	-	dry	nm	
	1-Jun-05		dry	dry	dry	-	dry	40	
	5-Oct-05		dry	dry	dry	-	dry	90	
	19-Jan-06		dry	dry	dry	-	dry	70	
	10-May-06		dry	dry	dry	-	dry	42	
	26-Jul-06		dry	dry	dry	-	dry	62	
25-Jan-07		cnl	cnl	cnl	cnl	cnl	cnl		
23-May-07		cnl	cnl	cnl	cnl	cnl	cnl		
<b>BH903</b>	8-Mar-04	1089.272	dry	dry	dry	-	dry	66	
	6-Apr-04		dry	dry	dry	-	dry	32	

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<i>BH903 Continued</i>	15-Jun-04		-	6.815	0.000	-	1082.457	80		
	13-Jul-04		dry	dry	dry	-	dry	34		
	23-Aug-04		-	6.813	0.000	-	1082.459	100		
	13-Oct-04		cnm	cnm	cnm	-	cnm	70	blocked at 7.0 m	
	1-Feb-05		dry	dry	dry	-	dry	260		
	2-Mar-05		dry	dry	dry	-	dry	20		
	1-Jun-05		dry	dry	dry	-	dry	50		
	4-Oct-05		dry	dry	dry	-	dry	120		
	18-Jan-06		dry	dry	dry	-	dry	230		
	10-May-06		-	6.827	0.000	-	1082.445	120		
	27-Jul-06		dry	dry	dry	-	dry	100		
	25-Jan-07		dry	dry	dry	-	dry	280		
	23-May-07		dry	dry	dry	-	dry	56		
	21-Aug-07		dry	dry	dry	-	dry	74		
	21-Nov-07		dry	dry	dry	-	dry	60		
	14-Mar-08		dry	dry	dry	-	dry	100		
	4-Jun-08		dry	dry	dry	-	dry	44		
	1-Jul-08		dry	dry	dry	-	dry	50	well decommissioned on 01 July 2008	
	<b>BH904</b>	8-Mar-04	1086.213	-	4.802	0.000	-	1081.411	70	
		6-Apr-04		-	4.748	0.000	-	1081.465	48	
15-Jun-04			-	4.454	0.000	-	1081.759	26		
13-Jul-04			-	4.321	0.000	-	1081.892	26	not enough groundwater to sample	
23-Aug-04			-	4.275	0.000	-	1081.938	28		
13-Oct-04			-	4.322	0.000	-	1081.891	56		
2-Feb-05			-	4.414	0.000	-	1081.799	300		
1-Mar-05			-	4.427	0.000	-	1081.786	30	surface water	
1-Jun-05			-	4.370	0.000	-	1081.843	50		
4-Oct-05			-	3.848	0.000	-	1082.365	80		
18-Jan-06			-	3.870	0.000	-	1082.343	220	boh 4.825m - bailer may be stuck down hole	
10-May-06			-	3.526	0.000	-	1082.687	100		
24-Jan-07			-	3.064	0.000	-	1083.149	30		
23-May-07			-	2.965	0.000	-	1083.248	10		
21-Aug-07			-	2.945	0.000	-	1083.268	32		
21-Nov-07			-	3.002	0.000	-	1083.211	30		
14-Mar-08		-	3.695	0.000	-	1082.518	34			

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<i>BH904 Continued</i>	4-Jun-08		-	3.750	0.000	-	1082.463	28		
	23-Sep-10		-	dry	0.000	-	dry	40		
	4-Oct-10		-	4.260	0.000	-	1081.953	16		
	5-Apr-11		-	4.410	0.000	-	1081.803	20		
	2-Jun-11		-	4.163	0.000	-	1082.050	16		
	13-Sep-11		-	3.910	0.000	-	1082.303	5		
	13-Dec-11		-	4.110	0.000	-	1082.103	5		
	21-Mar-12		-	4.200	0.000	-	1082.013	20		
	4-Oct-12		-	4.270	0.000	-	1081.943	0		
	30-Apr-13		-	4.385	0.000	-	1081.798	150	Top of pipe elevation w/o collar was 1086.183m.	
	<b>BH905</b>	25-Feb-04	1082.262	-	7.355	0.000	-	1074.907	220	
		8-Mar-04		-	7.469	0.000	-	1074.793	40	
		5-Apr-04		-	7.362	0.000	-	1074.900	40	RB has sunk 3-4"
15-Jun-04			-	7.387	0.000	-	1074.875	30		
13-Jul-04			-	7.329	0.000	-	1074.933	41		
23-Aug-04			-	7.297	0.000	-	1074.965	40		
13-Oct-04			-	7.334	0.000	-	1074.928	58		
2-Nov-04			-	7.322	0.000	-	1074.940	nm		
1-Feb-05			-	7.434	0.000	-	1074.828	8		
28-Feb-05			-	7.366	0.000	-	1074.896	84		
31-May-05			-	7.335	0.000	-	1074.927	120		
4-Oct-05			-	7.015	0.000	-	1075.247	20		
18-Jan-06			-	7.067	0.000	-	1075.195	20		
9-May-06			-	7.225	0.000	-	1075.037	40		
26-Jul-06			-	6.872	0.000	-	1075.390	58		
24-Jan-07			-	7.145	0.000	-	1075.117	48		
23-May-07			-	7.225	0.000	-	1075.037	66		
23-Aug-07			-	6.854	0.000	-	1075.408	10		
21-Nov-07			-	7.140	0.000	-	1075.122	12		
14-Mar-08			-	7.175	0.000	-	1075.087	180		
3-Jun-08		-	7.117	0.000	-	1075.145	56			
23-Sep-10		-	7.324	0.000	-	1074.938	58			
4-Oct-10		-	7.335	0.000	-	1074.927	10			
5-Apr-11		-	7.381	0.000	-	1074.881	52			
2-Jun-11		-	7.237	0.000	-	1075.025	90			
12-Sep-11		-	7.220	0.000	-	1075.042	10			

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<i>BH905 Continued</i>	19-Dec-11		-	7.285	0.000	-	1074.977	15	
	21-Mar-12		-	7.420	0.000	-	1074.842	16	
	1-Oct-12		-	7.332	0.000	-	1074.930	20	
	29-Apr-13		-	7.400	0.000	-	1074.862	125	
<b>BH907</b>	25-Feb-04	1079.190	cnm	cnm	cnm	-	cnm	cnm	truck parked over well
	8-Mar-04		-	5.993	0.000	-	1073.197	240	checked bailer - no product
	5-Apr-04		-	5.987	0.000	-	1073.203	18	
	15-Jun-04		-	5.992	0.000	-	1073.198	76	
	13-Jul-04		-	6.023	0.000	-	1073.167	34	
	23-Aug-04		-	6.130	0.000	-	1073.060	28	
	13-Oct-04		-	6.083	0.000	-	1073.107	72	
	1-Feb-05		-	6.035	0.000	-	1073.155	380	
	28-Feb-05		-	5.934	0.000	-	1073.256	320	
	31-May-05		-	6.010	0.000	-	1073.180	80	
	4-Oct-05		-	5.431	0.000	-	1073.759	120	
	18-Jan-06		-	5.472	0.000	-	1073.718	260	
	9-May-06		-	5.691	0.000	-	1073.499	88	
	24-Jul-06		-	5.651	0.000	-	1073.539	84	
	25-Jan-07		-	5.656	0.000	-	1073.534	100	
	23-May-07		-	5.497	0.000	-	1073.693	50	
	23-Aug-07		-	5.526	0.000	-	1073.664	52	
	22-Nov-07		-	5.586	0.000	-	1073.604	58	
	13-Mar-08		-	5.729	0.000	-	1073.461	74	
	4-Jun-08		-	5.615	0.000	-	1073.575	38	
	23-Sep-10		-	6.125	0.000	-	1073.065	36	
	4-Oct-10		-	6.115	0.000	-	1073.075	10	
	8-Apr-11		-	-	0.000	-	-	16	Blocked with ice at 0.1m
2-Jun-11		-	5.701	0.000	-	1073.489	54		
14-Sep-11		-	5.998	0.000	-	1073.192	15		
20-Dec-11		-	5.852	0.000	-	1073.338	25		
26-Mar-12		-	5.850	0.000	-	1073.340	70		
1-Oct-12		-	6.164	0.000	-	1073.026	110		
29-Apr-13		-	6.022	0.000	-	1073.138	0	Top of pipe elevation w/o collar was 1079.160m.	
<b>BH908</b>	25-Feb-04	1081.548	-	6.703	0.000	-	1074.845	76	
	8-Mar-04		-	6.783	0.000	-	1074.765	12	
	5-Apr-04		-	6.735	0.000	-	1074.813	74	
	15-Jun-04		-	6.678	0.000	-	1074.870	78	

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

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<i>BH908 Continued</i>	13-Jul-04		-	6.709	0.000	-	1074.839	44	
	23-Aug-04		-	6.684	0.000	-	1074.864	48	
	13-Oct-04		-	6.694	0.000	-	1074.854	78	
	2-Nov-04		-	6.699	0.000	-	1074.849	nm	
	1-Feb-05		-	6.806	0.000	-	1074.742	16	
	28-Feb-05		-	6.760	0.000	-	1074.788	80	
	31-May-05		-	6.743	0.000	-	1074.805	160	
	4-Oct-05		-	6.230	0.000	-	1075.318	120	
	18-Jan-06		-	6.377	0.000	-	1075.171	220	
	9-May-06		-	6.561	0.000	-	1074.987	98	
	26-Jul-06		-	6.144	0.000	-	1075.404	160	
	24-Jan-07		-	6.490	0.000	-	1075.058	100	
	23-May-07		-	6.389	0.000	-	1075.159	58	
	23-Aug-07		-	6.092	0.000	-	1075.456	50	
	21-Nov-07		-	6.425	0.000	-	1075.123	220	
	14-Mar-08		-	6.555	0.000	-	1074.993	180	
	3-Jun-08		-	6.535	0.000	-	1075.013	52	
	23-Jun-08		-	6.398	0.000	-	1075.150	72	well decommissioned on 25 June 2008
<b>BH909</b>	25-Feb-04	1077.680	-	5.593	0.000	-	1072.087	32	well cap 2' below road box; new box installed
	10-Mar-04		-	6.090	0.000	-	1071.590	60	iced up
	5-Apr-04		-	6.059	0.000	-	1071.621	12	
	15-Jun-04		-	6.065	0.000	-	1071.615	10	
	13-Jul-04		-	6.204	0.000	-	1071.476	24	
	23-Aug-04		-	6.392	0.000	-	1071.288	28	
	13-Oct-04		-	6.317	0.000	-	1071.363	56	
	1-Feb-05		-	6.167	0.000	-	1071.513	100	
	28-Feb-05		-	6.111	0.000	-	1071.569	68	
	31-May-05		-	6.204	0.000	-	1071.476	60	
	4-Oct-05		-	5.801	0.000	-	1071.879	55	
	18-Jan-06		-	5.923	0.000	-	1071.757	98	
	9-May-06		-	6.011	0.000	-	1071.669	32	
	25-Jul-06		-	6.074	0.000	-	1071.606	66	
	25-Jan-07		-	6.072	0.000	-	1071.608	70	
23-May-07		-	5.682	0.000	-	1071.998	30		
23-Aug-07		-	6.105	0.000	-	1071.575	40		

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cmm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
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<i>BH909 Continued</i>	22-Nov-07		-	6.055	0.000	-	1071.625	96	
	13-Mar-08		-	6.047	0.000	-	1071.633	100	
	4-Jun-08		-	5.760	0.000	-	1071.920	54	
	8-Jul-08		-	5.883	0.000	-	1071.797	68	well decommissioned on 08 July 2008
<b>BH910</b>	8-Mar-04	1091.271	dry	dry	dry	-	dry	38	
	6-Apr-04		-	5.745	0.000	-	1085.526	20	
	15-Jun-04		dry	dry	dry	-	dry	46	
	13-Jul-04		dry	dry	dry	-	dry	64	? blocked
	23-Aug-04		dry	dry	dry	-	dry	20	
	14-Oct-04		dry	dry	dry	-	dry	48	
	2-Feb-05		dry	dry	dry	-	dry	200	
	2-Mar-05		dry	dry	dry	-	dry	36	
	1-Jun-05		dry	dry	dry	-	dry	20	
	5-Oct-05		dry	dry	dry	-	dry	75	
	19-Jan-06		cnm	cnm	cnm	-	cnm	cnm	could not locate well
	10-May-06		dry	dry	dry	-	dry	40	
	26-Jul-06		dry	dry	dry	-	dry	46	
	25-Jan-07		dry	dry	dry	-	dry	50	
	29-May-07		dry	dry	dry	-	dry	70	
	23-Aug-07		dry	dry	dry	-	dry	34	
	22-Nov-07		dry	dry	dry	-	dry	24	
	10-Mar-08		dry	dry	dry	-	dry	76	
	4-Jun-08		dry	dry	dry	-	dry	20	
3-Jul-08		-	8.645	0.000	-	1082.626	50	well decommissioned on 03 July 2008	
<b>BH911</b>	8-Mar-04	1090.684	cnm	cnm	cnm	-	cnm	230	blocked; chipped out
	6-Apr-04		dry	dry	dry	-	dry	22	
	15-Jun-04		dry	dry	dry	-	dry	10	
	14-Jul-04		dry	dry	dry	-	dry	14	
	24-Aug-04		dry	dry	dry	-	dry	16	
	14-Oct-04		dry	dry	dry	-	dry	12	
	2-Feb-05		dry	dry	dry	-	dry	400	
	2-Mar-05		dry	dry	dry	-	dry	40	
	2-Jun-05		dry	dry	dry	-	dry	60	
	5-Oct-05		dry	dry	dry	-	dry	20	
	19-Jan-06		dry	dry	dry	-	dry	280	

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 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
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<i>BH911 Continued</i>	10-May-06		dry	dry	dry	-	dry	50	
	26-Jul-06		dry	dry	dry	-	dry	50	
	25-Jan-07		dry	dry	dry	-	dry	1,000	
	25-May-07		dry	dry	dry	-	dry	44	
	23-Aug-07		dry	dry	dry	-	dry	46	checked bailer - no visible product
	22-Nov-07		dry	dry	dry	-	dry	nm	
	10-Mar-08		dry	dry	dry	-	dry	nm	
	4-Jun-08		dry	dry	dry	-	dry	10	
	7-Jul-08		dry	dry	dry	-	dry	16	well decommissioned on 07 July 2008
<b>BH912</b>	25-Feb-04	1075.137	-	2.627	0.000	-	1072.510	66	
	8-Mar-04		-	2.617	0.000	-	1072.520	82	
	5-Apr-04		-	2.581	0.000	-	1072.556	56	
	15-Jun-04		-	2.540	0.000	-	1072.597	200	
	13-Jul-04		-	2.491	0.000	-	1072.646	54	
	23-Aug-04		-	2.588	0.000	-	1072.549	54	
	13-Oct-04		-	2.622	0.000	-	1072.549	60	cnm
	2-Nov-04		-	2.589	0.000	-	1072.548	nm	
	2-Feb-05		-	2.643	0.000	-	1072.494	180	
	28-Feb-05		-	2.631	0.000	-	1072.506	94	
	31-May-05		-	2.645	0.000	-	1072.492	70	
	4-Oct-05		-	2.249	0.000	-	1072.888	140	
	18-Jan-06		-	2.424	0.000	-	1070.273	26	
	9-May-06		-	1.495	0.000	-	1073.642	72	
	25-Jul-06		-	2.410	0.000	-	1072.727	74	
	24-Jan-07		-	2.525	0.000	-	1072.612	100	
	23-May-07		-	2.345	0.000	-	1072.792	30	
	21-Aug-07		-	2.405	0.000	-	1072.732	100	
	21-Nov-07		-	2.503	0.000	-	1072.634	55	
	13-Mar-08		-	2.535	0.000	-	1072.602	16	
3-Jun-08		-	2.436	0.000	-	1072.701	58		
23-Sep-10		-	2.625	0.000	-	1072.512	44		
4-Oct-10		-	2.636	0.000	-	1072.501	62		
5-Apr-11		-	2.265	0.000	-	1072.872	95		
1-Jun-11		-	2.411	0.000	-	1072.726	56		
12-Sep-11		-	2.513	0.000	-	1072.624	40		

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 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
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<i>BH912 Continued</i>	19-Dec-11		-	2.603	0.000	-	1072.534	75	
	21-Mar-12		-	2.530	0.000	-	1072.607	200	
	1-Oct-12		-	2.711	0.000	-	1072.426	85	casing cut down to improve accessibility
	29-Apr-13		-	2.587	0.000	-	1072.520	165	Top of pipe elevation w/o collar was 1075.107m.
<b>BH913</b>	25-Feb-04	1072.697	-	1.480	0.000	-	1071.217	240	
	8-Mar-04		-	1.461	0.000	-	1071.236	240	
	5-Apr-04		-	1.398	0.000	-	1071.299	50	
	15-Jun-04		-	1.396	0.000	-	1071.301	220	
	13-Jul-04		-	1.350	0.000	-	1071.347	40	
	23-Aug-04		-	1.434	0.000	-	1071.263	54	
	13-Oct-04		-	1.452	0.000	-	1071.245	74	
	2-Nov-04		-	1.399	0.000	-	1071.298	nm	
	2-Feb-05		-	1.484	0.000	-	1071.213	1,000	
	28-Feb-05		-	1.445	0.000	-	1071.252	340	
	31-May-05		-	1.492	0.000	-	1071.205	120	
	4-Oct-05		-	1.165	0.000	-	1071.532	35	
	18-Jan-06		-	1.302	0.000	-	1071.395	66	
	9-May-06		-	1.373	0.000	-	1071.324	46	
	25-Jul-06		-	1.313	0.000	-	1071.384	38	
	24-Jan-07		-	1.438	0.000	-	1071.259	88	
	23-May-07		-	1.243	0.000	-	1071.454	25	
	21-Aug-07		-	1.399	0.000	-	1071.298	20	
	21-Nov-07		-	1.398	0.000	-	1071.299	44	
	13-Mar-08		-	1.430	0.000	-	1071.242	12	
	3-Jun-08		-	1.349	0.000	-	1071.323	62	
	23-Sep-10		-	1.565	0.000	-	1071.132	46	
	4-Oct-10		-	1.578	0.000	-	1071.119	54	
	5-Apr-11		-	0.605	0.000	-	1072.092	92	
1-Jun-11		-	1.342	0.000	-	1071.355	62		
12-Sep-11		-	1.520	0.000	-	1071.177	50		
19-Dec-11		-	1.565	0.000	-	1071.132	40		
21-Mar-12		-	1.465	0.000	-	1071.232	10		
1-Oct-12		-	1.698	0.000	-	1070.999	150	casing cut down to improve accessibility	
29-Apr-13		-	1.589	0.000	-	1071.039	230	Top of pipe elevation w/o collar was 1072.628m.	
<b>BH914</b>	25-Feb-04	1070.179	-	2.000	0.000	-	1068.179	62	
	8-Mar-04		-	1.973	0.000	-	1068.206	30	
	5-Apr-04		-	1.843	0.000	-	1068.336	24	

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LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
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<i>BH914 Continued</i>	14-Jun-04		-	1.912	0.000	-	1068.267	40	
	13-Jul-04		-	1.905	0.000	-	1068.274	44	
	23-Aug-04		-	1.936	0.000	-	1068.243	52	
	13-Oct-04		-	1.980	0.000	-	1068.199	78	
	1-Feb-05		-	1.933	0.000	-	1068.246	320	
	28-Feb-05		-	1.873	0.000	-	1068.306	72	
	31-May-05		-	1.894	0.000	-	1068.285	180	has bailer
	4-Oct-05		-	1.829	0.000	-	1068.350	120	
	18-Jan-06		-	1.777	0.000	-	1068.402	760	
	24-Jul-06		-	2.674	0.000	-	1067.505	82	
	24-Jan-07		-	2.524	0.000	-	1067.655	120	
	23-May-07		-	2.402	0.000	-	1067.777	80	
	21-Aug-07		-	2.718	0.000	-	1067.461	70	
	21-Nov-07		-	2.675	0.000	-	1067.504	98	
	12-Mar-08		-	2.585	0.000	-	1067.594	12	
	3-Jun-08		-	2.496	0.000	-	1067.683	18	
	23-Sep-10			cnl	cnl	cnl	cnl	cnl	
	5-Apr-11			cnl	cnl	cnl	cnl	cnl	Blocked at 0.410m
	20-Dec-11			cnl	cnl	cnl	cnl	cnl	cnl
	2-Oct-12			cnl	cnl	cnl	cnl	cnl	cnl
<b>BH915</b>	25-Feb-04	1068.238	-	1.762	0.000	-	1066.476	48	
	8-Mar-04		-	1.773	0.000	-	1066.465	96	
	5-Apr-04		-	1.549	0.000	-	1066.689	32	
	14-Jun-04		-	1.685	0.000	-	1066.553	40	
	13-Jul-04		-	1.748	0.000	-	1066.490	48	
	23-Aug-04		-	1.730	0.000	-	1066.508	46	
	13-Oct-04		-	1.779	0.000	-	1066.459	52	
	2-Feb-05		-	1.807	0.000	-	1066.431	340	
	28-Feb-05		-	1.748	0.000	-	1066.490	66	
	31-May-05		-	1.718	0.000	-	1066.520	180	has bailer
	4-Oct-05		-	1.713	0.000	-	1066.525	30	
	18-Jan-06		-	1.765	0.000	-	1066.473	260	
	9-May-06		-	2.064	0.000	-	1066.174	70	
	24-Jul-06			cnm	cnm	cnm	cnm	cnm	
	24-Jan-07			-	2.180	0.000	-	1066.058	76

Notes:

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- Depth relative to top of standpipe.
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- Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.

LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.



TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
Calgary, Alberta

Monitoring Well	Date (dd-mmm-yy)	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments
<i>BH915 Continued</i>	23-May-07		-	1.898	0.000	-	1066.340	50	
	21-Aug-07		-	2.143	0.000	-	1066.095	72	
	21-Nov-07		-	2.115	0.000	-	1066.123	80	
	12-Mar-08		-	2.061	0.000	-	1066.177	78	
	3-Jun-08		-	1.948	0.000	-	1066.290	64	
	23-Sep-10		-	2.040	0.000	-	1066.198	52	
	4-Oct-10		-	2.081	0.000	-	1066.157	42	
	5-Apr-11		-	-	0.000	-	-	64	
	1-Jun-11		-	1.811	0.000	-	1066.427	52	
	12-Sep-11		-	2.040	0.000	-	1066.198	30	
	20-Dec-11		-	2.057	0.000	-	1066.181	30	no bolts on road box
	21-Mar-12		-	2.015	0.000	-	1066.223	94	no bolts on road box
	2-Oct-12		-	2.151	0.000	-	1066.087	80	no bolts on road box, no road box lid
	29-Apr-13		-	1.933	0.000	-	1066.275	30	Top of pipe elevation w/o collar was 1068.208m.
	<b>BH916</b>	25-Feb-04	1076.023	-	5.433	0.000	-	1070.590	50
10-Mar-04			-	5.427	0.000	-	1070.596	94	
5-Apr-04			-	5.347	0.000	-	1070.676	22	
15-Jun-04			-	5.304	0.000	-	1070.719	22	
13-Jul-04			-	5.572	0.000	-	1070.451	18	
23-Aug-04			-	5.830	0.000	-	1070.193	24	
13-Oct-04			-	5.715	0.000	-	1070.308	62	
1-Feb-05			-	5.450	0.000	-	1070.573	220	
28-Feb-05			-	5.305	0.000	-	1070.718	35	
31-May-05			-	5.429	0.000	-	1070.594	64	
4-Oct-05			-	4.955	0.000	-	1071.068	10	
18-Jan-06			-	5.199	0.000	-	1070.824	96	
9-May-06			-	5.286	0.000	-	1070.737	42	
25-Jul-06			-	5.340	0.000	-	1070.683	44	
25-Jan-07			-	5.335	0.000	-	1070.688	85	
23-May-07			-	4.713	0.000	-	1071.310	25	
23-Aug-07			-	5.565	0.000	-	1070.458	12	
22-Nov-07			-	5.390	0.000	-	1070.633	56	
13-Mar-08			-	5.250	0.000	-	1070.773	30	
4-Jun-08		-	4.889	0.000	-	1071.134	44		
23-Sep-10		-	5.447	0.000	-	1070.576	40		
4-Oct-10		-	5.530	0.000	-	1070.493	10		

Notes:

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  - 3 Water elevation referenced to Geodetic. Water elevation adjusted for presence of LPHs (using LPH density of 0.8).
  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
Calgary, Alberta

Monitoring Well	Date (dd-mmm-yy)	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments
<i>BH916 Continued</i>	8-Apr-11		-	5.034	0.000	-	1070.989	34	
	2-Jun-11		-	4.543	0.000	-	1071.480	40	
	13-Sep-11		-	5.270	0.000	-	1070.753	10	
	20-Dec-11		-	5.182	0.000	-	1070.841	5	
	26-Mar-12		-	5.060	0.000	-	1070.963	5	
	2-Oct-12		-	5.575	0.000	-	1070.448	15	
	29-Apr-13		-	5.010	0.000	-	1070.983	0	Top of pipe elevation w/o collar was 1075.993m.
<b>BH917</b>	25-Feb-04	1073.739	-	4.596	0.000	-	1069.143	64	
	8-Mar-04		-	4.620	0.000	-	1069.119	140	
	5-Apr-04		-	4.217	0.000	-	1069.522	34	
	15-Jun-04		-	4.136	0.000	-	1069.603	70	
	13-Jul-04		-	4.641	0.000	-	1069.098	36	
	23-Aug-04		-	4.955	0.000	-	1068.784	40	
	13-Oct-04		-	4.821	0.000	-	1068.918	62	
	1-Feb-05		-	4.255	0.000	-	1069.484	300	
	28-Feb-05		-	4.106	0.000	-	1069.633	48	
	31-May-05		-	4.305	0.000	-	1069.434	70	
	4-Oct-05		-	3.825	0.000	-	1069.914	75	
	18-Jan-06		-	4.044	0.000	-	1069.695	240	
	9-May-06		-	4.195	0.000	-	1069.544	68	
	25-Jul-06		-	4.518	0.000	-	1069.221	70	
	25-Jan-07		-	4.255	0.000	-	1069.484	94	
	23-May-07		-	4.247	0.000	-	1069.492	70	
	23-Aug-07		-	5.325	0.000	-	1068.414	40	
	22-Nov-07		-	4.928	0.000	-	1068.811	60	
	13-Mar-08		-	4.586	0.000	-	1069.153	90	
	4-Jun-08		-	4.359	0.000	-	1069.380	44	
	23-Sep-10		-	4.744	0.000	-	1068.995	52	
	4-Oct-10		-	4.851	0.000	-	1068.888	36	
	8-Apr-11		-	3.464	0.000	-	1070.275	46	
	2-Jun-11		-	3.503	0.000	-	1070.236	24	
	13-Sep-11		-	4.746	0.000	-	1068.993	35	
	20-Dec-11		-	4.536	0.000	-	1069.203	5	
	26-Mar-12		-	4.320	0.000	-	1069.419	32	
2-Oct-12		-	5.113	0.000	-	1068.626	60		
29-Apr-13		-	4.284	0.000	-	1069.425	0	Top of pipe elevation w/o collar was 1073.709m.	
<b>BH1101</b>	3-Mar-04	1089.574	-	10.200	0.000	-	1079.374	nm	

Notes:

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- Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.

LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

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Calgary, Alberta

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<i>BH1101 Continued</i>	8-Mar-04		-	10.173	0.000	-	1079.401	220	
	5-Apr-04		-	10.252	0.000	-	1079.322	18	
	21-May-04		-	10.260	0.000	-	1079.314	nm	
	15-Jun-04		-	10.325	0.000	-	1079.249	52	
	13-Jul-04		-	10.309	0.000	-	1079.265	180	
	23-Aug-04		-	10.273	0.000	-	1079.301	50	
	13-Oct-04		-	10.302	0.000	-	1079.272	80	
	1-Feb-05		-	10.363	0.000	-	1079.211	84	
	28-Feb-05		-	10.357	0.000	-	1079.217	94	
	30-May-05		-	10.420	0.000	-	1079.154	300	has bailer
	3-Oct-05		-	10.000	0.000	-	1079.574	26	
	17-Jan-06		-	10.073	0.000	-	1079.501	38	
	8-May-06		-	10.270	0.000	-	1079.304	60	
	24-Jul-06		-	10.272	0.000	-	1079.302	86	
	24-Jan-07		-	10.227	0.000	-	1079.347	50	
	22-May-07		-	10.305	0.000	-	1079.269	30	
	21-Aug-07		-	10.032	0.000	-	1079.542	22	
	20-Nov-07		-	10.144	0.000	-	1079.430	24	
	10-Mar-08		-	10.264	0.000	-	1079.310	200	
	2-Jun-08		-	10.305	0.000	-	1079.269	28	
4-Jul-08		-	10.225	0.000	-	1079.349	not reported	well decommissioned on 04 July 2008	
<b>BH1102</b>	3-Mar-04	1089.183	-	10.096	0.000	-	1079.087	nm	
	8-Mar-04		-	10.068	0.000	-	1079.115	170	
	5-Apr-04		-	10.243	0.000	-	1078.940	12	
	21-May-04		-	10.263	0.000	-	1078.920	nm	
	15-Jun-04		-	10.319	0.000	-	1078.864	76	
	13-Jul-04		-	10.313	0.000	-	1078.870	200	
	23-Aug-04		-	10.284	0.000	-	1078.899	38	
	13-Oct-04		-	10.328	0.000	-	1078.855	78	
	1-Feb-05		-	10.395	0.000	-	1078.788	92	2 inches of ice on top of road box
	28-Feb-05		-	10.381	0.000	-	1078.802	180	
	30-May-05		-	10.463	0.000	-	1078.720	200	has bailer
	3-Oct-05		-	10.237	0.000	-	1078.946	60	
	17-Jan-06		-	10.072	0.000	-	1079.111	250	
	8-May-06		-	10.355	0.000	-	1078.828	58	

Notes:

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- Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.

LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cmm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH1102 Continued</i>	24-Jul-06		-	10.823	0.000	-	1078.360	82	
	24-Jan-07		-	10.295	0.000	-	1078.888	80	
	22-May-07		-	10.314	0.000	-	1078.869	40	
	21-Aug-07		-	9.994	0.000	-	1079.189	32	
	20-Nov-07		-	10.170	0.000	-	1079.013	72	
	10-Mar-08		-	10.331	0.000	-	1078.852	220	
	2-Jun-08		-	10.365	0.000	-	1078.818	26	
	23-Sep-10		-	10.415	0.000	-	1078.768	64	
	4-Oct-10		-	10.440	0.000	-	1078.743	10	
	8-Apr-11		-	10.520	0.000	-	1078.663	96	
	1-Jun-11		-	10.474	0.000	-	1078.709	58	
	9-Sep-11		-	10.402	0.000	-	1078.781	100	
	13-Dec-11		-	10.361	0.000	-	1078.822	40	
	21-Mar-12		-	10.513	0.000	-	1078.670	18	
	4-Oct-12		-	10.478	0.000	-	1078.705	115	
	30-Apr-13		-	10.587	0.000	-	1078.566	175	Top of pipe elevation w/o collar was 1089.153m.
<b>BH1103</b>	8-Mar-04	1089.408	-	10.283	0.000	-	1079.125	6,000	bailer check
	5-Apr-04		-	10.338	0.000	-	1079.070	720	
	21-May-04		-	10.536	0.000	-	1078.872	nm	
	15-Jun-04		-	10.404	0.000	-	1079.004	220	
	13-Jul-04		-	10.390	0.000	-	1079.018	2,200	bailer checked: no product
	23-Aug-04		-	10.362	0.000	-	1079.046	>10,000	
	13-Oct-04		-	10.368	0.000	-	1079.040	>10,000	
	1-Feb-05		-	10.372	0.000	-	1079.036	9,400	
	28-Feb-05		cnm	cnm	cnm	-	cnm	8,800	bailer frozen in well
	30-May-05		-	10.456	0.000	-	1078.952	>10,000	no bailer
	3-Oct-05		-	10.314	0.000	-	1079.094	320	
	17-Jan-06		-	10.162	0.000	-	1079.246	>10,000	
	8-May-06		-	10.293	0.000	-	1079.115	300	
	24-Jul-06		-	10.328	0.000	-	1079.080	3,600	
	24-Jan-07		-	10.309	0.000	-	1079.099	2,000	
	22-May-07		-	10.365	0.000	-	1079.043	170	
	21-Aug-07		-	10.162	0.000	-	1079.246	280	
20-Nov-07		-	10.235	0.000	-	1079.173	160		
10-Mar-08		cnm	cnm	cnm	cnm	cnm	5,000	blocked with ice; bailer lost in well	
2-Jun-08		-	10.336	0.000	-	1079.072	2,800		

Notes:

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  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

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<i>BH1103 Continued</i>	23-Sep-10		-	10.446	0.000	-	1078.962	9,000		
	4-Oct-10		-	10.499	0.000	-	1078.909	20	B. Checked = 0ml	
	8-Apr-11		-	10.533	0.000	-	1078.875	50		
	1-Jun-11		-	10.473	0.000	-	1078.935	1,900		
	9-Sep-11		-	10.436	0.000	-	1078.972	95		
	13-Dec-11		-	10.389	0.000	-	1079.019	10,000		
	21-Mar-12		-	10.500	0.000	-	1078.908	8		
	4-Oct-12		-	10.455	0.000	-	1078.953	85		
	30-Apr-13		-	10.552	0.000	-	1078.826	240	Top of pipe elevation w/o collar was 1089.378m.	
	<b>BH1104</b>	3-Mar-04	1090.042	-	9.653	0.000	-	1080.389	nm	
		8-Mar-04		-	9.939	0.000	-	1080.103	1,100	
5-Apr-04			-	10.265	0.000	-	1079.777	82		
21-May-04			-	10.449	0.000	-	1079.593	nm		
15-Jun-04			-	10.469	0.000	-	1079.573	6		
13-Jul-04			-	10.484	0.000	-	1079.558	3,200	bailer checked: no product	
23-Aug-04			-	10.401	0.000	-	1079.641	1,100	One bolt missing - could not be replaced	
13-Oct-04			-	10.305	0.000	-	1079.737	3,600	bailer checked: no product	
1-Feb-05			-	10.220	0.000	-	1079.822	48	one bolt hole needs retapping	
28-Feb-05			-	10.159	0.000	-	1079.883	5,000		
30-May-05			-	10.105	0.000	-	1079.937	>10,000	bailer checked: no product	
3-Oct-05			-	9.735	0.000	-	1080.307	3,400		
17-Jan-06			-	9.692	0.000	-	1080.350	1,000		
8-May-06			-	9.803	0.000	-	1080.239	200		
24-Jul-06			-	9.834	0.000	-	1080.208	1,200		
24-Jan-07			-	9.735	0.000	-	1080.307	1,200		
22-May-07			-	10.035	0.000	-	1080.007	1,200		
21-Aug-07			-	9.596	0.000	-	1080.446	2,200	bailer checked - no visible product; odour, reddish colour	
20-Nov-07			-	9.875	0.000	-	1080.167	2,800		
10-Mar-08			-	9.723	0.000	-	1080.319	740		
2-Jun-08		-	10.017	0.000	-	1080.025	42			
23-Sep-10		-	8.425	0.000	-	1081.617	84			
4-Oct-10		-	9.020	0.000	-	1081.022	76			
8-Apr-11		-	7.913	0.000	-	1082.129	200			
1-Jun-11		-	9.203	0.000	-	1080.839	200			
9-Sep-11		-	9.065	0.000	-	1080.977	130			
13-Dec-11		-	8.972	0.000	-	1081.070	450			

Notes:

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- LPH liquid petroleum hydrocarbons.
- trace trace amount of LPH observed (<1 mm).
- passive bailer LPH collection and recovery device.
- HB hand bailed.
- nm not measured.
- cnm could not monitor.
- cnl could not locate.
- ppm parts per million; 1% LEL (lower explosive limit)=110ppm
- n/s not surveyed
- no data available.

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<i>BH1104 Continued</i>	21-Mar-12		-	9.015	0.000	-	1081.027	12	
	4-Oct-12		-	8.620	0.000	-	1081.422	360	
	30-Apr-13		-	9.180	0.000	-	1080.832	510	Top of pipe elevation w/o collar was 1090.012m.
<b>BH1105</b>	3-Mar-04	1091.038	-	11.392	0.000	-	1079.646	nm	
	8-Mar-04		-	11.315	0.000	-	1079.723	1,000	
	5-Apr-04		-	11.334	0.000	-	1079.704	2,800	
	21-May-04		-	11.389	0.000	-	1079.649	nm	
	15-Jun-04		-	11.457	0.000	-	1079.581	9,400	
	13-Jul-04		-	11.407	0.000	-	1079.631	>10,000	bailer checked: no product
	23-Aug-04		-	11.349	0.000	-	1079.689	>10,000	
	13-Oct-04		-	11.460	0.000	-	1079.578	>10,000	bailer checked: no product
	1-Feb-05		-	11.462	0.000	-	1079.576	>10,000	bailer checked: no product
	28-Feb-05		11.420	11.420	trace	-	1079.618	>10,000	bailer checked: no product; sheen present
	30-May-05		-	11.502	0.000	-	1079.536	>10,000	bailer checked: no product
	3-Oct-05		-	11.228	0.000	-	1079.810	1,600	
	17-Jan-06		-	11.152	0.000	-	1079.886	>10,000	
	8-May-06		-	11.185	0.000	-	1079.853	>10,000	
	24-Jul-06		-	11.145	0.000	-	1079.893	>10,000	
	24-Jan-07		-	10.205	0.000	-	1080.833	>10,000	
	22-May-07		-	11.265	0.000	-	1079.773	>10,000	
	21-Aug-07		-	11.178	0.000	-	1079.860	8,200	bailer checked - no visible product; odour, no sheen
	20-Nov-07		-	11.258	0.000	-	1079.780	8,700	
	10-Mar-08		-	11.223	0.000	-	1079.815	>10,000	
2-Jun-08		-	11.212	0.000	-	1079.826	2,000		
4-Jul-08		-	11.125	0.000	-	1079.913	>10,000	well decommissioned on 04 July 2008	
<b>BH1106</b>	3-Mar-04	1090.788	-	11.180	0.000	-	1079.608	nm	
	8-Mar-04		-	11.340	0.000	-	1079.448	1,100	
	5-Apr-04		-	11.295	0.000	-	1079.493	200	
	21-May-04		-	11.308	0.000	-	1079.480	nm	
	15-Jun-04		-	11.329	0.000	-	1079.459	64	
	13-Jul-04		-	11.264	0.000	-	1079.524	320	
	23-Aug-04		-	11.218	0.000	-	1079.570	300	
	13-Oct-04		-	11.334	0.000	-	1079.454	700	
	1-Feb-05		-	11.294	0.000	-	1079.494	1,000	
	28-Feb-05		-	11.175	0.000	-	1079.613	7,200	
	30-May-05		-	11.199	0.000	-	1079.589	1,200	has bailer

Notes:

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  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
Calgary, Alberta

Monitoring Well	Date	Top of Casing Elevation <sup>1</sup>	Depth to LPH <sup>2</sup>	Depth to Water <sup>2</sup>	Apparent Thickness of LPH	LPH Recovery Volume	Water Elevation <sup>3</sup>	Combustible Vapour Concentration <sup>4</sup>	Comments
	(dd-mmm-yy)	(m)	(m)	(m)	(m)	(L)	(m)	(ppm)	
<i>BH1106 Continued</i>	3-Oct-05		-	10.846	0.000	-	1079.942	640	
	17-Jan-06		-	10.692	0.000	-	1080.096	1,400	
	8-May-06		-	10.684	0.000	-	1080.104	1,000	
	24-Jul-06		-	10.879	0.000	-	1079.909	560	
	24-Jan-07		-	10.654	0.000	-	1080.134	136	
	22-May-07		-	10.913	0.000	-	1079.875	800	
	21-Aug-07		-	10.695	0.000	-	1080.093	220	
	20-Nov-07		-	10.743	0.000	-	1080.045	160	
	10-Mar-08		-	10.520	0.000	-	1080.268	400	
	2-Jun-08		-	10.665	0.000	-	1080.123	64	
	23-Sep-10		-	10.619	0.000	-	1080.169	92	
	4-Oct-10		-	10.514	0.000	-	1080.274	98	
	8-Apr-11		-	10.634	0.000	-	1080.154	360	
	1-Jun-11		-	10.305	0.000	-	1080.483	700	
	9-Sep-11		-	10.298	0.000	-	1080.490	400	
	13-Dec-11		-	10.241	0.000	-	1080.547	1,600	
	21-Mar-12		-	10.535	0.000	-	1080.253	10	
	4-Oct-12		-	10.418	0.000	-	1080.370	250	
	30-Apr-13		-	11.218	0.000	-	1079.540	1,700	Top of pipe elevation w/o collar was 1090.758m.
	<b>BH1107</b>	3-Mar-04	1092.008	-	11.447	0.000	-	1080.561	nm
8-Mar-04			-	11.522	0.000	-	1080.486	70	bailer check
5-Apr-04			-	11.157	0.000	-	1080.851	20	
21-May-04			-	11.415	0.000	-	1080.593	nm	
15-Jun-04			-	11.596	0.000	-	1080.412	56	
13-Jul-04			-	11.585	0.000	-	1080.423	100	
23-Aug-04			-	11.033	0.000	-	1080.975	24	
13-Oct-04			-	11.259	0.000	-	1080.749	74	
1-Feb-05			-	11.426	0.000	-	1080.582	40	
28-Feb-05			-	11.338	0.000	-	1080.670	66	
30-May-05			-	11.015	0.000	-	1080.993	180	has bailer
3-Oct-05			-	10.473	0.000	-	1081.535	38	
17-Jan-06			-	10.037	0.000	-	1081.971	200	
8-May-06			-	8.975	0.000	-	1083.033	20	
24-Jul-06			-	9.197	0.000	-	1082.811	64	
24-Jan-07			-	8.284	0.000	-	1083.724	44	
22-May-07			-	8.698	0.000	-	1083.310	36	

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- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

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Hounsfield Heights - Briar Hill Community  
Calgary, Alberta

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<i>BH1107 Continued</i>	21-Aug-07		-	8.122	0.000	-	1083.886	26	
	20-Nov-07		-	8.218	0.000	-	1083.790	32	
	10-Mar-08		-	8.282	0.000	-	1083.726	190	
	2-Jun-08		-	8.434	0.000	-	1083.574	20	
	23-Sep-10		-	8.145	0.000	-	1083.863	32	
	4-Oct-10		-	8.320	0.000	-	1083.688	48	
	8-Apr-11		-	8.390	0.000	-	1083.618	72	
	1-Jun-11		-	8.062	0.000	-	1083.946	42	
	9-Sep-11		-	8.272	0.000	-	1083.736	10	
	13-Dec-11		-	7.912	0.000	-	1084.096	40	
	21-Mar-12		-	8.159	0.000	-	1083.849	74	
	4-Oct-12		-	8.084	0.000	-	1083.924	0	
	30-Apr-13		-	7.980	0.000	-	1084.028	120	
<b>BH1301</b>	11-Jan-05	1077.698	-	1.699	0.000	-	1075.999	8	sand pack around well sank about 2.5-3 feet
	2-Feb-05		-	1.707	0.000	-	1075.991	6	
	28-Feb-05		-	1.709	0.000	-	1075.989	10	
	2-Jun-05		-	1.750	0.000	-	1075.948	20	
	4-Oct-05		-	1.445	0.000	-	1076.253	40	
	18-Jan-06		-	1.623	0.000	-	1076.075	60	
	10-May-06		-	1.637	0.000	-	1076.061	60	
	25-Jul-06		-	1.585	0.000	-	1076.113	72	
	25-Jan-07		-	1.690	0.000	-	1076.008	46	
	23-May-07		-	1.367	0.000	-	1076.331	40	
	23-Aug-07		-	1.672	0.000	-	1076.026	30	
	21-Nov-07		-	1.885	0.000	-	1075.813	66	
	13-Mar-08		-	1.649	0.000	-	1076.049	46	
	4-Jun-08		-	1.425	0.000	-	1076.273	18	
	23-Sep-10			cnl	cnl	cnl	cnl	cnl	
	1-Jun-11		-	1.132	0.000	-	1076.566	25	
	13-Sep-11		-	1.632	0.000	-	1076.066	20	
29-Mar-12		-	1.695	0.000	-	1076.003	12		
2-Oct-12		-	1.731	0.000	-	1075.967	0		
29-Apr-13		-	1.588	0.000	-	1076.080	35	Top of pipe elevation w/o collar was 1077.668m.	
<b>BH1302</b>	11-Jan-05	1082.638	-	7.578	0.000	-	1075.060	92	
	2-Feb-05		-	7.668	0.000	-	1074.970	12	
	28-Feb-05		-	7.620	0.000	-	1075.018	98	
	2-Jun-05		-	7.650	0.000	-	1074.988	72	

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LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.



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<i>BH1302 Continued</i>	4-Oct-05		-	7.299	0.000	-	1075.339	20	
	18-Jan-06		-	7.374	0.000	-	1075.264	72	
	9-May-06		-	7.409	0.000	-	1075.229	54	
	25-Jul-06		-	7.143	0.000	-	1075.495	64	
	24-Jan-07		-	7.449	0.000	-	1075.189	20	
	23-May-07		-	7.271	0.000	-	1075.367	20	
	21-Aug-07		-	7.406	0.000	-	1075.232	30	
	21-Nov-07		-	7.615	0.000	-	1075.023	32	
	13-Mar-08		-	7.540	0.000	-	1075.098	18	
	3-Jun-08		-	7.340	0.000	-	1075.298	52	
	23-Sep-10		-	7.555	0.000	-	1075.083	40	
	4-Oct-10		-	7.560	0.000	-	1075.078	42	
	5-Apr-11		-	7.570	0.000	-	1075.068	52	
	1-Jun-11		-	3.106	0.000	-	1079.532	60	The depth to water may have been 7.3 m, there maybe discrepancies
	13-Dec-11		-	7.540	0.000	-	1075.098	35	
	21-Mar-12		-	7.692	0.000	-	1074.946	26	
	1-Oct-12		-	7.615	0.000	-	1075.023	125	0.15 m down from top of casing joint in well casing
	29-Apr-13		-	7.490	0.000	-	1075.118	145	Top of pipe elevation w/o collar was 1082.608m.
	<b>BH1303</b>	11-Jan-05	1082.882	cnm	cnm	cnm	-	cnm	cnm
2-Feb-05			cnm	cnm	cnm	-	cnm	cnm	full of concrete
9-Mar-05			-	7.573	0.000	-	1075.309	76	
2-Jun-05			-	7.622	0.000	-	1075.260	60	
4-Oct-05			-	7.098	0.000	-	1075.784	18	
18-Jan-06			-	7.531	0.000	-	1075.351	80	
9-May-06			-	7.622	0.000	-	1075.260	42	
25-Jul-06			-	7.394	0.000	-	1075.488	15	
24-Jan-07			-	7.654	0.000	-	1075.228	28	
23-May-07			-	7.462	0.000	-	1075.420	25	
21-Aug-07			-	7.525	0.000	-	1075.357	20	
21-Nov-07			-	7.683	0.000	-	1075.199	18	
13-Mar-08			-	7.575	0.000	-	1075.307	50	
3-Jun-08			-	7.400	0.000	-	1075.482	38	
23-Sep-10			-	7.640	0.000	-	1075.242	44	
4-Oct-10		-	7.655	0.000	-	1075.227	48		
5-Apr-11		-	7.655	0.000	-	1075.227	60		
1-Jun-11		-	7.233	0.000	-	1075.649	24		

Notes:

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  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cni could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

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<i>BH1303 Continued</i>	13-Sep-11		-	7.646	0.000	-	1075.236	10	
	13-Dec-11		-	7.645	0.000	-	1075.237	40	
	21-Mar-12		-	7.790	0.000	-	1075.092	8	
	1-Oct-12		-	7.709	0.000	-	1075.173	85	O2 sock with rusty cable
	29-Apr-13		-	7.654	0.000	-	1075.228	165	
<b>BH1701</b>	23-Sep-10	1088.191	-	9.470	0.000	-	1078.721	76	
	4-Oct-10		-	9.462	0.000	-	1078.729	12	
	8-Apr-11		-	9.525	0.000	-	1078.666	280	
	1-Jun-11		-	9.545	0.000	-	1078.646	64	
	13-Sep-11		-	9.451	0.000	-	1078.740	170	
	15-Dec-11		-	9.424	0.000	-	1078.767	15	
	23-Mar-12		-	9.540	0.000	-	1078.651	88	
	4-Oct-12		-	9.522	0.000	-	1078.669	110	
	30-Apr-13		-	9.610	0.000	-	1078.551	0	Top of pipe elevation w/o collar was 1088.161m.
	<b>BH1702</b>	23-Sep-10	1090.039	-	11.367	0.000	-	1078.672	86
4-Oct-10			-	11.345	0.000	-	1078.694	50	
5-Apr-11			-	11.295	0.000	-	1078.744	80	
2-Jun-11			-	11.262	0.000	-	1078.777	64	
13-Sep-11			-	11.270	0.000	-	1078.769	160	
15-Dec-11			-	11.243	0.000	-	1078.796	80	
22-Mar-12			-	11.305	0.000	-	1078.734	60	dry @ 11.305
4-Oct-12			-	11.340	0.000	-	1078.699	95	
30-Apr-13			-	11.319	0.000	-	1078.690	0	Top of pipe elevation w/o collar was 1090.009m.
<b>BH1703</b>		23-Sep-10	1089.689	-	11.031	0.000	-	1078.658	1,000
	4-Oct-10		-	11.095	0.000	-	1078.594	12	
	5-Apr-11		-	11.043	0.000	-	1078.646	30	
	2-Jun-11		11.002	11.992	0.015	-	1077.697	1,000	
	13-Sep-11		10.912	11.230	0.318	-	1078.459	5,000	
	13-Dec-11		10.910	10.930	0.020	-	1078.459	6,100	
	22-Mar-12		11.091	11.092	0.010	-	1078.598	5,000	Recovered 1.0L from passive bailer
	4-Oct-12		10.972	10.973	0.010	-	1078.716	20	Recovered 1.0L from passive bailer
	1-May-13		-	11.035	-	-	1078.654	120	Top of pipe elevation w/o collar was 1089.689m.
	<b>BH1704</b>	23-Sep-10	1089.460	-	10.525	0.000	-	1078.935	180
4-Oct-10			-	10.582	0.000	-	1078.878	10	
8-Apr-11			-	-	0.000	-	-	590	Blocked with ice and bailer at 0.1m. Bailer top broke off.
2-Jun-11			-	10.473	0.000	-	1078.987	1,600	
13-Sep-11			-	10.477	0.000	-	1078.983	40	
15-Dec-11			-	10.430	0.000	-	1079.030	15	
23-Mar-12			-	-	0.000	-	-	-	Blocked with ice

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH1704 Continued</i>	4-Oct-12		-	10.503	0.000	-	1078.957	55	casing broken and repaired
	30-Apr-13		-	10.542	0.000	-	1078.888	120	Top of pipe elevation w/o collar was 1089.430m.
BH1705	23-Sep-10	1089.575	-	10.485	0.000	-	1079.090	3,000	
	4-Oct-10		-	10.608	0.000	-	1078.967	10	
	8-Apr-11		-	10.506	0.000	-	1079.069	280	
	1-Jun-11		-	10.454	0.000	-	1079.121	61	
	13-Sep-11		-	10.473	0.000	-	1079.102	10	
	20-Dec-11		-	10.425	0.000	-	1079.150	70	
	21-Mar-12		-	-	0.000	-	-	-	blocked with ice
	3-Oct-12		-	10.534	0.000	-	1079.041	0	
	1-May-13		-	10.613	0.000	-	dry	35	Top of pipe elevation w/o collar was 1089.545m.
	BH1706	23-Sep-10	1090.79	-	11.370	0.000	-	1079.420	>10,000
4-Oct-10			-	11.387	0.000	-	1079.403	10	
5-Apr-11			-	11.335	0.000	-	1079.455	10	
2-Jun-11			-	11.328	0.000	-	1079.462	80	
13-Sep-11			-	11.305	0.000	-	1079.485	10	
13-Dec-11			-	11.260	0.000	-	1079.530	200	
22-Mar-12			-	11.342	0.000	-	1079.448	18	
4-Oct-12			-	11.365	0.000	-	1079.425	0	
30-Apr-13		1089.241	-	10.664	0.000	-	1078.547	0	Top of pipe elevation w/o collar was 1089.211m.
BH1707		23-Sep-10	1090.780	cnm	cnm	cnm	cnm	cnm	cnm
	4-Oct-10		blocked	0.300	0.000	-	1090.480	-	Collapsed well annulus
	8-Apr-11		-	12.822	0.000	-	1077.958	1,000	Collapsed well annulus
	1-Jun-11		blocked	-	0.000	-	-	-	Collapsed well annulus
	13-Sep-11		blocked	-	0.000	-	-	35	Collapsed well annulus
	20-Dec-11		cnl	cnl	cnl	cnl	cnl	cnl	cnl
	20-Mar-12		cnl	cnl	cnl	cnl	cnl	cnl	decommissioned
BH1708	23-Sep-10	1087.592	-	10.941	0.000	-	1076.651	2,000	
	4-Oct-10		-	10.953	0.000	-	1076.639	20	
	5-Apr-11		-	10.955	0.000	-	1076.637	16	
	2-Jun-11		-	10.837	0.000	-	1076.755	44	
	13-Sep-11		-	10.915	0.000	-	1076.677	5	
	13-Dec-11		-	10.850	0.000	-	1076.742	30	
	22-Mar-12		-	10.990	0.000	-	1076.602	62	
	4-Oct-12		-	10.990	0.000	-	1076.602	0	
	30-Apr-13		-	11.015	0.000	-	1076.547	55	Top of pipe elevation w/o collar was 1087.562m.
	BH1709	23-Sep-10	1091.997	-	14.115	0.000	-	1077.882	60
4-Oct-10			-	14.320	0.000	-	1077.677	10	Air blowing out well
8-Apr-11			-	-	0.000	-	-	30	Blocked at 0.1m

Notes:

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013

Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
Calgary, Alberta

Monitoring Well	Date (dd-mmm-yy)	Top of Casing Elevation <sup>1</sup> (m)	Depth to LPH <sup>2</sup> (m)	Depth to Water <sup>2</sup> (m)	Apparent Thickness of LPH (m)	LPH Recovery Volume (L)	Water Elevation <sup>3</sup> (m)	Combustible Vapour Concentration <sup>4</sup> (ppm)	Comments
<i>BH1709 Continued</i>	1-Jun-11		-	14.131	0.000	-	1077.866	23	
	13-Sep-11		-	14.041	0.000	-	1077.956	100	
	20-Dec-11		-	13.961	0.000	-	1078.036	30	
	23-Mar-12		-	14.209	0.000	-	1077.788	40	
	3-Oct-12		-	14.166	0.000	-	1077.831	25	
	1-May-13		-	14.258	0.000	-	1077.709	0	Top of pipe elevation w/o collar was 1091.967m.
<b>BH1710</b>	23-Sep-10	1088.754	-	11.450	0.000	-	1077.304	64	
	4-Oct-10		-	11.520	0.000	-	1077.234	52	
	5-Apr-11		-	11.480	0.000	-	1077.274	40	
	2-Jun-11		-	11.414	0.000	-	1077.340	52	
	13-Sep-11		-	11.410	0.000	-	1077.344	10	
	13-Dec-11		-	11.348	0.000	-	1077.406	25	
	22-Mar-12		-	11.464	0.000	-	1077.290	32	
	4-Oct-12		-	11.470	0.000	-	1077.284	0	
	30-Apr-13		-	11.423	0.000	-	1077.289	0	Top of pipe elevation w/o collar was 1088.712m.
<b>BH1711</b>	23-Sep-10	1091.620	-	12.960	0.000	-	1078.660	280	Air blowing out well
	4-Oct-10		-	12.770	0.000	-	1078.850	10	
	1-Jun-11		-	12.893	0.000	-	1078.727	38	
	13-Sep-11		-	12.910	0.000	-	1078.710	30	
	20-Dec-11		-	12.843	0.000	-	1078.777	160	
	23-Mar-12		-	13.005	0.000	-	1078.615	240	
	3-Oct-12		-	12.940	0.000	-	1078.680	0	
	1-May-13		-	13.010	0.000	-	1078.610	0	
	23-Sep-10	1087.520	-	10.509	0.000	-	1077.011	82	
4-Oct-10		-	10.528	0.000	-	1076.992	12		
5-Apr-11		-	10.530	0.000	-	1076.990	10		
2-Jun-11		-	10.405	0.000	-	1077.115	38		
13-Sep-11		-	10.495	0.000	-	1077.025	5		
13-Dec-11		-	10.429	0.000	-	1077.091	15		
22-Mar-12		-	10.610	0.000	-	1076.910	22		
4-Oct-12		-	10.536	0.000	-	1076.984	0		
30-Apr-13		-	10.552	0.000	-	1076.938	60	Top of pipe elevation w/o collar was 1087.490m.	
<b>BH1713</b>	23-Sep-10	1078.250	-	3.629	0.000	-	1074.621	34	
	4-Oct-10		-	3.643	0.000	-	1074.607	28	
	5-Apr-11		-	3.640	0.000	-	1074.610	20	
	1-Jun-11		-	3.444	0.000	-	1074.806	6	
	12-Sep-11		-	3.579	0.000	-	1074.671	25	
	13-Dec-11		-	3.611	0.000	-	1074.639	15	
	21-Mar-12		-	3.695	0.000	-	1074.555	10	

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- Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.

LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>BH1713 Continued</i>	1-Oct-12		-	3.680	0.000	-	1074.570	0	O2 sock in well
	29-Apr-13		-	3.624	0.000	-	1074.596	80	Top of pipe elevation w/o collar was 1078.220m.
BH1714	23-Sep-10	1078.330	-	4.210	0.000	-	1074.120	36	
	4-Oct-10		-	4.229	0.000	-	1074.101	30	
	5-Apr-11		-	4.225	0.000	-	1074.105	40	
	1-Jun-11		-	4.077	0.000	-	1074.253	39	
	13-Sep-11		-	4.109	0.000	-	1074.221	15	
	13-Dec-11		-	4.188	0.000	-	1074.142	5	
	21-Mar-12		-	4.216	0.000	-	1074.114	58	
	1-Oct-12		-	4.272	0.000	-	1074.058	50	O2 sock in well
	29-Apr-13		-	4.203	0.000	-	1074.127	115	
BH1715	23-Sep-10	1089.440	-	10.270	0.000	-	1079.170	54	
	4-Oct-10		-	10.279	0.000	-	1079.161	40	
	5-Apr-11		-	10.464	0.000	-	1078.976	2	
	2-Jun-11		-	10.503	0.000	-	1078.937	56	
	13-Sep-11		-	10.720	0.000	-	1078.720	60	
	13-Dec-11		-	10.725	0.000	-	1078.715	15	
	22-Mar-12		-	10.675	0.000	-	1078.765	8	
	4-Oct-12		-	10.479	0.000	-	1078.961	0	
	30-Apr-13		-	10.664	0.000	-	1078.734	0	Top of pipe elevation w/o collar was 1089.398m.
BH1716	23-Sep-10	1089.140	-	11.445	0.000	-	1077.695	48	
	4-Oct-10		-	11.560	0.000	-	1077.580	72	
	5-Apr-11		-	11.530	0.000	-	1077.610	20	
	2-Jun-11		-	11.445	0.000	-	1077.695	67	
	13-Sep-11		-	11.379	0.000	-	1077.761	5	
	13-Dec-11		-	11.372	0.000	-	1077.768	25	
	22-Mar-12		-	11.470	0.000	-	1077.670	36	
	4-Oct-12		-	11.470	0.000	-	1077.670	0	1 bolt missing and replaced
	30-Apr-13		-	11.446	0.000	-	1077.664	0	Top of pipe elevation w/o collar was 1089.110m.
BH1717	23-Sep-10	1088.620	dry	dry	dry	-	dry	56	
	4-Oct-10		dry	dry	dry	-	dry	16	Bottom of hole depth = 10.065
	5-Apr-11		-	9.995	0.000	-	1078.625	80	
	2-Jun-11		-	9.957	0.000	-	1078.663	50	
	13-Sep-11		dry	dry	dry	-	dry	55	
	13-Dec-11		-	9.935	0.000	-	1078.685	40	
	22-Mar-12		-	10.071	0.000	-	1078.549	40	dry @ 10.071
	4-Oct-12		-	9.952	0.000	-	1078.668	0	
	30-Apr-13		-	10.070	0.000	-	dry	45	Top of pipe elevation w/o collar was 1089.620m.

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LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=10ppm  
 n/s not surveyed  
 - no data available.

**TABLE 2 SUMMARY OF ALL WELL MONITORING DATA 1998-2013**

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EX-1	23-Sep-10	1088.919	-	14.055	0.000	-	1074.864	200	
	4-Oct-10		-	11.619	0.000	-	1077.300	30	Bottom of hole depth = 14.600
	8-Apr-11		-	12.865	0.000	-	1076.054	700	Bottom of hole depth = 13.163
	9-Sep-11		-	13.639	0.000	-	1075.280	15	Bottom of hole depth = 15.867
	21-Dec-11		-	13.702	0.000	-	1075.217	5	Bottom of hole depth = 15.218
	27-Mar-12		-	13.622	0.000	-	1075.297	180	Bottom of hole depth = 15.174
	4-Oct-12		-	13.627	0.000	-	1075.292	105	Bottom of hole depth = 15.120
	1-May-13		-	13.809	0.000	-	1075.110	0	
EX-2	23-Sep-10	1087.853	-	13.095	0.000	-	1074.758	>10,000	
	4-Oct-10		-	11.395	0.000	-	1076.458	20	Bottom of hole depth = 12.646
	8-Apr-11		dry	dry	dry	-	dry	800	Bottom of hole depth = 11.500
	9-Sep-11		-	12.797	0.000	-	1075.056	70	Bottom of hole depth = 13.826
	21-Dec-11		-	12.821	0.000	-	1075.032	30	Bottom of hole depth = 13.232
	27-Mar-12		-	12.785	0.000	-	1075.068	240	Bottom of hole depth = 13.212
	4-Oct-12		-	12.762	0.000	-	1075.091	145	Bottom of hole depth = 13.235
	1-May-13		-	12.905	0.000	-	1074.948	0	
EX-3	23-Sep-10	1088.461	-	11.570	0.000	-	1076.891	1,000	
	5-Oct-10		-	9.055	0.000	-	1079.406	10	
	8-Apr-11		-	dry	0.000	-	-	20	Dry at 10.185m. Shut off.
	9-Sep-11		-	11.283	0.000	-	1077.178	10	Bottom of hole depth = 12.855
	21-Dec-11		-	11.293	0.000	-	1077.168	0	Bottom of hole depth = 12.530
	27-Mar-12		-	11.466	0.000	-	1076.995	60	Bottom of hole depth = 12.225
	4-Oct-12		-	11.282	0.000	-	1077.179	35	Bottom of hole depth = 12.140
	1-May-13		-	Frozen	Frozen	Frozen	Frozen	Frozen	
EX-4	23-Sep-10	1089.443	-	10.205	0.000	-	1079.238	8,000	
	5-Oct-10		-	9.295	0.000	-	1080.148	400	Bottom of hole depth = 10.250
	8-Apr-11		-	dry	0.000	-	-	1,000	Dry at 9.540m
	9-Sep-11		-	9.788	0.000	-	1079.655	45	Bottom of hole depth = 11.143
	21-Dec-11		-	9.822	0.000	-	1079.621	130	Bottom of hole depth = 11.380
	27-Mar-12		-	9.832	0.000	-	1079.611	300	Bottom of hole depth = 10.890
	4-Oct-12		-	9.830	0.000	-	1079.613	530	Bottom of hole depth = 10.922
	1-May-13		-	9.920	0.000	-	1079.523	115	
EX-5	23-Sep-10	1090.314	-	10.409	0.000	-	1079.905	2,200	
	4-Oct-10		-	10.409	0.000	-	1079.905	64	B. Checked = 0ml
	8-Apr-11		-	-	0.000	-	-	-	Vault completely frozen
	9-Sep-11		-	10.144	0.000	-	1080.170	480	Bottom of hole depth = 13.791
	21-Dec-11		-	10.202	0.000	-	1080.112	750	Bottom of hole depth = 13.266
	27-Mar-12		-	10.159	0.000	-	1080.155	320	Bottom of hole depth = 13.255
	4-Oct-12		-	10.187	0.000	-	1080.127	2,100	Bottom of hole depth = 13.260

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LPH liquid petroleum hydrocarbons.

trace trace amount of LPH observed (<1 mm).

passive bailer LPH collection and recovery device.

HB hand bailed.

nm not measured.

cnm could not monitor.

cnl could not locate.

ppm parts per million; 1% LEL (lower explosive limit)=110ppm

n/s not surveyed

- no data available.

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<i>EX-5 continued</i>	1-May-13		-	10.268	0.000	-	1080.046	2,900	
<b>EX-6</b>	23-Sep-10	1090.453	-	11.060	0.000	-	1079.393	4,000	
	4-Oct-10		-	9.760	0.000	-	1080.693	18	
	8-Apr-11		-	dry	0.000	-	-	600	Dry at 11.467m
	9-Sep-11		-	10.816	0.000	-	1079.637	20	Bottom of hole depth = 13.231
	21-Dec-11		-	10.876	0.000	-	1079.577	5	Bottom of hole depth = 12.594
	27-Mar-12		-	10.870	0.000	-	1079.583	20	Bottom of hole depth = 12.590
	4-Oct-12		-	10.815	0.000	-	1079.638	115	Bottom of hole depth = 12.280
	1-May-13		-	10.830	0.000	-	1079.623	30	
<b>EX-7</b>	23-Sep-10	1088.915	-	11.265	0.000	-	1077.650	7,000	
	4-Oct-10		-	11.300	0.000	-	1077.615	20	Valves were closed prior to monitor
	8-Apr-11		-	dry	0.000	-	-	1,000	Dry at 11.300m
	9-Sep-11		-	-	0.000	-	-	-	Pneumatic air lift hose preventing access
	21-Dec-11		-	-	0.000	-	-	-	Pneumatic air lift hose preventing access
	4-Oct-12		-	dry	0.000	-	-	200	Bottom of hole depth = 10.253
1-May-13		-	10.863	0.000	-	1078.052	25		

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  - 4 Headspace combustible vapour concentrations measured in monitoring well standpipes using a Gastech TraceTector vapour analyzer or a RKI Eagle II portable gas monitor with Photo Ionization Detector.
- LPH liquid petroleum hydrocarbons.  
 trace trace amount of LPH observed (<1 mm).  
 passive bailer LPH collection and recovery device.  
 HB hand bailed.  
 nm not measured.  
 cnm could not monitor.  
 cnl could not locate.  
 ppm parts per million; 1% LEL (lower explosive limit)=110ppm  
 n/s not surveyed  
 - no data available.

**TABLE 3 SUMMARY OF ALL SOIL LABORATORY RESULTS 1998-2012  
Zones 1 and 2 - North of 11<sup>th</sup> Avenue NW  
Updated Site Management Plan (2014)  
Hounsfeld Heights - Briar Hill Community  
CALGARY, Alberta**

Borehole (Sample Number)	Sample Date	Sample Depth	Soil Unit	Combustible Soil Headspace Vapour Concentration <sup>1</sup>	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH <sup>2</sup>	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	PHC F3 >C <sub>16</sub> -C <sub>34</sub>	PHC F4 C <sub>34</sub> +	Lead
	dd-mmm-yy	(m)		(ppm)*	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
<b>Site-specific Tier 3 Soil Quality Objectives (mg/kg). For Properties 1 to 20 and 26 to 35 (i.e. 11th Avenue and North)</b>														
					<b>5 to 15</b>	NG	NG	NG		NG	NG	NG	NG	NG
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines for Fine-Grained Soils and Residential/Parkland Land Use.														
Soils (<3.0 m depth)					0.046	<b>0.52</b>	<b>0.11</b>	<b>15</b>		<b>210</b>	<b>150</b>	<b>1,300</b>	<b>5,600</b>	<b>63</b>
Sub Soils (>3.0 m depth)					0.046	<b>0.52</b>	<b>0.11</b>	<b>15</b>		<b>710</b>	<b>1,000*</b>	<b>3,500*</b>	<b>10,000*</b>	<b>63</b>
<b>1998</b>														
BH206	21-Oct-98	8.4-8.8	sand	220	0.05	0.34	<b>0.17</b>	1.34	trace	-	-	-	-	-
BH207	21-Oct-98	8.4-8.8	sand	>10,000	2.80	<b>53.4</b>	<b>11.1</b>	<b>70.5</b>	771	-	-	-	-	-
BH208	21-Oct-98	9.1-9.6	sand	6,000	0.91	<b>7.01</b>	<b>0.95</b>	7.40	59.1	-	-	-	-	-
BH209	19-Oct-98	9.1-9.6	clay/sand	>10,000	0.09	<b>0.90</b>	<b>0.39</b>	2.67	25.0	-	-	-	-	-
BH210	21-Oct-98	8.4-8.8	sand	1,000	0.06	0.41	<b>0.13</b>	1.00	<10	-	-	-	-	-
<b>2002</b>														
BH501-15	12-Nov-02	10.7 - 11.4	sand	700	0.26	<b>0.86</b>	0.05	2.4	-	<5	<5	17	5	-
BH501-16	12-Nov-02	11.4 - 12.2	sand	400	0.90	<b>5.0</b>	<b>0.85</b>	6.3	-	<5	<5	12	<5	-
BH502-19	12-Nov-02	13.8 - 14.5	silt	1,200	1.7	<b>8.6</b>	<b>1.1</b>	8.6	-	12	<5	13	5	-
BH502-22	12-Nov-02	16.0 - 16.8	silt	600	4.8	<b>2.4</b>	0.03	0.17	-	<5	<5	9	<5	-
BH510-17	14-Nov-02	12.2 - 13.0	sand	10,000	1.9	<b>47</b>	<b>31</b>	<b>170</b>	-	<b>950</b>	9	35	<5	-
BH510-18	14-Nov-02	13.0 - 13.7	sand	10,000	6.3 <sup>3</sup>	<b>77</b>	<b>27</b>	<b>160</b>	-	<b>930</b>	14	11	<5	13
BH510-20	14-Nov-02	14.5 - 15.2	sand	620	4.6	<b>4.0</b>	<b>0.45</b>	2.80	-	<5	<5	16	7	-
<b>2003</b>														
BH701 (701-9)	8-Sep-03	6.9-7.0	clay	60	0.04	<0.01	0.09	0.01	-	10	<5	5	<5	-
BH701 (701-10)	8-Sep-03	7.6-7.7	clay	300	0.62	<0.01	<b>1.8</b>	0.14	-	18	<5	<5	<5	-
BH701 (701-16)	8-Sep-03	12.2-12.4	clay	580	3.1	<b>11</b>	<b>1.5</b>	10	-	11	<5	5	<5	-
BH702 (702-10)	8-Sep-03	7.5-7.6	clay	3,900	1.4	<b>3.5</b>	<b>6.7</b>	<b>18</b>	-	200	<5	<5	<5	14
BH702 (702-13)	8-Sep-03	9.9-10.1	silt	4,000	0.98	<b>5.4</b>	<b>3.5</b>	15	-	150	<5	5	<5	10
<i>duplicate of 702-13 (labelled 702-21)</i>					1.2	<b>3.4</b>	<b>2.0</b>	6.9	-	26	<5	<5	<5	-
BH702 (702-14)	8-Sep-03	10.5-10.7	silt	3,200	1.2	<b>7.4</b>	<b>1.3</b>	7.1	-	17	<5	<5	<5	9

Notes:

- Soil sample container headspace vapour concentration measured with Gastech vapour analyzer calibrated to hexane with methane exclusion.
  - Total petroleum hydrocarbon = sum of F1 and F2 Fractions.
  - BH510 is located between properties 5 and 6 which have benzene acceptance levels of 12 mg/kg and 15 mg/kg respectively, therefore 6.3 mg/kg is not an exceedance.
- \* Management Limits values adopted according to the AESRD Tier 1 Soil and Groundwater Remediation Guidelines. Exclusion of the ecological direct soil contact pathway is permitted below 3 metres with the application of "management limits" for petroleum hydrocarbon fractions.

NG no guideline.

- not measured.

BTEX Benzene, toluene, ethylbenzene and xylenes.

PHC Petroleum hydrocarbon concentration fractions.

ppm parts per million; 120 parts per million= 1% LEL.

LEL Lower Explosive Limit.

**Bold** Indicates value exceeds Tier 3 Guidelines developed by Cantox Environmental Inc. (Intrinsic), 2004.

**Bold** Indicates value exceeds AESRD 2010 Tier 1 Soil and Groundwater Remediation Guidelines for Fine-Grained Soil - Residential Land Use.



**TABLE 3 SUMMARY OF ALL SOIL LABORATORY RESULTS 1998-2012  
Zones 1 and 2 - North of 11<sup>th</sup> Avenue NW  
Updated Site Management Plan (2014)  
Hounsfeld Heights - Briar Hill Community  
CALGARY, Alberta**

Borehole (Sample Number)	Sample Date	Sample Depth	Soil Unit	Combustible Soil Headspace Vapour Concentration <sup>1</sup>	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH <sup>2</sup>	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	PHC F3 >C <sub>16</sub> -C <sub>34</sub>	PHC F4 C <sub>34</sub> +	Lead
	dd-mmm-yy	(m)		(ppm)*	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
<b>Site-specific Tier 3 Soil Quality Objectives (mg/kg). For Properties 1 to 20 and 26 to 35 (i.e. 11th Avenue and North)</b>														
					<b>5 to 15</b>	NG	NG	NG		NG	NG	NG	NG	NG
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines for Fine-Grained Soils and Residential/Parkland Land Use.														
Soils (<3.0 m depth)					0.046	<b>0.52</b>	<b>0.11</b>	<b>15</b>		<b>210</b>	<b>150</b>	<b>1,300</b>	<b>5,600</b>	<b>63</b>
Sub Soils (>3.0 m depth)					0.046	<b>0.52</b>	<b>0.11</b>	<b>15</b>		<b>710</b>	<b>1,000*</b>	<b>3,500*</b>	<b>10,000*</b>	<b>63</b>
<b>2003 continued</b>														
BH702 (702-20)	8-Sep-03	14.9-15.1	silt	1,100	0.03	0.14	0.06	0.32	-	<5	<5	7	<5	-
BH716 (716-11)	12-Sep-03	8.2-8.4	silt	25	<0.01	0.15	0.07	0.97	-	<5	<5	<5	<5	-
BH716 (716-12)	12-Sep-03	8.8-9.1	silt	60	0.08	<b>2.1</b>	<b>0.78</b>	6.8	-	8	<5	<5	<5	-
BH716 (716-17)	12-Sep-03	12.8-13.0	silt	80	0.03	<0.01	<b>0.12</b>	0.31	-	<5	<5	<5	<5	-
BH724 (724-13)	16-Sep-03	9.6-9.7	silt	58	<0.01	<0.01	<0.01	0.34	-	<5	<5	<5	<5	-
BH724 (724-17)	16-Sep-03	12.6-12.7	silt	125	0.67	<b>3.7</b>	<b>0.47</b>	3.3	-	<5	<5	<5	<5	-
BH724 (724-20)	16-Sep-03	14.9-15.0	silt	25	0.04	0.03	<0.01	0.23	-	<5	<5	<5	<5	-
BH725 (725-12)	16-Sep-03	8.8-9.1	clay	2,000	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH725 (725-17)	16-Sep-03	12.8-13.0	sand	>10,000	3	<b>5.6</b>	<b>5.5</b>	<b>29</b>	-	<b>1,300</b>	<5	<5	<5	-
BH725 (725-18)	16-Sep-03	13.9-14.0	sand	>10,000	1.3	<b>12</b>	<b>3.2</b>	<b>20</b>	-	<b>130</b>	<5	<5	<5	-
<i>duplicate of 725-18 (labelled 725-29)</i>						<b>8.4<sup>4</sup></b>	<b>4.1</b>	<b>34</b>	-	<b>860</b>	<5	<5	<5	-
BH725 (725-24)	16-Sep-03	18.0-18.3	sand	200	0.51	<b>1.3</b>	<b>0.47</b>	2.3	-	5	<5	<5	<5	-
BH725 (725-28)	16-Sep-03	21.0-21.3	silt	75	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH726 (726-5)	17-Sep-03	3.7-3.8	sand	15	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH726 (727-15)	17-Sep-03	11.3-11.4	clay	22	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH727 (727-18)	17-Sep-03	13.4-13.7	silt	10	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH727 (727-20)	17-Sep-03	15.1-15.2	silt	55	3.3	<b>12</b>	<b>1.1</b>	8.4	-	8	<5	<5	<5	-
BH727 (727-23)	17-Sep-03	17.4-17.5	silt	50	4.4	<b>1.6</b>	<0.01	0.02	-	<5	<5	<5	<5	-
BH727 (727-27)	17-Sep-03	20.4-20.6	silt	10	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH728 (728-16)	17-Sep-03	11.4-12.2	silt	20	0.11	0.31	0.08	0.68	-	<5	<5	<5	<5	-
BH728 (728-18)	17-Sep-03	13.6-13.7	silt	200	5.8 <sup>5</sup>	<b>14</b>	<b>1.2</b>	8.8	-	5	<5	<5	<5	-
BH728 (728-22)	17-Sep-03	16.6-16.8	silt	110	3.2	<b>8.6</b>	<b>0.14</b>	0.31	-	<5	<5	<5	<5	-

Notes:

- 1 Soil sample container headspace vapour concentration measured with Gastech vapour analyzer calibrated to hexane with methane exclusion.
- 2 Total petroleum hydrocarbon = sum of F1 and F2 Fractions.
- 4 BH725 is located between properties 7 and 8 which have benzene acceptance levels of 12 mg/kg and 13 mg/kg respectively, therefore 8.4 mg/kg is not an exceedance.
- 5 BH728 is located between properties 11 and 12 which have benzene acceptance levels of 13 mg/kg, therefore 5.8 mg/kg is not an exceedance.
- \* Management Limits values adopted according to the AESRD Tier 1 Soil and Groundwater Remediation Guidelines. Exclusion of the ecological direct soil contact pathway is permitted below 3 metres with the application of "management limits" for petroleum hydrocarbon fractions.
- NG no guideline.
- not measured.
- BTEX Benzene, toluene, ethylbenzene and xylenes.
- PHC Petroleum hydrocarbon concentration fractions.
- ppm parts per million; 120 parts per million= 1% LEL.
- LEL Lower Explosive Limit.

**Bold** Indicates value exceeds Tier 3 Guidelines developed by Cantox Environmental Inc. (Intrinsik), 2004.

**Bold** Indicates value exceeds AESRD 2010 Tier 1 Soil and Groundwater Remediation Guidelines for Fine-Grained Soil - Residential Land Use.

**TABLE 3 SUMMARY OF ALL SOIL LABORATORY RESULTS 1998-2012  
Zones 1 and 2 - North of 11<sup>th</sup> Avenue NW  
Updated Site Management Plan (2014)  
Hounsfeld Heights - Briar Hill Community  
CALGARY, Alberta**

Borehole (Sample Number)	Sample Date	Sample Depth	Soil Unit	Combustible Soil Headspace Vapour Concentration <sup>1</sup>	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH <sup>2</sup>	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	PHC F3 >C <sub>16</sub> -C <sub>34</sub>	PHC F4 C <sub>34+</sub>	Lead
	dd-mmm-yy	(m)		(ppm)*	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
<b>Site-specific Tier 3 Soil Quality Objectives (mg/kg). For Properties 1 to 20 and 26 to 35 (i.e. 11th Avenue and North)</b>														
					<b>5 to 15</b>	NG	NG	NG		NG	NG	NG	NG	NG
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines for Fine-Grained Soils and Residential/Parkland Land Use.														
Soils (<3.0 m depth)					0.046	<b>0.52</b>	<b>0.11</b>	<b>15</b>		<b>210</b>	<b>150</b>	<b>1,300</b>	<b>5,600</b>	<b>63</b>
Sub Soils (>3.0 m depth)					0.046	<b>0.52</b>	<b>0.11</b>	<b>15</b>		<b>710</b>	<b>1,000*</b>	<b>3,500*</b>	<b>10,000*</b>	<b>63</b>
<b>2003 Continued</b>														
BH728 (728-25)	17-Sep-03	18.9-19.1	silt	45	2.9	0.05	<0.01	<0.01	-	<5	<5	<5	<5	-
BH729 (729-15)	18-Sep-03	11.3-11.4	silt	600	4.9	<b>9.0</b>	<b>0.97</b>	7.3	-	<5	<5	<5	<5	-
BH729 (729-16)	18-Sep-03	12.0-12.2	silt	1,200	6.0 <sup>6</sup>	<b>11.0</b>	<b>0.80</b>	6.0	-	<5	<5	<5	<5	-
BH729 (729-20)	18-Sep-03	15.1-15.2	silt	850	0.04	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH729 (729-22)	18-Sep-03	16.6-16.8	silt	200	3.4	<b>2.9</b>	0.08	0.31	-	<5	<5	<5	<5	-
BH730 (730-15)	18-Sep-03	11.2-11.4	silt	1,800	5.3 <sup>7</sup>	<b>10.0</b>	<b>0.52</b>	4.1	-	<5	<5	<5	<5	-
BH730 (730-16)	18-Sep-03	11.9-12.2	silt	600	5.5 <sup>7</sup>	<b>8.2</b>	<b>0.46</b>	3.6	-	<5	<5	<5	<5	-
BH730 (730-22)	18-Sep-03	16.6-16.8	silt	700	3.7	<b>1.2</b>	<0.01	<0.01	-	<5	<5	<5	<5	-
BH738 (738-11)	24-Sep-03	8.2-8.4	silt	600	<0.01	<0.01	<0.01	<0.01	-	<5	<5	8	<5	-
BH738 (738-13)	24-Sep-03	9.6-9.7	silt	1,600	9.4 <sup>8</sup>	0.17	<b>0.32</b>	0.70	-	<5	<5	6	<5	-
BH738 (738-15)	24-Sep-03	11.3-11.4	silt	380	1.5	<0.01	<0.01	<0.01	-	<5	<5	9	<5	-
BH738 (738-21)	24-Sep-03	15.8-15.9	silt	300	<b>14</b>	<b>0.82</b>	<0.01	<0.01	-	<5	<5	9	<5	-
BH739 (739-11)	24-Sep-03	8.2-8.4	silt	400	6.8 <sup>9</sup>	<0.01	0.02	0.03	-	8	8	21	<5	-
BH739 (739-19)	24-Sep-03	14.3-14.5	silt	200	<b>13</b>	<b>0.84</b>	<0.01	0.05	-	7	<5	24	11	-
<b>2004</b>														
BH901 (901-8)	4-Feb-04	4.6	sand	65	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	7
BH901 (901-11)	4-Feb-04	6.1	clay	35	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	6
BH906 (906-10)	5-Feb-04	5.0-5.3	silt	700	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	<5
BH906 (906-11)	5-Feb-04	5.8-6.1	silt	500	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	6

Notes:

- 1 Soil sample container headspace vapour concentration measured with Gastech vapour analyzer calibrated to hexane with methane exclusion.
- 2 Total petroleum hydrocarbon = sum of F1 and F2 Fractions.
- 6 BH729 is located adjacent to property 13 which has a benzene acceptance level of 13 mg/kg therefore 6.0 mg/kg is not an exceedance.
- 7 BH730 is located between properties 14 and 15 which have benzene acceptance levels of 13 mg/kg and 14 mg/kg respectively, therefore neither 5.3 mg/kg nor 5.5 mg/kg are an exceedance.
- 8 BH738 is located adjacent to property 18 which has a benzene acceptance level of 13 mg/kg therefore 9.4 mg/kg is not an exceedance.
- 9 BH739 is located between properties 17 and 19 which have benzene acceptance levels of 13 mg/kg and 12 mg/kg respectively, therefore 6.8 mg/kg is not an exceedance.

\* Management Limits values adopted according to the AESRD Tier 1 Soil and Groundwater Remediation Guidelines. Exclusion of the ecological direct soil contact pathway is permitted below 3 metres with the application of "management limits" for petroleum hydrocarbon fractions.

NG no guideline.

- not measured.

BTEX Benzene, toluene, ethylbenzene and xylenes.

PHC Petroleum hydrocarbon concentration fractions.

ppm parts per million; 120 parts per million= 1% LEL.

LEL Lower Explosive Limit.

**Bold** Indicates value exceeds Tier 3 Guidelines developed by Cantox Environmental Inc. (Intrinsic), 2004.

**Bold** Indicates value exceeds AESRD 2010 Tier 1 Soil and Groundwater Remediation Guidelines for Fine-Grained Soil - Residential Land Use.

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Zones 1 and 2 - North of 11<sup>th</sup> Avenue NW  
Updated Site Management Plan (2014)  
Hounsfeld Heights - Briar Hill Community  
CALGARY, Alberta**

Borehole (Sample Number)	Sample Date	Sample Depth	Soil Unit	Combustible Soil Headspace Vapour Concentration <sup>1</sup>	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH <sup>2</sup>	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	PHC F3 >C <sub>16</sub> -C <sub>34</sub>	PHC F4 C <sub>34</sub> +	Lead
	dd-mmm-yy	(m)		(ppm)*	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
<b>Site-specific Tier 3 Soil Quality Objectives (mg/kg). For Properties 1 to 20 and 26 to 35 (i.e. 11th Avenue and North)</b>														
					<b>5 to 15</b>	NG	NG	NG		NG	NG	NG	NG	NG
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines for Fine-Grained Soils and Residential/Parkland Land Use.														
Soils (<3.0 m depth)					0.046	<b>0.52</b>	<b>0.11</b>	<b>15</b>		<b>210</b>	<b>150</b>	<b>1,300</b>	<b>5,600</b>	<b>63</b>
Sub Soils (>3.0 m depth)					0.046	<b>0.52</b>	<b>0.11</b>	<b>15</b>		<b>710</b>	<b>1,000*</b>	<b>3,500*</b>	<b>10,000*</b>	<b>63</b>
<b>2004 continued</b>														
BH910 (910-13)	6-Feb-04	6.7-6.9	sand	200	<0.01	0.04	<0.01	<0.01	-	<5	<5	<5	<5	6
BH510A (510A-12)	21-Dec-04	11.9-12.50	-	-	0.03	0.36	<b>0.36</b>	2.4	-	9	<5	<5	<5	-
BH510A (510A-13)	21-Dec-04	12.50-13.10	-	-	1.5	<b>22</b>	<b>8.6</b>	<b>51</b>	-	140	<5	<5	<5	-
BH510A (510A-14)	21-Dec-04	13.70-14.30	-	-	3.1	<b>8</b>	<b>0.62</b>	3.8	-	<5	<5	8	6	-
<b>2008</b>														
EX-1 (14)	7-Oct-08	9.91	NA	20	0.013	0.09	0.01	0.04	-	<5	<20	<20	<20	-
EX-1 (19)	7-Oct-08	12.19	NA	1,200	0.91	<b>8.1</b>	<b>0.47</b>	7.6	-	39	<20	<20	<20	-
EX-1 (22)	7-Oct-08	14.48	NA	240	0.32	<b>1.1</b>	<b>0.12</b>	1.5	-	<5	<20	<20	<20	-
EX-2 (11)	7-Oct-08	7.92	NA	18	0.011	<0.01	<0.01	<0.01	-	<5	<20	<20	<20	-
EX-2 (13)	7-Oct-08	9.60	NA	40	<0.005	<0.01	<0.01	0.02	-	<5	<20	<20	<20	-
EX-2 (19)	7-Oct-08	13.41	NA	22	0.19	<0.01	0.01	0.02	-	<5	<20	<20	<20	-
EX-3 (11)	8-Oct-08	7.77	NA	720	0.4	<b>1.1</b>	<b>1.0</b>	3.0	-	15	<20	<20	<20	-
EX-3 (14)	8-Oct-08	9.60	NA	7,400	1.9	<b>24</b>	<b>4.6</b>	<b>54</b>	-	410	<20	<20	<20	-
EX-3 (19)	8-Oct-08	13.41	NA	80	0.3	<b>1.5</b>	<b>0.48</b>	5.2	-	13	<20	<20	<20	-
EX-4 (13)	8-Oct-08	10.96	NA	620	0.007	<0.01	0.01	<0.01	-	8	<20	<20	<20	-
EX-4 (16)	8-Oct-08	19.35	NA	300	0.18	<b>1.2</b>	<b>1.1</b>	4.4	-	19	<20	<20	<20	-
EX-4 (21)	8-Oct-08	14.94	NA	60	1.2	0.33	<b>2.5</b>	4.5	-	18	<20	<20	<20	-
EX-5 (6)	9-Oct-08	10.06	NA	120	0.032	0.09	0.05	0.76	-	<5	<20	<20	<20	-
EX-5 (7)	9-Oct-08	10.82	NA	1,200	0.04	0.25	<b>0.42</b>	3	-	8	<20	<20	<20	-
EX-5 (11)	9-Oct-08	13.87	NA	180	8.7 <sup>10</sup>	0.24	<0.01	<0.01	-	8	<20	<20	<20	-
EX-6 (2)	10-Oct-08	9.30	NA	40	<0.005	<0.01	<0.01	<0.01	-	<5	<20	<20	<20	-
EX-6 (5)	10-Oct-08	10.82	NA	520	0.56	<b>0.78</b>	<b>1.6</b>	8.1	-	23	<20	<20	<20	-

Notes:

1 Soil sample container headspace vapour concentration measured with Gastech vapour analyzer calibrated to hexane with methane exclusion.

2 Total petroleum hydrocarbon = sum of F1 and F2 Fractions.

10 EX-5 is located adjacent to property 1 which has a benzene acceptance level of 13 mg/kg, therefore 8.7 mg/kg is not an exceedance.

\* Management Limits values adopted according to the AESRD Tier 1 Soil and Groundwater Remediation Guidelines. Exclusion of the ecological direct soil contact pathway is permitted

below 3 metres with the application of "management limits" for petroleum hydrocarbon fractions.

NG no guideline.

- not measured.

BTEX Benzene, toluene, ethylbenzene and xylenes.

PHC Petroleum hydrocarbon concentration fractions.

ppm parts per million; 120 parts per million= 1% LEL.

LEL Lower Explosive Limit.

**Bold** Indicates value exceeds Tier 3 Guidelines developed by Cantox Environmental Inc. (Intrinsic), 2004.

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**Zones 1 and 2 - North of 11<sup>th</sup> Avenue NW**  
**Updated Site Management Plan (2014)**  
**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Borehole (Sample Number)	Sample Date	Sample Depth	Soil Unit	Combustible Soil Headspace Vapour Concentration <sup>1</sup>	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH <sup>2</sup>	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	PHC F3 >C <sub>16</sub> -C <sub>34</sub>	PHC F4 C <sub>34+</sub>	Lead
	dd-mmm-yy	(m)		(ppm)*	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
<b>Site-specific Tier 3 Soil Quality Objectives (mg/kg). For Properties 1 to 20 and 26 to 35 (i.e. 11th Avenue and North)</b>														
					<b>5 to 15</b>	NG	NG	NG		NG	NG	NG	NG	NG
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines for Fine-Grained Soils and Residential/Parkland Land Use.														
<i>Soils (&lt;3.0 m depth)</i>					0.046	<b>0.52</b>	<b>0.11</b>	<b>15</b>		<b>210</b>	<b>150</b>	<b>1,300</b>	<b>5,600</b>	<b>63</b>
<i>Sub Soils (&gt;3.0 m depth)</i>					0.046	<b>0.52</b>	<b>0.11</b>	<b>15</b>		<b>710</b>	<b>1,000*</b>	<b>3,500*</b>	<b>10,000*</b>	<b>63</b>
<i>2008 continued</i>														
EX-6 (7)	10-Oct-08	12.65	NA	38	0.31	0.08	<b>1.4</b>	0.13	-	10	<20	<20	<20	-
EX-7 (4)	27-Oct-08	10.97	NA	12	0.015	0.02	<0.01	<0.01	-	<5	<20	<20	<20	-
EX-7 (7)	27-Oct-08	13.41	NA	800	2.9	<b>8.5</b>	<b>0.7</b>	5	-	25	<20	<20	<20	-
EX-7 (8)	27-Oct-08	14.02	NA	1,000	2.2	<b>0.81</b>	<b>0.69</b>	4.8	-	17	<20	<20	<20	-
EX-7 (10)	27-Oct-08	15.54	NA	240	3.5	0.3	<0.01	<0.01	-	<5	<20	<20	<20	-

## Notes:

1 Soil sample container headspace vapour concentration measured with Gastech vapour analyzer calibrated to hexane with methane exclusion.

2 Total petroleum hydrocarbon = sum of F1 and F2 Fractions.

\* Management Limits values adopted according to the AESRD Tier 1 Soil and Groundwater Remediation Guidelines. Exclusion of the ecological direct soil contact pathway is permitted

below 3 metres with the application of "management limits" for petroleum hydrocarbon fractions.

NG no guideline.

- not measured.

BTEX Benzene, toluene, ethylbenzene and xylenes.

PHC Petroleum hydrocarbon concentration fractions.

ppm parts per million; 120 parts per million= 1% LEL.

LEL Lower Explosive Limit.

**Bold** Indicates value exceeds Tier 3 Guidelines developed by Cantox Environmental Inc. (Intrinsic), 2004.

**Bold** Indicates value exceeds AESRD 2010 Tier 1 Soil and Groundwater Remediation Guidelines for Fine-Grained Soil - Residential Land Use.

**TABLE 4 SUMMARY OF ALL SOIL LABORATORY RESULTS 1998-2012  
Zone 3 - South of 11<sup>th</sup> Avenue NW  
Updated Site Management Plan (2014)  
Hounsfeld Heights - Briar Hill Community  
CALGARY, Alberta**

Borehole (Sample Number)	Sample Date	Sample Depth	Soil Unit	Combustible Soil Headspace Vapour Concentration <sup>1</sup>	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH <sup>2</sup>	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	PHC F3 >C <sub>16</sub> -C <sub>34</sub>	PHC F4 C <sub>34+</sub>	Lead
	dd-mmm-yy	(m)		(ppm)*	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>														
Soils (<3.0 m depth)					<b>0.046</b>	<b>0.52</b>	<b>0.11</b>	<b>15</b>	NG	<b>210</b>	<b>150</b>	<b>1,300</b>	<b>5,600</b>	<b>63</b>
Sub Soils (>3.0 m depth)					<b>0.046</b>	<b>0.52</b>	<b>0.11</b>	<b>15</b>	NG	<b>710</b>	<b>1,000*</b>	<b>3,500*</b>	<b>10,000*</b>	<b>63</b>
<b>2003</b>														
BH733 (733-12)	19-Sep-03	9.1-9.2	silt	500	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH733 (733-16)	19-Sep-03	12.2-12.3	silt	1,200	<b>6.2</b>	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH733 (733-17)	19-Sep-03	13.0-13.1	clay	40	0.02	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH737 (737-7)	24-Sep-03	5.2-5.3	silt	120	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH737 (737-16)	24-Sep-03	11.9-12.2	silt	65	<b>0.40</b>	<0.01	<0.01	<0.01	-	17	<5	14	<5	-
<b>2004</b>														
BH905 (905-6)	5-Feb-04	7.6	sand	600	<b>0.63</b>	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	<5
BH905 (905-11)	5-Feb-04	11.4	sand	1,000	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	7
BH905 (905-12)	5-Feb-04	12.2	sand	180	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	6
BH907 (907-9)	5-Feb-04	6.9	clay	120	<b>0.26</b>	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	<5
BH907 (907-11)	5-Feb-04	8.4	silt	210	<b>2.5</b>	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	6
BH907 (907-13)	5-Feb-04	9.9	silt	65	<b>0.2</b>	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	8
BH908 (908-6)	6-Feb-04	7.6	silt	120	0.04	<0.01	<0.01	<0.01	-	<5	<5	6	<5	7
BH908 (908-8)	6-Feb-04	9.1	silt	50	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	6
BH908 (908-11)	6-Feb-04	11.4	silt	320	<b>0.06</b>	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	7
BH909 (909-8)	6-Feb-04	5.8-6.1	clay	1,000	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	7
BH909 (909-9)	6-Feb-04	6.6-6.9	silt	2,000	0.03	<0.01	<0.01	<0.01	-	<5	<5	13	6	8
BH909 (909-13)	6-Feb-04	9.6-9.9	clay	80	<0.01	<0.01	<0.01	<0.01	-	<5	<5	34	20	7
BH916 (916-11)	18-Feb-04	8.2-8.4	silt	700	<0.01	<0.01	<0.01	<0.01	<5	<5	<5	<5	7	7
BH916 (916-15)	18-Feb-04	11.4-11.6	silt	320	<0.01	<0.01	<0.01	<0.01	<5	<5	6	<5	6	6
BH917 (917-3)	18-Feb-04	2.1-2.3	sand	440	<0.01	<0.01	<0.01	<0.01	<5	<5	<5	<5	7	7
BH917 (917-7)	18-Feb-04	5.1-5.3	sand	380	<0.01	<0.01	<0.01	<0.01	<5	<5	<5	<5	8	8
BH917 (917-9)	18-Feb-04	6.7-6.9	sand	380	<0.01	<0.01	<0.01	<0.01	<5	<5	<5	<5	8	8

Notes:

1 Soil sample container headspace vapour concentration measured with Gastech vapour analyzer calibrated to hexane with methane exclusion.

2 Total petroleum hydrocarbon = sum of F1 and F2 Fractions.

\* Management Limits values adopted according to the *AESRD Tier 1 Soil and Groundwater Remediation Guidelines*. Exclusion of the ecological direct soil contact pathway is permitted below 3 metres with the application of "management limits" for petroleum hydrocarbon fractions.

NG no guideline.

- not measured.

BTEX Benzene, toluene, ethylbenzene and xylenes.

PHC Petroleum hydrocarbon concentration fractions.

ppm parts per million; 120 parts per million= 1% LEL.

LEL Lower Explosive Limit.

**Bold** Indicates value exceeds the AESRD 2010 Tier 1 Soil Remediation Guidelines for Fine-Grained Soil and Residential Land Use.

**TABLE 5 SUMMARY OF ALL SOIL LABORATORY RESULTS 1998-2012  
Area Surrounding Zones 1, 2 and 3  
Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
CALGARY, Alberta**

Borehole (Sample Number)	Sample Date	Sample Depth	Soil Unit	Combustible Soil Headspace Vapour Concentration <sup>1</sup>	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH <sup>2</sup>	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	PHC F3 >C <sub>16</sub> -C <sub>34</sub>	PHC F4 C <sub>34</sub> +	Lead
	dd-mmm-yy	(m)		(ppm)*	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>														
Soils (<3.0 m depth)					<b>0.046</b>	<b>0.52</b>	<b>0.11</b>	<b>15</b>	NG	<b>210</b>	<b>150</b>	<b>1,300</b>	<b>5,600</b>	<b>63</b>
Sub Soils (>3.0 m depth)					<b>0.046</b>	<b>0.52</b>	<b>0.11</b>	<b>15</b>	NG	<b>710</b>	<b>1,000*</b>	<b>3,500*</b>	<b>10,000*</b>	<b>63</b>
<b>1998</b>														
BH52	21-Apr-98	6.9	silt/clay	5,800	<b>0.77</b>	<b>7.3</b>	<b>11</b>	<b>86.4</b>	780.0	-	-	-	-	-
BH53	21-Apr-98	8.4	clay	4,200	<b>18</b>	<b>110</b>	<b>28</b>	<b>157.0</b>	-	-	-	-	-	-
BH54	21-Apr-98	6.9	clay	180	<0.04	<0.04	<0.04	<0.06	-	-	-	-	-	-
BH55	21-Apr-98	6.9	silt/clay	420	<b>0.35</b>	<0.04	<b>0.17</b>	0.2	-	-	-	-	-	-
<b>2002</b>														
BH503-08	12-Nov-02	5.1 - 5.6	silt	20	<0.01	<0.01	<0.01	<0.01	-	<5	<5	26	15	-
BH503-15	12-Nov-02	10.1 - 10.7	sand	110	0.01	0.03	<0.01	0.05	-	<5	<5	13	<5	-
BH504-13	12-Nov-02	9.8 - 10.7	sand	10,000	<b>0.65</b>	<b>2.8</b>	<b>0.37</b>	2.2	-	<5	<5	11	6	-
BH505-15	13-Nov-02	10.7 - 11.4	sand	300	<b>1.1</b>	<b>1.8</b>	<b>1.0</b>	5.2	-	<5	<5	<5	12	-
BH505-17	13-Nov-02	12.2 - 13.0	silt	240	<b>0.20</b>	0.14	<b>0.17</b>	1.4	-	<5	<5	<5	<5	-
BH506-14	13-Nov-02	11.6 - 12.2	sand	1,300	<b>1.7</b>	0.21	<b>0.50</b>	1.7	-	<5	<5	11	6	-
BH506-16	13-Nov-02	13.0 - 13.7	sand	140	<b>1.2</b>	0.14	<b>0.67</b>	1.9	-	<5	<5	<5	<5	-
BH507-15	13-Nov-02	10.7 - 11.4	sand	400	<b>1.8</b>	<b>5.2</b>	<b>0.82</b>	4.4	-	<5	<5	7	6	-
BH507-18	13-Nov-02	13.0 - 13.7	silt	40	<b>3.3</b>	0.02	0.01	0.02	-	<5	<5	<5	<5	-
BH508-12	13-Nov-02	7.7 - 8.2	clay	20	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH509-16	14-Nov-02	10.7 - 11.4	sand	1,600	<b>2.1</b>	<b>14</b>	<b>5.4</b>	<b>26</b>	-	83	<5	<5	<5	-
BH509-19	14-Nov-02	13.0 - 13.7	silt	400	<b>0.99</b>	<b>1.5</b>	<b>0.91</b>	3.4	-	6	<5	<5	<5	-
<b>2003</b>														
BH601 (601-5)	11-Aug-03	3.81	clay	40	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	6	-
BH601 (601-14)	11-Aug-03	10.67	sand	62	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH601 (601-15)	11-Aug-03	10.67-11.28	sand	26	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-

Notes:

1 Soil sample container headspace vapour concentration measured with Gastech vapour analyzer calibrated to hexane with methane exclusion.

2 Total petroleum hydrocarbon = sum of F1 and F2 Fractions.

\* Management Limits values adopted according to the AESRD Tier 1 Soil and Groundwater Remediation Guidelines. Exclusion of the ecological direct soil contact pathway is permitted below 3 metres with the application of "management limits" for petroleum hydrocarbon fractions.

NG no guideline.

- not measured.

BTEX Benzene, toluene, ethylbenzene and xylenes.

PHC Petroleum hydrocarbon concentration fractions.

ppm parts per million; 120 parts per million= 1% LEL.

LEL Lower Explosive Limit.

**Bold** Indicates value exceeds the AESRD 2010 Tier 1 Soil Remediation Guidelines for Fine-Grained Soil and Residential Land Use.

**TABLE 5 SUMMARY OF ALL SOIL LABORATORY RESULTS 1998-2012**  
**Area Surrounding Zones 1, 2 and 3**  
**Updated Site Management Plan (2014)**  
**Hounsfield Heights - Briar Hill Community**  
**CALGARY, Alberta**

Borehole (Sample Number)	Sample Date	Sample Depth (m)	Soil Unit	Combustible Soil Headspace Vapour Concentration <sup>1</sup> (ppm)*	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	TPH <sup>2</sup> (mg/kg)	PHC	PHC	PHC	PHC	Lead (mg/kg)
										F1-BTEX C <sub>6</sub> -C <sub>10</sub> (mg/kg)	F2 >C <sub>10</sub> -C <sub>16</sub> (mg/kg)	F3 >C <sub>16</sub> -C <sub>34</sub> (mg/kg)	F4 C <sub>34+</sub> (mg/kg)	
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>														
Soils (<3.0 m depth)					<b>0.046</b>	<b>0.52</b>	<b>0.11</b>	<b>15</b>	NG	<b>210</b>	<b>150</b>	<b>1,300</b>	<b>5,600</b>	<b>63</b>
Sub Soils (>3.0 m depth)					<b>0.046</b>	<b>0.52</b>	<b>0.11</b>	<b>15</b>	NG	<b>710</b>	<b>1,000*</b>	<b>3,500*</b>	<b>10,000*</b>	<b>63</b>
<i>2003 Continued</i>														
BH602 (602-5)	11-Aug-03	3.81	silt	62	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH602 (602-11)	11-Aug-03	8.38	sand	95	<0.01	<0.01	<0.01	<0.01	-	<5	<5	6	<5	-
<i>Duplicate of 602-11 (labelled 602-40)</i>														
BH602 (602-13)	11-Aug-03	9.14-9.75	sand	8	<0.01	<0.01	<0.01	<0.01	-	<5	<5	17	10	-
BH602 (602-15)	11-Aug-03	11.43	sand	92	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH603 (603-15)	11-Aug-03	10.82	sand	8	<0.01	<0.01	<0.01	<0.01	-	<5	<5	7	6	-
BH603 (603-16)	11-Aug-03	11.89	sand	10	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH703 (703-16)	8-Sep-03	12.0-12.1	silt	50	<b>0.19</b>	<0.01	<0.01	<0.01	-	<5	<5	12	<5	-
BH704 (704-19)	8-Sep-03	14.3-14.4	silt	64	<b>0.12</b>	<0.01	<0.01	<0.01	-	<5	<5	12	<5	-
BH705 (705-13)	9-Sep-03	9.9-10.1	silt	440	<b>2.2</b>	<b>8.3</b>	<b>1.1</b>	6.9	-	7	<5	<5	<5	-
BH705 (705-15)	9-Sep-03	11.3-11.4	silt	320	<b>1.0</b>	<b>0.61</b>	<b>1.9</b>	5.2	-	9	<5	<5	<5	-
BH705 (705-17)	9-Sep-03	12.8-13.0	silt	340	<b>0.43</b>	0.03	<b>0.55</b>	0.45	-	<5	<5	6	<5	-
BH706 (706-5)	9-Sep-03	3.7-3.8	sand	63	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH706 (706-14)	9-Sep-03	10.4-10.5	silt	1,700	<b>3.4</b>	<b>100</b>	<b>42</b>	<b>230</b>	-	590	<5	<5	<5	-
BH706 (706-15)	9-Sep-03	11.0-11.1	silt	1,000	<b>1.2</b>	<b>6.5</b>	<b>3.2</b>	<b>16</b>	-	37	<5	<5	<5	-
BH706 (706-18)	9-Sep-03	13.6-13.7	silt	240	<b>0.59</b>	0.05	<b>0.28</b>	0.29	-	<5	<5	<5	<5	-
BH707 (707-13)	9-Sep-03	9.4-9.8	silt	600	<b>0.79</b>	<b>0.81</b>	<b>0.14</b>	0.53	-	<5	<5	<5	<5	-
BH707 (707-16)	9-Sep-03	10.0-10.7	silt	29	<b>0.07</b>	0.25	0.02	0.75	-	<5	<5	<5	<5	-
BH707 (707-20)	9-Sep-03	13.6-13.7	silt	180	<b>3.8</b>	0.05	0.01	0.01	-	<5	<5	<5	<5	-
BH708 (708-5)	9-Sep-03	3.7-3.8	sand	440	<0.01	0.01	<0.01	0.02	-	<5	<5	<5	<5	-
BH708 (708-17)	9-Sep-03	12.6-12.8	silt	170	<b>4.0</b>	0.02	0.06	0.03	-	<5	<5	<5	<5	-
BH708 (708-19)	9-Sep-03	14.3-14.5	silt	240	<b>9.0</b>	0.05	<0.01	0.01	-	<5	<5	6	<5	-
BH709 (709-13)	10-Sep-03	9.9-10.1	silt	30	0.02	0.02	<0.01	0.01	-	<5	<5	<5	<5	-
BH709 (709-14)	10-Sep-03	10.4-10.7	silt	1,000	<b>0.33</b>	0.07	0.01	0.01	-	<5	<5	<5	<5	-
BH709 (709-18)	10-Sep-03	13.4-13.7	silt	700	<b>4.2</b>	<b>0.95</b>	<b>2.5</b>	15	-	9	<5	<5	<5	-

Notes:

1 Soil sample container headspace vapour concentration measured with Gastech vapour analyzer calibrated to hexane with methane exclusion.

2 Total petroleum hydrocarbon = sum of F1 and F2 Fractions.

\* Management Limits values adopted according to the AESRD Tier 1 Soil and Groundwater Remediation Guidelines. Exclusion of the ecological direct soil contact pathway is permitted below 3 metres with the application of "management limits" for petroleum hydrocarbon fractions.

NG no guideline.

- not measured.

BTEX Benzene, toluene, ethylbenzene and xylenes.

PHC Petroleum hydrocarbon concentration fractions.

ppm parts per million; 120 parts per million= 1% LEL.

LEL Lower Explosive Limit.

**Bold** Indicates value exceeds the AESRD 2010 Tier 1 Soil Remediation Guidelines for Fine-Grained Soil and Residential Land Use.

**TABLE 5 SUMMARY OF ALL SOIL LABORATORY RESULTS 1998-2012  
Area Surrounding Zones 1, 2 and 3  
Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
CALGARY, Alberta**

Borehole (Sample Number)	Sample Date	Sample Depth	Soil Unit	Combustible Soil Headspace Vapour Concentration <sup>1</sup>	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH <sup>2</sup>	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	PHC F3 >C <sub>16</sub> -C <sub>34</sub>	PHC F4 C <sub>34</sub> +	Lead
	dd-mmm-yy	(m)		(ppm)*	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>														
Soils (<3.0 m depth)					<b>0.046</b>	<b>0.52</b>	<b>0.11</b>	<b>15</b>	NG	<b>210</b>	<b>150</b>	<b>1,300</b>	<b>5,600</b>	<b>63</b>
Sub Soils (>3.0 m depth)					<b>0.046</b>	<b>0.52</b>	<b>0.11</b>	<b>15</b>	NG	<b>710</b>	<b>1,000*</b>	<b>3,500*</b>	<b>10,000*</b>	<b>63</b>
<i>2003 Continued</i>														
BH710 (710-13)	10-Sep-03	9.9-10.1	silt	5,600	<b>0.3</b>	0.07	<0.01	<0.01	-	<5	<5	<5	<5	-
BH710 (710-14)	10-Sep-03	10.5-10.7	silt	2,800	<b>1.5</b>	<b>1.4</b>	<b>0.83</b>	2.8	-	<5	<5	<5	<5	-
BH710 (710-16)	10-Sep-03	12-12.1	silt	940	<b>5.9</b>	0.11	<b>1.4</b>	9	-	<5	<5	<5	<5	-
BH710 (710-18)	10-Sep-03	13.6-13.7	silt	700	<b>5.6</b>	0.09	<b>1.8</b>	5.6	-	6	<5	<5	<5	-
BH711 (711-12)	10-Sep-03	8.8-9.1	silt	1,400	<b>0.41</b>	<0.01	0.02	0.06	-	<5	<5	12	21	-
BH711 (711-13)	10-Sep-03	9.8-10.0	silt	720	<b>3.0</b>	0.05	<b>1.2</b>	4	-	<5	<5	14	<5	-
BH711 (711-15)	10-Sep-03	11.3-11.4	silt	1,200	<b>11</b>	0.02	0.01	0.03	-	<5	<5	<5	<5	-
BH711 (711-16)	10-Sep-03	12.0-12.2	silt	400	<b>6.3</b>	0.02	0.03	0.04	-	<5	<5	<5	<5	-
BH712 (712-11)	11-Sep-03	8.2-8.4	silt	1,800	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH712 (712-12)	11-Sep-03	8.8-9.1	silt	680	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH712 (712-16)	11-Sep-03	12.0-12.2	silt	480	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH713 (713-12)	11-Sep-03	8.8-9.1	clay	220	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH714 (714-15)	11-Sep-03	11.3-11.4	silt	260	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH714 (714-20)	11-Sep-03	15.1-15.2	silt	460	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH715 (715-17)	11-Sep-03	12.6-12.8	silt	3,000	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH715 (715-18)	11-Sep-03	13.6-13.7	silt	680	<0.01	<0.01	<0.01	0.02	-	<5	<5	<5	<5	-
BH717 (717-13)	12-Sep-03	9.8-9.9	silt	20	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH717 (717-15)	12-Sep-03	11.4-11.7	silt	20	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH717 (717-16)	12-Sep-03	12.0-12.2	silt	160	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH718 (718-7)	12-Sep-03	5.2-5.3	sand	20	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH718 (718-15)	12-Sep-03	11.3-11.4	silt	30	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH718 (718-17)	12-Sep-03	12.8-13.0	silt	80	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-

Notes:

1 Soil sample container headspace vapour concentration measured with Gastech vapour analyzer calibrated to hexane with methane exclusion.

2 Total petroleum hydrocarbon = sum of F1 and F2 Fractions.

\* Management Limits values adopted according to the AESRD Tier 1 Soil and Groundwater Remediation Guidelines. Exclusion of the ecological direct soil contact pathway is permitted below 3 metres with the application of "management limits" for petroleum hydrocarbon fractions.

NG no guideline.

- not measured.

BTEX Benzene, toluene, ethylbenzene and xylenes.

PHC Petroleum hydrocarbon concentration fractions.

ppm parts per million; 120 parts per million= 1% LEL.

LEL Lower Explosive Limit.

**Bold** Indicates value exceeds the AESRD 2010 Tier 1 Soil Remediation Guidelines for Fine-Grained Soil and Residential Land Use.



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Area Surrounding Zones 1, 2 and 3  
Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
CALGARY, Alberta**

Borehole (Sample Number)	Sample Date	Sample Depth (m)	Soil Unit	Combustible Soil Headspace Vapour Concentration <sup>1</sup> (ppm)*	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	TPH <sup>2</sup> (mg/kg)	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> (mg/kg)	PHC F2 >C <sub>10</sub> -C <sub>16</sub> (mg/kg)	PHC F3 >C <sub>16</sub> -C <sub>34</sub> (mg/kg)	PHC F4 C <sub>34</sub> (mg/kg)	Lead (mg/kg)
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>														
Soils (<3.0 m depth)					<b>0.046</b>	<b>0.52</b>	<b>0.11</b>	<b>15</b>	NG	<b>210</b>	<b>150</b>	<b>1,300</b>	<b>5,600</b>	<b>63</b>
Sub Soils (>3.0 m depth)					<b>0.046</b>	<b>0.52</b>	<b>0.11</b>	<b>15</b>	NG	<b>710</b>	<b>1,000*</b>	<b>3,500*</b>	<b>10,000*</b>	<b>63</b>
<i>2003 Continued</i>														
BH719 (719-14)	12-Sep-03	10.5-10.7	silt	30	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH719 (719-15)	12-Sep-03	11.2-11.4	silt	40	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH720 (720-15)	15-Sep-03	11.2-11.4	silt	760	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH720 (720-16)	15-Sep-03	11.9-12.2	silt	620	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH720 (720-20)	15-Sep-03	14.9-15.2	silt	82	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH721 (721-11)	15-Sep-03	8.4-8.5	silt	760	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	9	-
BH721 (721-13)	15-Sep-03	9.9-10.0	silt	480	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH721 (721-19)	15-Sep-03	14.5-14.6	silt	100	<0.01	<0.01	<0.01	<0.01	-	<5	<5	26	9	-
BH721 (721-20)	15-Sep-03	15.2-15.3	silt	840	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH722 (722-10)	15-Sep-03	7.6-7.7	silt	640	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH722 (722-12)	15-Sep-03	9.1-9.2	silt	820	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH722 (722-19)	15-Sep-03	14.5-14.6	clay	78	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH723 (723-5)	16-Sep-03	3.7-3.8	sand	35	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH731 (731-11)	19-Sep-03	8.4-8.5	silt	180	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH731 (731-14)	19-Sep-03	10.7-10.8	silt	210	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH731 (731-21)	19-Sep-03	16.0-16.1	silt	110	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH732 (732-7)	19-Sep-03	5.2-5.3	sand	900	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH732 (732-8)	19-Sep-03	5.9-6.1	sand	600	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH732 (732-15)	19-Sep-03	11.3-11.4	sand	450	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH732 (732-18)	19-Sep-03	13.6-13.7	sand	200	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH734 (734-9)	22-Sep-03	6.7-6.9	sand	2,200	<b>3.4</b>	<0.01	0.03	0.85	-	<5	<5	<5	<5	-
BH734 (734-10)	22-Sep-03	7.5-7.6	sand	1,100	<b>0.91</b>	0.02	<b>0.45</b>	0.18	-	<5	<5	<5	<5	-
BH734 (734-12)	22-Sep-03	8.8-9.1	sand	250	<b>1.8</b>	0.02	<b>0.12</b>	0.14	-	<5	<5	<5	<5	-
BH734 (734-15)	22-Sep-03	11.3-11.4	sand	1,000	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH734 (734-16)	22-Sep-03	12.0-12.2	sand	85	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-

Notes:

1 Soil sample container headspace vapour concentration measured with Gastech vapour analyzer calibrated to hexane with methane exclusion.

2 Total petroleum hydrocarbon = sum of F1 and F2 Fractions.

\* Management Limits values adopted according to the AESRD Tier 1 Soil and Groundwater Remediation Guidelines. Exclusion of the ecological direct soil contact pathway is permitted below 3 metres with the application of "management limits" for petroleum hydrocarbon fractions.

NG no guideline.

- not measured.

BTEX Benzene, toluene, ethylbenzene and xylenes.

PHC Petroleum hydrocarbon concentration fractions.

ppm parts per million; 120 parts per million= 1% LEL.

LEL Lower Explosive Limit.

**Bold** Indicates value exceeds the AESRD 2010 Tier 1 Soil Remediation Guidelines for Fine-Grained Soil and Residential Land Use.

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Area Surrounding Zones 1, 2 and 3  
Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
CALGARY, Alberta**

Borehole (Sample Number)	Sample Date	Sample Depth	Soil Unit	Combustible Soil Headspace Vapour Concentration <sup>1</sup>	Benzene	Toluene	Ethyl-benzene	Total Xylenes	TPH <sup>2</sup>	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	PHC F3 >C <sub>16</sub> -C <sub>34</sub>	PHC F4 C <sub>34</sub> +	Lead
	dd-mmm-yy	(m)		(ppm)*	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)	(mg/kg)
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>														
Soils (<3.0 m depth)					<b>0.046</b>	<b>0.52</b>	<b>0.11</b>	<b>15</b>	NG	<b>210</b>	<b>150</b>	<b>1,300</b>	<b>5,600</b>	<b>63</b>
Sub Soils (>3.0 m depth)					<b>0.046</b>	<b>0.52</b>	<b>0.11</b>	<b>15</b>	NG	<b>710</b>	<b>1,000*</b>	<b>3,500*</b>	<b>10,000*</b>	<b>63</b>
<i>2003 Continued</i>														
BH735 (735-6)	22-Sep-03	4.4-4.6	silt	180	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH735 (735-12)	22-Sep-03	8.8-9.1	silt	250	<b>0.43</b>	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH735 (735-15)	22-Sep-03	11.3-11.4	sand	550	<b>0.06</b>	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH735 (735-17)	22-Sep-03	12.8-13.0	sand	400	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH736 (736-7)	22-Sep-03	5.3-5.4	silt	85	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH736 (736-16)	22-Sep-03	12.2-12.3	silt	80	<b>0.05</b>	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH740 (BH740-11)	29-Sep-03	8.2-8.4	silt	65	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH740 (BH740-15)	29-Sep-03	11.3-11.4	silt	60	<0.01	0.05	<0.01	<0.01	-	<5	<5	11	<5	-
BH740 (BH740-18)	29-Sep-03	13.6-13.7	silt	55	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH740 (BH740-21)	29-Sep-03	15.8-16.0	silt	25	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH741 (BH741-11)	29-Sep-03	8.2-8.4	silt	65	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH741 (BH741-15)	29-Sep-03	11.2-11.4	clay	95	<0.01	0.02	<0.01	<0.01	-	<5	<5	6	<5	-
BH741 (BH741-21)	29-Sep-03	15.8-16.0	sand	60	<0.01	0.03	<0.01	<0.01	-	<5	<5	<5	<5	-
BH742 (BH742-7)	29-Sep-03	5.2-5.3	sand	55	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH742 (BH742-15)	29-Sep-03	11.3-11.4	sand	85	<0.01	0.03	<0.01	<0.01	-	<5	<5	16	<5	-
BH742 (BH742-20)	29-Sep-03	15.1-15.2	sand	80	<0.01	0.03	<0.01	<0.01	-	<5	<5	6	30	-
BH743 (BH743-05)	29-Sep-03	6.7-6.9	sand	1,000	<0.01	0.03	<0.01	<0.01	-	<5	<5	<5	<5	-
BH743 (BH743-15)	29-Sep-03	14.3-14.5	silt	1,000	<0.01	0.03	<0.01	<0.01	-	<5	<5	<5	<5	-
BH743 (BH743-16)	29-Sep-03	15.1-15.2	silt	420	<0.01	0.03	<0.01	<0.01	-	<5	<5	6	<5	-
BH743 (BH743-17)	29-Sep-03	15.8-16.0	silt	900	<0.01	0.03	<0.01	<0.01	-	<5	<5	10	<5	-
BH743 (BH743-18)	29-Sep-03	16.6-16.8	silt	300	<0.01	0.03	<0.01	<0.01	-	<5	<5	<5	<5	-
BH744 (BH744-03)	30-Sep-03	5.2-5.3	clay	800	<0.01	0.03	<0.01	<0.01	-	<5	<5	<5	<5	-
BH744 (BH744-09)	30-Sep-03	9.8-9.9	sand	1,200	<b>0.4</b>	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH744 (BH744-11)	30-Sep-03	11.3-11.4	sand	1,000	<b>0.29</b>	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH744 (BH744-15)	30-Sep-03	14.3-14.5	sand	300	<0.01	<0.01	<0.01	<0.01	-	<5	<5	7	<5	-
BH801 (801-4)	23-Sep-03	3.0-3.1	sand	25	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH801 (801-14)	23-Sep-03	10.7-10.8	silt	80	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH801 (801-15)	23-Sep-03	11.4-11.5	silt	2,200	<b>1.8</b>	<b>11</b>	<b>1.1</b>	9.8	-	<5	<5	<5	<5	-
BH801 (801-16)	23-Sep-03	12.2-12.4	silt	325	<b>8</b>	0.03	<b>2.9</b>	0.11	-	<5	<5	6	<5	-

Notes:

1 Soil sample container headspace vapour concentration measured with Gastech vapour analyzer calibrated to hexane with methane exclusion.

2 Total petroleum hydrocarbon = sum of F1 and F2 Fractions.

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Borehole (Sample Number)	Sample Date	Sample Depth (m)	Soil Unit	Combustible Soil Headspace Vapour Concentration <sup>1</sup> (ppm)*	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	TPH <sup>2</sup> (mg/kg)	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> (mg/kg)	PHC F2 >C <sub>10</sub> -C <sub>16</sub> (mg/kg)	PHC F3 >C <sub>16</sub> -C <sub>34</sub> (mg/kg)	PHC F4 C <sub>34</sub> (mg/kg)	Lead (mg/kg)
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>														
Soils (<3.0 m depth)					<b>0.046</b>	<b>0.52</b>	<b>0.11</b>	<b>15</b>	NG	<b>210</b>	<b>150</b>	<b>1,300</b>	<b>5,600</b>	<b>63</b>
Sub Soils (>3.0 m depth)					<b>0.046</b>	<b>0.52</b>	<b>0.11</b>	<b>15</b>	NG	<b>710</b>	<b>1,000*</b>	<b>3,500*</b>	<b>10,000*</b>	<b>63</b>
<b>2004</b>														
BH802 (802-8)	23-Sep-03	5.8-6.1	sand	40	<0.01	<0.01	<0.01	<0.01	-	<5	<5	6	<5	-
BH802 (802-15)	23-Sep-03	11.3-11.4	silt	88	<0.01	<0.01	<0.01	<0.01	-	<5	<5	7	<5	-
BH802 (802-19)	23-Sep-03	14.3-14.5	silt	70	<b>0.13</b>	<0.01	0.04	0.42	-	17	<5	10	<5	-
BH803 (803-11)	26-Sep-03	8.4-8.5	clay	35	<0.01	<0.01	0.04	0.17	-	<5	<5	11	<5	-
BH803 (803-15)	26-Sep-03	11.4-11.6	clay	2,200	<0.01	<0.01	<0.01	<0.01	-	<5	<5	37	14	-
BH803 (803-18)	26-Sep-03	13.7-13.8	silt	70	<b>0.53</b>	0.17	0.05	0.35	-	<5	<5	8	<5	-
BH902 (902-11)	4-Feb-04	5.8-6.1	clay	50	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	12
BH903 (903-10)	4-Feb-04	5.3	sand	160	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	6
BH903 (903-11)	4-Feb-04	6.1	clay	30	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	12
BH904 (904-4)	4-Feb-04	2.0-2.3	sand	110	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	12
BH904 (904-7)	4-Feb-04	3.5-3.8	sand	40	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	7
BH912 (912-7)	18-Feb-04	5.1-5.3	sand	50	<b>0.18</b>	<0.01	<0.01	<0.01	<5	<5	<5	<5	6	6
BH913 (913-2)	18-Feb-04	1.3-1.5	silt	300	<0.01	<0.01	<0.01	<0.01	<5	<5	15	<5	7	7
BH913 (913-9)	18-Feb-04	6.7-6.9	silt	1,400	0.03	<0.01	<0.01	<0.01	<5	<5	<5	<5	6	6
BH913 (913-10)	18-Feb-04	7.4-7.6	silt	220	<b>0.13</b>	<0.01	<0.01	<0.01	<5	<5	5	<5	6	6
BH914 (914-8)	18-Feb-04	5.7-6.1	silt	340	<0.01	<0.01	<0.01	<0.01	<5	<5	<5	<5	9	9
BH914 (914-9)	18-Feb-04	6.7-6.9	clay	660	<0.01	<0.01	<0.01	<0.01	<5	<5	<5	<5	6	6
BH915 (915-8)	18-Feb-04	5.9-6.1	silt	1,000	<0.01	<0.01	<0.01	<0.01	<5	<5	6	8	7	7
BH1101 (1101-12)	27-Feb-04	8.99	silt	520	<0.01	<0.01	<0.01	<0.01	-	<5	14	140	100	6
BH1101 (1101-16)	27-Feb-04	12.04	silt	500	<0.01	<0.01	<0.01	<0.01	-	<5	14	150	110	7
BH1102 (1102-13)	27-Feb-04	9.3	silt	300	<0.01	<0.01	<0.01	<0.01	-	<5	24	160	120	7
BH1102 (1102-17)	27-Feb-04	12.65	silt	420	<0.01	<0.01	<0.01	<0.01	-	<5	11	140	100	6
<i>duplicate of 1102-17 (labelled 1102-31)</i>														
BH1103 (1103-14)	27-Feb-04	10.21	silt	>10,000	<b>2.6</b>	<b>13</b>	<b>3.7</b>	<b>32</b>	-	120	34	130	90	8
BH1103 (1103-15)	27-Feb-04	10.82	silt	960	<b>0.34</b>	<b>0.25</b>	<b>0.3</b>	<b>2.4</b>	-	6	11	130	90	6
BH1103 (1103-21)	27-Feb-04	15.7	silt	1,000	<b>0.19</b>	<b>0.78</b>	<b>0.19</b>	<b>3.1</b>	-	15	10	90	60	6
<i>duplicate of 1103-21 (labelled 1103-41)</i>														
BH1104 (1104-7)	1-Mar-04	5.03	clay	700	<0.01	<0.01	<0.01	<0.01	-	<5	<6	70	50	9
BH1104 (1104-15)	1-Mar-04	11.43	silt	>10,000	<0.01	<b>2.2</b>	<b>6.7</b>	<b>38</b>	-	160	93	60	30	7
BH1104 (1104-16)	1-Mar-04	12.04	silt	1,000	<b>0.05</b>	<b>1.1</b>	<b>0.41</b>	<b>2.5</b>	-	15	<6	<60	<30	8
BH1104 (1104-18)	1-Mar-04	13.57	silt	800	<b>0.05</b>	<b>0.1</b>	<b>0.15</b>	<b>0.5</b>	-	11	<6	<60	<30	8

Notes:

1 Soil sample container headspace vapour concentration measured with Gastech vapour analyzer calibrated to hexane with methane exclusion.

2 Total petroleum hydrocarbon = sum of F1 and F2 Fractions.

\* Management Limits values adopted according to the AESRD Tier 1 Soil and Groundwater Remediation Guidelines. Exclusion of the ecological direct soil contact pathway is permitted below 3 metres with the application of "management limits" for petroleum hydrocarbon fractions.

NG no guideline.

- not measured.

BTEX Benzene, toluene, ethylbenzene and xylenes.

PHC Petroleum hydrocarbon concentration fractions.

ppm parts per million; 120 parts per million= 1% LEL.

LEL Lower Explosive Limit.

**Bold** Indicates value exceeds the AESRD 2010 Tier 1 Soil Remediation Guidelines for Fine-Grained Soil and Residential Land Use.

**TABLE 5 SUMMARY OF ALL SOIL LABORATORY RESULTS 1998-2012**  
**Area Surrounding Zones 1, 2 and 3**  
**Updated Site Management Plan (2014)**  
**Hounsfield Heights - Briar Hill Community**  
**CALGARY, Alberta**

Borehole (Sample Number)	Sample Date	Sample Depth (m)	Soil Unit	Combustible Soil Headspace Vapour Concentration <sup>1</sup> (ppm)*	Benzene (mg/kg)	Toluene (mg/kg)	Ethyl-benzene (mg/kg)	Total Xylenes (mg/kg)	TPH <sup>2</sup> (mg/kg)	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> (mg/kg)	PHC F2 >C <sub>10</sub> -C <sub>16</sub> (mg/kg)	PHC F3 >C <sub>16</sub> -C <sub>34</sub> (mg/kg)	PHC F4 C <sub>34+</sub> (mg/kg)	Lead (mg/kg)
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>														
Soils (<3.0 m depth)					<b>0.046</b>	<b>0.52</b>	<b>0.11</b>	<b>15</b>	NG	<b>210</b>	<b>150</b>	<b>1,300</b>	<b>5,600</b>	<b>63</b>
Sub Soils (>3.0 m depth)					<b>0.046</b>	<b>0.52</b>	<b>0.11</b>	<b>15</b>	NG	<b>710</b>	<b>1,000*</b>	<b>3,500*</b>	<b>10,000*</b>	<b>63</b>
<b>2004 Continued</b>														
BH1105 (1105-9)	1-Mar-04	6.25	sand	940	<b>0.07</b>	0.02	<b>0.45</b>	0.17	-	49	<6	<60	<30	6
BH1105 (1105-19)	1-Mar-04	13.57	silt	340	<b>4.6</b>	0.22	0.03	0.56	-	<5	9	70	40	7
BH1106 (1106-9)	1-Mar-04	6.55	clay	440	<b>0.58</b>	0.06	<b>3.6</b>	<b>17</b>	-	41	18	200	120	10
BH1106 (1106-10)	1-Mar-04	7.47	clay	220	<b>1.6</b>	0.07	<b>2.0</b>	2.1	-	8	17	120	60	8
BH1106 (1106-18)	1-Mar-04	13.26	silt	220	<b>1.7</b>	0.11	<b>0.2</b>	1.8	-	<5	12	110	60	7
BH1107 (1107-9)	2-Mar-04	6.94	sand	300	<0.01	<0.01	<0.01	<0.01	-	<5	18	120	70	7
BH1107 (1107-20)	2-Mar-04	15.09	silt	500	<b>0.41</b>	<0.01	<0.01	0.03	-	<5	6	90	50	6
BH1301 (1301-4)	15-Dec-04	2.8-2.9	clay	50	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH1301 (1301-6)	15-Dec-04	3.8-4.4	sand	56	<0.01	<0.01	<0.01	<0.01	-	<5	<5	<5	<5	-
BH1302 (1302-9)	15-Dec-04	6.1-6.7	sand	34	<0.01	<0.01	<0.01	<0.01	<5	<5	<5	<5	-	-
BH1302 (1302-13)	15-Dec-04	9.1-9.8	sand	22	<b>0.29</b>	<0.01	<0.01	<0.01	<5	<5	<5	<5	-	-
BH1302 (1302-16)	15-Dec-04	11.4-12.0	sand	38	<0.01	<0.01	<0.01	<0.01	<5	<5	8	5	-	-
BH1303 (1303-5)	16-Dec-04	3.8-4.4	clay	200	<0.01	<0.01	<0.01	<0.01	<5	<5	36	11	-	-
BH1303 (1303-10)	16-Dec-04	7.6-8.2	sand	88	<b>3.2</b>	<0.01	<0.01	<0.01	<5	<5	<5	<5	-	-
BH1303 (1303-16)	16-Dec-04	12.2-12.8	sand	48	<0.01	<0.01	<0.01	<0.01	<5	<5	14	<5	-	-
<b>2009</b>														
BH1712 (9)	20-Jan-09	6.40	NA	62	<0.0050	<0.010	<0.010	<0.010	-	<5	<20	<20	<20	-
BH1712 (12)	20-Jan-09	8.84	NA	500	0.015	<0.010	<0.010	0.05	-	<5	<20	<20	<20	-
BH1712 (16)	20-Jan-09	11.89	NA	420	<b>1.2</b>	0.01	<b>1.1</b>	0.1	-	<5	<20	<20	<20	-
BH1713 (8)	20-Jan-09	5.18	NA	42	<0.0050	<0.010	<0.010	<0.010	<5	<20	<20	<20	-	-
BH1714 (7)	20-Jan-09	4.88	NA	33	<b>0.58</b>	<0.010	<0.010	<0.010	<5	<20	<20	<20	-	-
BH1715 (12)	20-Jan-09	8.99	NA	60	0.024	0.02	<0.010	0.08	-	<5	<20	<20	<20	-
BH1715 (14)	20-Jan-09	10.21	NA	80	0.038	0.02	0.02	0.1	-	<5	<20	<20	<20	-
BH1715 (16)	20-Jan-09	11.58	NA	1,400	<b>0.49</b>	0.06	<b>0.91</b>	1.1	-	7.4	<20	<20	<20	-
BH1716 (13)	20-Jan-09	9.45	NA	30	0.007	<0.010	<0.010	<0.010	-	<5	<20	<20	<20	-
BH1716 (14)	20-Jan-09	10.36	NA	64	0.007	<0.010	<0.010	<0.010	-	<5	<20	<20	<20	-
BH1717 (11)	20-Jan-09	7.92	NA	45	<b>0.11</b>	0.01	0.01	0.05	-	<5	<20	<20	<20	-
BH1717 (12)	20-Jan-09	8.69	NA	780	<b>0.1</b>	0.01	0.02	0.15	-	<5	<20	<20	<20	-
BH1717 (16)	20-Jan-09	11.89	NA	260	<b>0.35</b>	0.02	<b>0.58</b>	0.15	-	<5	<20	<20	<20	-

Notes:

1 Soil sample container headspace vapour concentration measured with Gastech vapour analyzer calibrated to hexane with methane exclusion.

2 Total petroleum hydrocarbon = sum of F1 and F2 Fractions.

\* Management Limits values adopted according to the AESRD Tier 1 Soil and Groundwater Remediation Guidelines. Exclusion of the ecological direct soil contact pathway is permitted below 3 metres with the application of "management limits" for petroleum hydrocarbon fractions.

NG no guideline.

- not measured.

BTEX Benzene, toluene, ethylbenzene and xylenes.

PHC Petroleum hydrocarbon concentration fractions.

ppm parts per million; 120 parts per million= 1% LEL.

LEL Lower Explosive Limit.

**Bold** Indicates value exceeds the AESRD 2010 Tier 1 Soil Remediation Guidelines for Fine-Grained Soil and Residential Land Use.

**TABLE 6 SUMMARY OF ALL GROUNDWATER LABORATORY RESULTS 1998 - 2013**  
**Zones 1 and 2 - North of 11<sup>th</sup> Avenue NW**  
**Updated Site Management Plan (2014)**  
**Hounsfield Heights - Briar Hill Community**  
**CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe	Benzene mg/L	Toluene mg/L	Ethyl-benzene mg/L	Total Xylenes mg/L	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> mg/L	PHC F2 >C <sub>10</sub> -C <sub>16</sub> mg/L	Lead mg/L
		Combustible Vapour Concentrations <sup>1</sup> ppm							
<b>Site-specific Tier 3 Groundwater Quality Objectives (mg/L). For Properties 1 to 20 and 26 to 35 (i.e. 11<sup>th</sup> Avenue and North)</b>									
			<b>12 to 39</b>	NG	NG	NG	NG	NG	NG
<i>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</i>									
			0.005	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
BH206	6-Nov-98	5,500	0.0172	<b>0.0477</b>	<b>0.0059</b>	0.115	-	-	-
	27-Jul-01	62	0.003	0.0052	0.0018	0.0062	-	-	-
	6-Dec-02	480	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	13-May-03	76	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	16-Oct-03	200	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	15	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	20	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	21-Jul-04	14	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	21-Oct-04	30	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	70	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	400	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	6-Feb-07	100	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	72	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
13-Mar-08	260	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
BH207	6-Nov-98	>10,000	0.767	<b>9.89</b>	<b>0.593</b>	<b>3.38</b>	-	-	-
	6-Dec-02	>10,000	0.3	<b>5.8</b>	<b>0.58</b>	<b>7.4</b>	<b>4.0</b>	0.86	-
	15-Oct-03	7,500	0.11	<b>1.7</b>	<b>0.13</b>	<b>3.0</b>	<b>3.3</b>	<b>2.9</b>	-
	20-Jan-04	320	0.11	<b>1.1</b>	<b>1.9</b>	<b>3.5</b>	<b>2.7</b>	0.87	-

Notes:

- <sup>1</sup> Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle calibrated to hexane with methane exclusion.
  - mg/L milligrams per litre
  - ND not detected; values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).
  - nm not monitored
  - cnl monitoring well could not be located
  - Italics* indicates a duplicate groundwater sample
  - < Less than laboratory method detection limits.
  - NG No Guideline.
  - not measured.
  - BTEX Benzene, toluene, ethylbenzene and xylenes.
  - PHC Petroleum hydrocarbon concentration fractions.
  - ppm parts per million; 120 parts per million= 1% LEL.
  - LEL Lower Explosive Limit.
  - Bold** Indicates value exceeds Tier 3 Guidelines criterion developed by Cantox Environmental (Intrinsic) for Groundwater in Fine Grained Soil - Residential Land Use.
  - Bold** Indicates value exceeds the AESRD 2010 Tier 1 Groundwater Remediation Guidelines for Fine-Grained Soil and Residential Land Use.
- See laboratory report for detection limits, testing protocols and QA/QC procedures.

**TABLE 6** **SUMMARY OF ALL GROUNDWATER LABORATORY RESULTS 1998 - 2013**  
**Zones 1 and 2 - North of 11<sup>th</sup> Avenue NW**  
**Updated Site Management Plan (2014)**  
**Hounsfield Heights - Briar Hill Community**  
**CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe Combustible Vapour Concentrations <sup>1</sup> ppm	Benzene	Toluene	Ethyl-benzene	Total Xylenes	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	Lead
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<b>Site-specific Tier 3 Groundwater Quality Objectives (mg/L). For Properties 1 to 20 and 26 to 35 (i.e. 11<sup>th</sup> Avenue and North)</b>									
			<b>12 to 39</b>	NG	NG	NG	NG	NG	NG
<i>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</i>			0.005	0.024	0.0024	0.3	2.2	1.1	0.001
<b>BH208</b>	6-Nov-98	3,300	8.68	<b>24.9</b>	<b>1.31</b>	<b>9.08</b>	-	-	-
<i>duplicate for BH208 labelled 908</i>			8.83	<b>26.4</b>	<b>1.38</b>	<b>9.93</b>	-	-	-
	27-Jul-01	>10,000	4.7	<b>26</b>	<b>2.5</b>	<b>20</b>	-	-	-
	13-May-03	1,200	0.52	<b>1.1</b>	<b>0.032</b>	<b>2.5</b>	<b>7.4</b>	<b>1.3</b>	-
	15-Oct-03	>10,000	1.6	<b>3.0</b>	<b>0.17</b>	<b>3.5</b>	<b>2.7</b>	<b>2.2</b>	-
<i>duplicate for BH208 labelled 908</i>	20-Jan-04	>10,000	3.6	<b>9.3</b>	<b>0.34</b>	<b>7.1</b>	<b>11</b>	<b>3.8</b>	<0.005
			3.7	<b>9.2</b>	<b>0.31</b>	<b>6.8</b>	<b>9.9</b>	<b>2.9</b>	<0.005
<i>duplicate for BH208 labelled 908</i>	8-Apr-04	12	4.5	<b>16</b>	<b>1.3</b>	<b>13</b>	<b>12</b>	<b>3.0</b>	<0.005
			4.7	<b>17</b>	<b>1.4</b>	<b>14</b>	<b>12</b>	<b>3.5</b>	<0.005
<i>duplicate for BH208 labelled BH248</i>	21-Jul-04	46	4.3	<b>11</b>	<b>1.4</b>	<b>12</b>	<b>2.8</b>	<b>2.6</b>	-
			4.3	<b>10</b>	<b>0.74</b>	<b>10</b>	<b>4.8</b>	<b>2.4</b>	-
<i>duplicate for BH208 labelled BH228</i>	21-Oct-04	290	3.4	<b>7.6</b>	<b>0.48</b>	<b>6.8</b>	<b>8.2</b>	<b>4.0</b>	-
			3.2	<b>8.5</b>	<b>0.43</b>	<b>8.8</b>	<b>1.8</b>	<b>3.0</b>	-
	6-Oct-05	>10,000	3.8	<b>12</b>	<b>0.8</b>	<b>9.6</b>	<b>3.3</b>	<b>2.9</b>	-
	18-May-06	>10,000	2.5	<b>7.2</b>	<b>0.13</b>	<b>6.7</b>	<b>5.5</b>	<b>3.3</b>	-
<i>duplicate of BH208 labelled BH888</i>	6-Feb-07	>10,000	3.8	<b>7.9</b>	<b>0.53</b>	<b>6.6</b>	<b>3.9</b>	<b>5.9</b>	-
			3.8	<b>8.2</b>	<b>0.56</b>	<b>6.8</b>	<b>4.1</b>	<b>4.1</b>	-
	29-May-07		3.51	<b>6.86</b>	<b>0.563</b>	<b>7.83</b>	<b>0.8</b>	<b>4.1</b>	-

Notes:

- <sup>1</sup> Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle calibrated to hexane with methane exclusion.
  - mg/L milligrams per litre
  - ND not detected; values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).
  - nm not monitored
  - cnl monitoring well could not be located
  - Italics* indicates a duplicate groundwater sample
  - < Less than laboratory method detection limits.
  - NG No Guideline.
  - not measured.
  - BTEX Benzene, toluene, ethylbenzene and xylenes.
  - PHC Petroleum hydrocarbon concentration fractions.
  - ppm parts per million; 120 parts per million= 1% LEL.
  - LEL Lower Explosive Limit.
  - Bold** Indicates value exceeds Tier 3 Guidelines criterion developed by Cantox Environmental (Intrinsic) for Groundwater in Fine Grained Soil - Residential Land Use.
  - Bold** Indicates value exceeds the AESRD 2010 Tier 1 Groundwater Remediation Guidelines for Fine-Grained Soil and Residential Land Use.
- See laboratory report for detection limits, testing protocols and QA/QC procedures.

**TABLE 6 SUMMARY OF ALL GROUNDWATER LABORATORY RESULTS 1998 - 2013  
Zones 1 and 2 - North of 11<sup>th</sup> Avenue NW  
Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe	Benzene mg/L	Toluene mg/L	Ethyl-benzene mg/L	Total Xylenes mg/L	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> mg/L	PHC F2 >C <sub>10</sub> -C <sub>16</sub> mg/L	Lead mg/L
		Combustible Vapour Concentrations <sup>1</sup> ppm							
<b>Site-specific Tier 3 Groundwater Quality Objectives (mg/L). For Properties 1 to 20 and 26 to 35 (i.e. 11<sup>th</sup> Avenue and North)</b>									
			<b>12 to 39</b>	NG	NG	NG	NG	NG	NG
<i>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</i>									
			0.005	0.024	0.0024	0.3	2.2	1.1	0.001
<b>BH209</b>	6-Nov-98	880	7.94	<b>17.1</b>	<b>1.34</b>	<b>8.59</b>	-	-	-
	27-Jul-01	2,200	19 <sup>2</sup>	<b>29</b>	<b>2.0</b>	<b>13</b>	-	-	-
	6-Dec-02	>10,000	8.3	<b>9.7</b>	<b>0.77</b>	<b>5.7</b>	<b>7.8</b>	0.62	-
	13-May-03	1,800	5.1	<b>6.6</b>	<b>0.36</b>	<b>3.4</b>	<b>11</b>	0.54	-
	15-Oct-03	>10,000	7.3	<b>12</b>	<b>0.77</b>	<b>6.5</b>	<b>6.0</b>	<b>2.0</b>	-
	20-Jan-04	1,200	12 <sup>2</sup>	<b>24</b>	<b>0.73</b>	<b>9.3</b>	<b>17</b>	<b>1.2</b>	<b>0.006</b>
	21-Jul-04	38	14 <sup>2</sup>	<b>25</b>	<b>1.3</b>	<b>11</b>	0.3	1.1	-
	21-Oct-04	1,000	13 <sup>2</sup>	<b>23</b>	<b>1</b>	<b>9.4</b>	1.3	<b>1.5</b>	-
	6-Oct-05	1,000	8.1	<b>21</b>	<b>1.4</b>	<b>9.4</b>	<b>3.6</b>	0.74	-
<i>duplicate for BH209 labelled BH999</i>									
			<b>8.1</b>	<b>20</b>	<b>1.4</b>	<b>9.3</b>	<b>3.8</b>	<b>0.89</b>	-
<b>BH210</b>	6-Nov-98	>10,000	0.96	<b>3.14</b>	<b>0.444</b>	<b>3.73</b>	-	-	-
	27-Jul-01	8	0.52	<b>0.7</b>	<b>0.53</b>	<b>3.6</b>	-	-	-
	15-Oct-03	1,100	0.19	0.016	<b>0.11</b>	0.22	0.4	0.14	-
	20-Jan-04	15	0.27	<0.005	<b>0.044</b>	0.16	0.8	<0.05	-
	8-Apr-04	72	0.23	0.014	<b>0.082</b>	0.28	0.8	0.05	<b>&lt;0.005</b>
	21-Jul-04	8	0.23	0.0091	<b>0.061</b>	0.16	1.2	<0.05	-
	21-Oct-04	540	0.3	0.0097	<b>0.064</b>	0.16	0.5	<0.05	-
	9-Mar-05	1,200	0.18	0.018	<b>0.018</b>	0.17	0.4	0.06	-
	7-Oct-05	10	0.21	0.017	<b>0.031</b>	0.19	0.5	<0.05	-
	18-May-06	2,000	0.22	0.0085	<b>0.030</b>	0.20	0.6	0.05	-
	5-Feb-07	1,000	0.23	0.0055	<b>0.026</b>	0.17	0.6	<0.05	-
	29-May-07	1,100	0.177	0.00357	<b>0.00585</b>	0.0536	0.3	<0.05	-
	11-Mar-08	260	0.164	0.0031	<b>0.0108</b>	0.0882	0.5	<0.05	-

Notes:

- Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle calibrated to hexane with methane exclusion.
- BH209 is located adjacent to property 1 which has a benzene acceptance level of 34 mg/kg, therefore the measurements indicated are not an exceedance.

mg/L milligrams per litre

ND not detected; values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).

nm not monitored

cnl monitoring well could not be located

*Italics* indicates a duplicate groundwater sample

< Less than laboratory method detection limits.

NG No Guideline.

- not measured.

BTEX Benzene, toluene, ethylbenzene and xylenes.

PHC Petroleum hydrocarbon concentration fractions.

ppm parts per million; 120 parts per million= 1% LEL.

LEL Lower Explosive Limit.

**Bold** Indicates value exceeds Tier 3 Guidelines criterion developed by Cantox Environmental (Intrinsic) for Groundwater in Fine Grained Soil - Residential Land Use.

**Bold** Indicates value exceeds the AESRD 2010 Tier 1 Groundwater Remediation Guidelines for Fine-Grained Soil and Residential Land Use.

See laboratory report for detection limits, testing protocols and QA/QC procedures.

**TABLE 6 SUMMARY OF ALL GROUNDWATER LABORATORY RESULTS 1998 - 2013  
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Hounsfield Heights - Briar Hill Community  
CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe	Benzene mg/L	Toluene mg/L	Ethyl-benzene mg/L	Total Xylenes mg/L	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> mg/L	PHC F2 >C <sub>10</sub> -C <sub>16</sub> mg/L	Lead mg/L
		Combustible Vapour Concentrations <sup>1</sup> ppm							
<b>Site-specific Tier 3 Groundwater Quality Objectives (mg/L). For Properties 1 to 20 and 26 to 35 (i.e. 11<sup>th</sup> Avenue and North)</b>									
			<b>12 to 39</b>	NG	NG	NG	NG	NG	NG
<i>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</i>									
			0.005	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<b>BH211</b>	6-Nov-98	>10,000	1.61	<b>3.13</b>	<b>0.225</b>	<b>1.51</b>	-	-	-
	27-Jul-01	28	1.7	<b>0.37</b>	<b>0.85</b>	<b>3.4</b>	-	-	-
	6-Dec-02	5,800	0.72	<b>0.14</b>	<b>0.19</b>	0.2	0.7	0.06	-
	13-May-03	8,800	1	<b>0.1</b>	<b>0.48</b>	0.3	<b>3.4</b>	0.15	-
	15-Oct-03	2,500	0.14	0.0034	<b>0.023</b>	0.011	0.2	<0.05	-
	20-Jan-04	15	0.16	0.0014	<b>0.0099</b>	0.0035	0.2	<0.05	<b>&lt;0.005</b>
	21-Jul-04	30	0.27	<b>0.38</b>	<b>0.035</b>	0.006	<0.1	<0.05	-
	21-Oct-04	6	0.19	0.0024	<b>0.023</b>	0.0023	0.2	<0.05	-
	9-Mar-05	86	0.041	0.0047	<b>0.0082</b>	0.016	0.1	<0.05	-
	7-Oct-05	7,150	0.26	0.02	<b>0.017</b>	0.013	0.3	<0.05	-
	18-May-06	500	0.53	0.0085	<b>0.19</b>	0.026	0.4	<0.05	-
	5-Feb-07	3,000	0.36	0.0055	<b>0.10</b>	0.018	0.3	<0.05	-
	29-May-07	68	0.343	0.005	<b>0.10</b>	0.0089	0.2	<0.05	-
	11-Mar-08	300	0.609	0.008	<b>0.205</b>	0.0693	0.5	<0.05	-
<b>BH212</b>	6-Nov-98	200	<0.0002	<0.0002	<0.0002	<0.0002	-	-	-
	27-Jul-01	22	<0.0005	<0.0005	0.0011	0.0007	-	-	-
	6-Dec-02	290	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	13-May-03	50	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	16-Oct-03	55	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	20	0.0027	0.0067	<0.0005	0.0043	<0.1	<0.05	<b>&lt;0.005</b>
	8-Apr-04	120	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<b>&lt;0.005</b>
	21-Jul-04	20	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	21-Oct-04	42	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	65	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	220	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-

Notes:

- <sup>1</sup> Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle calibrated to hexane with methane exclusion.
- mg/L milligrams per litre
- ND not detected; values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).
- nm not monitored
- cnl monitoring well could not be located
- Italics* indicates a duplicate groundwater sample
- < Less than laboratory method detection limits.
- NG No Guideline.
- not measured.
- BTEX Benzene, toluene, ethylbenzene and xylenes.
- PHC Petroleum hydrocarbon concentration fractions.
- ppm parts per million; 120 parts per million= 1% LEL.
- LEL Lower Explosive Limit.

**Bold** Indicates value exceeds Tier 3 Guidelines criterion developed by Cantox Environmental (Intrinsic) for Groundwater in Fine Grained Soil - Residential Land Use.

**Bold** Indicates value exceeds the AESRD 2010 Tier 1 Groundwater Remediation Guidelines for Fine-Grained Soil and Residential Land Use.

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**CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe	Benzene mg/L	Toluene mg/L	Ethyl-benzene mg/L	Total Xylenes mg/L	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> mg/L	PHC F2 >C <sub>10</sub> -C <sub>16</sub> mg/L	Lead mg/L
		Combustible Vapour Concentrations <sup>1</sup> ppm							
<b>Site-specific Tier 3 Groundwater Quality Objectives (mg/L). For Properties 1 to 20 and 26 to 35 (i.e. 11<sup>th</sup> Avenue and North)</b>									
			<b>12 to 39</b>	NG	NG	NG	NG	NG	NG
<i>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</i>									
			0.005	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<b>BH212 continued</b>	6-Feb-07	100	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	68	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
<b>BH213</b>	13-May-03	2,800	0.41	<b>0.29</b>	<b>0.68</b>	<b>4.3</b>	<b>11</b>	<b>2.7</b>	-
	21-Oct-04	1,000	3.5	<b>2.1</b>	<b>2.6</b>	<b>11</b>	<b>11</b>	<b>5.8</b>	-
	7-Oct-05	1,000	1.4	<b>1.1</b>	<b>1.9</b>	<b>5.5</b>	<b>16</b>	<b>7.0</b>	-
	8-Feb-07	4,000	2.4	<b>0.61</b>	<b>1.4</b>	<b>2.6</b>	<b>7.1</b>	-	-
	11-Mar-08	240	0.164	<b>0.0372</b>	<b>0.842</b>	<b>1.28</b>	<b>8.7</b>	<b>17</b>	-
<b>BH501</b>	6-Dec-02	>10,000	2.4	<b>5.9</b>	<b>0.25</b>	<b>2.1</b>	<b>8.7</b>	0.08	-
	13-May-03	>10,000	6.6	<b>18</b>	<b>1.0</b>	<b>9.6</b>	<b>1.8</b>	0.18	-
	16-Oct-03	>10,000	4.9	<b>8.4</b>	<b>0.69</b>	<b>3.6</b>	<0.1	0.08	-
	20-Jan-04	80	2.2	<b>2.9</b>	<b>0.25</b>	<b>1.3</b>	<b>2.6</b>	0.09	<b>&lt;0.005</b>
	8-Apr-04	480	2.1	<b>2.4</b>	<b>0.31</b>	<b>1.2</b>	<b>10</b>	<0.05	<b>&lt;0.005</b>
	21-Jul-04	700	2.9	<b>3.1</b>	<b>0.56</b>	<b>2.1</b>	<b>6.1</b>	<0.2	-
	21-Oct-04	>10,000	2.1	<b>2.5</b>	<b>0.4</b>	<b>1.8</b>	<0.1	0.08	-
	8-Mar-05	9,200	2.1	<b>1.7</b>	<b>0.53</b>	<b>1.6</b>	0.2	0.06	-
<i>duplicate for BH501 labelled BH1501</i>			2	<b>1.6</b>	<b>0.57</b>	<b>1.6</b>	<b>0.3</b>	<b>0.07</b>	-
	12-Oct-05	-	1.3	<b>0.72</b>	<b>0.38</b>	<b>1.0</b>	<b>0.7</b>	<0.05	-
<i>duplicate for BH501 labelled BH544</i>			<b>1.1</b>	<b>0.63</b>	<b>0.31</b>	<b>0.84</b>	<b>0.4</b>	<0.05	-
	18-May-06	200	1.9	<b>0.62</b>	<b>0.56</b>	<b>1.2</b>	<b>0.9</b>	<0.05	-
	5-Feb-07	6,000	0.33	<b>0.070</b>	<b>0.097</b>	<b>0.16</b>	<b>0.2</b>	<0.05	-
	29-May-07	2,200	0.998	<b>0.293</b>	<b>0.248</b>	<b>0.692</b>	<b>0.3</b>	0.05	-
<i>duplicate of BH501 labelled BH444</i>			<b>1.23</b>	<b>0.334</b>	<b>0.303</b>	<b>0.738</b>	<b>0.4</b>	<b>0.2</b>	-
	11-Mar-08	1,000	1.9	<b>1.12</b>	<b>0.914</b>	<b>1.31</b>	<b>0.5</b>	<0.05	-

Notes:

- 1 Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle calibrated to hexane with methane exclusion.
- mg/L milligrams per litre
- ND not detected; values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).
- nm not monitored
- cnl monitoring well could not be located
- Italics* indicates a duplicate groundwater sample
- < Less than laboratory method detection limits.
- NG No Guideline.
- not measured.
- BTEX Benzene, toluene, ethylbenzene and xylenes.
- PHC Petroleum hydrocarbon concentration fractions.
- ppm parts per million; 120 parts per million= 1% LEL.
- LEL Lower Explosive Limit.

**Bold** Indicates value exceeds Tier 3 Guidelines criterion developed by Cantox Environmental (Intrinsic) for Groundwater in Fine Grained Soil - Residential Land Use.

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Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe	Benzene mg/L	Toluene mg/L	Ethyl-benzene mg/L	Total Xylenes mg/L	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> mg/L	PHC F2 >C <sub>10</sub> -C <sub>16</sub> mg/L	Lead mg/L
		Combustible Vapour Concentrations <sup>1</sup> ppm							
Site-specific Tier 3 Groundwater Quality Objectives (mg/L). For Properties 1 to 20 and 26 to 35 (i.e. 11 <sup>th</sup> Avenue and North)									
			12 to 39	NG	NG	NG	NG	NG	NG
<i>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</i>									
			0.005	0.024	0.0024	0.3	2.2	1.1	0.001
<b>BH502</b>	6-Dec-02	>10,000	0.16	0.41	0.002	0.37	1.2	0.14	-
	13-May-03	>10,000	0.19	0.65	0.016	0.078	5.2	<0.05	-
	15-Oct-03	>10,000	0.0071	0.0052	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	20	6	11	0.86	6.4	11	0.39	0.005
	8-Apr-04	140	9.5	31	1.4	13	16	0.91	0.006
	21-Jul-04	64	5.7	16	0.88	6.5	<0.1	0.89	-
	21-Oct-04	2,600	5.4	16	0.71	6.7	<0.1	0.6	-
<i>duplicate for BH502 labelled BH500</i>									
	8-Mar-05	4,000	7.2	17	0.95	6.4	1.1	0.58	-
<i>duplicate for BH502 labelled BH1502</i>									
	12-Oct-05	-	12 <sup>2</sup>	27	1.3	9.6	2.7	0.76	-
<i>duplicate of BH502 labelled BH566</i>									
	18-May-06	1,000	11	31	1.5	11	4.1	0.63	-
	5-Feb-07	>10,000	11	24	1.9	13	5.2	0.77	-
	29-May-07	200	11	25	1.8	12	4.2	0.72	-
	11-Mar-08	1,800	4.9	31	1.8	12	2.0	0.97	-
	5-Feb-07	>10,000	8.0	19	1.5	10	5.6	1.4	-
	29-May-07	200	6.7	12	1.1	9.46	3.4	0.67	-
	11-Mar-08	1,800	4.9	6.81	0.89	6.2	2.4	0.63	-
<b>BH510</b>	6-Dec-02	>10,000	10	13	0.95	7.1	11	1.7	-
	11-Mar-08	1,300	6.35	9.6	1.18	10.2	3.7	2.5	-
<i>duplicate of BH510 labeled BH2000</i>									
			5.52	10.5	1.13	10.8	0.9	4.6	-
<b>BH510A</b>	18-Oct-12	0	5.12	4.39	0.934	2.25	2.68	<0.25	-

Notes:

- Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle calibrated to hexane with methane exclusion.
  - BH502 is located between properties 7 and 8 which have benzene acceptance levels of 31 mg/kg and 34 mg/kg respectively, therefore neither 12 mg/kg nor 14 mg/kg are exceedances.
- mg/L milligrams per litre  
 ND not detected; values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).  
 nm not monitored  
 cnl monitoring well could not be located  
*Italics* indicates a duplicate groundwater sample  
 < Less than laboratory method detection limits.  
 NG No Guideline.  
 - not measured.
- BTEX Benzene, toluene, ethylbenzene and xylenes.  
 PHC Petroleum hydrocarbon concentration fractions.  
 ppm parts per million; 120 parts per million= 1% LEL.  
 LEL Lower Explosive Limit.
- Bold** Indicates value exceeds Tier 3 Guidelines criterion developed by Cantox Environmental (Intrinsic) for Groundwater in Fine Grained Soil - Residential Land Use.  
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		Combustible Vapour Concentrations <sup>1</sup> ppm							
Site-specific Tier 3 Groundwater Quality Objectives (mg/L). For Properties 1 to 20 and 26 to 35 (i.e. 11 <sup>th</sup> Avenue and North)									
			<b>12 to 39</b>	NG	NG	NG	NG	NG	NG
<i>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</i>									
			0.005	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<i>BH510A continued</i>	8-May-13	10	6.0	<b>4.9</b>	<b>0.94</b>	<b>2.2</b>	1.4	0.26	-
<i>Duplicate(QC3)</i>	8-May-13	-	5.2	<b>5.1</b>	<b>0.98</b>	<b>2.4</b>	<b>2.3</b>	0.19	-
<b>BH701</b>	14-Oct-03	640	4	<b>6.7</b>	<b>0.46</b>	<b>2.8</b>	1.2	0.8	-
	20-Jan-04	25	6.7	<b>10</b>	<b>1.3</b>	<b>8.5</b>	<b>9.9</b>	1.1	<b>&lt;0.005</b>
	8-Apr-04	1,000	8.6	<b>18</b>	<b>2.0</b>	<b>13</b>	<b>11</b>	<b>1.5</b>	<b>&lt;0.005</b>
	21-Jul-04	200	12	<b>20</b>	<b>1.9</b>	<b>14</b>	<b>3.7</b>	0.89	-
<i>duplicate for BH701 labelled BH777</i>			<i>9.1</i>	<i>15</i>	<i>1.5</i>	<i>10</i>	<i>4</i>	<i>0.9</i>	-
	21-Oct-04	68	9.9	<b>16</b>	<b>1.4</b>	<b>9.1</b>	<b>5</b>	<b>1.2</b>	-
<i>duplicate for BH701 labelled BH700</i>			<i>9.2</i>	<i>15</i>	<i>1.3</i>	<i>8.5</i>	<i>4.8</i>	<i>1</i>	-
	8-Mar-05	660	10	<b>19</b>	<b>1.4</b>	<b>10</b>	<b>8.6</b>	<b>1.2</b>	-
<i>duplicate for BH701 labelled BH1701</i>			<i>8.2</i>	<i>15</i>	<i>1.4</i>	<i>9.5</i>	<i>7.5</i>	<i>1.1</i>	-
	6-Oct-05	200	6.4	<b>13</b>	<b>1</b>	<b>6.6</b>	<b>2.2</b>	0.79	-
	18-May-06	400	6.5	<b>18</b>	<b>1.2</b>	<b>7.9</b>	<b>3.7</b>	1.0	-
<i>duplicate of BH701 labelled BH5555</i>			<i>6.1</i>	<i>16</i>	<i>1.1</i>	<i>7.4</i>	<i>4.9</i>	<i>1.0</i>	-
	6-Feb-07	92	6.9	<b>15</b>	<b>1.2</b>	<b>7.1</b>	<b>5.3</b>	<b>1.2</b>	-
	29-May-07	90	6.29	<b>10.6</b>	<b>1.3</b>	<b>6.73</b>	<b>3.4</b>	<b>1.3</b>	-
	11-Mar-08	360	3	<b>6.65</b>	<b>0.586</b>	<b>2.66</b>	1.5	0.48	-
<b>BH702</b>	14-Oct-03	3,000	2.2	<b>3.7</b>	<b>0.36</b>	<b>2.0</b>	1.1	0.49	-
	8-Apr-04	76	3	<b>7.0</b>	<b>0.46</b>	<b>4.4</b>	<b>8.6</b>	0.87	<b>&lt;0.005</b>
	21-Jul-04	52	5.5	<b>14</b>	<b>1.3</b>	<b>8.4</b>	<b>2.3</b>	0.65	-
	21-Oct-04	76	2.6	<b>5.7</b>	<b>0.59</b>	<b>3.3</b>	<b>3.2</b>	0.45	-
	8-Mar-05	1,000	1.6	<b>3.7</b>	<b>0.36</b>	<b>2.3</b>	<b>3.0</b>	0.7	-
<i>duplicate for BH702 labelled BH1702</i>			<i>1.9</i>	<i>4.5</i>	<i>0.53</i>	<i>3.1</i>	<i>3.6</i>	<i>0.76</i>	-
	6-Oct-05	200	1.7	<b>4.2</b>	<b>0.57</b>	<b>2.9</b>	<b>2.9</b>	0.58	-
	18-May-06	100	1.6	<b>5.5</b>	<b>0.69</b>	<b>3.4</b>	<b>3.9</b>	0.98	-

Notes:

- <sup>1</sup> Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle calibrated to hexane with methane exclusion.
  - mg/L milligrams per litre
  - ND not detected; values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).
  - nm not monitored
  - cnl monitoring well could not be located
  - Italics* indicates a duplicate groundwater sample
  - < Less than laboratory method detection limits.
  - NG No Guideline.
  - not measured.
  - BTEX Benzene, toluene, ethylbenzene and xylenes.
  - PHC Petroleum hydrocarbon concentration fractions.
  - ppm parts per million; 120 parts per million= 1% LEL.
  - LEL Lower Explosive Limit.
  - Bold** Indicates value exceeds Tier 3 Guidelines criterion developed by Cantox Environmental (Intrinsic) for Groundwater in Fine Grained Soil - Residential Land Use.
  - Bold** Indicates value exceeds the AESRD 2010 Tier 1 Groundwater Remediation Guidelines for Fine-Grained Soil and Residential Land Use.
- See laboratory report for detection limits, testing protocols and QA/QC procedures.

**TABLE 6 SUMMARY OF ALL GROUNDWATER LABORATORY RESULTS 1998 - 2013**  
**Zones 1 and 2 - North of 11<sup>th</sup> Avenue NW**  
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**Hounsfield Heights - Briar Hill Community**  
**CALGARY, Alberta**

Monitoring Well	Sample Date	Well Standpipe	Benzene	Toluene	Ethyl-benzene	Total Xylenes	PHC F1-BTEX	PHC F2	Lead
		Combustible Vapour Concentrations <sup>1</sup>							
	dd-mmm-yy	ppm	mg/L	mg/L	mg/L	mg/L	C <sub>6</sub> -C <sub>10</sub> mg/L	>C <sub>10</sub> -C <sub>16</sub> mg/L	mg/L
<b>Site-specific Tier 3 Groundwater Quality Objectives (mg/L). For Properties 1 to 20 and 26 to 35 (i.e. 11<sup>th</sup> Avenue and North)</b>									
			<b>12 to 39</b>	NG	NG	NG	NG	NG	NG
<i>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</i>									
			0.005	0.024	0.0024	0.3	2.2	1.1	0.001
<i>duplicate of BH702 labelled BH6666</i>									
			1.6	5.7	0.70	3.5	4.8	1.1	-
<b>BH716</b>	16-Oct-03	>10,000	0.044	0.17	0.0071	1.0	1.1	0.2	-
	20-Jan-04	3,200	<0.02	0.03	<0.02	0.41	2.3	0.11	<0.005
	21-Jul-04	1,800	0.012	0.0091	0.0006	0.26	0.3	0.11	-
	21-Oct-04	1,600	0.013	0.043	0.003	0.45	0.3	0.14	-
	7-Oct-05	10	0.012	0.048	0.0081	0.35	0.4	0.13	-
	18-May-06	7,000	0.0096	0.027	0.0045	0.32	0.4	0.07	-
	5-Feb-07	3,600	0.0052	0.045	0.0063	0.17	0.2	0.08	-
	29-May-07	3,800	0.0074	0.0032	<0.0030	0.0918	0.1	0.34	-
<i>duplicate of BH716 labelled BH777</i>									
			0.00567	0.00222	0.0005	0.0914	<0.1	0.13	-
	11-Mar-08	7,200	0.00662	0.0488	0.00677	0.136	0.3	<0.05	-
<b>BH724</b>	15-Oct-03	5,500	0.55	0.76	0.013	0.5	0.3	<0.05	-
	20-Jan-04	20	0.14	0.016	<0.0005	0.13	0.2	<0.05	<0.005
	8-Apr-04	200	0.03	0.0015	0.007	0.11	0.2	<0.05	<0.005
	21-Jul-04	500	0.14	0.014	0.003	0.13	<0.1	<0.05	-
	21-Oct-04	300	0.22	0.036	0.0051	0.14	0.2	<0.05	-
	9-Mar-05	700	0.54	0.77	0.1	0.62	0.5	<0.05	-
	6-Oct-05	420	0.047	0.0052	0.0045	0.088	0.2	<0.05	-
	18-May-06	420	0.74	0.012	0.16	0.19	0.6	<0.05	-
	5-Feb-07	400	0.72	0.024	0.25	0.16	0.6	<0.05	-
<i>duplicate for BH724 labelled BH555</i>									
			0.75	0.026	0.27	0.17	0.7	<0.05	-
	29-May-07	180	0.472	0.0785	0.143	0.151	0.3	<0.05	-
	11-Mar-08	260	0.998	0.0993	0.469	0.255	1.0	<0.05	-
<b>BH725</b>	15-Oct-03	>10,000	0.63	2.5	0.048	1.3	2.6	0.24	-

Notes:

- 1 Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle calibrated to hexane with methane exclusion.
  - mg/L milligrams per litre
  - ND not detected; values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).
  - nm not monitored
  - cnl monitoring well could not be located
  - Italics* indicates a duplicate groundwater sample
  - < Less than laboratory method detection limits.
  - NG No Guideline.
  - not measured.
  - BTEX Benzene, toluene, ethylbenzene and xylenes.
  - PHC Petroleum hydrocarbon concentration fractions.
  - ppm parts per million; 120 parts per million= 1% LEL.
  - LEL Lower Explosive Limit.
  - Bold** Indicates value exceeds Tier 3 Guidelines criterion developed by Cantox Environmental (Intrinsic) for Groundwater in Fine Grained Soil - Residential Land Use.
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**CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe	Benzene mg/L	Toluene mg/L	Ethyl-benzene mg/L	Total Xylenes mg/L	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> mg/L	PHC F2 >C <sub>10</sub> -C <sub>16</sub> mg/L	Lead mg/L
		Combustible Vapour Concentrations <sup>1</sup> ppm							
Site-specific Tier 3 Groundwater Quality Objectives (mg/L). For Properties 1 to 20 and 26 to 35 (i.e. 11 <sup>th</sup> Avenue and North)									
			<b>12 to 39</b>	NG	NG	NG	NG	NG	NG
<i>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</i>									
			0.005	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<b>BH727</b>	15-Oct-03	2,500	1.3	<b>2.1</b>	<b>0.06</b>	<b>0.63</b>	1.4	0.06	-
	20-Jan-04	55	0.59	<b>1</b>	<b>0.037</b>	<b>0.34</b>	2.1	0.05	<b>&lt;0.005</b>
	8-Apr-04	52	0.65	<b>0.82</b>	<b>0.0019</b>	<b>0.43</b>	<0.1	0.05	<b>&lt;0.005</b>
	21-Jul-04	52	0.23	<b>0.15</b>	<b>0.017</b>	0.12	<0.1	<0.05	-
	21-Oct-04	30	0.085	<b>0.025</b>	<b>0.0012</b>	0.019	<0.1	<0.05	-
	3-Nov-04	-	1.5	<b>3.0</b>	<b>0.073</b>	<b>0.46</b>	2.2	0.06	-
	9-Mar-05	36	0.44	0.021	<0.0005	0.036	0.2	<0.05	-
	11-Oct-05	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	19-May-06	90	1.2	<b>0.57</b>	<b>0.025</b>	0.26	<0.1	<0.05	-
	8-Feb-07	80	0.0050	0.0073	<0.0005	0.0022	<0.1	<0.05	-
	30-May-07	40	0.00096	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
<b>BH728</b>	15-Oct-03	>10,000	3.6	<b>9.4</b>	<b>0.009</b>	<b>2.3</b>	<0.1	0.09	-
	20-Jan-04	850	3.6	<b>6.3</b>	<b>&lt;0.04</b>	<b>1.4</b>	<b>5.1</b>	0.06	<b>&lt;0.005</b>
	8-Apr-04	62	3	<b>7.6</b>	<b>0.31</b>	<b>2.8</b>	<b>19</b>	0.09	<b>&lt;0.005</b>
<i>duplicate for BH728 labelled 827</i>			2.9	<b>7.2</b>	<b>0.23</b>	<b>2.5</b>	<b>6.9</b>	0.07	<b>&lt;0.005</b>
	21-Jul-04	600	2.1	<b>3.2</b>	<b>0.22</b>	<b>1.3</b>	<0.1	0.09	-
	21-Oct-04	90	2.1	<b>3.4</b>	<b>0.28</b>	<b>1.6</b>	1.5	0.07	-
	9-Mar-05	600	3.4	<b>2.3</b>	<b>0.44</b>	<b>1.4</b>	<0.1	0.1	-
	12-Oct-05	-	0.29	<b>0.11</b>	<b>0.078</b>	0.1	0.2	<0.05	-
	18-May-06	600	5.0	<b>1.9</b>	<b>0.22</b>	<b>0.94</b>	0.2	<0.05	-
<i>duplicate for BH728 labelled BH7777</i>			9.6	<b>5.5</b>	<b>0.61</b>	<b>2.7</b>	<b>1.2</b>	0.08	-
	5-Feb-07	1,000	15	<b>6.6</b>	<b>0.95</b>	<b>4.0</b>	1.7	0.26	-
	29-May-07	10	3.29	<b>0.94</b>	<b>0.235</b>	<b>0.862</b>	0.4	0.06	-
	11-Mar-08	260	8.20	<b>2.54</b>	<b>0.399</b>	<b>1.630</b>	0.2	0.08	-

Notes:

- <sup>1</sup> Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle calibrated to hexane with methane exclusion.
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  - NG No Guideline.
  - not measured.
  - BTEX Benzene, toluene, ethylbenzene and xylenes.
  - PHC Petroleum hydrocarbon concentration fractions.
  - ppm parts per million; 120 parts per million= 1% LEL.
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  - Bold** Indicates value exceeds Tier 3 Guidelines criterion developed by Cantox Environmental (Intrinsic) for Groundwater in Fine Grained Soil - Residential Land Use.
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**TABLE 6** **SUMMARY OF ALL GROUNDWATER LABORATORY RESULTS 1998 - 2013**  
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**CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe	Benzene mg/L	Toluene mg/L	Ethyl-benzene mg/L	Total Xylenes mg/L	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> mg/L	PHC F2 >C <sub>10</sub> -C <sub>16</sub> mg/L	Lead mg/L
		Combustible Vapour Concentrations <sup>1</sup> ppm							
Site-specific Tier 3 Groundwater Quality Objectives (mg/L). For Properties 1 to 20 and 26 to 35 (i.e. 11 <sup>th</sup> Avenue and North)									
			12 to 39	NG	NG	NG	NG	NG	NG
<i>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</i>									
			0.005	0.024	0.0024	0.3	2.2	1.1	0.001
BH729	15-Oct-03	>10,000	5.5	7.1	0.11	1.5	<0.1	0.11	-
	20-Jan-04	24	11	14	0.29	3.4	12	0.17	0.008
	8-Apr-04	14	21 <sup>4</sup>	23	0.6	7.3	32	0.32	<0.005
	21-Jul-04	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	30-Jul-04	6	0.57	0.15	0.0023	0.014	0.5	<0.05	-
	21-Oct-04	2	3.5	5.3	0.16	1.3	<0.1	0.06	-
	9-Mar-05	20	22 <sup>4</sup>	27	1.2	8.1	3.3	0.2	-
	12-Oct-05	-	0.0012	0.0009	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	200	0.048	0.019	<0.0005	0.0011	<0.1	<0.05	-
	5-Feb-07	200	0.011	0.0009	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	25	0.00622	<0.0005	<0.0005	0.0009	<0.1	<0.05	-
	30-Sep-10	22	3.73	0.174	1.7	0.707	6.3	<0.25	-
	3-Jun-11	38	11.7	5.78	0.712	2.85	19.4	0.33	-
	14-Sep-11	-	0.0274	0.00119	0.00119	0.00324	<0.1	<0.25	-
	29-Mar-12	42	3.1	1.7	0.158	0.605	5.70	<0.25	-
18-Oct-12	0	0.04	<0.00050	0.001	0.005	<0.10	<0.25	-	
8-May-13	0	12 <sup>4</sup>	2.6	0.72	2.5	<10	0.41	-	
BH730	15-Oct-03	2,500	6.5	8.0	0.23	1.7	<0.1	0.08	-
	20-Jan-04	52	15 <sup>5</sup>	18	0.21	3.7	13	0.11	<0.005
	8-Apr-04	16	19 <sup>5</sup>	22	0.75	6.1	31	0.18	<0.005
	21-Jul-04	-	1.5	1.5	0.072	0.4	<0.1	<0.05	-
	30-Jul-04	10	4.5	5.1	0.2	1.5	1.8	<0.05	-

Notes:

- 1 Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle calibrated to hexane with methane exclusion.
- 4 BH729 is located adjacent to property 13 which has a benzene acceptance levels of 34 mg/kg, therefore none of the values indicated are exceedances.
- 5 BH730 is located between properties 14 and 15 which have benzene acceptance levels of 34 mg/kg and 35 mg/kg respectively, therefore none of the values indicated are exceedances.

mg/L milligrams per litre

ND not detected; values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).

nm not monitored

cnl monitoring well could not be located

*Italics* indicates a duplicate groundwater sample

< Less than laboratory method detection limits.

NG No Guideline.

- not measured.

BTEX Benzene, toluene, ethylbenzene and xylenes.

PHC Petroleum hydrocarbon concentration fractions.

ppm parts per million; 120 parts per million= 1% LEL.

LEL Lower Explosive Limit.

**Bold** Indicates value exceeds Tier 3 Guidelines criterion developed by Cantox Environmental (Intrinsic) for Groundwater in Fine Grained Soil - Residential Land Use.

**Bold** Indicates value exceeds the AESRD 2010 Tier 1 Groundwater Remediation Guidelines for Fine-Grained Soil and Residential Land Use.

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Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe	Benzene mg/L	Toluene mg/L	Ethyl-benzene mg/L	Total Xylenes mg/L	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> mg/L	PHC F2 >C <sub>10</sub> -C <sub>16</sub> mg/L	Lead mg/L
		Combustible Vapour Concentrations <sup>1</sup> ppm							
Site-specific Tier 3 Groundwater Quality Objectives (mg/L). For Properties 1 to 20 and 26 to 35 (i.e. 11 <sup>th</sup> Avenue and North)									
			12 to 39	NG	NG	NG	NG	NG	NG
<i>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</i>									
			0.005	0.024	0.0024	0.3	2.2	1.1	0.001
<i>BH730 continued</i>	21-Oct-04	38	19 <sup>5</sup>	23	0.57	5.7	<0.1	0.13	-
	9-Mar-05	44	12 <sup>5</sup>	13	0.46	3.5	<0.1	0.15	-
	12-Oct-05	120	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	80	0.23	0.084	0.0058	0.036	<0.1	<0.05	-
<b>BH738</b>	15-Oct-03	75	1	0.017	0.0015	0.002	<0.1	<0.05	-
	20-Jan-04	15	1.3	0.048	<0.02	<0.02	<0.1	<0.05	<0.005
	8-Apr-04	12	2.5	0.51	0.0091	0.22	20	<0.05	<0.005
	21-Jul-04	70	2.1	0.32	0.016	0.048	10	<0.05	-
	21-Oct-04	42	1.7	0.25	0.012	0.026	0.2	<0.05	-
	9-Mar-05	64	1	0.058	0.0025	0.0093	0.2	<0.05	-
	12-Oct-05	-	0.0012	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	180	0.92	0.015	0.0029	0.0094	<0.1	<0.05	-
	5-Feb-07	0	0.39	0.0015	0.0007	0.0020	<0.1	<0.05	-
	29-May-07	60	0.0122	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	11-Mar-08	160	1.07	0.0063	0.0031	0.0042	<0.1	<0.05	-
<b>BH739</b>	16-Oct-03	60	3	0.008	0.0086	0.019	1.1	<0.05	-
	8-Apr-04	4	2.7	0.004	0.0012	0.0096	4.4	<0.05	<0.005
	21-Jul-04	64	0.66	0.0025	0.0014	0.015	4.7	<0.05	-
	21-Oct-04	14	4.9	0.36	0.021	0.11	<0.1	<0.05	-
	12-Oct-05	0	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	100	3.6	0.0067	<0.0005	0.031	<0.1	<0.05	-

Notes:

- 1 Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle calibrated to hexane with methane exclusion.
  - 5 BH730 is located between properties 14 and 15 which have benzene acceptance levels of 34 mg/kg and 35 mg/kg respectively, therefore none of the values indicated are exceedances.
  - mg/L milligrams per litre
  - ND not detected; values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).
  - nm not monitored
  - cnl monitoring well could not be located
  - Italics* indicates a duplicate groundwater sample
  - < Less than laboratory method detection limits.
  - NG No Guideline.
  - not measured.
  - BTEX Benzene, toluene, ethylbenzene and xylenes.
  - PHC Petroleum hydrocarbon concentration fractions.
  - ppm parts per million; 120 parts per million= 1% LEL.
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**TABLE 6 SUMMARY OF ALL GROUNDWATER LABORATORY RESULTS 1998 - 2013**  
**Zones 1 and 2 - North of 11<sup>th</sup> Avenue NW**  
**Updated Site Management Plan (2014)**  
**Hounsfield Heights - Briar Hill Community**  
**CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe	Benzene mg/L	Toluene mg/L	Ethyl-benzene mg/L	Total Xylenes mg/L	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> mg/L	PHC F2 >C <sub>10</sub> -C <sub>16</sub> mg/L	Lead mg/L
		Combustible Vapour Concentrations <sup>1</sup> ppm							
Site-specific Tier 3 Groundwater Quality Objectives (mg/L). For Properties 1 to 20 and 26 to 35 (i.e. 11 <sup>th</sup> Avenue and North)									
			12 to 39	NG	NG	NG	NG	NG	NG
<i>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</i>									
			0.005	0.024	0.0024	0.3	2.2	1.1	0.001
BH1701	18-Oct-12	110	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	8-May-13	0	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-
BH1704	30-Sep-10	180	1.62	0.648	3.88	4.03	17.2	1.27	-
	3-Jun-11	1,500	1.19	1.96	0.144	0.35	4.4	<0.25	-
	14-Sep-11	40	1.48	1.86	0.072	0.783	6.1	<0.25	-
	23-Dec-11	15	1.38	1.68	1.68	0.941	6.3	0.3	-
	18-Oct-12	55	1.01	0.374	0.126	0.389	1.49	<0.25	-
	8-May-13	120	1.2*	0.13	0.20	0.080	0.52	0.18	-
BH1705	30-Sep-10	3,000	0.0342	<0.00050	0.00155	0.166	0.37	<0.25	-
	3-Jun-11	66	0.0224	0.00097	<0.00050	0.0827	0.26	<0.25	-
	14-Sep-11	10	0.0238	0.00056	<0.00050	0.0278	0.24	<0.25	-
	22-Dec-11	70	0.0194	<0.00050	<0.00050	0.014	0.12	<0.25	-
BH1709	30-Sep-10	64	0.0271	<0.0005	<0.0005	<0.0005	<0.10	<0.25	-
	3-Jun-11	23	0.0462	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	14-Sep-11	100	0.0103	<0.00050	<0.00050	0.00064	<0.10	<0.25	-
	22-Dec-11	30	0.072	0.00214	<0.00050	<0.00050	<0.10	<0.25	-
<i>duplicate of BH1709 labeled BH2209</i>			0.0833	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	28-Mar-12	40	0.0238	<0.00050	<0.00050	0.00061	<0.10	<0.25	-
	18-Oct-12	25	0.1780	0.00206	<0.00050	0.00112	<0.10	<0.25	-

Notes:

- <sup>1</sup> Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle calibrated to hexane with methane exclusion.
  - mg/L milligrams per litre
  - ND not detected; values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).
  - nm not monitored
  - cnl monitoring well could not be located
  - Italics* indicates a duplicate groundwater sample
  - < Less than laboratory method detection limits.
  - NG No Guideline.
  - not measured.
  - BTEX Benzene, toluene, ethylbenzene and xylenes.
  - PHC Petroleum hydrocarbon concentration fractions.
  - ppm parts per million; 120 parts per million= 1% LEL.
  - LEL Lower Explosive Limit.
  - Bold** Indicates value exceeds Tier 3 Guidelines criterion developed by Cantox Environmental (Intrinsik) for Groundwater in Fine Grained Soil - Residential Land Use.
  - Bold** Indicates value exceeds the AESRD 2010 Tier 1 Groundwater Remediation Guidelines for Fine-Grained Soil and Residential Land Use.
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**Zones 1 and 2 - North of 11<sup>th</sup> Avenue NW**  
**Updated Site Management Plan (2014)**  
**Hounsfield Heights - Briar Hill Community**  
**CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe	Benzene mg/L	Toluene mg/L	Ethyl-benzene mg/L	Total Xylenes mg/L	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> mg/L	PHC F2 >C <sub>10</sub> -C <sub>16</sub> mg/L	Lead mg/L
		Combustible Vapour Concentrations <sup>1</sup> ppm							
Site-specific Tier 3 Groundwater Quality Objectives (mg/L). For Properties 1 to 20 and 26 to 35 (i.e. 11 <sup>th</sup> Avenue and North)									
			<b>12 to 39</b>	NG	NG	NG	NG	NG	NG
<i>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</i>									
			0.005	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<i>BH1709 continued</i>	8-May-13	0	0.16	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-
<b>BH1711</b>	30-Sep-10	82	2.43	<b>0.684</b>	<b>0.997</b>	<b>1.84</b>	<b>6.8</b>	<0.25	-
	3-Jun-11	38	2.29	<b>0.0664</b>	<b>0.582</b>	0.0427	<b>3.9</b>	<0.25	-
	14-Sep-11	30	1.58	<b>0.126</b>	<b>0.2</b>	0.066	<b>&lt;8.8</b>	<0.25	-
	22-Dec-11	160	1.86	<b>0.321</b>	<b>0.668</b>	<b>1.14</b>	<b>6.2</b>	<0.25	-
	28-Mar-12	240	1.59	<b>0.575</b>	<b>0.416</b>	<b>2.92</b>	<b>6.63</b>	0.61	-
	18-Oct-12	0	1.79	<b>0.132</b>	<b>0.757</b>	<b>1.39</b>	<b>&lt;4.4</b>	<0.25	-
	8-May-13	0	1.8*	<b>0.078</b>	<b>0.96</b>	<b>1.5</b>	<b>0.49</b>	0.16	-
<b>EX1</b>	30-Sep-10	200	11.5	<b>0.341</b>	<b>4.72</b>	<b>0.74</b>	<b>18.9</b>	<0.25	-
	14-Sep-11	15	7.77	<b>0.451</b>	<b>0.172</b>	0.246	<b>11.2</b>	<0.25	-
	22-Dec-11	5	12.1 <sup>6</sup>	<b>2.13</b>	<b>0.574</b>	<b>1.19</b>	<b>15.2</b>	<0.25	-
	28-Mar-12	180	0.274	<b>0.0672</b>	<b>0.0139</b>	0.0591	0.44	<0.25	-
	18-Oct-12	105	11.6	<b>2.63</b>	<b>0.542</b>	<b>0.991</b>	<b>7.51</b>	0.3	-
	8-May-13	0	15	<b>5.9</b>	<b>0.80</b>	<b>1.9</b>	<b>&lt;0.10</b>	0.28	-
<b>EX2</b>	30-Sep-10	>10,000	3.47	<b>0.831</b>	<b>5.37</b>	<b>4.42</b>	<b>15.1</b>	0.31	-
	14-Sep-11	70	2.49	<b>6.42</b>	<b>0.692</b>	<b>4.78</b>	<b>18.7</b>	0.42	-
	22-Dec-11	30	0.769	0.0214	<b>0.211</b>	<b>0.584</b>	<b>2.2</b>	<0.25	-
	28-Mar-12	240	2.89	<b>7.43</b>	<b>1.02</b>	<b>6.33</b>	<b>18.2</b>	0.64	-
	18-Oct-12	145	2.57	<b>3.01</b>	<b>1.00</b>	<b>4.27</b>	<b>3.27</b>	0.81	-
	8-May-13	0	1.8	<b>1.3</b>	<b>0.95</b>	<b>3.5</b>	<b>2.8</b>	0.59	-
<b>EX3</b>	30-Sep-10	1,000	0.0788	<b>0.121</b>	<b>0.00337</b>	0.00758	<b>2.48</b>	<0.25	-
	14-Sep-11	10	0.31	<b>0.0986</b>	<b>0.165</b>	0.0886	1.8	<0.25	-
	22-Dec-11	0	0.255	<b>0.201</b>	<b>0.139</b>	<b>0.315</b>	1.3	<0.25	-
	28-Mar-12	60	0.00166	0.0104	0.00118	0.0193	<0.10	0.38	-

Notes:

- 1 Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle calibrated to hexane with methane exclusion.
  - 6 EX1 is located between properties 9 and 10 which have benzene acceptance levels of 37 mg/kg and 33 mg/kg respectively, therefore 12.1 mg/kg is not an exceedance.
  - mg/L milligrams per litre
  - ND not detected; values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).
  - nm not monitored
  - cnl monitoring well could not be located
  - Italics* indicates a duplicate groundwater sample
  - < Less than laboratory method detection limits.
  - NG No Guideline.
  - not measured.
  - BTEX Benzene, toluene, ethylbenzene and xylenes.
  - PHC Petroleum hydrocarbon concentration fractions.
  - ppm parts per million; 120 parts per million= 1% LEL.
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  - Bold** Indicates value exceeds Tier 3 Guidelines criterion developed by Cantox Environmental (Intrinsic) for Groundwater in Fine Grained Soil - Residential Land Use.
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**Updated Site Management Plan (2014)**  
**Hounsfield Heights - Briar Hill Community**  
**CALGARY, Alberta**

Monitoring Well	Sample Date	Well Standpipe Combustible Vapour Concentrations <sup>1</sup>	Benzene	Toluene	Ethyl-benzene	Total Xylenes	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	Lead
	dd-mmm-yy	ppm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Site-specific Tier 3 Groundwater Quality Objectives (mg/L). For Properties 1 to 20 and 26 to 35 (i.e. 11 <sup>th</sup> Avenue and North)									
			<b>12 to 39</b>	NG	NG	NG	NG	NG	NG
<i>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</i>									
			0.005	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<i>EX3 continued</i>	18-Oct-12	35	0.012	<0.00050	<b>0.0029</b>	<0.00050	<0.10	<0.25	-
<b>EX4</b>	30-Sep-10	8,000	4.77	<b>0.744</b>	<b>13.3</b>	<b>9.87</b>	<b>30.2</b>	<b>1.22</b>	-
	14-Sep-11	75	3.16	<b>5.58</b>	<b>0.532</b>	<b>9.04</b>	<b>25.6</b>	1.05	-
	23-Dec-11	130	3.38	<b>7.27</b>	<b>0.802</b>	<b>7.03</b>	<b>22.5</b>	0.92	-
	28-Mar-12	300	3.27	<b>4.6</b>	<b>0.79</b>	<b>6.58</b>	<b>18.3</b>	<b>1.15</b>	-
	18-Oct-12	530	2.78	<b>1.8</b>	<b>0.675</b>	<b>6.59</b>	<b>3.78</b>	0.88	-
	8-May-13	115	2.3	<b>0.39</b>	<b>0.52</b>	<b>5.9</b>	<b>3.7</b>	0.90	-
<b>EX5</b>	30-Sep-10	2,200	5.56	<b>1.72</b>	<b>19.5</b>	<b>9.03</b>	<b>40.2</b>	<b>1.61</b>	-
	14-Sep-11	480	3.16	<b>12.8</b>	<b>1.31</b>	<b>6.96</b>	<b>35.3</b>	<b>2.16</b>	-
	23-Dec-11	750	3.91	<b>9.61</b>	<b>1.64</b>	<b>6.17</b>	<b>25.7</b>	<b>1.38</b>	-
<i>duplicate of EX5 labelled EX15</i>			<b>4.01</b>	<b>9.57</b>	<b>1.57</b>	<b>6.01</b>	<b>25.8</b>	<b>1.26</b>	-
	28-Mar-12	320	2.41	<b>6.52</b>	<b>1.39</b>	<b>5.25</b>	<b>19.3</b>	<b>1.49</b>	-
	18-Oct-12	2,100	2.65	<b>6.6</b>	<b>1.27</b>	<b>4.78</b>	<b>5.83</b>	1.05	-
	8-May-13	2,900	2.8	<b>10</b>	<b>1.7</b>	<b>7.4</b>	<b>3.0</b>	<b>1.5</b>	-
<b>EX6</b>	30-Sep-10	4,000	1.72	<b>0.766</b>	<b>0.618</b>	<b>2.2</b>	<b>7.5</b>	0.5	-
	14-Sep-11	20	0.809	<b>0.269</b>	<b>0.807</b>	<b>1.5</b>	<b>5.81</b>	0.82	-
	23-Dec-11	5	0.816	<b>0.312</b>	<b>0.856</b>	<b>0.723</b>	<b>10.5</b>	0.46	-
	28-Mar-12	20	0.804	<b>0.239</b>	<b>0.812</b>	<b>1.3</b>	<b>5.76</b>	0.53	-
	18-Oct-12	115	0.638	<b>0.236</b>	<b>0.746</b>	<b>1.64</b>	<b>4.81</b>	0.52	-
	8-May-13	30	1.0	<b>0.48</b>	<b>1.5</b>	<b>3.6</b>	<b>6.5</b>	0.88	-
<b>EX7</b>	30-Sep-10	7,000	6.260	<b>1.490</b>	<b>0.263</b>	<b>4.00</b>	<b>15.70</b>	0.61	-
	8-May-13	25	1.7	<b>2.0</b>	<b>2.2</b>	<b>11</b>	<b>11</b>	<b>2.6</b>	-
<b>TRIP BLANK</b>	8-May-13	-	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	-	-

Notes:

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- NG No Guideline.
- not measured.
- BTEX Benzene, toluene, ethylbenzene and xylenes.
- PHC Petroleum hydrocarbon concentration fractions.
- ppm parts per million; 120 parts per million= 1% LEL.
- LEL Lower Explosive Limit.

**Bold** Indicates value exceeds Tier 3 Guidelines criterion developed by Cantox Environmental (Intrinsic) for Groundwater in Fine Grained Soil - Residential Land Use.

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**CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe Combustible Vapour Concentrations <sup>1</sup> ppm	Benzene	Toluene	Ethyl-benzene	Total Xylenes	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	Lead
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>									
			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<b>BH50</b>	6-Dec-02	180	<b>0.079</b>	<0.0005	0.0019	<0.0005	0.2	<0.05	-
	13-May-03	34	<b>0.0054</b>	<0.0005	<0.0005	0.0006	0.2	<0.05	-
	14-Oct-03	28	<b>0.036</b>	<0.0005	<0.0005	<0.0005	0.2	<0.05	-
	20-Jan-04	-	<b>0.023</b>	<0.0005	<0.0005	0.0007	0.3	0.1	<0.005
	8-Apr-04	36	<b>0.042</b>	0.002	0.0015	0.012	0.1	<0.05	<0.005
	21-Oct-04	60	<b>0.039</b>	<0.0005	<0.0005	<0.0005	0.3	0.08	-
	4-Mar-05	50	<b>0.023</b>	<0.0005	<0.0005	<0.0005	0.2	0.08	-
6-Oct-05	86	<b>0.065</b>	0.0023	<b>0.0057</b>	0.0045	0.4	0.06	-	
<b>BH51</b>	15-Sep-98	52	<b>0.0245</b>	0.0046	0.0002	0.015	-	-	-
	6-Dec-02	220	<b>0.089</b>	<0.0005	<0.0005	<0.0005	0.4	0.09	-
	13-May-03	48	<b>0.04</b>	<0.0005	<0.0005	<0.0005	0.5	0.07	-
	14-Oct-03	54	<b>0.087</b>	<0.0005	<0.0005	<0.0005	0.3	<0.05	-
	20-Jan-04	88	<b>0.035</b>	<0.0005	<0.0005	<0.0005	0.3	0.05	<0.005
	8-Apr-04	14	<b>0.09</b>	0.0018	<b>0.0065</b>	0.05	<0.1	0.06	<0.005
	21-Oct-04	84	<b>0.060</b>	<0.0005	<0.0005	<0.0005	0.3	0.13	-
	7-Mar-05	82	<b>0.0062</b>	<0.0005	<0.0005	<0.0005	0.3	0.08	-
	6-Oct-05	64	<b>0.099</b>	0.0005	0.002	<0.0005	0.2	0.06	-
<b>BH52</b>	15-Sep-98	52	<b>0.0459</b>	<b>0.0804</b>	<b>0.158</b>	<b>3.22</b>	-	-	-
	19-Oct-00	-	<b>0.01</b>	<b>0.3</b>	<b>3.2</b>	<b>50</b>	-	-	-
	23-Nov-00	-	<b>0.011</b>	<b>0.31</b>	<b>5.6</b>	<b>82</b>	-	-	-
	6-Dec-02	300	<b>1.8</b>	<b>0.057</b>	<b>1.5</b>	<b>12</b>	<b>4.0</b>	<b>3.3</b>	-
	13-May-03	54	<b>2.2</b>	<b>0.076</b>	<b>2.2</b>	<b>22</b>	<b>12</b>	<b>3.0</b>	-
	14-Oct-03	45	<b>0.25</b>	<b>0.01</b>	<b>0.16</b>	<b>3.5</b>	<0.1	<b>1.4</b>	-
	20-Jan-04	90	<b>0.77</b>	<b>0.057</b>	<b>1.4</b>	<b>13</b>	<b>8.6</b>	<b>2.8</b>	<0.005
	8-Apr-04	62	<b>1.6</b>	<b>0.16</b>	<b>2.2</b>	<b>17</b>	<b>13</b>	<b>2.5</b>	<0.005
	21-Oct-04	74	<b>1.1</b>	<b>0.053</b>	<b>0.027</b>	<b>10</b>	<b>8</b>	<b>2.4</b>	-
	4-Mar-05	140	<b>2.7</b>	<b>0.11</b>	<b>2.5</b>	<b>8.6</b>	<b>4.4</b>	<b>1.7</b>	-
	6-Oct-05	10	<0.0005	<0.0005	<0.0005	0.024	<0.1	<0.05	-

Notes:

- <sup>1</sup> Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle, calibrated to hexane with methane exclusion.
- mg/L milligrams per litre
- < Less than laboratory method detection limits.
- ND not detected, values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).
- cnl monitoring well could not be located.
- Italics* indicates a duplicate groundwater sample.
- \* detection limits raised due to dilution.
- NG No Guideline.
- not measured or no data available.
- BTEX Benzene, toluene, ethylbenzene and xylenes.
- PHC Petroleum hydrocarbon concentration fractions.
- ppm parts per million; 120 parts per million= 1% LEL.
- LEL Lower Explosive Limit.
- Bold** Indicates value exceeds the AESRD 2010 Tier 1 Groundwater Remediation Guidelines for Fine-Grained Soil and Residential Land Use.  
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Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe Combustible Vapour Concentrations <sup>1</sup> ppm	Benzene	Toluene	Ethyl-benzene	Total Xylenes	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	Lead
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>									
			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<b>BH54</b>	15-Sep-98	64	<b>0.779</b>	0.0108	0.0011	0.0024	-	-	-
	6-Dec-02	220	<b>0.27</b>	<0.005	<0.005	<0.005	0.3	<0.05	-
	13-May-03	56	<b>0.04</b>	<0.0005	<0.0005	0.0008	0.6	<0.05	-
	14-Oct-03	50	<b>0.022</b>	<0.0005	<0.0005	<0.0005	0.3	<0.05	-
	20-Jan-04	42	<b>0.036</b>	<0.0005	<0.0005	0.0005	0.4	0.07	<b>0.007</b>
<i>duplicate for BH54, labelled BH954</i>			<b>0.033</b>	<0.0005	<0.0005	0.0008	0.6	0.09	<b>0.007</b>
	8-Apr-04	52	<b>0.0095</b>	0.0017	<0.0005	0.0008	0.3	0.06	<0.005
	21-Oct-04	72	0.0037	<0.0005	<0.0005	<0.0005	0.2	<0.05	-
	7-Mar-05	72	0.0047	<0.0005	<0.0005	<0.0005	0.2	<0.05	-
	6-Oct-05	42	0.0033	<0.0005	<0.0005	<0.0005	0.1	<0.05	-
<b>BH505</b>	6-Dec-02	>10,000	<b>1.5</b>	<b>0.21</b>	<b>0.65</b>	<b>1.3</b>	<b>2.2</b>	0.22	-
	13-May-03	>10,000	<b>0.79</b>	<b>0.93</b>	<b>0.011</b>	0.21	<b>7.7</b>	<0.05	-
	15-Oct-03	>10,000	<b>0.14</b>	<b>0.12</b>	<b>0.0037</b>	0.025	0.4	<0.05	-
<i>duplicate of BH505 labelled BH95</i>			<b>0.15</b>	<b>0.13</b>	<b>0.0034</b>	0.025	0.3	<0.05	-
	20-Jan-04	300	<b>0.52</b>	<b>0.32</b>	<b>&lt;0.02</b>	0.07	0.8	0.1	<0.005
	8-Apr-04	>10,000	<b>0.21</b>	<b>0.18</b>	<b>0.0026</b>	0.018	0.6	<0.05	<0.005
	21-Jul-04	4,800	<b>0.53</b>	<b>0.25</b>	<b>0.0087</b>	0.057	0.3	<0.05	-
	3-Nov-04	-	<b>0.28</b>	<b>0.27</b>	<b>0.019</b>	0.11	1.2	<0.05	-
	8-Mar-05	1,800	<b>0.4</b>	<b>0.28</b>	<b>0.033</b>	0.22	0.6	0.17	-
	12-Oct-05	6,600	<b>0.033</b>	0.003	<0.0005	0.0027	0.4	<0.05	-
<i>duplicate of BH505 labelled BH555</i>			<b>0.036</b>	<b>0.0034</b>	<b>&lt;0.0005</b>	<b>0.0029</b>	<b>0.4</b>	<b>&lt;0.05</b>	-
	18-May-06	280	<b>0.11</b>	0.014	<b>0.0055</b>	0.011	1.1	<0.05	-
	8-Feb-07	1,400	0.0048	0.0007	<0.0005	0.0013	<0.1	<0.05	-
	29-May-07	380	<b>0.006</b>	0.00056	<0.0005	<0.0005	<0.1	<0.05	-
<i>duplicate of BH505 labelled BH222</i>			<b>0.00627</b>	<b>0.00087</b>	<b>&lt;0.0005</b>	<b>0.00061</b>	<b>&lt;0.1</b>	<b>&lt;0.05</b>	-
	14-Mar-08	400	<b>0.0277</b>	0.00206	0.00179	<0.0005	0.1	<0.05	-

Notes:

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- < Less than laboratory method detection limits.
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- cnl monitoring well could not be located.
- Italics* indicates a duplicate groundwater sample.
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- NG No Guideline.
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- BTEX Benzene, toluene, ethylbenzene and xylenes.
- PHC Petroleum hydrocarbon concentration fractions.
- ppm parts per million; 120 parts per million= 1% LEL.
- LEL Lower Explosive Limit.
- Bold** Indicates value exceeds the AESRD 2010 Tier 1 Groundwater Remediation Guidelines for Fine-Grained Soil and Residential Land Use.  
See laboratory report for detection limits, testing protocols and QA/QC procedures.

**TABLE 7 SUMMARY OF ALL GROUNDWATER LABORATORY RESULTS 1998-2013**  
**Zone 3 and Surrounding Areas - South of 11<sup>th</sup> Avenue NW**  
**Updated Site Management Plan (2014)**  
**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe Combustible Vapour Concentrations <sup>1</sup> ppm	Benzene	Toluene	Ethyl-benzene	Total Xylenes	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	Lead
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
BH506	6-Dec-02	>10,000	<b>1.7</b>	<b>0.094</b>	<b>0.12</b>	<b>0.86</b>	1.6	<0.05	-
	13-May-03	2,100	0.0007	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	15-Oct-03	5,000	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	30	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	76	<b>1.4</b>	<b>0.03</b>	<b>0.14</b>	<b>0.42</b>	<b>4.2</b>	<0.05	<0.005
	21-Jul-04	46	<b>0.79</b>	0.013	<b>0.032</b>	<b>0.31</b>	<0.1	<0.05	-
	3-Nov-04	-	<b>0.14</b>	0.0012	<b>0.0027</b>	<b>0.059</b>	<0.1	<0.05	-
	9-Mar-05	80	<b>1</b>	0.015	<b>0.057</b>	<b>0.38</b>	0.5	<0.05	-
	12-Oct-05	-	0.0007	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	120	<b>0.098</b>	0.0010	<b>0.0060</b>	0.041	<0.1	<0.05	-
	8-Feb-07	72	<b>0.0078</b>	<0.0005	<0.0005	0.0031	<0.1	<0.05	-
	30-May-07	30	<b>&lt;0.020</b>	<0.020	<b>&lt;0.020</b>	<b>&lt;4.4</b>	<0.1	<0.05	-
	18-Mar-08	260	0.00053	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-Oct-08	0	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	8-May-13	10	0.0026	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-
BH507	6-Dec-02	>10,000	<b>1.1</b>	<b>0.055</b>	<b>0.086</b>	0.094	<b>2.8</b>	0.07	-
	13-May-03	>10,000	<b>1.1</b>	<b>0.081</b>	<b>0.27</b>	<b>1.1</b>	<b>6.4</b>	0.27	-
	15-Oct-03	4,600	<b>0.93</b>	<b>0.04</b>	<b>0.069</b>	0.21	0.4	0.16	-
<i>duplicate of BH507 labelled BH97</i>			<i>0.98</i>	<i>0.064</i>	<i>0.12</i>	<i>0.43</i>	<i>1.5</i>	0.23	-
duplicate of BH507 labelled BH97	20-Jan-04	1,200	<b>2.2</b>	<b>0.066</b>	<b>0.061</b>	<b>0.32</b>	<b>2.3</b>	0.19	<0.005
	8-Apr-04	98	<b>0.76</b>	<b>0.053</b>	<b>0.11</b>	0.3	0.5	0.15	<0.005
	21-Jul-04	42	<b>1.3</b>	<b>0.072</b>	<b>0.055</b>	0.22	0.5	0.16	-
	3-Nov-04	-	<b>1.6</b>	<b>0.037</b>	<b>0.015</b>	0.067	0.4	0.07	-
	8-Mar-05	26	<b>0.6</b>	<b>0.028</b>	<b>0.022</b>	0.022	0.8	0.08	-
	12-Oct-05	110	<b>0.49</b>	<b>0.033</b>	<b>0.045</b>	0.017	0.4	<0.05	-
	18-May-06	84	<b>0.84</b>	<b>0.034</b>	<b>0.035</b>	0.009	0.5	0.07	-
	8-Feb-07	75	<b>0.46</b>	<b>0.062</b>	<b>0.066</b>	0.029	0.6	0.10	-
	29-May-07	56	<b>0.615</b>	<b>0.0505</b>	<b>0.092</b>	0.0689	0.6	0.33	-
	14-Mar-08	220	<b>0.979</b>	<b>0.106</b>	<b>0.299</b>	<b>0.469</b>	1.6	0.11	-

Notes:

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- BTEX Benzene, toluene, ethylbenzene and xylenes.
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**Bold** Indicates value exceeds the AESRD 2010 Tier 1 Groundwater Remediation Guidelines for Fine-Grained Soil and Residential Land Use.  
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Updated Site Management Plan (2014)  
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CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe	Benzene mg/L	Toluene mg/L	Ethyl-benzene mg/L	Total Xylenes mg/L	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> mg/L	PHC F2 >C <sub>10</sub> -C <sub>16</sub> mg/L	Lead mg/L
		Combustible Vapour Concentrations <sup>1</sup> ppm							
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>									
			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<b>BH508</b>	6-Dec-02	180	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	13-May-03	48	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	14-Oct-03	60	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Apr-04	96	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	21-Jul-04	48	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	3-Nov-04	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Mar-05	2	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	62	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	84	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Feb-07	118	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	25-May-07	65	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	13-Mar-08	200	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
<b>BH601</b>	14-Aug-03	75	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
<b>BH602</b>	14-Aug-03	120	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
<b>BH603</b>	14-Aug-03	20	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
<b>BH703</b>	14-Oct-03	60	<b>0.64</b>	<0.003	<0.003	<0.003	<0.1	<0.05	-
	20-Jan-04	40	<b>1.3</b>	<0.02	<0.02	<0.02	1.7	<0.05	<0.005
	8-Apr-04	70	<b>1.5</b>	<b>0.094</b>	<b>0.011</b>	0.07	1.8	<0.05	<0.005
	21-Jul-04	54	<b>2.3</b>	<0.02	<0.02	<0.02	<0.1	<0.05	-
	3-Nov-04	-	<b>2.3</b>	0.0006	<0.0005	<0.0005	0.3	<0.05	-
<i>duplicate for BH703 labelled BH807</i>									
	8-Mar-05	44	<b>2.6</b>	0.012	0.0012	0.0089	<b>3.4</b>	<0.05	-
	7-Oct-05	98	<b>3.5</b>	0.0079	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	220	<b>3.8</b>	0.0096	<0.0005	0.0005	<0.1	<0.05	-
	8-Feb-07	72	<b>0.91</b>	0.0079	<0.0005	0.0006	<0.1	<0.05	-
	25-May-07	75	<b>0.00627</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	13-Mar-08	200	<b>0.0635</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-

Notes:

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			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>									
			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<b>BH704</b>	14-Oct-03	55	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	42	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<b>&lt;0.005</b>
	8-Apr-04	84	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<b>&lt;0.005</b>
	21-Jul-04	38	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	3-Nov-04	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Mar-05	8	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	50	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	64	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Feb-07	48	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	25-May-07	50	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	13-Mar-08	210	0.004	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
<b>BH706</b>	14-Oct-03	>10,000	<b>2.9</b>	<b>1.8</b>	<b>1.3</b>	<b>4.9</b>	<b>7.3</b>	0.7	-
	20-Jan-04	800	<b>3.5</b>	<b>4.3</b>	<b>2.1</b>	<b>10</b>	<b>10</b>	5.9	<b>0.009</b>
<i>duplicate of BH706 labelled BH96</i>			<b>3.2</b>	<b>2.1</b>	<b>1.4</b>	<b>5.3</b>	<b>4.0</b>	0.72	-
<b>BH707</b>	15-Oct-03	6,500	<b>1.9</b>	<b>0.18</b>	<b>0.29</b>	<b>0.69</b>	1.1	0.39	-
	20-Jan-04	15	<b>2.9</b>	<b>0.74</b>	<b>1.4</b>	<b>4.5</b>	<b>7.3</b>	0.6	<b>&lt;0.005</b>
<i>duplicate for BH707, labelled 707B</i>			<b>3.9</b>	<b>0.46</b>	<b>1.5</b>	<b>3.7</b>	<b>8.7</b>	0.53	<b>&lt;0.005</b>
	8-Apr-04	4,200	<b>3.4</b>	<b>0.62</b>	<b>2.1</b>	<b>5.8</b>	<b>7.9</b>	0.59	<b>&lt;0.005</b>
<i>duplicate for BH707, labelled 777</i>			<b>3.6</b>	<b>0.38</b>	<b>1.3</b>	<b>3.8</b>	<b>11</b>	0.65	<b>&lt;0.005</b>
	21-Jul-04	1,300	<b>1.9</b>	<b>0.22</b>	<b>1.1</b>	<b>3</b>	<b>2.2</b>	0.49	-
<i>duplicate for BH707 labelled BH797</i>			<b>2.2</b>	<b>0.24</b>	<b>1.0</b>	<b>2.2</b>	<b>2.7</b>	0.42	-
	3-Nov-04	-	<b>0.88</b>	<b>0.041</b>	<b>0.82</b>	<b>1.4</b>	<b>5.8</b>	0.31	-
	8-Mar-05	260	<b>1.4</b>	<b>0.044</b>	<b>0.83</b>	<b>1.5</b>	<b>2.8</b>	0.41	-
	12-Oct-05	540	<b>3.3</b>	<b>0.078</b>	<b>0.56</b>	<b>0.76</b>	1.3	0.11	-
	18-May-06	300	<b>2.4</b>	<b>0.20</b>	<b>0.73</b>	<b>2.1</b>	1.2	0.31	-
	8-Feb-07	2,000	<b>1.4</b>	<b>0.14</b>	<b>0.83</b>	<b>1.9</b>	<b>2.2</b>	0.15	-
	29-May-07	180	<b>1.06</b>	<b>0.125</b>	<b>1.05</b>	<b>2.35</b>	<b>11</b>	0.64	-
	14-Mar-08	>10,000	<b>1.0</b>	<b>0.0345</b>	<b>0.399</b>	0.214	2.1	0.18	-
<i>duplicate of BH707 labeled BH7000</i>			<b>1.24</b>	<b>0.0464</b>	<b>0.488</b>	<b>0.399</b>	<b>1.8</b>	<b>0.16</b>	-

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- cnl monitoring well could not be located.
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- \* detection limits raised due to dilution.
- NG No Guideline.
- not measured or no data available.
- BTEX Benzene, toluene, ethylbenzene and xylenes.
- PHC Petroleum hydrocarbon concentration fractions.
- ppm parts per million; 120 parts per million= 1% LEL.
- LEL Lower Explosive Limit.

**Bold** Indicates value exceeds the AESRD 2010 Tier 1 Groundwater Remediation Guidelines for Fine-Grained Soil and Residential Land Use.  
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**TABLE 7 SUMMARY OF ALL GROUNDWATER LABORATORY RESULTS 1998-2013  
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Updated Site Management Plan (2014)  
Hounsfield Heights - Briar Hill Community  
CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe Combustible Vapour Concentrations <sup>1</sup> ppm	Benzene	Toluene	Ethyl-benzene	Total Xylenes	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	Lead
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>									
			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<b>BH708</b>	15-Oct-03	6,200	<b>7.8</b>	<b>0.1</b>	<b>0.73</b>	<b>1.8</b>	<b>4</b>	0.44	-
	20-Jan-04	20	<b>8.1</b>	<b>0.049</b>	<b>0.26</b>	<b>0.66</b>	<b>4.4</b>	0.17	<b>&lt;0.005</b>
	8-Apr-04	82	<b>4.7</b>	<b>0.17</b>	<b>1.3</b>	<b>2.7</b>	<b>12</b>	0.31	<b>&lt;0.005</b>
	21-Jul-04	42	<b>6.6</b>	<b>&lt;0.1</b>	<b>0.23</b>	<b>0.34</b>	<b>2.2</b>	0.12	-
	3-Nov-04	-	<b>3.6</b>	<b>0.12</b>	<b>0.57</b>	<b>1.1</b>	<b>3.9</b>	0.24	-
	8-Mar-05	82	<b>3.4</b>	<b>0.047</b>	<b>0.56</b>	<b>1.2</b>	<b>2.4</b>	0.22	-
	12-Oct-05	125	<b>3.5</b>	<b>0.054</b>	<b>0.37</b>	<b>0.72</b>	<b>1.9</b>	0.31	-
	18-May-06	200	<b>2.1</b>	<b>0.060</b>	<b>0.80</b>	<b>2.1</b>	<b>2.5</b>	0.28	-
	8-Feb-07	82	<b>1.9</b>	<b>0.081</b>	<b>0.67</b>	<b>1.7</b>	<b>2.2</b>	0.47	-
	29-May-07	50	<b>1.7</b>	<b>0.112</b>	<b>0.805</b>	<b>1.8</b>	<b>1.2</b>	0.62	-
<b>BH709</b>	15-Oct-03	7,500	<b>0.0076</b>	0.01	<b>0.015</b>	0.089	0.3	<0.05	-
	20-Jan-04	1,150	<b>0.0051</b>	0.0022	0.0015	0.0079	<0.1	<0.05	<b>&lt;0.005</b>
	8-Apr-04	1,100	<b>0.0098</b>	0.0013	<0.0005	0.0012	<0.1	<0.05	<b>&lt;0.005</b>
	21-Jul-04	190	<b>0.022</b>	0.0018	<b>0.003</b>	0.03	<0.1	<0.05	-
	3-Nov-04	-	0.0023	<0.0005	<0.0005	0.0008	<0.1	<0.05	-
	8-Mar-05	140	<b>0.54</b>	<b>0.26</b>	<b>0.056</b>	0.21	0.3	<0.05	-
	12-Oct-05	40	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
<i>duplicate for BH709 labelled BH799</i>			<0.0005	<0.0005	<0.0005	<0.0005	<0.1	0.37	-
	18-May-06	200	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	56	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	14-Mar-08	280	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-

Notes:

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- mg/L milligrams per litre
- < Less than laboratory method detection limits.
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			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>									
			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<b>BH710</b>	15-Oct-03	>10,000	<b>11</b>	<b>0.53</b>	<b>1.4</b>	<b>6.1</b>	<b>7.8</b>	0.65	-
	20-Jan-04	1,200	<b>11</b>	<b>0.64</b>	<b>1.8</b>	<b>7.4</b>	<b>11</b>	0.47	<b>0.006</b>
	8-Apr-04	280	<b>14</b>	<b>0.72</b>	<b>2.4</b>	<b>8.8</b>	<b>12</b>	0.48	<b>&lt;0.005</b>
	21-Jul-04	60	<b>18</b>	<b>0.13</b>	<b>0.67</b>	<b>0.96</b>	<0.1	0.6	-
	3-Nov-04	-	<b>12</b>	<b>0.64</b>	<b>1.4</b>	<b>5.5</b>	<b>3.8</b>	0.31	-
	8-Mar-05	160	<b>9.9</b>	<b>0.72</b>	<b>1.6</b>	<b>5.7</b>	<b>4.3</b>	0.51	-
	12-Oct-05	10	<b>8.7</b>	<b>0.98</b>	<b>1.8</b>	<b>3.9</b>	<b>4.7</b>	0.29	-
	18-May-06	40	<b>8.5</b>	<b>0.30</b>	<b>1.7</b>	<b>2.2</b>	<b>5.3</b>	0.39	-
	8-Feb-07	180	<b>3.7</b>	<b>0.062</b>	<b>0.66</b>	<b>0.72</b>	<b>1.2</b>	0.63	-
<i>duplicate of BH710 labelled BH444</i>									
	29-May-07	20	<b>0.0136</b>	<0.00050	<b>0.00401</b>	0.00434	<0.1	<0.05	-
	14-Mar-08	280	<b>4.42</b>	<b>0.0243</b>	<b>0.805</b>	0.245	1.0	0.15	-
<b>BH711</b>	15-Oct-03	3,000	<b>3.6</b>	<b>0.018</b>	<b>0.35</b>	<b>0.75</b>	<b>2.4</b>	0.15	-
	20-Jan-04	50	<b>4.8</b>	<b>0.034</b>	<b>0.4</b>	<b>0.76</b>	<b>1.3</b>	0.08	<b>&lt;0.005</b>
<i>duplicate for BH711, labelled 711B</i>									
	8-Apr-04	42	<b>4.9</b>	<b>0.035</b>	<b>0.36</b>	<b>0.77</b>	<b>1.4</b>	0.09	<b>&lt;0.005</b>
	21-Jul-04	62	<b>5.2</b>	<b>0.039</b>	<b>0.62</b>	<b>0.65</b>	<b>10</b>	0.11	<b>&lt;0.005</b>
	3-Nov-04	-	<b>4.9</b>	<0.1	<b>0.41</b>	<b>0.49</b>	0.6	0.14	-
	8-Mar-05	56	<b>6.1</b>	0.023	<b>0.49</b>	<b>0.46</b>	<0.1	0.1	-
	12-Oct-05	120	<b>4.3</b>	0.021	<b>0.43</b>	<b>0.38</b>	0.9	0.12	-
	18-May-06	60	<b>4.5</b>	<b>0.028</b>	<b>0.63</b>	<b>0.66</b>	1.2	<0.05	-
<i>duplicate of BH711 labelled BH888</i>									
	16-Oct-12	95	<b>4.4</b>	0.019	<b>0.42</b>	<b>0.44</b>	0.4	0.09	-
	8-May-13	85	<b>0.365</b>	0.022	<b>0.44</b>	<b>0.47</b>	0.5	0.14	-
			<b>0.14</b>	0.00489	<b>0.021</b>	0.00529	0.17	<0.25	-
			<b>0.14</b>	0.0019	<b>0.0078</b>	0.0034	0.29	<0.10	-

Notes:

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	dd-mmm-yy	ppm	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>	
BH712	16-Oct-03	50	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	20-Jan-04	73	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005	
	8-Apr-04	28	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005	
	21-Jul-04	160	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	21-Oct-04	80	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	3-Nov-04	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	4-Mar-05	64	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	11-Oct-05	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	19-May-06	90	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	8-Feb-07	138	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	30-May-07	55	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
18-Mar-08	40	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-		
BH713	16-Oct-03	65	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	0.32	-	
	20-Jan-04	65	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005	
	8-Apr-04	26	<b>0.019</b>	0.023	<b>0.0035</b>	0.019	<0.1	<0.05	<0.005	
	21-Oct-04	78	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	4-Mar-05	90	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	7-Oct-05	25	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	17-May-06	100	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	2-Feb-07	74	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	<i>duplicate of BH713 labelled BH777</i>			<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	39	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
12-Mar-08	34	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-		

Notes:

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			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>									
			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<b>BH714</b>	16-Oct-03	65	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	47	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
<i>duplicate for BH714, labelled BH147</i>	8-Apr-04	38	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	21-Oct-04	60	0.0038	0.0047	0.0007	0.0053	<0.1	<0.05	<0.005
	8-Mar-05	160	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	17-May-06	60	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	2-Feb-07	64	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	45	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	12-Mar-08	46	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
<b>BH715</b>	16-Oct-03	50	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	0.27	-
	20-Jan-04	70	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	36	<b>0.01</b>	0.011	<0.0005	0.0012	<0.1	<0.05	<0.005
	21-Oct-04	78	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Mar-05	40	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	17-May-06	100	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	2-Feb-07	52	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	92	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	12-Mar-08	24	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
<i>duplicate of BH715 labelled BH4000</i>			<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
<b>BH717</b>	16-Oct-03	40	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	58	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	32	0.001	0.0011	<0.0005	0.0013	<0.1	<0.05	<0.005
	21-Oct-04	60	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Mar-05	40	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	17-May-06	20	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	2-Feb-07	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	29	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	12-Mar-08	38	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-

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			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
BH718	16-Oct-03	45	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	0.17	-
	20-Jan-04	76	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	38	0.0014	0.0016	<0.0005	0.0014	<0.1	<0.05	<0.005
	21-Oct-04	62	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Mar-05	20	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	25	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	17-May-06	20	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	2-Feb-07	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	30	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	12-Mar-08	66	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
BH719	16-Oct-03	55	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	73	0.0009	0.001	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	22	0.0028	0.0034	<0.0005	0.0031	<0.1	<0.05	<0.005
	21-Jul-04	120	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	21-Oct-04	72	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	3-Nov-04	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	9-Mar-05	74	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	11-Oct-05	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	19-May-06	86	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Feb-07	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	0.21	-
	30-May-07	24	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-Mar-08	12	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	5-Nov-12	0	<b>&lt;0.025</b>	<b>&lt;0.025</b>	<b>&lt;0.025</b>	<0.025	<0.025	<0.50	-
8-May-13	55	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-	

Notes:

- <sup>1</sup> Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle, calibrated to hexane with methane exclusion.
- mg/L milligrams per litre
- < Less than laboratory method detection limits.
- ND not detected, values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).
- cnl monitoring well could not be located.
- Italics* indicates a duplicate groundwater sample.
- \* detection limits raised due to dilution.
- NG No Guideline.
- not measured or no data available.
- BTEX Benzene, toluene, ethylbenzene and xylenes.
- PHC Petroleum hydrocarbon concentration fractions.
- ppm parts per million; 120 parts per million= 1% LEL.
- LEL Lower Explosive Limit.
- Bold** Indicates value exceeds the AESRD 2010 Tier 1 Groundwater Remediation Guidelines for Fine-Grained Soil and Residential Land Use.  
See laboratory report for detection limits, testing protocols and QA/QC procedures.

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Zone 3 and Surrounding Areas - South of 11<sup>th</sup> Avenue NW  
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CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe Combustible Vapour Concentrations <sup>1</sup> ppm	Benzene	Toluene	Ethyl-benzene	Total Xylenes	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> mg/L	PHC F2 >C <sub>10</sub> -C <sub>16</sub> mg/L	Lead mg/L
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>									
			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<b>BH720</b>	16-Oct-03	50	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	25	0.0007	0.0009	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	200	0.0012	0.0016	<0.0005	0.0013	<0.1	<0.05	<0.005
	21-Oct-04	56	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Mar-05	44	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	65	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	17-May-06	18	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	2-Feb-07	108	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	32	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
<b>BH721</b>	16-Oct-03	50	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	25	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	6	0.0017	0.0021	<0.0005	0.0017	<0.1	<0.05	<0.005
	21-Jul-04	88	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	21-Oct-04	50	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Mar-05	54	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	40	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	17-May-06	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	2-Feb-07	20	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	12-Mar-08	32	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
<b>BH722</b>	16-Oct-03	55	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	50	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	22	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	21-Jul-04	180	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	21-Oct-04	56	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Mar-05	56	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	125	0.0023	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	17-May-06	200	<b>0.016</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	2-Feb-07	44	<b>0.054</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	66	<b>0.0427</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	12-Mar-08	72	<b>0.0763</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-

Notes:

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- mg/L milligrams per litre
- < Less than laboratory method detection limits.
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- BTEX Benzene, toluene, ethylbenzene and xylenes.
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Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe Combustible Vapour Concentrations <sup>1</sup> ppm	Benzene	Toluene	Ethyl-benzene	Total Xylenes	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	Lead
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>									
			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<b>BH731</b>	16-Oct-03	40	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	21	<0.0005	0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	12	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	21-Jul-04	84	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	21-Oct-04	70	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Mar-05	60	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	40	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	17-May-06	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	2-Feb-07	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	14	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
12-Mar-08	22	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
<b>BH732</b>	16-Oct-03	60	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	54	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	12	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	21-Jul-04	41	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	3-Nov-04	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	9-Mar-05	60	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	11-Oct-05	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	19-May-06	180	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Feb-07	82	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	30-May-07	42	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-Mar-08	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	3-Jun-11	40	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	14-Sep-11	-	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	22-Dec-11	40	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	29-Mar-12	82	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
25-Oct-12	0	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-	
<i>duplicate for BH732 labelled BH2732</i>			<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
7-May-13	0	0.0012	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-	

Notes:

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**CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe	Benzene mg/L	Toluene mg/L	Ethyl-benzene mg/L	Total Xylenes mg/L	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> mg/L	PHC F2 >C <sub>10</sub> -C <sub>16</sub> mg/L	Lead mg/L
		Combustible Vapour Concentrations <sup>1</sup> ppm							
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.									
			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
BH733	16-Oct-03	60	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	60	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	54	<b>0.12</b>	0.017	<0.005	0.0046	<0.1	<0.05	<0.005
	21-Jul-04	38	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	3-Nov-04	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Mar-05	74	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	60	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	98	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Feb-07	160	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	54	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	14-Mar-08	80	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	16-Oct-12	50	<b>1.16</b>	<0.00050	<0.00050	<0.00071	0.44	<0.25	-
	7-May-13	75	<b>1.4*</b>	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-
BH734	15-Oct-03	60	0.0042	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	15	<b>4.0</b>	0.0065	<b>0.12</b>	0.024	<b>4.1</b>	0.07	<0.005
	8-Apr-04	46	<b>3.6</b>	<b>0.59</b>	<b>0.0094</b>	<b>0.36</b>	<b>20</b>	<0.05	<0.005
	21-Jul-04	32	<b>0.075</b>	<0.0005	0.002	<0.0005	<0.1	<0.05	-
	3-Nov-04	-	<b>1.6</b>	0.0011	<b>0.032</b>	0.0029	0.2	<0.05	-
	9-Mar-05	300	<b>2.4</b>	0.0035	<b>0.058</b>	0.11	1.1	<0.05	-
	11-Oct-05	-	0.0006	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	19-May-06	80	0.0022	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Feb-07	160	<b>0.040</b>	<0.0005	<0.0005	0.0015	0.2	<0.05	-
	30-May-07	125	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	28-Mar-12	18	<b>0.0495</b>	0.00257	0.00067	0.00547	0.58	<0.25	-
	16-Oct-12	170	<b>0.0149</b>	0.00082	<0.00050	0.00124	<0.10	<0.25	-
	7-May-13	0	<b>0.034</b>	0.00093	0.00084	0.0048	0.67	<0.10	-

Notes:

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mg/L milligrams per litre

< Less than laboratory method detection limits.

ND not detected, values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).

cnl monitoring well could not be located.

*Italics* indicates a duplicate groundwater sample.

\* detection limits raised due to dilution.

NG No Guideline.

- not measured or no data available.

BTEX Benzene, toluene, ethylbenzene and xylenes.

PHC Petroleum hydrocarbon concentration fractions.

ppm parts per million; 120 parts per million= 1% LEL.

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Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe Combustible Vapour Concentrations <sup>1</sup> ppm	Benzene	Toluene	Ethyl-benzene	Total Xylenes	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	Lead	
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>	
BH735	15-Oct-03	45	<b>0.014</b>	<0.0005	0.0007	<0.0005	<0.1	<0.05	-	
	20-Jan-04	20	0.002	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005	
	8-Apr-04	28	<b>0.026</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005	
	21-Jul-04	39	<b>0.011</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	3-Nov-04	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	4-Mar-05	86	<b>0.019</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	7-Oct-05	10	<b>0.31</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	18-May-06	38	<b>0.34</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	8-Feb-07	68	<b>0.10</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	29-May-07	120	<b>0.1090</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	<i>duplicate of BH735 labelled BH555</i>			<b>0.0932</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	13-Mar-08	260	<b>0.3750</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	BH736	15-Oct-03	45	<b>2.5</b>	<b>0.032</b>	<0.0005	0.066	1.1	<0.05	-
20-Jan-04		75	<b>4.0</b>	<b>0.063</b>	0.0005	0.23	<b>3.9</b>	<0.05	<0.005	
8-Apr-04		30	<b>4.9</b>	<b>0.42</b>	<0.0005	<b>0.48</b>	<b>20</b>	0.06	<0.005	
21-Jul-04		42	<b>1.9</b>	<b>0.033</b>	<b>0.027</b>	0.083	0.9	<0.05	-	
3-Nov-04		-	<b>2.0</b>	<b>0.025</b>	<0.0005	0.089	0.3	<0.05	-	
4-Mar-05		84	<b>4.2</b>	<b>0.074</b>	<0.0005	<b>0.36</b>	0.1	0.05	-	
7-Oct-05		22	<b>0.17</b>	0.0041	<0.0005	0.028	<0.1	<0.05	-	
18-May-06		82	<b>6.7</b>	<b>0.12</b>	0.0009	<b>0.64</b>	<0.1	0.05	-	
8-Feb-07		56	<b>4.5</b>	<b>0.035</b>	<0.0005	0.076	<0.1	<0.05	-	
29-May-07		10	<b>1.86</b>	<b>0.0818</b>	0.001	0.0933	0.3	<0.05	-	
13-Mar-08		90	<b>1.68</b>	0.00903	<0.0005	0.0237	<0.1	<0.05	-	
<i>duplicate of BH736 labelled BH5000</i>			<b>1.71</b>	<b>0.00919</b>	<0.0005	<b>0.0243</b>	<0.1	<0.05	-	
29-Sep-10		20	<b>0.103</b>	<0.00050	0.00217	0.00181	0.12	<0.25	-	
3-Jun-11		60	<b>0.0501</b>	0.00091	<0.00050	0.00086	<0.10	<0.25	-	
14-Sep-11		10	<b>0.0941</b>	<0.0025	<b>&lt;0.0025</b>	<0.0025	<0.1	<0.25	-	
22-Dec-11		25	<b>0.0208</b>	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-	
5-Mar-12	8	<b>0.116</b>	0.00147	<0.00050	0.00182	0.12	<0.25	-		
16-Oct-12	155	<b>0.010</b>	<0.00050	<0.00050	<0.00071	<0.10	<0.25	-		
7-May-13	270	<b>0.093</b>	0.0011	<0.00040	0.0011	<0.10	<0.10	-		

Notes:

- <sup>1</sup> Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle, calibrated to hexane with methane exclusion.
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- not measured or no data available.
- BTEX Benzene, toluene, ethylbenzene and xylenes.
- PHC Petroleum hydrocarbon concentration fractions.
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**Bold** Indicates value exceeds the AESRD 2010 Tier 1 Groundwater Remediation Guidelines for Fine-Grained Soil and Residential Land Use.  
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**CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe Combustible Vapour Concentrations <sup>1</sup> ppm	Benzene	Toluene	Ethyl-benzene	Total Xylenes	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	Lead
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
BH737	16-Oct-03	55	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	73	0.0007	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	16	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	21-Jul-04	40	<b>0.0073</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	3-Nov-04	-	<b>0.041</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Mar-05	74	<b>0.24</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	10	<b>0.66</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	32	<b>0.36</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Feb-07	60	<b>0.54</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	32	<b>0.412</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	14-Mar-08	20	<b>0.507</b>	<0.0025	<0.0005	<0.0005	<0.1	<0.05	-
	16-Oct-12	55	<b>3.83</b>	<0.00050	<0.00050	<0.00071	<0.1	<0.25	-
	7-May-13	125	<b>6.0*</b>	<0.00040	<0.00040	0.0011	<1.0*	<0.10	-
BH740	15-Oct-03	45	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	9-Mar-05	20	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	160	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
18-May-06	200	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
<i>duplicate for BH740 labelled BH9999</i>			<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	25-May-07	50	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	13-Mar-08	26	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	25-Oct-12	50	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	7-May-13	185	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-
<i>Duplicate(QC1)</i>			<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-
BH741	15-Oct-03	49	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Apr-04	70	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	3-Nov-04	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	9-Mar-05	18	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	76	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	64	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	25-May-07	40	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-

Notes:

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- cnl monitoring well could not be located.
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- not measured or no data available.
- BTEX Benzene, toluene, ethylbenzene and xylenes.
- PHC Petroleum hydrocarbon concentration fractions.
- ppm parts per million; 120 parts per million= 1% LEL.
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Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe	Benzene mg/L	Toluene mg/L	Ethyl-benzene mg/L	Total Xylenes mg/L	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> mg/L	PHC F2 >C <sub>10</sub> -C <sub>16</sub> mg/L	Lead mg/L
		Combustible Vapour Concentrations <sup>1</sup> ppm							
<b>Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.</b>									
			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<b>BH742</b>	15-Oct-03	62	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Apr-04	58	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<b>&lt;0.005</b>
	4-Nov-04	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	4-Mar-05	42	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	84	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	70	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	25-May-07	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	0.17	-
	25-Oct-12	0	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	7-May-13	105	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-
<b>BH743</b>	15-Oct-03	25	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	53	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<b>&lt;0.005</b>
	8-Apr-04	10	0.0006	0.0008	<0.0005	0.0012	<0.1	<0.05	<b>&lt;0.005</b>
	3-Nov-04	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	4-Mar-05	62	<0.0005	0.0005	<0.0005	0.0026	<0.1	<0.05	-
	7-Oct-05	90	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	70	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Feb-07	50	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
<i>duplicate for BH743 labelled BH333</i>									
	25-May-07	50	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	13-Mar-08	30	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
<b>BH744</b>	15-Oct-03	25	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	20-Jan-04	91	<b>0.009</b>	<b>0.49</b>	<b>0.2</b>	<b>2.2</b>	<b>3.3</b>	<b>1.7</b>	<b>&lt;0.005</b>
	8-Apr-04	8	<0.0005	0.0006	<0.0005	<0.0005	<0.1	<0.05	<b>&lt;0.005</b>
	21-Jul-04	18	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	3-Nov-04	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	11-Mar-05	30	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	12-Oct-05	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	19-May-06	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	30-May-07	25	<b>&lt;0.020</b>	<0.020	<b>&lt;0.020</b>	<b>&lt;4.4</b>	<0.1	<0.05	-
	18-Mar-08	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-May-13	150	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-

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Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe Combustible Vapour Concentrations <sup>1</sup> ppm	Benzene	Toluene	Ethyl-benzene	Total Xylenes	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	Lead
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
BH801	14-Oct-03	2,000	<b>0.1</b>	<b>0.17</b>	<b>0.0032</b>	0.11	0.6	<0.05	-
	21-Jul-04	32	<b>0.071</b>	<b>0.034</b>	0.002	0.018	<0.1	<0.05	-
	3-Nov-04	-	<b>0.058</b>	<b>0.045</b>	0.0016	0.022	<0.1	<0.05	-
	4-Mar-05	56	<b>0.049</b>	0.021	0.002	0.015	<0.1	<0.05	-
BH802	14-Oct-03	40	<b>0.085</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	21-Jul-04	44	<b>2.3</b>	< <b>0.04</b>	< <b>0.04</b>	<0.04	<0.1	<0.05	-
	3-Nov-04	-	<b>2.7</b>	0.0008	<0.0005	<0.0005	<0.1	<0.05	-
	4-Mar-05	52	<b>3.6</b>	0.0019	<0.0005	0.0005	<0.1	<0.05	-
BH803	14-Oct-03	35	0.0006	0.0007	<0.0005	<0.0005	<0.1	<0.05	-
	21-Jul-04	28	<0.0005	<0.0005	< <b>0.04</b>	<0.0005	<0.1	<0.05	-
	3-Nov-04	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Mar-05	54	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
BH905	18-Mar-04	40	<b>3.2</b>	<b>0.034</b>	0.0007	0.21	0.4	<0.05	< <b>0.005</b>
	8-Apr-04	40	<b>4.9</b>	<b>0.12</b>	0.0012	<b>0.41</b>	<b>10</b>	<0.05	< <b>0.005</b>
	21-Jul-04	41	<b>3.9</b>	< <b>0.1</b>	<0.1	0.15	0.2	<0.05	-
	3-Nov-04	-	<b>4.1</b>	0.0075	<0.0005	0.06	1.1	<0.05	-
	4-Mar-05	84	<b>4.8</b>	<b>0.011</b>	<0.0005	0.1	0.4	<0.05	-
	7-Oct-05	20	<b>0.36</b>	0.0013	<0.0005	0.0055	0.1	<0.05	-
	18-May-06	40	<b>1.8</b>	0.0046	<0.0005	0.044	<0.1	<0.05	-
	8-Feb-07	48	<b>2.0</b>	0.0047	<0.0005	0.031	<0.1	<0.05	-
	29-May-07	66	<b>0.0140</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	14-Mar-08	180	<b>2.0</b>	0.0059	0.00195	0.0224	0.7	<0.05	-
	16-Oct-12	20	<b>0.175</b>	0.0067	<b>0.0352</b>	0.0135	0.33	<0.25	-
	7-May-13	125	<b>0.14</b>	0.0033	<b>0.0046</b>	0.014	0.42	<0.10	-

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			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>	
BH907	18-Mar-04	240	<b>1.4</b>	<0.0005	<0.0005	<0.0005	0.2	<0.05	<0.005	
	8-Apr-04	18	<b>1.1</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005	
	21-Jul-04	34	<b>1.6</b>	<0.04	<0.04	<0.04	<0.1	<0.05	-	
	21-Oct-04	72	<b>2.0</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	4-Mar-05	320	<b>0.94</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	7-Oct-05	120	<b>0.13</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	18-May-06	88	<b>0.64</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	5-Feb-07	100	<b>0.18</b>	0.0008	<0.0005	0.0010	<0.1	<0.05	-	
	29-May-07	50	<b>0.0472</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	13-Mar-08	74	<b>0.184</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	22-Dec-11	25	<b>0.791</b>	<0.00050	<0.00050	<0.00050	0.81	<0.25	-	
	29-Mar-12	70	<b>0.629</b>	<0.00050	<0.00050	0.00096	0.62	<0.25	-	
	<i>duplicate for BH907 labelled BH977</i>			<b>0.772</b>	<0.0050	<0.0050	<0.0050	0.74	<0.25	-
	25-Oct-12	110	<b>1.110</b>	<0.00050	<0.00050	<0.00050	<4.4	<0.25	-	
	8-May-13	0	<b>0.52</b>	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-	
BH908	18-Mar-04	12	<b>0.21</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005	
	8-Apr-04	74	<b>0.73</b>	<0.0005	<0.0005	<0.0005	2	<0.05	<0.005	
	21-Jul-04	44	<b>0.21</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	3-Nov-04	-	<b>0.65</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	8-Mar-05	80	<b>1.2</b>	<0.0005	<0.0005	<0.0005	1.2	<0.05	-	
	7-Oct-05	120	<b>0.31</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	18-May-06	98	<b>0.096</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	
	<i>duplicate for BH908 labelled BH1111</i>			<b>0.084</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	<i>duplicate for BH908 labelled BH111</i>			0.0022	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
		29-May-07	58	0.00402	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-Mar-08	180	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-	

Notes:

- 1 Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle, calibrated to hexane with methane exclusion.
- mg/L milligrams per litre
- < Less than laboratory method detection limits.
- ND not detected, values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).
- cnl monitoring well could not be located.
- Italics* indicates a duplicate groundwater sample.
- \* detection limits raised due to dilution.
- NG No Guideline.
- not measured or no data available.
- BTEX Benzene, toluene, ethylbenzene and xylenes.
- PHC Petroleum hydrocarbon concentration fractions.
- ppm parts per million; 120 parts per million= 1% LEL.
- LEL Lower Explosive Limit.
- Bold** Indicates value exceeds the AESRD 2010 Tier 1 Groundwater Remediation Guidelines for Fine-Grained Soil and Residential Land Use.  
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Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe	Benzene mg/L	Toluene mg/L	Ethyl-benzene mg/L	Total Xylenes mg/L	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub> mg/L	PHC F2 >C <sub>10</sub> -C <sub>16</sub> mg/L	Lead mg/L
		Combustible Vapour Concentrations <sup>1</sup> ppm							
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
BH909	18-Mar-04	60	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	12	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	21-Jul-04	24	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	22-Oct-04	56	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	4-Mar-05	68	<b>0.033</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	55	<b>0.015</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	32	<b>0.15</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	5-Feb-07	70	<b>0.29</b>	0.0007	<0.0005	0.0007	<0.1	<0.05	-
	29-May-07	30	<b>0.129</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	13-Mar-08	100	<b>0.262</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
BH912	18-Mar-04	82	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	56	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	21-Jul-04	54	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	3-Nov-04	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	4-Mar-05	94	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	140	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	17-May-06	72	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Feb-07	100	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	30	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	13-Mar-08	16	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	28-Mar-12	200	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	25-Oct-12	85	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	7-May-13	165	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-

Notes:

1 Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle, calibrated to hexane with methane exclusion.

mg/L milligrams per litre

< Less than laboratory method detection limits.

ND not detected, values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).

cnl monitoring well could not be located.

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NG No Guideline.

- not measured or no data available.

BTEX Benzene, toluene, ethylbenzene and xylenes.

PHC Petroleum hydrocarbon concentration fractions.

ppm parts per million; 120 parts per million= 1% LEL.

LEL Lower Explosive Limit.

**Bold** Indicates value exceeds the AESRD 2010 Tier 1 Groundwater Remediation Guidelines for Fine-Grained Soil and Residential Land Use.

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		Combustible Vapour Concentrations <sup>1</sup> ppm							
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
BH913	18-Mar-04	240	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	50	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	21-Jul-04	40	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	3-Nov-04	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	4-Mar-05	340	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	35	<b>0.0089</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	17-May-06	46	0.0009	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	8-Feb-07	88	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	25	0.00138	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	13-Mar-08	12	0.00414	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	5-Mar-12	36	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.25	-
	25-Oct-12	150	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	7-May-13	230	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-
BH914	18-Mar-04	30	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	24	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	21-Jul-04	44	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	21-Oct-04	-	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	4-Mar-05	72	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	120	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	17-May-06	200	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	2-Feb-07	120	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	80	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	12-Mar-08	12	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-

Notes:

- 1 Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle, calibrated to hexane with methane exclusion.
- mg/L milligrams per litre
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- ND not detected, values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).
- cnl monitoring well could not be located.
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- NG No Guideline.
- not measured or no data available.
- BTEX Benzene, toluene, ethylbenzene and xylenes.
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			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
BH915	18-Mar-04	96	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	32	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	21-Jul-04	48	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	21-Oct-04	52	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	4-Mar-05	66	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	30	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	17-May-06	70	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	2-Feb-07	76	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	50	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	12-Mar-08	78	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
25-Oct-12	80	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-	
7-May-13	30	0.0067	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-	
BH916	18-Mar-04	94	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	22	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	21-Jul-04	18	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	21-Oct-04	62	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	4-Mar-05	35	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	42	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	5-Feb-07	85	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	25	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	13-Mar-08	30	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
25-Oct-12	15	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-	
8-May-13	0	0.0015	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-	
BH917	18-Mar-04	140	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	34	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	21-Jul-04	36	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	22-Oct-04	62	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	4-Mar-05	48	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	75	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-May-06	68	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-

Notes:

- 1 Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle, calibrated to hexane with methane exclusion.
  - mg/L milligrams per litre
  - < Less than laboratory method detection limits.
  - ND not detected, values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).
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			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<i>BH917 continued</i>	5-Feb-07	94	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	29-May-07	70	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	13-Mar-08	90	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	25-Oct-12	60	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	8-May-13	0	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-
<b>BH1101</b>	18-Mar-04	220	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	8-Apr-04	18	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	21-Jul-04	180	<0.02	<0.02	<0.02	<0.02	0.2	<0.05	-
	21-Oct-04	80	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	4-Mar-05	94	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	-
	6-Oct-05	26	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	16-May-06	60	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	30-Jan-07	50	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	25-May-07	30	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	0.63	-
	11-Mar-08	200	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
<b>BH1102</b>	8-Apr-04	12	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<0.005
	21-Jul-04	200	0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	21-Oct-04	78	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	4-Mar-05	180	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	6-Oct-05	60	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	16-May-06	58	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	31-Jan-07	80	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	25-May-07	40	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	11-Mar-08	220	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	18-Oct-12	115	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
<i>duplicate for BH1102 labelled BH4444</i>			<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	8-May-13	175	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-

Notes:

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			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
BH1103	18-Mar-04	6,000	2.3	4.4	0.5	5.1	3.1	0.62	<0.005
	8-Apr-04	720	2.8	4.8	0.33	4.9	9.6	0.6	<0.005
<i>duplicate for BH1103, labelled 1113</i>			2.6	4.1	0.055	4.7	9.0	0.5	<0.005
	21-Jul-04	2,200	3.6	6.6	0.27	6.6	2.5	0.72	-
	21-Oct-04	>10,000	2.9	5.2	0.15	4.7	2.7	0.54	-
<i>duplicate for BH1103 labelled BH1110</i>			2.9	5.1	0.16	4.6	2.7	0.59	-
	6-Oct-05	320	1.3	2.7	0.28	3.1	3.2	0.3	-
<i>duplicate for BH1103 labelled BH1123</i>			1.6	3.2	0.29	3.7	2.4	0.48	-
	16-May-06	300	3.9	8.1	0.62	6.6	8.9	0.61	-
<i>duplicate for BH1103 labelled BH4444</i>			3.6	7.5	0.57	6.1	2.4	0.66	-
	31-Jan-07	2,000	2.4	4.7	0.51	4.7	6.3	0.67	-
	25-May-07	170	1.09	0.00176	<0.0005	<0.0005	<0.1	<0.05	-
	30-Sep-10	9,000	1.24	2.34	0.477	3.55	9.3	0.46	-
	3-Jun-11	1,900	1.25	2.23	0.24	3.81	8.9	0.27	-
<i>duplicate for BH1103 Labelled BH1133</i>			1.25	2.27	2.39	3.79	9.0	-	-
	14-Sep-11	95	1.14	2.25	0.22	2.68	8.7	0.72	-
<i>duplicate for BH1103 Labelled BH1000</i>			1.12	2.09	0.217	2.41	9.5	0.66	-
	22-Dec-11	10,000	1.04	1.93	0.246	3.42	9.0	0.30	-
	28-Mar-12	8	1.22	2.51	0.257	3.90	10.5	0.82	-
<i>duplicate for BH1103 Labelled BH1133</i>			1.24	2.48	0.255	3.88	10.1	0.77	-
	16-Oct-12	85	0.94	1.82	0.162	3.06	<4.4	0.26	-
	8-May-13	240	0.96*	1.8*	0.25*	3.7*	3.6	0.46	-
<i>Duplicate (QC4)</i>			0.92	1.8	0.25	3.7	3.7	0.52	-
BH1104	18-Mar-04	1,100	2.5	0.0091	0.21	0.012	1.2	0.37	<0.005
<i>duplicate for BH1104, labelled BH1144</i>			2.2	0.0083	0.15	0.015	<0.1	0.34	<0.005
	8-Apr-04	82	3.3	0.12	0.097	0.089	6.4	0.26	<0.005
	21-Jul-04	3,200	2.1	0.0091	0.044	0.049	2.4	0.32	-
	21-Oct-04	3,600	2.4	<0.02	0.1	<0.02	0.3	0.37	-
	4-Mar-05	5,000	3.3	0.012	0.24	<0.02	1.4	0.25	-
<i>duplicate for BH1104 labelled BH1114</i>			3.4	0.012	0.26	<0.02	1.4	0.25	-
	6-Oct-05	3,400	3.0	0.021	0.36	0.033	0.7	0.29	-

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**CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe Combustible Vapour Concentrations <sup>1</sup> ppm	Benzene	Toluene	Ethyl-benzene	Total Xylenes	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	Lead
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<i>BH1104 continued</i>	16-May-06	200	<b>2.2</b>	0.010	<b>0.25</b>	0.014	1.2	0.25	-
	31-Jan-07	1,200	<b>1.6</b>	0.0073	<b>0.24</b>	0.028	1.4	0.40	-
	25-May-07	1,200	<b>1.34</b>	0.0114	<b>0.126</b>	0.134	0.9	0.52	-
<i>duplicate of BH1104 labelled BH1152</i>			<b>0.66</b>	<b>0.0066</b>	<b>0.0823</b>	<b>0.0871</b>	<b>0.6</b>	<b>0.51</b>	-
	11-Mar-08	740	<b>1.54</b>	0.0086	<b>0.57</b>	0.0194	0.9	0.21	-
<i>duplicate of BH1104 labeled BH1000</i>			<b>1.44</b>	<b>0.0086</b>	<b>0.529</b>	<b>0.019</b>	<b>0.9</b>	<b>0.22</b>	-
	16-Oct-12	360	<b>0.905</b>	0.00514	<b>0.198</b>	0.0237	0.44	0.33	-
	8-May-13	510	<b>0.50</b>	0.0028	<b>0.18</b>	0.0050	0.77	0.33	-
<b>BH1105</b>	18-Mar-04	1,000	<b>0.44</b>	0.018	<b>0.21</b>	0.17	1.3	0.18	<b>&lt;0.005</b>
	8-Apr-04	2,800	<b>0.45</b>	0.017	<b>0.09</b>	0.089	1.4	0.17	<b>&lt;0.005</b>
	21-Jul-04	>10,000	<b>0.33</b>	<0.02	<b>&lt;0.02</b>	<0.02	0.3	0.21	-
	21-Oct-04	>10,000	<b>0.048</b>	<0.0005	<b>&lt;0.0005</b>	<0.0005	0.3	0.12	-
	7-Mar-05	>10,000	<b>0.45</b>	0.011	<b>0.36</b>	<b>0.49</b>	0.5	0.22	-
<i>duplicate for BH1105 labelled BH1115</i>			<b>0.46</b>	<b>0.011</b>	<b>0.35</b>	<b>0.47</b>	<b>0.6</b>	<b>0.2</b>	-
	6-Oct-05	1,600	<b>0.4</b>	0.0089	<b>0.39</b>	0.087	1.5	0.23	-
	16-May-06	>10,000	<b>0.26</b>	0.0049	<b>0.26</b>	0.033	2.0	0.23	-
	31-Jan-07	>10,000	<b>0.19</b>	0.0026	<b>&lt;0.0005</b>	0.0017	<0.1	0.30	-
	25-May-07	>10,000	<b>0.183</b>	0.0046	<b>0.200</b>	0.0109	0.5	0.58	-
<i>duplicate of BH1105 labelled BH1151</i>			<b>&lt;0.0005</b>	<b>&lt;0.0005</b>	<b>&lt;0.0005</b>	<b>&lt;0.0005</b>	<b>&lt;0.1</b>	<b>0.51</b>	-
	11-Mar-08	>10,000	<b>0.2</b>	0.00385	<b>0.238</b>	0.0168	1.3	0.18	-
<b>BH1106</b>	18-Mar-04	1,100	<b>1.1</b>	<b>0.026</b>	<b>0.49</b>	<b>0.8</b>	<b>3.2</b>	0.45	<b>&lt;0.005</b>
	8-Apr-04	200	<b>0.72</b>	0.022	<b>0.12</b>	<b>0.7</b>	<b>3.4</b>	0.5	<b>&lt;0.005</b>
	21-Jul-04	320	<b>0.93</b>	<b>0.026</b>	<b>0.2</b>	<b>0.36</b>	<b>2.7</b>	0.32	-
	21-Oct-04	700	<b>0.33</b>	0.0074	<b>0.26</b>	0.024	0.7	0.17	-
	7-Mar-05	7,200	<b>0.13</b>	0.0085	<b>0.31</b>	<b>0.42</b>	0.7	0.16	-
	6-Oct-05	640	<b>0.11</b>	0.0069	<b>0.29</b>	0.063	1.3	0.25	-
	16-May-06	1,000	<b>0.054</b>	0.0042	<b>0.16</b>	0.029	1.4	0.31	-
	31-Jan-07	136	<b>0.034</b>	0.0022	<b>0.12</b>	0.015	1.0	0.30	-
	25-May-07	800	<b>0.0265</b>	0.00245	<b>0.115</b>	0.00755	0.8	0.28	-
	11-Mar-08	400	<b>0.0256</b>	0.00235	<b>0.0912</b>	0.0133	0.8	0.15	-
	16-Oct-12	250	<b>0.00996</b>	0.00091	<b>0.0293</b>	0.00663	0.56	<0.25	-

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			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<i>BH1106 continued</i>	8-May-13	1,700	<b>0.0093</b>	0.0011	<b>0.020</b>	0.010	0.86	0.32	-
<b>BH1107</b>	18-Mar-04	70	<b>0.015</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<b>&lt;0.005</b>
	8-Apr-04	20	<b>0.0086</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	<b>&lt;0.005</b>
	21-Jul-04	100	<b>0.0051</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	21-Oct-04	74	0.0034	<0.0005	<0.0005	<0.0005	<0.1	<b>1.3</b>	-
	6-Oct-05	38	<b>0.0077</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	16-May-06	20	<b>0.015</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	31-Jan-07	44	<b>0.028</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	25-May-07	36	<b>0.0408</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	11-Mar-08	190	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	3-Jun-11	24	<b>0.0189</b>	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	14-Sep-11	10	<b>0.0321</b>	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	22-Dec-11	40	<b>0.00688</b>	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	29-Mar-12	74	<b>0.06100</b>	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
16-Oct-12	0	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-	
8-May-13	120	<b>0.015</b>	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-	
<b>BH1133</b>	21-Jul-04	-	<b>2.8</b>	<b>4.9</b>	<b>0.22</b>	<b>4.9</b>	<b>2.4</b>	0.58	-
<b>BH1144</b>	21-Jul-04	-	<b>3.0</b>	<0.02	<b>0.037</b>	<0.02	1.1	0.38	-
<b>BH1301</b>	7-Mar-05	10	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	40	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	17-May-06	60	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	6-Feb-07	46	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	25-May-07	40	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	13-Mar-08	46	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	25-Oct-12	0	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	7-May-13	35	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-
<i>Duplicate (QC2)</i>	7-May-13	-	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-

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			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
BH1302	4-Mar-05	98	<b>1.7</b>	<0.0005	<0.0005	<0.0005	<0.1	<0.05	-
	7-Oct-05	20	<b>0.8</b>	0.0006	<0.0005	<0.0005	0.5	<0.05	-
	17-May-06	54	<b>1.7</b>	0.0025	<0.0005	<0.0005	<0.1	<0.05	-
	8-Feb-07	20	<b>1.1</b>	0.0017	<0.0005	0.0007	<0.1	<0.05	-
	25-May-07	20	<b>1.4</b>	0.0106	0.00176	0.0044	0.5	<0.05	-
	13-Mar-08	18	<b>1.16</b>	0.00067	<0.0005	0.00426	<0.1	<0.05	-
	28-Mar-12	26	<b>0.663</b>	<0.0050	<0.0050	0.0054	0.7	<0.25	-
	16-Oct-12	125	<b>0.087</b>	<0.00050	<0.00050	0.0019	<0.10	<0.25	-
	7-May-13	145	0.0023	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-
BH1303	9-Mar-05	76	<b>5.0</b>	0.0036	0.0016	0.035	0.4	<0.05	-
	7-Oct-05	18	<b>4.9</b>	0.002	0.0005	0.019	<0.1	<0.05	-
	17-May-06	42	<b>4.1</b>	0.0014	<0.0005	0.026	<0.1	<0.05	-
	8-Feb-07	28	<b>4.2</b>	0.0011	<0.0005	0.018	<0.1	<0.05	-
	25-May-07	25	<b>0.501</b>	0.0011	0.0005	0.0025	0.1	<0.05	-
	13-Mar-08	50	<b>2.78</b>	0.00126	<0.0005	0.00455	<0.1	<0.05	-
	29-Sep-10	50	<b>2.65</b>	<0.0005	0.00215	0.0112	<b>2.94</b>	<0.25	-
	3-Jun-11	42	<b>0.0686</b>	<0.0005	<0.0005	<0.0005	<0.10	<0.25	-
	14-Sep-11	10	<b>2.29</b>	<0.22	<0.22	<0.22	<b>&lt;44.0</b>	<0.25	-
	22-Dec-11	40	<b>4.49</b>	<0.0050	<0.0050	0.0055	<b>4.3</b>	<0.25	-
	5-Mar-12	32	<b>4.62</b>	0.00234	0.00221	0.0168	<b>3.82</b>	<0.25	-
	7-May-13	165	<b>3.7*</b>	0.0022	<b>0.0030*</b>	0.017	<1.0*	<0.10	-
	BH1702	16-Oct-12	95	<b>0.153</b>	<0.0005	<0.0005	<0.0005	<0.10	<0.25
8-May-13		0	<b>0.31</b>	<0.00040	<0.00040	0.00095	<0.10	<0.10	-
BH1703	29-Sep-10	1,000	<b>0.619</b>	<b>0.434</b>	<b>0.41</b>	<b>0.55</b>	<b>4.1</b>	0.62	-
	8-May-13	120	<b>0.24</b>	<b>6.0</b>	<b>3.4</b>	<b>25</b>	<b>81</b>	<b>28</b>	-
BH1706	29-Sep-10	>10,000	<b>0.444</b>	<b>0.234</b>	<b>0.0269</b>	0.0647	2.08	<0.25	-
	3-Jun-11	80	<b>0.355</b>	0.0188	<b>0.143</b>	0.0157	1.5	<0.25	-
	14-Sep-11	10	<b>0.385</b>	0.0188	<b>0.155</b>	0.0213	1.7	<0.25	-
	22-Dec-11	200	<b>0.469</b>	<b>0.0708</b>	<b>0.309</b>	0.144	<b>10.29</b>	<0.25	-
	28-Mar-12	18	<b>1.01</b>	<b>0.149</b>	<b>1.1</b>	0.149	<b>5.41</b>	0.62	-
	18-Oct-12	0	<b>0.30</b>	<b>0.104</b>	<b>0.18</b>	0.047	<0.1	<0.25	-

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			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
<i>BH1706 continued</i>	8-May-13	0	<b>0.68</b>	<b>0.35</b>	<b>0.85</b>	<b>1.9</b>	<b>2.3</b>	0.87	-
<b>BH1708</b>	29-Sep-10	60	<b>1.88</b>	<b>1.15</b>	<b>0.0682</b>	<b>0.421</b>	<b>5.6</b>	0.44	-
	3-Jun-11	44	<b>1.59</b>	<b>0.0478</b>	<b>0.877</b>	0.148	<b>4.4</b>	<0.25	-
	14-Sep-11	5	<b>2.3</b>	<b>0.052</b>	<b>1.8</b>	0.066	<b>8.13</b>	0.65	-
	22-Dec-11	30	<b>1.93</b>	<b>0.0406</b>	<b>1.4</b>	0.103	<b>7.5</b>	0.33	-
	28-Mar-12	62	<b>2.25</b>	<b>0.0235</b>	<b>0.858</b>	0.0524	<b>6.09</b>	0.72	-
	18-Oct-12	0	<b>1.77</b>	<b>0.0483</b>	<b>0.906</b>	0.0042	<b>4.45</b>	0.42	-
	8-May-13	55	<b>1.7*</b>	<b>0.054</b>	<b>1.0*</b>	0.025	<b>3.2</b>	0.51	-
<b>BH1710</b>	18-Oct-12	0	<b>0.0827</b>	0.00398	<b>0.0297</b>	0.00545	0.47	<0.25	-
	8-May-13	0	<b>0.030</b>	<0.00040	<b>0.018</b>	<0.0008	0.26	<0.10	-
<b>BH1712</b>	29-Sep-10	34	<b>1.8</b>	<b>0.508</b>	<b>0.0105</b>	0.0183	<b>3.3</b>	<0.25	-
	3-Jun-11	38	<b>1.89</b>	0.0217	<b>0.541</b>	0.0119	<b>3.2</b>	<0.25	-
	14-Sep-11	5	<b>0.79</b>	0.0083	<b>0.277</b>	0.005	<b>3.5</b>	<0.25	-
	22-Dec-11	15	<b>0.818</b>	0.00925	<b>0.279</b>	0.00418	<b>3.01</b>	<0.25	-
	28-Mar-12	22	<b>0.958</b>	0.0166	<b>0.462</b>	0.0085	2.2	<0.25	-
	18-Oct-12	0	<b>0.591</b>	0.0153	<b>0.605</b>	0.0162	2.11	<0.25	-
	8-May-13	60	<b>0.31</b>	0.0099	<b>0.12</b>	0.0079	0.55	0.12	-
<b>BH1713</b>	29-Sep-10	34	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.25	-
	3-Jun-11	6	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.25	-
	14-Sep-11	25	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.25	-
	22-Dec-11	5	<b>0.00722</b>	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	5-Mar-12	30	<0.0005	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	25-Oct-12	0	<0.0005	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	7-May-13	80	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	<0.10	-
<b>BH1714</b>	29-Sep-10	36	<b>0.0104</b>	<0.0005	<0.0005	<0.0005	<0.10	<0.25	-
	3-Jun-11	39	<b>0.018</b>	<0.0005	<0.0005	<0.0005	<0.10	<0.25	-
	14-Sep-11	15	<b>0.275</b>	<0.0025	<b>&lt;0.0025</b>	<0.0025	<0.50	<0.25	-
	22-Dec-11	5	<b>0.309</b>	<0.00050	<0.00050	<0.00050	0.32	<0.25	-
	5-Mar-12	20	<b>0.0829</b>	<0.00050	<0.00050	<0.00050	0.1	<0.25	-
	25-Oct-12	-	<b>0.299</b>	<0.00050	<0.00050	<0.00050	<0.50	<0.25	-
	7-May-13	115	<b>0.19</b>	<0.00040	<0.00040	0.00096	<0.10	<0.10	-

Notes:

- <sup>1</sup> Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle, calibrated to hexane with methane exclusion.
- mg/L milligrams per litre
- < Less than laboratory method detection limits.
- ND not detected, values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).
- cnl monitoring well could not be located.
- Italics* indicates a duplicate groundwater sample.
- \* detection limits raised due to dilution.
- NG No Guideline.
- not measured or no data available.
- BTEX Benzene, toluene, ethylbenzene and xylenes.
- PHC Petroleum hydrocarbon concentration fractions.
- ppm parts per million; 120 parts per million= 1% LEL.
- LEL Lower Explosive Limit.
- Bold** Indicates value exceeds the AESRD 2010 Tier 1 Groundwater Remediation Guidelines for Fine-Grained Soil and Residential Land Use.
- See laboratory report for detection limits, testing protocols and QA/QC procedures.

**TABLE 7 SUMMARY OF ALL GROUNDWATER LABORATORY RESULTS 1998-2013**  
**Zone 3 and Surrounding Areas - South of 11<sup>th</sup> Avenue NW**  
**Updated Site Management Plan (2014)**  
**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Monitoring Well	Sample Date dd-mmm-yy	Well Standpipe Combustible Vapour Concentrations <sup>1</sup> ppm	Benzene	Toluene	Ethyl-benzene	Total Xylenes	PHC F1-BTEX C <sub>6</sub> -C <sub>10</sub>	PHC F2 >C <sub>10</sub> -C <sub>16</sub>	Lead
			mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Alberta Environment and Sustainable Resource Development (AESRD) 2010 Alberta Tier 1 Soil and Groundwater Remediation Guidelines - for Fine-Grained Soils and Residential/Parkland Land Use.			<b>0.005</b>	<b>0.024</b>	<b>0.0024</b>	<b>0.3</b>	<b>2.2</b>	<b>1.1</b>	<b>0.001</b>
BH1715	18-Oct-12	0	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
<i>duplicate of BH1715 labelled BH2715</i>			<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
BH1716	29-Sep-10	48							-
	3-Jun-11	67	<b>0.0706</b>	0.00472	<b>0.0459</b>	0.00482	0.58	<0.25	-
	14-Sep-11	5	<0.0005	<0.0005	<0.0005	<0.0005	<0.10	<0.25	-
	22-Dec-11	25	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	29-Mar-12	36	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
	18-Oct-12	0	<0.00050	<0.00050	<0.00050	<0.00050	<0.10	<0.25	-
TRIP BLANK	8-May-13	-	<0.00040	<0.00040	<0.00040	<0.00080	<0.10	-	-

Notes:

1 Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer or a RKI Eagle, calibrated to hexane with methane exclusion.

mg/L milligrams per litre

< Less than laboratory method detection limits.

ND not detected, values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).

cnl monitoring well could not be located.

*Italics* indicates a duplicate groundwater sample.

\* detection limits raised due to dilution.

NG No Guideline.

- not measured or no data available.

BTEX Benzene, toluene, ethylbenzene and xylenes.

PHC Petroleum hydrocarbon concentration fractions.

ppm parts per million; 120 parts per million= 1% LEL.

LEL Lower Explosive Limit.

**Bold** Indicates value exceeds the AESRD 2010 Tier 1 Groundwater Remediation Guidelines for Fine-Grained Soil and Residential Land Use.  
See laboratory report for detection limits, testing protocols and QA/QC procedures.

**TABLE 8 SUMMARY OF ALL GROUNDWATER LABORATORY RESULTS – Routine Parameters - 2006 - 2012**  
**All Zones**  
**Updated Site Management Plan (2014)**  
**Hounsfield Heights - Briar Hill Community**  
**CALGARY, Alberta**

Monitor Well	Sample Date dd-mmm-yy	Well Standpipe Combustible Vapour Concentrations <sup>1</sup> ppm	Dissolved Oxygen mg/L	Dissolved Iron mg/L	Dissolved Manganese mg/L	Total Alkalinity mg/L	Dissolved Methane mg/L	Nitrate-N mg/L	Nitrite-N mg/L	Ortho Phosphate as P mg/L	Sulphate mg/L	Nitrate + Nitrite mg/L
2010 AESRD Tier 1 Soil and Groundwater Remediation Guidelines for Fine-Grained Soils and Residential Park Land Use For Properties South of 11th Avenue												
			NG	0.3	0.05	NG	NG	NG	0.06	NG	500	NG
BH506	18-May-06	120	-	<0.01	0.03	414	<0.005	5.01	<0.05	-	52.3	5.01
	8-Feb-07	72	-	<b>2.03</b>	<b>1.04</b>	418	<0.005	7.77	<0.05	<0.01	54.0	7.77
	30-May-07	30	-	<0.005	<0.001	412	<0.005	7.76	<0.05	<0.01	49.9	7.76
	18-Mar-08	260	-	<0.15	<0.025	431	<0.005	8.47	<0.05	<0.01	50.7	8.47
BH712	19-May-06	90	-	0.20	<0.01	422	<0.005	0.88	<0.05	-	44.6	0.88
	8-Feb-07	138	-	<b>4.68</b>	<b>1.39</b>	532	<0.005	2.54	<0.05	<0.01	45.8	2.54
	30-May-07	55	-	<0.005	<0.001	493	<0.005	1.48	<0.05	<0.01	60.6	1.48
	18-Mar-08	40	-	<0.15	<0.025	396	<0.005	0.37	<0.05	<0.01	47.0	0.37
BH719	19-May-06	86	-	0.08	<b>0.24</b>	648	<0.005	5.97	<0.05	-	31.2	5.97
	8-Feb-07	10	-	<b>4.09</b>	<b>1.31</b>	592	<0.005	6.23	<0.05	<0.01	29.5	6.23
	30-May-07	24	-	<0.005	<b>0.255</b>	582	<0.005	7.08	<0.05	<0.01	29.3	7.08
	18-Mar-08	12	-	<0.15	<b>0.257</b>	658	<0.005	8.15	<0.05	<0.01	30.3	8.15
	29-Sep-10	56	1.6	<0.030	<b>0.262</b>	560	<0.0050	8.95	<0.050	<0.0050	30.8	8.95
BH727	19-May-06	90	-	0.15	0.02	325	<0.005	4.67	<0.05	-	42.5	4.67
	8-Feb-07	80	-	<b>2.93</b>	<b>6.13</b>	316	<0.005	7.32	<b>0.07</b>	<0.01	44.6	7.39
	30-May-07	40	-	<0.005	0.016	314	<0.005	6.65	<0.05	<0.01	43.5	6.65
BH732	19-May-06	180	-	<b>0.77</b>	0.01	440	<0.005	4.31	<0.05	-	104.0	4.31
	8-Feb-07	82	-	<b>4.1</b>	<b>0.831</b>	452	<0.005	7.22	<0.05	<0.01	64.6	7.22
	30-May-07	42	-	<0.005	0.002	439	<0.005	7.3	<0.05	<0.01	62.8	7.3
	18-Mar-08	10	-	<0.15	<0.025	454	<0.005	7.21	<0.05	<0.01	50.7	7.21
	3-Jun-11	40	4.4	<0.030	<0.0050	464	<0.0050	5.46	<0.050	<0.0050	69.2	5.46
	14-Sep-11		6.6	-	<b>0.0836</b>	551	<0.0050	5.26	<0.050	<0.0050	118.0	5.26
	22-Dec-11	40	4.0	0.152	<0.0050	500	21.7	6.22	<0.050	<0.0050	109.0	6.22
	29-Mar-12	82	4.0	<0.030	<0.0050	488	<0.0050	5.88	<0.050	<0.0050	86.1	5.88
BH734	19-May-06	80	-	<0.01	<0.01	487	<0.005	1.94	<0.05	-	32.9	1.94
	8-Feb-07	160	-	<b>0.423</b>	<b>0.137</b>	534	<0.005	0.74	<0.05	<0.01	26.1	0.74
	30-May-07	125	-	<0.005	0.003	466	<0.005	5.21	<0.05	<0.01	36.5	5.21
BH744	19-May-06	10	-	0.04	<0.01	344	<0.005	8.41	<0.05	-	65.3	8.41
	30-May-07	25	-	<0.005	<0.001	348	<0.005	12.4	<0.05	<0.01	55.3	12.4
	18-Mar-08	10	-	<0.15	<0.025	336	<0.005	8.49	<0.05	<0.01	50.6	8.49
	29-Sep-10	30	7.3	<0.030	<0.0050	314	<0.005	10.4	<0.050	<0.0050	54.8	10.4
	3-Jun-11	24	-	<0.15	<0.025	465	<0.0050	0.785	<0.050	<0.0050	21.7	0.785
	14-Sep-11	10	-	-	0.0195	468	<0.0050	1.48	<0.050	<0.0050	22.6	1.48
	22-Dec-11	40	-	0.117	0.0063	463	22.3	1.68	<0.25	<0.0050	22.9	1.68
	29-Mar-12	74	-	<0.030	<0.0050	461	<0.0050	0.86	<0.25	<0.0050	21.5	0.86
	3-Jun-11	24	4.60	<0.15	<0.025	465	<0.0050	0.785	<0.050	<0.0050	21.7	0.785
BH1107	14-Sep-11	10	7.80	-	0.0195	468	<0.0050	1.48	<0.050	<0.0050	22.6	1.48
	22-Dec-11	40	4.60	0.117	0.0063	463	22.3	1.68	<0.25	<0.0050	22.9	1.68
	29-Mar-12	74	5.40	<0.030	<0.0050	461	<0.0050	0.86	<0.25	<0.0050	21.5	0.86
	3-Jun-11	24	4.60	<0.15	<0.025	465	<0.0050	0.785	<0.050	<0.0050	21.7	0.785
BH1716	29-Sep-10	48	4.8	<0.030	<0.0050	303	<0.0050	6.53	<0.050	<0.0050	53.9	6.53
	3-Jun-11	67	8.6	<0.030	<b>0.336</b>	328	<0.0050	6.05	<0.050	<0.0050	47.9	6.05
	14-Sep-11	5	2.0	-	<0.0050	359	0.0113	6.12	<0.050	<0.0050	52.1	6.12
	22-Dec-11	25	8.9	0.034	<0.0050	344	14.4	6.54	<0.050	<0.0050	51.7	6.54
	29-Mar-12	36	9.0	<0.030	<0.0050	354	<0.0050	6.37	<0.050	<0.0050	49.1	6.37

Notes:

- 1 Well standpipe combustible vapour concentrations measured with a Gastech Trace Tector vapour analyzer, calibrated to hexane with methane exclusion.
- < Less than laboratory method detection limits.
- NG No Guideline.
- BTEX Benzene, toluene, ethylbenzene and xylenes.
- PHC Petroleum hydrocarbon concentration fractions F1 and F2.
- Bold** Indicates value exceeds AENV 2001 PST Guidelines criterion for Groundwater in Fine Grained Soil - Residential Land Use. See laboratory report for detection limits, testing protocols and QA/QC procedures. Testing was conducted by Enviro-test Laboratories.

**TABLE 8.1**                      **SUMMARY OF GROUNDWATER LABORATORY ANALYSES - 2013**  
**Routine Parameters**  
**Site Monitoring and Sampling Report - April 2013**  
**Hounsfield Heights and Lions Park**  
**CALGARY, Alberta**

Monitoring Well Sample Date	UNITS	BH907 8-May-13	BH915 7-May-13	BH1104 8-May-13	BH1303 7-May-13	BH1714 7-May-13	EX-1 8-May-13	Guidelines <sup>1</sup>
<b>Calculated Parameters</b>								
Hardness (CaCO <sub>3</sub> )	mg/L	920	660	1100	930	490	660	NG
Ion Balance	N/A	0.95	1.1	0.99	1.1	1.1	1.0	NG
Dissolved Nitrate (NO <sub>3</sub> )	mg/L	<b>73</b>	0.057	0.32	0.059	0.082	1.9	13
Nitrate plus Nitrite (N)	mg/L	16	0.013	0.10	0.013	0.019	1.1	NG
Dissolved Nitrite (NO <sub>2</sub> )	mg/L	0.028	<0.0099	0.095	<0.0099	<0.0099	2.3	NG
Total Dissolved Solids	mg/L	<b>1100</b>	<b>690</b>	<b>1300</b>	<b>900</b>	480	<b>800</b>	500
<b>Misc. Inorganics</b>								
Conductivity	uS/cm	1900	1200	2500	1700	890	1500	NG
pH	N/A	7.72	7.64	7.45	7.40	7.74	7.38	6.5-8.5
<b>Low Level Elements</b>								
Dissolved Cadmium (Cd)	ug/L	0.019	0.0068	0.023	0.018	0.017	0.0061	0.130-0.260
<b>Anions</b>								
Alkalinity (PP as CaCO <sub>3</sub> )	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG
Alkalinity (Total as CaCO <sub>3</sub> )	mg/L	670	400	680	580	400	590	NG
Bicarbonate (HCO <sub>3</sub> )	mg/L	810	490	830	710	490	720	NG
Carbonate (CO <sub>3</sub> )	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG
Hydroxide (OH)	mg/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG
Dissolved Sulphate (SO <sub>4</sub> )	mg/L	160	63	13	34	24	15	500
Dissolved Chloride (Cl)	mg/L	130	140	<b>470*</b>	200*	39*	140	230
<b>Nutrients</b>								
Dissolved Nitrite (N)	mg/L	0.0086	<0.0030	0.029	<0.0030	<0.0030	<b>0.69</b>	0.06
Dissolved Nitrate (N)	mg/L	16*	0.013	0.072	0.013	0.019	0.43	NG

**Notes:**

<sup>1</sup> 2010 AESRD Tier 1 Soil and Groundwater Remediation Guidelines (December 2010) for fine-grained soil and residential land use.  
mg/L milligrams per liter.

ug/L micrograms per liter.

ND not detected; values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).

NG No guideline specified

\* Detection limits raised due to dilution

**Bold** Indicates that the concentration did not meet the applicable AESRD 2010 Tier 1 criterion.



**TABLE 8.2** **SUMMARY OF GROUNDWATER LABORATORY ANALYSES - 2013**  
**Polycyclic Aromatic Hydrocarbons**  
**Site Monitoring and Sampling Report - April 2013**  
**Hounsfield Heights and Lions Park**  
**CALGARY, Alberta**

Monitoring Well Sample Date Parameters	UNITS	BH907 8-May-13	BH915 7-May-13	BH1104 8-May-13	BH1303 7-May-13	BH1714 7-May-13	EX-1 8-May-13	Guidelines <sup>1</sup>
Benzo[a]pyrene equivalency	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.01
Acenaphthene	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	5.8
Acenaphthylene	ug/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	46
Acridine	ug/L	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	NG
Anthracene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.012
Benzo(a)anthracene	ug/L	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	0.018
Benzo(b&j)fluoranthene	ug/L	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	0.48
Benzo(k)fluoranthene	ug/L	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	0.48
Benzo(g,h,i)perylene	ug/L	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	0.21
Benzo(c)phenanthrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
Benzo(a)pyrene	ug/L	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075	0.017
Benzo[e]pyrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
Chrysene	ug/L	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	1.4
Dibenz(a,h)anthracene	ug/L	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075	<0.0075	0.28
Fluoranthene	ug/L	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.04
Fluorene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	3
Indeno(1,2,3-cd)pyrene	ug/L	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	<0.0085	0.23
2-Methylnaphthalene	ug/L	<0.10	<0.10	0.53	<0.10	<0.10	<0.10	NG
Naphthalene	ug/L	<0.10	<0.10	0.60	<0.10	<0.10	0.40	1.1
Phenanthrene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	0.4
Perylene	ug/L	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	NG
Pyrene	ug/L	<0.020	<0.020	<0.020	<0.020	<0.020	<0.020	0.025
Quinoline	ug/L	<0.20	<0.20	<0.36*	<0.20	<0.20	<0.20	NG

**Notes:**

<sup>1</sup> 2010 AESRD Tier 1 Soil and Groundwater Remediation Guidelines (December 2010) for fine-grained soil and residential land use.  
ug/L micrograms per liter.

ND not detected; values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).

NG No guideline specified

\* Detection limits raised due to dilution

**Bold** Indicates that the concentration did not meet the applicable AESRD 2010 Tier 1 criterion.

**TABLE 8.3**                      **SUMMARY OF GROUNDWATER LABORATORY ANALYSES - 2013**  
**Dissolved Metals**  
**Site Monitoring and Sampling Report - April 2013**  
**Hounsfield Heights and Lions Park**  
**CALGARY, Alberta**

Monitoring Well		BH907	BH915	BH1104	BH1303	BH1714	EX-1	Guidelines <sup>1</sup>
Sample Date		8-May-13	7-May-13	8-May-13	7-May-13	7-May-13	8-May-13	
Parameters	UNITS							
Dissolved Aluminum (Al)	mg/L	0.079	0.0044	0.011	<0.0030	0.012	<0.0030	0.1
Dissolved Antimony (Sb)	mg/L	<0.00060	<0.00060	<0.0015	<0.00060	<0.00060	<0.00060	0.006
Dissolved Arsenic (As)	mg/L	0.00024	0.00055	0.00078	0.00070	0.00029	0.0023	0.005
Dissolved Barium (Ba)	mg/L	0.14	0.45	<b>1.2</b>	0.40	0.24	<b>1.4</b>	1
Dissolved Beryllium (Be)	mg/L	<0.0010	<0.0010	<0.0025	<0.0010	<0.0010	<0.0010	NG
Dissolved Boron (B)	mg/L	0.035	<0.020	<0.020	<0.020	<0.020	<0.020	1.5
Dissolved Calcium (Ca)	mg/L	95	160	150	170	110	150	NG
Dissolved Chromium (Cr)	mg/L	<0.0010	<0.0010	<0.0025	<0.0010	<0.0010	<0.0010	0.21
Dissolved Cobalt (Co)	mg/L	<0.00030	0.00081	0.0040	0.0048	0.0016	0.0022	NG
Dissolved Copper (Cu)	mg/L	0.0010	0.0017	<0.00050	<b>0.030</b>	<0.00020	<0.00020	0.004
Dissolved Iron (Fe)	mg/L	<0.060	<0.060	0.066	<0.060	<0.060	<b>4.0</b>	0.3
Dissolved Lead (Pb)	mg/L	<0.00020	<0.00020	<0.00050	<0.00020	<0.00020	<0.00020	0.007
Dissolved Lithium (Li)	mg/L	0.041	<0.020	<0.020	0.032	0.021	<0.020	NG
Dissolved Magnesium (Mg)	mg/L	170	66	180	120	56	72	NG
Dissolved Manganese (Mn)	mg/L	<b>0.074</b>	<b>0.49</b>	<b>1.1</b>	<b>1.5</b>	<b>0.85</b>	<b>1.2</b>	0.05
Dissolved Molybdenum (Mo)	mg/L	0.0013	0.0020	0.0011	0.0013	0.0023	0.0019	NG
Dissolved Nickel (Ni)	mg/L	0.0024	0.0011	0.012	0.0072	0.0022	0.0037	0.15
Dissolved Phosphorus (P)	mg/L	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	NG
Dissolved Potassium (K)	mg/L	5.2	3.8	2.8	3.2	2.5	5.4	NG
Dissolved Selenium (Se)	mg/L	0.00057	<0.00020	<0.00050	<0.00020	<0.00020	0.00022	0.01
Dissolved Silicon (Si)	mg/L	5.4	5.7	6.7	6.2	5.2	7.0	NG
Dissolved Silver (Ag)	mg/L	<0.00010	<0.00010	<0.00025	<0.00010	<0.00010	<0.00010	0.0001
Dissolved Sodium (Na)	mg/L	43	20	100	16	11	61	200
Dissolved Strontium (Sr)	mg/L	0.92	0.73	0.74	1.1	0.67	0.89	NG
Dissolved Sulphur (S)	mg/L	43	20	3.8	9.7	7.1	5.2	NG
Dissolved Thallium (Tl)	mg/L	<0.00020	<0.00020	<0.00050	<0.00020	<0.00020	<0.00020	NG
Dissolved Tin (Sn)	mg/L	<0.0010	<0.0010	<0.0025	<0.0010	<0.0010	<0.0010	NG
Dissolved Titanium (Ti)	mg/L	0.0019	<0.0010	<0.0025	<0.0010	<0.0010	<0.0010	NG
Dissolved Uranium (U)	mg/L	0.015	0.0043	0.0029	0.010	0.0074	0.0037	0.02
Dissolved Vanadium (V)	mg/L	<0.0010	<0.0010	<0.0025	<0.0010	<0.0010	<0.0010	NG
Dissolved Zinc (Zn)	mg/L	0.0055	<0.0030	<0.0075	<b>0.032</b>	<0.0030	0.0030	0.03

**Notes:**

- 1 2010 AESRD Tier 1 Soil and Groundwater Remediation Guidelines (December 2010) for fine-grained soil and residential land use.
- mg/L milligrams per liter.
- ND not detected; values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).
- NG No guideline specified

**Bold** Indicates that the concentration did not meet the applicable AESRD 2010 Tier 1 criterion.

TABLE 8.4

**SUMMARY OF GROUNDWATER LABORATORY ANALYSES - 2013**  
**Volatile Organic Compounds**  
**Site Monitoring and Sampling Report - April 2013**  
**Hounsfeld Heights and Lions Park**  
**CALGARY, Alberta**

Monitoring Well		BH907	BH915	BH1104	BH1303	BH1714	EX-1	Guidelines <sup>1</sup>
Sample Date		8-May-13	7-May-13	8-May-13	7-May-13	7-May-13	8-May-13	
Parameters	UNITS							
Total Trihalomethanes	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	100
Bromodichloromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG
Bromoform	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG
Bromomethane	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NG
Carbon tetrachloride	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5
Chlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1
Chlorodibromomethane	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	190
Chloroethane	ug/L	<1.0	<1.0	<1.0	1.1	<1.0	1.2	NG
Chloroform	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2
Chloromethane	ug/L	<2.0	<2.0	<2.0	<3.4*	<2.0	<9.9*	NG
1,2-dibromoethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG
1,2-dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1
1,3-dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG
1,4-dichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1
1,1-dichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG
1,2-dichloroethane	ug/L	<b>7.5</b>	<0.50	<b>100</b>	<b>200</b>	<b>22</b>	<b>180</b>	5
1,1-dichloroethene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	14
cis-1,2-dichloroethene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG
trans-1,2-dichloroethene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG
Dichloromethane	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	5
1,2-dichloropropane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG
cis-1,3-dichloropropene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG
trans-1,3-dichloropropene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG
Methyl methacrylate	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	470
Methyl-tert-butylether (MTBE)	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	15
Styrene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	72
1,1,1,2-tetrachloroethane	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NG
1,1,2,2-tetrachloroethane	ug/L	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	NG
Tetrachloroethene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	30
1,2,3-trichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	8
1,2,4-trichlorobenzene	ug/L	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	15
1,3,5-trichlorobenzene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	14
1,1,1-trichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG
1,1,2-trichloroethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	2.4	NG
Trichloroethene	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	5
Trichlorofluoromethane	ug/L	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	NG
1,2,4-trimethylbenzene	ug/L	<0.50	<0.50	0.52	0.52	<0.50	75	NG
1,3,5-trimethylbenzene	ug/L	<0.50	<0.50	0.73	0.73	<0.50	23	NG
Vinyl chloride	ug/L	<0.50	<0.50	0.69	0.53	<0.50	0.68	2

**Notes:**

1 2010 AESRD Tier 1 Soil and Groundwater Remediation Guidelines (December 2010) for fine-grained soil and residential land use.  
ug/L micrograms per liter.

ND not detected; values shown in the laboratory certificate as ND have been replaced by the actual Reportable Detection Limits (RDL).

NG No guideline specified

\* Detection limits raised due to matrix interference

**Bold** Indicates that the concentration did not meet the applicable AESRD 2010 Tier 1 criterion.

**TABLE 9**

**SUMMARY OF LPH RECOVERY  
Zones 1 and 2 - North of 11<sup>th</sup> Avenue NW  
Updated Site Management Plan (2014)  
Hounsfeld Heights - Briar Hill Community  
CALGARY, Alberta**

<b>Monitoring Date</b> mmm-dd-yyyy	<b>Total LPH</b> litres
Jan 3 to 4, 2011	19.8
May 25 to June 3, 2011	29.0
June 3 to 26, 2011	57.5
July 6 to July 31, 2011	45.0
August 1 to 31, 2011	21.7
September 1 to 30, 2011	243.0
October 1 to 2, 2011	4.8
October 1 to 17, 2011	28.9
November 10 to December 17, 2011	166.5
Jan 2 to 22, 2012	120.0
Jan 22 to Feb 22, 2012	164.3
Feb 22 to March 16, 2012	57.5
April 5 to April 10, 2012	15.0
April 10 to May 25, 2012	244.2
June 25 to September 11, 2012	344.2
September 17 to October 1, 2012	40.6
October 2 to December, 2012	system off, not back on yet
<b>TOTAL PHCs Removed</b>	<b>1602.0</b>

**Notes:**

DPVE: Dual Phase Vapour Extraction.

PHC: Petroleum hydrocarbon concentration fractions.

ppm: parts per million; 120 parts per million= 1% LEL.

LEL: Lower Explosive Limit.

TABLE 10

**SUMMARY OF SHALLOW SOIL VAPOURS CONCENTRATIONS**  
**All Zones**  
**Updated Site Management Plan (2014)**  
**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Sample Number (address)	Sample Date (dd-mmm-yy)	Air Volume (L)	Benzene			Toluene			Ethyl-benzene			Xylenes			F1- BTEX C <sub>6</sub> -C <sub>10</sub>			F2 - Naphthalene
			(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )
SG1 (1335 - 15 <sup>th</sup> Street NW)	25-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	20-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	22-Mar-04	134.844	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	23-Sep-03	104.690	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG2 (1335 - 15 <sup>th</sup> Street NW)	23-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	20-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	22-Mar-04	126.486	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	23-Sep-03	137.390	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.008	<40	<5/<5	<0.008	<40	<50	<400	<50	<400
SG3 (1335 - 15 <sup>th</sup> Street NW)	25-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	20-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	22-Mar-04	132.285	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	23-Sep-03	155.320	<0.5/<0.5	<0.001	<3	<5/<5	<0.009	<30	<5/<5	<0.007	<30	<5/<5	<0.007	<30	<50	<300	<50	<300
SG4 (1335 - 15 <sup>th</sup> Street NW)	29-Aug-05	104.904	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
	20-Sep-04	115.060	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	24-Mar-04	121.473	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	24-Sep-03	103.040	<0.5/<0.5	<0.002	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG5 (1321 - 15 <sup>th</sup> Street NW)	29-Aug-05	111.841	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	21-Sep-04	112.060	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	29-Mar-04	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24-Sep-03	106.950	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.02	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG6 (1321 - 15 <sup>th</sup> Street NW)	29-Aug-05	116.986	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	21-Sep-04	118.260	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	29-Mar-04	118.068	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	24-Sep-03	103.260	<0.5/<0.5	<0.002	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG7 (1327 - 15 <sup>th</sup> Street NW)	29-Aug-05	107.141	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
	21-Sep-04	121.130	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	23-Mar-04	117.419	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	24-Sep-03	106.730	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500

Notes:

- no sample due to low flow rate, tube blockage or could not locate soil vapour probe.
- █ Detectable level of hydrocarbons.

<sup>1</sup> There is no sample location GC1.

<sup>2</sup> For SG70, there is potentially a leak in the tubing leading from the soil vapour probe, as hissing sound was heard during sampling on 24 March 2004.

See Contract Laboratory reports for detection limits, testing protocols and QA/QC procedures.

Laboratory testing was conducted by EnviroTest Laboratories (Edmonton, AB).

Samples obtained using charcoal tubes, a SKC AirChek 2000 air sampling pump and a DryCAI DC-Lite primary flow calibrator.

TABLE 10

**SUMMARY OF SHALLOW SOIL VAPOURS CONCENTRATIONS**  
**All Zones**  
**Updated Site Management Plan (2014)**  
**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Sample Number (address)	Sample Date (dd-mmm-yy)	Air Volume (L)	Benzene (µg)		Toluene (µg)		Ethylbenzene (µg)		Xylenes (µg)		F1- BTEX C <sub>6</sub> -C <sub>10</sub> (µg)			F2 - Naphthalene >C <sub>10</sub> -C <sub>16</sub> (µg/m <sup>3</sup> )				
			(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )			
SG8 (1327 - 15 <sup>th</sup> Street NW)	29-Aug-05	107.571	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
	21-Sep-04	120.360	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	23-Mar-04	115.362	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	24-Sep-03	107.510	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG9 (1327 - 15 <sup>th</sup> Street NW)	29-Aug-05	112.572	<0.5/<0.5	<0.001	<4	<5/<5	<0.001	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	21-Sep-04	120.840	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	23-Mar-04	130.619	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	24-Sep-03	107.290	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG10 (1331 - 15 <sup>th</sup> Street NW)	29-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	21-Sep-04	118.860	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	24-Mar-04	121.147	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	24-Sep-03	106.270	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG11 (1331 - 15 <sup>th</sup> Street NW)	29-Aug-05	115.389	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	20-Sep-04	116.890	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	24-Mar-04	114.273	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	24-Sep-03	104.340	<0.5/<0.5	<0.002	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG12 (1604 11 <sup>th</sup> Avenue NW)	Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	23-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24-Mar-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24-Sep-03	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

- no sample due to low flow rate, tube blockage or could not locate soil vapour probe.
- Detectable level of hydrocarbons.

<sup>1</sup> There is no sample location GC1.

<sup>2</sup> For SG70, there is potentially a leak in the tubing leading from the soil vapour probe, as hissing sound was heard during sampling on 24 March 2004.

See Contract Laboratory reports for detection limits, testing protocols and QA/QC procedures.

Laboratory testing was conducted by EnviroTest Laboratories (Edmonton, AB).

Samples obtained using charcoal tubes, a SKC AirChek 2000 air sampling pump and a DryCal DC-Lite primary flow calibrator.

TABLE 10

**SUMMARY OF SHALLOW SOIL VAPOURS CONCENTRATIONS**  
**All Zones**  
**Updated Site Management Plan (2014)**  
**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Sample Number (address)	Sample Date (dd-mmm-yy)	Air Volume (L)	Benzene			Toluene			Ethylbenzene			Xylenes			F1- BTEX C <sub>6</sub> -C <sub>10</sub>		F2 - Naphthalene >C <sub>10</sub> -C <sub>16</sub>	
			(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )
SG13 (1604 11 <sup>th</sup> Avenue NW)	30-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	23-Sep-04	118.570	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	25-Mar-04	125.833	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	25-Sep-03	104.200	<0.5/<0.5	<0.002	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG14 (1604 11 <sup>th</sup> Avenue NW)	23-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	25-Mar-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	25-Sep-03	112.450	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG15 (1604 11 <sup>th</sup> Avenue NW)	23-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	25-Mar-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	25-Sep-03	115.190	0.9/<0.5	0.002	8	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG16 (1324 16 <sup>th</sup> Street NW)	19-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	22-Sep-04	135.310	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	16-Apr-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	25-Sep-03	120.330	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG17 (1324 16 <sup>th</sup> Street NW)	19-Aug-05	105.668	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
	22-Sep-04	119.530	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	26-Mar-04	123.943	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	25-Sep-03	106.270	<0.5/<0.5	<0.002	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG18 (1324 16 <sup>th</sup> Street NW)	19-Aug-05	114.462	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	22-Sep-04	123.830	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	16-Apr-04	116.020	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	25-Sep-03	114.290	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400

Notes:

- no sample due to low flow rate, tube blockage or could not locate soil vapour probe.
- 0.9/<0.5 Detectable level of hydrocarbons.

<sup>1</sup>There is no sample location GC1.

<sup>2</sup> For SG70, there is potentially a leak in the tubing leading from the soil vapour probe, as hissing sound was heard during sampling on 24 March 2004.

See Contract Laboratory reports for detection limits, testing protocols and QA/QC procedures.

Laboratory testing was conducted by EnviroTest Laboratories (Edmonton, AB).

Samples obtained using charcoal tubes, a SKC AirChek 2000 air sampling pump and a DryCAI DC-Lite primary flow calibrator.

TABLE 10

**SUMMARY OF SHALLOW SOIL VAPOURS CONCENTRATIONS**  
**All Zones**  
**Updated Site Management Plan (2014)**  
**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Sample Number (address)	Sample Date (dd-mmm-yy)	Air Volume (L)	Benzene (µg)			Toluene (µg)			Ethylbenzene (µg)			Xylenes (µg)			F1- BTEX C <sub>6</sub> -C <sub>10</sub> (µg)			F2 - Naphthalene >C <sub>10</sub> -C <sub>16</sub> (µg)
			(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )
SG19 (1333 16 <sup>th</sup> Street NW)	22-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	29-Mar-04	116.103	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	25-Sep-03	105.630	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG20 (1333 16 <sup>th</sup> Street NW)	19-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	22-Sep-04	129.990	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	29-Mar-04	119.010	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	25-Sep-03	104.130	<0.5/<0.5	<0.002	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG21 (1333 16 <sup>th</sup> Street NW)	19-Aug-05	116.943	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	22-Sep-04	116.240	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	29-Mar-04	116.075	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	25-Sep-03	117.170	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG22 (1321 15 <sup>th</sup> Street NW)	29-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	22-Sep-04	123.670	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	29-Mar-04	114.460	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	26-Sep-03	104.590	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG23 (1329 16 <sup>th</sup> Street NW)	18-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	22-Sep-04	129.140	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	29-Mar-04	122.555	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	25-Sep-03	114.900	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG24 (1329 16 <sup>th</sup> Street NW)	18-Aug-05	118.665	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	22-Sep-04	118.160	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	29-Mar-04	122.783	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	26-Sep-03	111.800	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400

Notes:

- no sample due to low flow rate, tube blockage or could not locate soil vapour probe.
- Detectable level of hydrocarbons.

<sup>1</sup> There is no sample location GC1.

<sup>2</sup> For SG70, there is potentially a leak in the tubing leading from the soil vapour probe, as hissing sound was heard during sampling on 24 March 2004.

See Contract Laboratory reports for detection limits, testing protocols and QA/QC procedures.

Laboratory testing was conducted by EnviroTest Laboratories (Edmonton, AB).

Samples obtained using charcoal tubes, a SKC AirChek 2000 air sampling pump and a DryCAI DC-Lite primary flow calibrator.



TABLE 10

**SUMMARY OF SHALLOW SOIL VAPOURS CONCENTRATIONS**  
**All Zones**  
**Updated Site Management Plan (2014)**  
**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Sample Number (address)	Sample Date (dd-mmm-yy)	Air Volume (L)	Benzene			Toluene			Ethylbenzene			Xylenes			F1- BTEX C <sub>6</sub> -C <sub>10</sub>			F2 - Naphthalene >C <sub>10</sub> -C <sub>16</sub>			
			(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	
SG25 (1329 16 <sup>th</sup> Street NW)	Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	22-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	29-Mar-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Sep-03	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SG26 (1329 16 <sup>th</sup> Street NW)	18-Aug-05	124.138	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400	<50	<400	
	22-Sep-04	113.550	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400	
	29-Mar-04	120.908	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400	
	26-Sep-03	127.600	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400	<50	<400	
SG27 (1329 16 <sup>th</sup> Street NW)	18-Aug-05	121.519	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400	<50	<400	
	22-Sep-04	124.070	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400	<50	<400	
	29-Mar-04	117.998	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400	
	26-Sep-03	111.930	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400	
SG28 (1332 16A Street NW)	18-Aug-05	116.721	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400	
	24-Sep-04	119.540	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400	
	26-Mar-04	118.743	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400	
	26-Sep-03	111.310	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400	
SG29 (1332 16A Street NW)	18-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	24-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	26-Mar-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	26-Sep-03	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	

Notes:

- no sample due to low flow rate, tube blockage or could not locate soil vapour probe.
- █ Detectable level of hydrocarbons.

<sup>1</sup> There is no sample location GC1.

<sup>2</sup> For SG70, there is potentially a leak in the tubing leading from the soil vapour probe, as hissing sound was heard during sampling on 24 March 2004.

See Contract Laboratory reports for detection limits, testing protocols and QA/QC procedures.

Laboratory testing was conducted by EnviroTest Laboratories (Edmonton, AB).

Samples obtained using charcoal tubes, a SKC AirChek 2000 air sampling pump and a DryCal DC-Lite primary flow calibrator.

TABLE 10

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**All Zones**  
**Updated Site Management Plan (2014)**  
**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Sample Number (address)	Sample Date (dd-mmm-yy)	Air Volume (L)	Benzene (µg)		Toluene (µg)		Ethylbenzene (µg)		Xylenes (µg)		F1- BTEX C <sub>6</sub> -C <sub>10</sub> (µg)		F2 - Naphthalene >C <sub>10</sub> -C <sub>16</sub> (µg)					
			(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )			
SG30 (1340 16A Street NW)	16-Aug-05	119.419	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	16-Sep-04	113.520	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	26-Mar-04	133.928	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	26-Sep-03	122.810	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
SG31 (1340 16A Street NW)	16-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Sep-04	110.260	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
	26-Mar-04	112.208	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	26-Sep-03	120.830	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG32 (1340 16A Street NW)	16-Aug-05	120.730	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	16-Sep-04	117.650	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	26-Mar-04	128.414	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	26-Sep-03	122.240	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
SG33 (1315 16A Street NW)	16-Aug-05	122.128	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	15-Sep-04	112.170	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	25-Mar-04	112.689	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	29-Sep-03	120.780	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG34 (1315 16A Street NW)	16-Aug-05	123.532	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	15-Sep-04	117.300	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	25-Mar-04	124.364	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	29-Sep-03	122.120	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400

Notes:

- no sample due to low flow rate, tube blockage or could not locate soil vapour probe.
- █ Detectable level of hydrocarbons.

<sup>1</sup> There is no sample location GC1.

<sup>2</sup> For SG70, there is potentially a leak in the tubing leading from the soil vapour probe, as hissing sound was heard during sampling on 24 March 2004.

See Contract Laboratory reports for detection limits, testing protocols and QA/QC procedures.

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Samples obtained using charcoal tubes, a SKC AirChek 2000 air sampling pump and a DryCal DC-Lite primary flow calibrator.

TABLE 10

**SUMMARY OF SHALLOW SOIL VAPOURS CONCENTRATIONS**  
**All Zones**  
**Updated Site Management Plan (2014)**  
**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Sample Number (address)	Sample Date (dd-mmm-yy)	Air Volume (L)	Benzene (µg)			Toluene (µg)			Ethylbenzene (µg)			Xylenes (µg)			F1- BTEX C <sub>6</sub> -C <sub>10</sub> (µg)		F2 - Naphthalene >C <sub>10</sub> -C <sub>16</sub> (µg)	
			(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )
SG35 (1315 16A Street NW)	16-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	25-Mar-04	114.993	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	29-Sep-03	113.490	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG36 (1319 16A Street NW)	15-Aug-05	118.494	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	15-Sep-04	112.010	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	25-Mar-04	132.589	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	29-Sep-03	109.570	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG37 (1311 16A Street NW)	Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Sep-04	126.810	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	25-Mar-04	118.550	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	30-Sep-03	115.320	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG38 (1311 16A Street NW)	Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Sep-04	111.020	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
	25-Mar-04	120.265	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	30-Sep-03	113.400	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG39 (1311 16A Street NW)	Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Sep-04	118.920	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	25-Mar-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	30-Sep-03	114.760	<0.05/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400

Notes:

- no sample due to low flow rate, tube blockage or could not locate soil vapour probe.
- Detectable level of hydrocarbons.

<sup>1</sup> There is no sample location GC1.

<sup>2</sup> For SG70, there is potentially a leak in the tubing leading from the soil vapour probe, as hissing sound was heard during sampling on 24 March 2004.

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Samples obtained using charcoal tubes, a SKC AirChek 2000 air sampling pump and a DryCal DC-Lite primary flow calibrator.

TABLE 10

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**All Zones**  
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**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Sample Number (address)	Sample Date (dd-mmm-yy)	Air Volume (L)	Benzene (µg)		Toluene (µg)		Ethylbenzene (µg)		Xylenes (µg)		F1- BTEX C <sub>6</sub> -C <sub>10</sub> (µg)		F2 - Naphthalene >C <sub>10</sub> -C <sub>16</sub> (µg)					
			(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )			
SG40 (1307 16A Street NW)	16-Aug-05	141.747	<0.5/<0.5	<0.001	<4	<5/<5	<0.009	<40	<5/<5	<0.008	<40	<5/<5	<0.008	<40	<50	<400	<50	<400
	16-Sep-04	125.350	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	26-Mar-04	129.138	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	30-Sep-03	112.720	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG41 (1307 16A Street NW)	16-Aug-05	129.510	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	16-Sep-04	120.830	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	26-Mar-04	117.358	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	30-Sep-03	115.790	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG42 (1307 16A Street NW)	16-Aug-05	118.906	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	16-Sep-04	110.290	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
	26-Mar-04	124.685	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	30-Sep-03	114.010	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG43 (1225 16A Street NW)	18-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	30-Mar-04	114.653	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	30-Sep-03	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SG44 (1225 16A Street NW)	18-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	16-Sep-04	111.630	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	30-Mar-04	129.878	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	30-Sep-03	113.840	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG45 (1225 16A Street NW)	18-Aug-05	118.204	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	16-Sep-04	118.120	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	30-Mar-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	30-Sep-03	115.800	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400

Notes:

- no sample due to low flow rate, tube blockage or could not locate soil vapour probe.
- █ Detectable level of hydrocarbons.

<sup>1</sup> There is no sample location GC1.

<sup>2</sup> For SG70, there is potentially a leak in the tubing leading from the soil vapour probe, as hissing sound was heard during sampling on 24 March 2004.

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Samples obtained using charcoal tubes, a SKC AirChek 2000 air sampling pump and a DryCAL DC-Lite primary flow calibrator.

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**Updated Site Management Plan (2014)**  
**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Sample Number (address)	Sample Date (dd-mmm-yy)	Air Volume (L)	Benzene (µg)		Toluene (µg)		Ethylbenzene (µg)		Xylenes (µg)		F1- BTEX C <sub>6</sub> -C <sub>10</sub> (µg)		F2 - Naphthalene >C <sub>10</sub> -C <sub>16</sub> (µg)					
			(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(µg/m <sup>3</sup> )			
SG45 (1225 16A Street NW)	18-Aug-05	118.204	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	16-Sep-04	118.120	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	30-Mar-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	30-Sep-03	115.800	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG46 (1111 16A Street NW)	18-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24-Sep-04	117.610	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	30-Mar-04	119.873	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	30-Sep-03	121.650	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
SG47 (1111 16A Street NW)	18-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	30-Mar-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	30-Sep-03	110.500	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG48 (1319 16A Street NW)	15-Aug-05	119.301	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	24-Sep-04	120.400	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	25-Mar-04	124.033	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	29-Sep-03	117.110	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG49 (1319 16A Street NW)	15-Aug-05	121.334	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	15-Sep-04	129.910	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	25-Mar-04	123.595	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	29-Sep-03	114.130	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG50 (1326 16 <sup>th</sup> Street NW)	22-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Mar-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	25-Sep-03	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Notes:

- no sample due to low flow rate, tube blockage or could not locate soil vapour probe.
- █ Detectable level of hydrocarbons.

<sup>1</sup> There is no sample location GC1.

<sup>2</sup> For SG70, there is potentially a leak in the tubing leading from the soil vapour probe, as hissing sound was heard during sampling on 24 March 2004.

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Samples obtained using charcoal tubes, a SKC AirChek 2000 air sampling pump and a DryCAI DC-Lite primary flow calibrator.

TABLE 10

**SUMMARY OF SHALLOW SOIL VAPOURS CONCENTRATIONS**  
**All Zones**  
**Updated Site Management Plan (2014)**  
**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Sample Number (address)	Sample Date (dd-mmm-yy)	Air Volume (L)	Benzene			Toluene			Ethylbenzene			Xylenes			F1- BTEX C <sub>6</sub> -C <sub>10</sub>			F2 - Naphthalene >C <sub>10</sub> -C <sub>16</sub>	
			(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )	
SG51 (1326 16 <sup>th</sup> Street NW)	22-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	26-Mar-04	132.260	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400	
	25-Sep-03	106.480	<0.5/<0.5	<0.002	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500	
SG52 (1326 16 <sup>th</sup> Street NW)	18-Aug-05	110.967	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500	
	22-Sep-04	115.000	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	
	26-Mar-04	126.740	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400	
	25-Sep-03	107.310	<0.5/<0.5	<0.002	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500	
SG53 (1301 15 <sup>th</sup> Street NW)	23-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	25-Mar-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	30-Sep-03	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
SG54 (1301 15 <sup>th</sup> Street NW)	23-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	25-Mar-04	109.048	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500	
	30-Sep-03	118.680	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	
SG55 (1301 15 <sup>th</sup> Street NW)	23-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	25-Mar-04	104.811	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500	
	30-Sep-03	115.730	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	
SG56 (1336 15 <sup>th</sup> Street NW)	31-Aug-05	117.447	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	
	17-Sep-04	119.390	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	
	23-Mar-04	119.661	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	
	14-Oct-03	115.920	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	

Notes:

- no sample due to low flow rate, tube blockage or could not locate soil vapour probe.
- █ Detectable level of hydrocarbons.

<sup>1</sup> There is no sample location GC1.

<sup>2</sup> For SG70, there is potentially a leak in the tubing leading from the soil vapour probe, as hissing sound was heard during sampling on 24 March 2004.

See Contract Laboratory reports for detection limits, testing protocols and QA/QC procedures.

Laboratory testing was conducted by EnviroTest Laboratories (Edmonton, AB).

Samples obtained using charcoal tubes, a SKC AirChek 2000 air sampling pump and a DryCAI DC-Lite primary flow calibrator.

TABLE 10

**SUMMARY OF SHALLOW SOIL VAPOURS CONCENTRATIONS**  
**All Zones**  
**Updated Site Management Plan (2014)**  
**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Sample Number (address)	Sample Date (dd-mmm-yy)	Air Volume (L)	Benzene		Toluene		Ethylbenzene		Xylenes		F1- BTEX C <sub>6</sub> -C <sub>10</sub>		F2 - Naphthalene >C <sub>10</sub> -C <sub>16</sub>					
			(µg) (front/back)	(ppm)	(µg/m <sup>3</sup> ) (front/back)	(ppm)	(µg) (front/back)	(ppm)	(µg) (front/back)	(ppm)	(µg) (front/back)	(ppm)	(µg) (front/back)	(µg) (front/back)	(µg/m <sup>3</sup> ) (front/back)			
SG57 (1336 15 <sup>th</sup> Street NW)	31-Aug-05	122.392	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	17-Sep-04	119.720	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	23-Mar-04	121.842	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	14-Oct-03	120.540	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG58 (1336 15 <sup>th</sup> Street NW)	31-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	17-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	23-Mar-04	111.631	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	14-Oct-03	113.950	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG59 (1328 15 <sup>th</sup> Street NW)	31-Aug-05	115.754	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	20-Sep-04	118.480	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	23-Mar-04	118.090	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	14-Oct-03	113.710	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG60 (1328 15 <sup>th</sup> Street NW)	31-Aug-05	103.801	<0.5/<0.5	<0.002	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
	17-Sep-04	111.500	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	23-Mar-04	126.320	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	14-Oct-03	116.720	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG61 (1328 15 <sup>th</sup> Street NW)	31-Aug-05	106.372	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
	20-Sep-04	124.670	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	23-Mar-04	118.064	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	14-Oct-03	110.400	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG62 (1319 15 <sup>th</sup> Street NW)	29-Aug-05	110.361	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
	21-Sep-04	114.360	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	24-Mar-04	123.320	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	15-Oct-03	114.470	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400

**Notes:**

- no sample due to low flow rate, tube blockage or could not locate soil vapour probe.  
 Detectable level of hydrocarbons.

<sup>1</sup> There is no sample location GC1.

<sup>2</sup> For SG70, there is potentially a leak in the tubing leading from the soil vapour probe, as hissing sound was heard during sampling on 24 March 2004.

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Laboratory testing was conducted by EnviroTest Laboratories (Edmonton, AB).

Samples obtained using charcoal tubes, a SKC AirChek 2000 air sampling pump and a DryCal DC-Lite primary flow calibrator.

TABLE 10

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**All Zones**  
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**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Sample Number (address)	Sample Date (dd-mmm-yy)	Air Volume (L)	Benzene (µg)			Toluene (µg)			Ethylbenzene (µg)			Xylenes (µg)			F1 - BTEX C <sub>6</sub> -C <sub>10</sub> (µg)			F2 - Naphthalene >C <sub>10</sub> -C <sub>16</sub> (µg)		
			(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )		
SG63 (1319 15 <sup>th</sup> Street NW)	29-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	21-Sep-04	131.740	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400	<50	<400
	24-Mar-04	131.679	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400	<50	<400
	15-Oct-03	119.780	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400
SG64 (1319 15 <sup>th</sup> Street NW)	29-Aug-05	108.751	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500	<50	<500
	21-Sep-04	131.280	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400	<50	<400
	24-Mar-04	127.837	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400	<50	<400
	15-Oct-03	113.400	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400
SG65 (1339 15 <sup>th</sup> Street NW)	23-Aug-05	116.318	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400
	23-Sep-04	120.210	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400
	22-Mar-04	126.117	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400	<50	<400
SG66 (1339 15 <sup>th</sup> Street NW)	23-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	22-Mar-04	120.763	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400
	14-Oct-03	113.410	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400
SG67 (1339 15 <sup>th</sup> Street NW)	25-Aug-05	119.709	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400
	23-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	22-Mar-04	129.108	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400	<50	<400
	14-Oct-03	118.140	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400
SG68 (1315 15 <sup>th</sup> Street NW)	30-Aug-05	113.014	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400
	21-Sep-04	117.940	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400
	24-Mar-04	130.336	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400	<50	<400
	15-Oct-03	113.010	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400
SG69 (1315 15 <sup>th</sup> Street NW)	30-Aug-05	111.713	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400
	21-Sep-04	120.360	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400
	24-Mar-04	138.039	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.008	<40	<5/<5	<0.008	<40	<50	<400	<50	<400	<50	<400
	15-Oct-03	114.710	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400
SG70 (1315 15 <sup>th</sup> Street NW)	30-Aug-05	111.923	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400
	22-Sep-04	126.310	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400	<50	<400
	24-Mar-04 <sup>2</sup>	120.204	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400
	15-Oct-03	113.970	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	<50	<400

Notes:

- no sample due to low flow rate, tube blockage or could not locate soil vapour probe.
- █ Detectable level of hydrocarbons.

<sup>1</sup> There is no sample location GC1.

<sup>2</sup> For SG70, there is potentially a leak in the tubing leading from the soil vapour probe, as hissing sound was heard during sampling on 24 March 2004.

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Samples obtained using charcoal tubes, a SKC AirChek 2000 air sampling pump and a DryCAL DC-Lite primary flow calibrator.



TABLE 10

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**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Sample Number (address)	Sample Date (dd-mmm-yy)	Air Volume (L)	Benzene (µg)			Toluene (µg)			Ethylbenzene (µg)			Xylenes (µg)			F1- BTEX C <sub>6</sub> -C <sub>10</sub> (µg)		F2 - Naphthalene >C <sub>10</sub> -C <sub>16</sub> (µg)	
			(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )
SG71 (1319 16 <sup>th</sup> Street NW)	19-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24-Sep-04	112.140	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	24-Mar-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Oct-03	113.420	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG72 (1319 16 <sup>th</sup> Street NW)	19-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	24-Sep-04	114.530	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	24-Mar-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Oct-03	122.970	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
SG73 (1319 16 <sup>th</sup> Street NW)	19-Aug-05	118.112	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	22-Sep-04	120.920	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	24-Mar-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	15-Oct-03	122.530	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
SG101 (1601 11 <sup>th</sup> Avenue NW)	30-Aug-05	113.646	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	14-Sep-04	126.380	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
SG102 (1601 11 <sup>th</sup> Avenue NW)	31-Aug-05	106.639	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
	14-Sep-04	120.380	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG103 (1601 11 <sup>th</sup> Avenue NW)	30-Aug-05	110.837	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
	14-Sep-04	112.720	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG104 (1605 11 <sup>th</sup> Avenue NW)	30-Aug-05	125.638	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	14-Sep-04	121.720	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG105 (1605 11 <sup>th</sup> Avenue NW)	30-Aug-05	117.075	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	14-Sep-04	129.620	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	1600	12000	<50	<400
SG106 (1605 11 <sup>th</sup> Avenue NW)	30-Aug-05	106.783	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
	14-Sep-04	124.730	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400

Notes:

- no sample due to low flow rate, tube blockage or could not locate soil vapour probe.
- 1600 Detectable level of hydrocarbons.

<sup>1</sup> There is no sample location GC1.

<sup>2</sup> For SG70, there is potentially a leak in the tubing leading from the soil vapour probe, as hissing sound was heard during sampling on 24 March 2004.

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Laboratory testing was conducted by EnviroTest Laboratories (Edmonton, AB).

Samples obtained using charcoal tubes, a SKC AirChek 2000 air sampling pump and a DryCAI DC-Lite primary flow calibrator.

TABLE 10

**SUMMARY OF SHALLOW SOIL VAPOURS CONCENTRATIONS**  
**All Zones**  
**Updated Site Management Plan (2014)**  
**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Sample Number (address)	Sample Date (dd-mmm-yy)	Air Volume (L)	Benzene (µg)			Toluene (µg)			Ethylbenzene (µg)			Xylenes (µg)			F1- BTEX C <sub>6</sub> -C <sub>10</sub> (µg)			F2 - Naphthalene >C <sub>10</sub> -C <sub>16</sub> (µg)		
			(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(front/back)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )		
SG107 (1616 11 <sup>th</sup> Avenue NW)	22-Aug-05	120.746	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400		
	14-Sep-04	118.760	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400		
SG108 (1616 11 <sup>th</sup> Avenue NW)	19-Aug-05	110.528	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500		
	14-Sep-04	117.770	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400		
SG109 (1616 11 <sup>th</sup> Avenue NW)	14-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
SG110 (1106 16 <sup>th</sup> Street NW)	22-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	10-Sep-04	177.380	<0.5/<0.5	<0.0009	<3	<5/<5	<0.007	<30	<5/<5	<0.007	<30	<5/<5	<0.007	<30	<50	<300	<50	<300		
SG111 (1106 16 <sup>th</sup> Street NW)	22-Aug-05	110.832	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500		
	10-Sep-04	153.850	<0.5/<0.5	<0.001	<3	<5/<5	<0.009	<30	<5/<5	<0.007	<30	<5/<5	<0.007	<30	<50	<300	<50	<300		
SG112 (1112 16 <sup>th</sup> Street NW)	22-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
	13-Sep-04	119.570	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400		
SG113 (1112 16 <sup>th</sup> Street NW)	22-Aug-05	118.083	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400		
	13-Sep-04	113.070	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400		
SG114 (1112 16 <sup>th</sup> Street NW)	22-Aug-05	121.556	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400		
	13-Sep-04	113.370	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400		
SG115 (1116 16 <sup>th</sup> Street NW)	22-Aug-05	114.998	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400		
	13-Sep-04	117.800	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400		

Notes:

- no sample due to low flow rate, tube blockage or could not locate soil vapour probe.
- █ Detectable level of hydrocarbons.

<sup>1</sup> There is no sample location GC1.

<sup>2</sup> For SG70, there is potentially a leak in the tubing leading from the soil vapour probe, as hissing sound was heard during sampling on 24 March 2004.

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Samples obtained using charcoal tubes, a SKC AirChek 2000 air sampling pump and a DryCAI DC-Lite primary flow calibrator.

TABLE 10

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**CALGARY, Alberta**

Sample Number (address)	Sample Date (dd-mmm-yy)	Air Volume (L)	Benzene			Toluene			Ethylbenzene			Xylenes			F1- BTEX C <sub>6</sub> -C <sub>10</sub>			F2 - Naphthalene >C <sub>10</sub> -C <sub>16</sub>
			(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )	(µg)	(µg/m <sup>3</sup> )
SG116 (1116 16 <sup>th</sup> Street NW)	Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	13-Sep-04	118.940	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG117 (1116 16 <sup>th</sup> Street NW)	22-Aug-05	112.728	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	13-Sep-04	110.650	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG118 (1118 16 <sup>th</sup> Street NW)	22-Aug-05	122.694	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
	13-Sep-04	116.530	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG119 (1118 16 <sup>th</sup> Street NW)	22-Aug-05	119.065	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
	13-Sep-04	121.700	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400
SG201 (1604 11 <sup>th</sup> Avenue NW)	30-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SG202 (1604 11 <sup>th</sup> Avenue NW)	30-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-04	107.380	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG203 (1616 11 <sup>th</sup> Avenue NW)	19-Aug-05	109.215	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
	18-Nov-04	106.230	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500
SG204 (1301 15 <sup>th</sup> Street NW)	Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SG205 (1301 15 <sup>th</sup> Street NW)	Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-04	114.270	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400
SG206 (1301 15 <sup>th</sup> Street NW)	Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	18-Nov-04	111.450	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400

Notes:

- no sample due to low flow rate, tube blockage or could not locate soil vapour probe.  
 Detectable level of hydrocarbons.

<sup>1</sup> There is no sample location GC1.

<sup>2</sup> For SG70, there is potentially a leak in the tubing leading from the soil vapour probe, as hissing sound was heard during sampling on 24 March 2004.

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Samples obtained using charcoal tubes, a SKC AirChek 2000 air sampling pump and a DryCal DC-Lite primary flow calibrator.

TABLE 10

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**CALGARY, Alberta**

Sample Number (address)	Sample Date (dd-mmm-yy)	Air Volume (L)	Benzene			Toluene			Ethylbenzene			Xylenes			F1- BTEX C <sub>6</sub> -C <sub>10</sub>			F2 - Naphthalene >C <sub>10</sub> -C <sub>16</sub>	
			(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg/m <sup>3</sup> )	(µg)	(ppm)	(µg)	(µg/m <sup>3</sup> )	(µg)
SG207 (1326 15 <sup>th</sup> Street NW)	19-Aug-05	111.889	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	
	19-Nov-04	108.940	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500	
SG208 (1326 15 <sup>th</sup> Street NW)	18-Aug-05	117.660	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	
	19-Nov-04	123.370	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400	
SG209 (1339 15 <sup>th</sup> Street NW)	23-Aug-05	115.455	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	
	19-Nov-04	110.400	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500	
SG210 (1333 16 <sup>th</sup> Street NW)	18-Aug-05	121.135	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	
	18-Nov-04	123.140	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400	
GC2 (1609 11 <sup>th</sup> Avenue NW) 1	22-Aug-05	123.038	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.009	<40	<5/<5	<0.009	<40	<50	<400	<50	<400	
	14-Sep-04	121.180	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	
	16-Apr-04	116.943	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	
	11-Nov-03	121.240	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	
GC3 (1609 11 <sup>th</sup> Avenue NW)	22-Aug-05	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	14-Sep-04	N/A	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
	16-Apr-04	116.540	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	
	11-Nov-03	120.660	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	
GC4 (1609 11 <sup>th</sup> Avenue NW)	22-Aug-05	114.117	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	
	14-Sep-04	109.340	<0.5/<0.5	<0.001	<5	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<5/<5	<0.01	<50	<50	<500	<50	<500	
	11-Nov-03	115.290	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	
	16-Apr-04	117.750	<0.5/<0.5	<0.001	<4	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<5/<5	<0.01	<40	<50	<400	<50	<400	

Notes:

- no sample due to low flow rate, tube blockage or could not locate soil vapour probe.
- █ Detectable level of hydrocarbons.

<sup>1</sup> There is no sample location GC1.

<sup>2</sup> For SG70, there is potentially a leak in the tubing leading from the soil vapour probe, as hissing sound was heard during sampling on 24 March 2004.

See Contract Laboratory reports for detection limits, testing protocols and QA/QC procedures.

Laboratory testing was conducted by EnviroTest Laboratories (Edmonton, AB).

Samples obtained using charcoal tubes, a SKC AirChek 2000 air sampling pump and a DryCAL DC-Lite primary flow calibrator.

**TABLE 11**      **SUMMARY OF SITE SPECIFIC SOIL AND GROUNDWATER GUIDELINES - TIER 3**  
**Zones 1 and 2**  
**Updated Site Management Plan (2014)**  
**Hounsfield Heights - Briar Hill Community**  
**CALGARY, Alberta**

House Number	Civic Address	Site-specific Soil Quality Guidelines		Site-specific Groundwater Quality Guidelines	
		Benzene (mg/kg)	PHC Fraction F1 (mg/kg)	Benzene (mg/L)	PHC Fraction F1 (mg/L)
1	1340 - 16th Street NW	13	14,983	34	NA
2	1339 - 15th Street NW	15	17,190	38	NA
3	1336 - 16th Street NW	13	14,403	33	NA
4	1335 - 15th Street NW	12	13,190	32	NA
5	1330 - 16th Street NW	12	13,950	30	NA
6	1331 - 15th Street NW	15	18,543	39	NA
7	1326 - 16th Street NW	12	13,114	31	NA
8	1327 - 15th Street NW	13	13,582	34	NA
9	1324 - 16th Street NW	14	16,814	37	NA
10	1321 - 15th Street NW	13	13,983	33	NA
11	1318 - 16th Street NW	13	13,708	34	NA
12	1319 - 15th Street NW	13	14,293	34	NA
13	1315 - 15th Street NW	13	14,314	34	NA
14	1312 - 16th Street NW	13	13,832	34	NA
15	1309 - 15th Street NW	14	14,270	35	NA
16	1616 - 11th Avenue NW	5	2,426	12	NA
17	1610 - 11th Avenue NW	13	13,406	32	NA
18	1305 - 15th Street NW	13	13,406	32	NA
19	1604 - 11th Avenue NW	12	13,247	32	NA
20	1301 - 15th Street NW	12	11,620	31	NA
21	1124 - 16th Street NW	6	3,077	15	NA
22	1613 - 11th Avenue NW	6	3,077	15	NA
23	1609 - 11th Avenue NW	6	3,077	15	NA
24	1605 - 11th Avenue NW	6	3,004	14	NA
25	1601 - 11th Avenue NW	6	5,720	16	NA
26	1631 - 13th Avenue NW	13	14,764	32	NA
27	1333 - 16th Street NW	12	13,331	31	NA
28	1329 - 16th Street NW	12	12,209	30	NA
29	1325 - 16th Street NW	14	15,248	36	NA
30	1323 - 16th Street NW	15	17,590	39	NA
31	1319 - 16th Street NW	15	17,590	39	NA
32	1315 - 16th Street NW	13	13,727	35	NA
33	1630 - 11th Avenue NW	11	8,735	27	NA
34	1634 - 11th Avenue NW	12	11,373	31	NA
35	1129 - 16A Street NW	11	10,081	29	NA
36	1125 - 16A Street NW	11	10,081	29	NA
37	1123 - 16A Street NW	11	10,081	29	NA
38	1115 - 16A Street NW	11	10,081	29	NA
39	1111 - 16A Street NW	11	10,081	29	NA

NA      Not Applicable

**TABLE 12 SCHEDULE OF MILESTONES FOR THE HOUNSFIELD HEIGHTS AREA**  
**Updated Site Management Plan (2014)**  
**Hounsfeld Heights - Briar Hill Community**  
**CALGARY, Alberta**

Sears North Hill Mall and Hounsfeld Heights

Start Date: 1/1/2014  
End Date: 12/31/2017

Today: 7/11/2014  
Project Manager: Stephen D'Abadie

ID	WBS	Status	Milestone	Dur.	Start	Finish	W	U	S	Resource	De	Bu	Ac	%
	<b>1</b>	<b>Complete</b>	<b>SMP update</b>	<b>90</b>	<b>1/1/14</b>	<b>4/1/14</b>						<b>150</b>	<b>150</b>	<b>100%</b>
1	1.1	Complete	SMP writing	58	1/1/14	2/28/14				Fabian Isaza	80	80		100%
2	1.2	Complete	CSM preparation	28	1/31/14	2/28/14				Daniel Budai	20	20		100%
3	1.3	Complete	HRA	30	1/1/14	1/31/14				Intristik	40	40		100%
4	1.4	Complete	Senior review	25	3/28/14	4/22/14				Mark Lehar	3	10	10	100%
	<b>2</b>	<b>On Schedule</b>	<b>License of Occupation</b>	<b>137</b>	<b>3/15/14</b>	<b>7/30/14</b>	<b>98</b>	<b>84</b>	<b>14</b>			<b>84</b>	<b>44</b>	<b>52%</b>
8	2.1	Complete	List of existing wells	3	4/1/14	4/4/14				Keith Pan		6	6	100%
9	2.2	Complete	Drawings	8	4/7/14	4/15/14				Richele Deang		30	30	100%
10	2.3	Complete	ULA application	7	4/15/14	4/22/14				Daniel Budai		20	8	100%
11	2.4	On Schedule	Credit Letter	76	5/15/14	7/30/14	55	41	14	Stephen D'Abadie		8	0	0%
12	2.5	On Schedule	LOA application	46	6/30/14	8/15/14	35	9	26	Daniel Budai	11	20	0	0%
	<b>3</b>	<b>Complete</b>	<b>Public Meeting</b>	<b>5</b>	<b>5/5/14</b>	<b>5/10/14</b>						<b>80</b>	<b>80</b>	<b>100%</b>
13	3.1	Complete	Public Meeting	20	5/5/14	5/25/14				Stephen D'Abadie, Mark Lehar		80	80	100%
	<b>4</b>	<b>Complete</b>	<b>Door to Door Survey</b>	<b>5</b>	<b>5/10/14</b>	<b>5/15/14</b>						<b>40</b>	<b>40</b>	<b>100%</b>
14	4.1	Complete	Door to Door Survey	5	5/10/14	5/15/14				Daniel Budai		60	60	100%
	<b>5</b>	<b>On Schedule</b>	<b>Well Abandonment</b>	<b>25</b>	<b>5/26/14</b>	<b>6/20/14</b>	<b>20</b>					<b>340</b>	<b>20</b>	<b>6%</b>
15	5.1	Complete	Drilling Services Tendering & Award	78	4/15/14	7/2/14				Sears Canada Inc		20	20	100%
16	5.2	On Schedule	Laboratory Services Tendering & Award	31	4/15/14	5/16/14	24			Sears Canada Inc		20	0	0%
17	5.3	On Schedule	Drawings	5	4/17/14	4/22/14	4			Richele Deang		12	0	0%
18	5.4	On Schedule	ULA Application	1	4/22/14	4/23/14	2			Daniel Budai		4	0	0%
19	5.5	On Schedule	Excavation Permit Application	5	5/15/14	5/20/14	4			Daniel Budai		8	0	0%
20	5.6	On Schedule	Well Abandonment	25	5/26/14	6/20/14	20			Gavin Clarke, Keith Pan		320	0	0%
21	5.7	On Schedule	Well Abandonment Report for the City	1	6/20/14	6/21/14	1			Daniel Budai		12	0	0%
	<b>6</b>	<b>On Schedule</b>	<b>Boreholes Drilling/Wells Development</b>	<b>19</b>	<b>6/30/14</b>	<b>7/19/14</b>	<b>15</b>	<b>9</b>	<b>6</b>			<b>586</b>	<b>0</b>	<b>0%</b>
22	6.1	On Schedule	Excavation Permit application	1	6/20/14	6/21/14	1			Daniel Budai	4	6	0	0%
23	6.2	On Schedule	Drilling, Soil sampling, Wells development	26	6/30/14	7/26/14	20	9	11	Gavin Clarke, Keith Pan		532	0	0%
24	6.3	On Schedule	Pack, Submit samples to laboratory	1	7/26/14	7/27/14	0			Gavin Clarke, Keith Pan		8	0	0%
25	6.4	On Schedule	Groundwater purge, sampling	3	8/4/14	8/7/14	4			Gavin Clarke, Keith Pan		32	0	0%
26	6.5	On Schedule	Pack, Submit Samples to Laboratory	1	8/7/14	8/8/14	2			Gavin Clarke, Keith Pan		8	0	0%
	<b>7</b>	<b>On Schedule</b>	<b>Investigation Reporting</b>	<b>23</b>	<b>8/18/14</b>	<b>9/10/14</b>	<b>18</b>	<b>44</b>				<b>95</b>	<b>0</b>	<b>0%</b>
27	7.1	On Schedule	Investigation Reporting Draft	11	8/18/14	8/29/14	10			Fabian Isaza, Daniel Budai		60	0	0%
28	7.2	On Schedule	Senior review	3	9/2/14	9/5/14	4			Mark Lehar		15	0	0%
29	7.3	On Schedule	Edits, Drawings, Tables	23	8/18/14	9/10/14	18			Richele Deang, Keith Pan		20	0	0%
	<b>8</b>	<b>On Schedule</b>	<b>Numerical Modeling</b>	<b>31</b>	<b>8/18/14</b>	<b>9/18/14</b>	<b>24</b>	<b>50</b>				<b>162</b>	<b>0</b>	<b>0%</b>
30	8.1	On Schedule	Data gathering, QA/QC	18	8/18/14	9/5/14	15			Mohsen Nickstar		80	0	0%
31	8.2	On Schedule	Modeling	5	9/8/14	9/13/14	5			Mostafa Zadeh		70	0	0%
32	8.3	On Schedule	Senior review	3	9/15/14	9/18/14	4			Mark Lehar		12	0	0%
	<b>9</b>	<b>On Schedule</b>	<b>Health Risk Assessment</b>	<b>30</b>	<b>8/31/14</b>	<b>9/30/14</b>	<b>22</b>	<b>58</b>				<b>135</b>	<b>0</b>	<b>0%</b>
33	9.1	On Schedule	HRA Draft	15	8/31/14	9/15/14	11			Intristik		120	0	0%
34	9.2	On Schedule	Senior Review	5	9/15/14	9/20/14	5			Mark Lehar		5	0	0%
35	9.3	On Schedule	CSM update	3	9/15/14	9/18/14	4			Daniel Budai		10	0	0%
	<b>10</b>	<b>On Schedule</b>	<b>Groundwater Sampling Event</b>	<b>15</b>	<b>11/15/14</b>	<b>11/30/14</b>	<b>10</b>	<b>101</b>				<b>104</b>	<b>0</b>	<b>0%</b>
36	10.1	On Schedule	Groundwater purge, sampling	14	11/15/14	11/29/14	10			Gavin Clarke, Keith Pan		96	0	0%
37	10.2	On Schedule	Pack, Submit samples to laboratory	1	11/29/14	11/30/14	0			Gavin Clarke, Keith Pan		8	0	0%
	<b>11</b>	<b>On Schedule</b>	<b>Investigation Reporting</b>	<b>15</b>	<b>12/7/14</b>	<b>12/22/14</b>	<b>11</b>	<b>117</b>				<b>95</b>	<b>0</b>	<b>0%</b>
38	11.1	On Schedule	Investigation Reporting Draft	8	12/7/14	12/15/14	6			Fabian Isaza, Daniel Budai		60	0	0%
39	11.2	On Schedule	Senior Review	5	12/15/14	12/20/14	5			Mark Lehar		15	0	0%
40	11.3	On Schedule	Edits, Drawings, Tables	15	12/7/14	12/22/14	11			Richele Deang, Keith Pan		20	0	0%
	<b>12</b>	<b>On Schedule</b>	<b>Monitoring Event I - 2015</b>	<b>7</b>	<b>3/1/15</b>	<b>3/8/15</b>	<b>5</b>	<b>171</b>				<b>104</b>	<b>0</b>	<b>0%</b>
41	12.1	On Schedule	Field sampling & testing	6	3/1/15	3/7/15	5			Gavin Clarke, Keith Pan		96	0	0%
42	12.2	On Schedule	Pack, Submit samples to laboratory	1	3/7/15	3/8/15	0			Gavin Clarke, Keith Pan		8	0	0%
	<b>13</b>	<b>On Schedule</b>	<b>Investigation Reporting I - 2015</b>	<b>26</b>	<b>3/20/15</b>	<b>4/15/15</b>	<b>19</b>	<b>199</b>				<b>95</b>	<b>0</b>	<b>0%</b>
43	13.1	On Schedule	Investigation Reporting Draft	12	3/20/15	4/1/15	9			Fabian Isaza, Daniel Budai		60	0	0%
44	13.2	On Schedule	Senior Review	10	4/1/15	4/11/15	8			Mark Lehar		15	0	0%
45	13.3	On Schedule	Edits, Drawings, Tables	26	3/20/15	4/15/15	19			Richele Deang, Keith Pan		20	0	0%
	<b>14</b>	<b>On Schedule</b>	<b>Monitoring Event II - 2015</b>	<b>7</b>	<b>6/1/15</b>	<b>6/8/15</b>	<b>6</b>	<b>237</b>				<b>104</b>	<b>0</b>	<b>0%</b>
46	14.1	On Schedule	Field sampling & testing	6	6/1/15	6/7/15	5			Gavin Clarke, Keith Pan		96	0	0%
47	14.2	On Schedule	Pack, Submit samples to laboratory	1	6/7/15	6/8/15	1			Gavin Clarke, Keith Pan		8	0	0%
	<b>15</b>	<b>On Schedule</b>	<b>Investigation Reporting II - 2015</b>	<b>25</b>	<b>6/20/15</b>	<b>7/15/15</b>	<b>18</b>	<b>264</b>				<b>95</b>	<b>0</b>	<b>0%</b>
48	15.1	On Schedule	Investigation Reporting Draft	11	6/20/15	7/1/15	8			Fabian Isaza, Daniel Budai		60	0	0%
49	15.2	On Schedule	Senior Review	10	7/1/15	7/11/15	8			Mark Lehar		15	0	0%
50	15.3	On Schedule	Edits, Drawings, Tables	25	6/20/15	7/15/15	18			Richele Deang, Keith Pan		20	0	0%
	<b>16</b>	<b>On Schedule</b>	<b>Monitoring Event III - 2015</b>	<b>7</b>	<b>9/1/15</b>	<b>9/8/15</b>	<b>6</b>	<b>303</b>				<b>104</b>	<b>0</b>	<b>0%</b>
51	16.1	On Schedule	Field sampling & testing	6	9/1/15	9/7/15	5			Gavin Clarke, Keith Pan		96	0	0%
52	16.2	On Schedule	Pack, Submit samples to laboratory	1	9/7/15	9/8/15	2			Gavin Clarke, Keith Pan		8	0	0%
	<b>17</b>	<b>On Schedule</b>	<b>Investigation Reporting III - 2015</b>	<b>25</b>	<b>9/20/15</b>	<b>10/15/15</b>	<b>19</b>	<b>330</b>				<b>95</b>	<b>0</b>	<b>0%</b>
53	17.1	On Schedule	Investigation Reporting Draft	11	9/20/15	10/1/15	9			Fabian Isaza, Daniel Budai		60	0	0%
54	17.2	On Schedule	Senior Review	10	10/1/15	10/11/15	7			Mark Lehar		15	0	0%
55	17.3	On Schedule	Edits, Drawings, Tables	25	9/20/15	10/15/15	19			Richele Deang, Keith Pan		20	0	0%
	<b>18</b>	<b>On Schedule</b>	<b>Monitoring Event IV - 2015</b>	<b>7</b>	<b>12/1/15</b>	<b>12/8/15</b>	<b>6</b>	<b>368</b>				<b>104</b>	<b>0</b>	<b>0%</b>
56	18.1	On Schedule	Field sampling & testing	6	12/1/15	12/7/15	5			Gavin Clarke, Keith Pan		96	0	0%
57	18.2	On Schedule	Pack, Submit samples to laboratory	1	12/7/15	12/8/15	2			Gavin Clarke, Keith Pan		8	0	0%
	<b>19</b>	<b>On Schedule</b>	<b>Investigation Reporting IV - 2015</b>	<b>26</b>	<b>12/20/15</b>	<b>1/15/16</b>	<b>20</b>	<b>396</b>				<b>95</b>	<b>0</b>	<b>0%</b>
58	19.1	On Schedule	Investigation Reporting Draft	12	12/20/15	1/1/16	10			Fabian Isaza, Daniel Budai		60	0	0%
59	19.2	On Schedule	Senior Review	10	1/1/16	1/11/16	7			Mark Lehar		15	0	0%
60	19.3	On Schedule	Edits, Drawings, Tables	26	12/20/15	1/15/16	20			Richele Deang, Keith Pan		20	0	0%
	<b>20</b>	<b>On Schedule</b>	<b>Monitoring Event I - 2016</b>	<b>7</b>	<b>3/1/16</b>	<b>3/8/16</b>	<b>5</b>	<b>171</b>				<b>104</b>	<b>0</b>	<b>0%</b>
61	20.1	On Schedule	Field sampling & testing	6	3/1/16	3/7/16	5			Gavin Clarke, Keith Pan		96	0	0%
62	20.2	On Schedule	Pack, Submit samples to laboratory	1	3/7/16	3/8/16	0			Gavin Clarke, Keith Pan		8	0	0%
	<b>21</b>	<b>On Schedule</b>	<b>Investigation Reporting I - 2016</b>	<b>26</b>	<b>3/20/16</b>	<b>4/15/16</b>	<b>20</b>	<b>461</b>				<b>95</b>	<b>0</b>	<b>0%</b>
63	21.1	On Schedule	Investigation Reporting Draft	12	3/20/16	4/1/16	10			Fabian Isaza, Daniel Budai		60	0	0%
64	21.2	On Schedule	Senior Review	10	4/1/16	4/11/16	7			Mark Lehar		15	0	0%
65	21.3	On Schedule	Edits, Drawings, Tables	26	3/20/16	4/15/16	20			Richele Deang, Keith Pan		20	0	0%
	<b>22</b>	<b>On Schedule</b>	<b>Monitoring Event II - 2016</b>	<b>7</b>	<b>6/1/16</b>	<b>6/8/16</b>	<b>6</b>	<b>499</b>				<b>104</b>	<b>0</b>	<b>0%</b>
66	22.1	On Schedule	Field sampling &											

**TABLE 13**

**REMEDIALTION OPTIONS FEASIBILITY  
Updated Site Management Plan (2014)  
Hounsfeld Heights - Briar Hill Community  
CALGARY, Alberta**

Remediation Method	Technically Feasible	Viability
<p align="center"><b>Natural Attenuation</b></p> <p><b>Excavation with In-Situ Treatment</b></p> <p><b>Excavation with Ex-Situ Treatment</b></p> <p><b>Interception Trench (French Drain)</b></p> <p><b>Dual Phase Vapour Extraction</b></p> <p><b>Bioremediation In-Situ</b></p> <p><b>Bioremediation Ex-Situ</b></p> <p><b>Chemical Oxidation In-Situ</b></p> <p><b>Chemical Oxidation Ex-Situ</b></p> <p><b>Surfactant Enhanced Aquifer Remediation</b></p> <p><b>Pump and Treat System</b></p> <p><b>Solidification</b></p> <p><b>Phytoremediation</b></p> <p><b>Electrical Resistance Heating</b></p>	<p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p> <p align="center">Yes</p>	<p align="center">Yes</p> <p align="center">No - Cost prohibitive option, requiring buildings demolition</p> <p align="center">No - Cost prohibitive option, requiring buildings demolition</p> <p align="center">Yes - Effectivity limited to contaminants in water</p> <p align="center">Yes - Effectivity limited radius of influence</p> <p align="center">Yes - Costly and intrusive in residential areas</p> <p align="center">No - Excessive disruptive effects, requiring buildings demolition</p> <p align="center">Yes - Limited to deeper contaminants, presence of numerous underground utilities, possible emissions, odours</p> <p align="center">No - Excessive disruptive effects, requiring buildings demolition</p> <p align="center">Yes - Effectivity limited mostly to LPH</p> <p align="center">Yes - Effectivity limited to contaminants in water</p> <p align="center">No - It would not solve contamination of the area</p> <p align="center">No - Most of the area covered by hard surface, ineffective for subsurface soils</p> <p align="center">No - Presence of numerous underground utilities, possible emissions, odours</p>



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## **Appendices**





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## Appendix A

# SEARS - NORTH HILL MALL AND HOUNSFIELD HEIGHTS AREA

## SUMMARY OF ACTIVITIES

**1984** - Service station building explosion within the basement due to gasoline vapour concentration.

**1995-1998** - SEACOR was retained, by Sunoco, in 1996 to assess the Site. The following reports are as result of the environmental site assessments performed from 1995 to 1998.

**SEACOR Environmental Engineering Inc.,** *Draft Environmental Activities Synthesis Report – October 1995 to August 1997 – North Hill Sears Gas Bar, 1616-14<sup>th</sup> Avenue NW, Calgary, Alberta, August 1997.*

**SEACOR Environmental Engineering Inc.,** *Off-Site West Delineation Drilling Summary Report, Former North Hill Sears Gas Bar (S/S#19-0860), 1616-14<sup>th</sup> Avenue NW, Calgary, Alberta, March 1998.*

**SEACOR Environmental Engineering Inc.,** *On-Site West Delineation Drilling Summary Report, Former North Hill Sears Gas Bar, 1616-14<sup>th</sup> Avenue NW, Calgary, Alberta, April 1998.*

**SEACOR Environmental Engineering Inc.,** *Off-Site Investigation, North Hill Sears Gas Bar, North Hill Lions Park, Calgary, Alberta, May 1998.*

### Phase I

- Sears gas bar was probably the only hydrocarbon source in the North Hill Mall vicinity.
- Gas bar was active from approximately 1958 to 1995.
- Tank nest was historically located in three different areas on-Site.
- Suggested that a serious tank leak may have occurred in the late 70s or early 80s (based on interviews).
- An October 1963 Insurance plan shows an underground storage tank (UST) located immediately south of the front doors to the Sears Automotive (currently Kal-Tire) building.
- A 1985 Sears drawing suggested that two 45,460 L and one 18,184 L USTs located north and west of the proposed kiosk were to be removed and that new fiberglass USTs were to be installed to the southwest of the kiosk.
- Four USTs, four fuel pumps and a kiosk were decommissioned in October 1995.

### Phase II

- 20 boreholes drilled on-Site to date (BH1 to BH20, inclusive).
- 30 boreholes drilled off-Site (BH21 to BH31; and, BH38 to BH49 in parking lot; BH32 to BH37 in 14 Avenue NW; and, BH50 to BH55 in Lions Park).
- Soil profile on-Site generally consists of pavement and gravel fill at surface underlain by native sand to a depth of approximately 3.1 m followed by a clay and silt unit to approximately 5.1 m. Clay was encountered below to the maximum depth of investigation (7.6 m below grade).
- Soil profile off-Site (parking lot and City of Calgary property 14 Avenue NW) generally consists of pavement and, sand and gravel fill at underlain by native sand to a depth of approximately 4.5 m followed by a silt and clay unit to approximately 6.2 m. Clay was encountered below to the maximum depth of investigation, 7.6 m below grade.
- Soil profile beneath the Lions Park consists of topsoil from approximately 0 m to 1.5 m bgs underlain by native sand to a depth of approximately 6.7 m bgs followed by native clay to the maximum depth of investigation, 10.7 m bgs.

- Alberta Environmental Protection (AEP), *Risk Management Criteria (RMC), Level II, Coarse-Grained Soil Criteria* was identified as the applicable criteria for soil and groundwater at the Site.
- Soil samples from boreholes BH1, BH5, BH7, BH8, BH13, BH14, BH15, BH19, BH20, BH22, BH23, BH24, BH25, BH26, BH27, BH29, BH32, BH36, BH42, BH52, BH53 and BH55 had one or more BTEX constituents in excess of the applicable criterion.
- Soil samples were not submitted for laboratory analysis from boreholes BH2, BH3, BH4, BH6, BH9, BH10, BH11 and BH12, BH28, BH30, BH31, BH33, BH34, BH38, BH41, BH43, BH46, BH50, BH51.
- In boreholes where no sample was submitted for laboratory analysis, maximum soil vapour concentrations were >10,000 ppm in BH3, BH4, BH6, BH28, BH30, BH33 and BH34.
- Boreholes BH1, BH6, BH10, BH13, BH15, BH16, BH18, BH19, BH22, BH24, BH26, BH27, BH31, BH35, BH37 through BH41, BH43, BH45 through BH52 and BH54 were completed as monitoring wells.
- Groundwater table at a depth of between 3.4 m (on-Site) to 6.7 m (off-Site - Lions Park).

**1998** - Clifton Associates Ltd. was retained by SEARS to assess the Site. The following reports are as result of the environmental Site assessments performed from 1998 to 2012.

**Clifton Associates Ltd.,** *Monitoring Report - September 1998, Former Sears North Hill Gas Bar, 1616-14<sup>th</sup> Avenue NW, Calgary, Alberta, 29 September 1998.*

- 31 monitoring wells (29 drilled by SEACOR, and WX and EX) were monitored between 9 September and 24 September 1998.
- First reference to monitoring wells WX and EX, it is unknown who drilled these wells as well as the completion and installation details.
- Water table varied from 2.6 m to 7.4 m below grade.
- Standpipe vapour concentrations ranged from 12 ppm to 3,000 ppm as measured with a Gastech TraceTechtor.
- Groundwater samples were collected from 14 wells and analyzed for BTEX constituents (BH1, BH13, BH18, BH27, BH31, BH35, BH37, BH41, BH45, BH47, BH48, BH51, BH52, and BH54).
- Applicable criteria is listed as Alberta Environment (AENV), *Draft Remediation Guidelines for Petroleum Storage Sites*, July 1994, (1994 RMC Guidelines), *Level III* for Vapour Inhalation Pathway Groundwater in Coarse-Grained Soil.
- Groundwater samples from boreholes BH1, BH27, and BH37 had concentrations for one or more BTEX constituents that did not meet the referenced criterion.
- Groundwater samples from BH13, BH18, BH31, BH35, BH41, BH45, BH47, BH48, BH51, BH52, and BH54 met the referenced criterion.
- Liquid petroleum hydrocarbons (LPH) were encountered in monitoring wells WX (1715 mm) and BH24 (630 mm).

**Clifton Associates Ltd.,** *Environmental Site Assessment, City of Calgary Property, 14 Avenue between 14 and 19 Streets NW, 13 Avenue between 15 and 16 Streets NW, Laneway between 15 and 16 Streets NW, and 12 Avenue and 13 Avenue NW, 20 November 1998.*

- 14 boreholes drilled off-Site in October 1998 (BH201 to BH214, inclusive).
- General soil stratigraphy consists of 3 m to 6 m of very fine-grained sand underlain by silty clay, underlain by fine-grained silty sand, which was contacted at depths below 6 m. Bedrock was not encountered to the maximum depth of investigation (15.3 m below grade).
- Soil samples from boreholes BH203, BH205, BH207, and BH208 had concentrations for one or more BTEX constituents that did not meet the applicable criterion.

- Soil samples from BH201, BH206, BH209, and BH210 met the applicable criterion.
- Soil samples were not submitted for laboratory analysis from boreholes BH202, BH204, BH211, BH212, BH213, and BH214.
- In boreholes where no sample was submitted for laboratory analysis, maximum soil vapour concentrations were >10,000 ppm in BH204 and BH213. Maximum soil vapour concentrations were 1,000 ppm in BH202, 800 ppm in BH211, 40 ppm in BH212, and 7,000 ppm in BH214.
- Boreholes BH201 to BH214, inclusive were completed as monitoring wells.
- Groundwater flow direction was interpreted to be toward the south.
- Average depth to groundwater in boreholes BH201 to BH205 was 4 m below grade.
- Average depth to groundwater in boreholes BH206 to BH214 was 10 m below grade.
- LPH was encountered in monitoring wells WX, BH205, BH213, and BH214.

**Clifton Associates Ltd.**, *Supplementary Environmental Site Assessment, North Hill Shopping Centre, 1616-14 Avenue NW, Calgary, Alberta*, 08 February 1999.

- 13 boreholes drilled on-Site between 26 and 30 November 1998 (BH401 to BH413, inclusive).
- General soil stratigraphy generally consisted of asphalt pavement or topsoil underlain by a thin layer of granular fill extending to a maximum depth of 0.4 m below grade. The fill was underlain by fine to medium-grained sand with clay occurring both as lenses and as thin layers between 0.4 and 1.6 m in thickness within the sand. The sand layer ranged in thickness from 3.5 m to 6.8 m. In eight of the boreholes, the sand was underlain by clay that extended to the maximum depth of investigation 8.8 m below surface. In three of the boreholes, the sand and clay occurred in interbedded layers of variable thickness. Bedrock was not encountered in any of the boreholes.
- The appropriate risk management criteria for soil and groundwater underlying the Site is *Level II* of the AENV 1994 RMC Guidelines for Vapour Inhalation in Coarse-Grained Soil.
- Soil samples from boreholes BH403, BH404, BH406, BH409, BH410, BH412 and BH413 had concentrations for one or more BTEX constituents that did not meet the applicable criterion.
- Soil samples from BH408 and BH411 met the applicable criterion.
- Soil samples were not submitted for laboratory analysis from boreholes BH401, BH402, BH405, and BH407.
- In boreholes where no samples were submitted for laboratory analysis, the maximum soil vapour concentration was >10,000 ppm in BH401; 1,200 ppm in BH402; 720 ppm in BH405; and, 22 ppm in BH407.
- Boreholes BH401 to BH413, inclusive were completed as monitoring wells.
- Groundwater flow direction was interpreted to be west to northwest.
- Depth to groundwater ranged between 3.7 m to 7.8 m below surface. Average depth to groundwater was 4.8 m below ground surface.

**Clifton Associates Ltd.**, *Human Health Risk Assessment, North Hill Shopping Centre, 1616-14 Avenue NW, Calgary, Alberta*, 09 February 1999.

- A site-specific human health risk assessment was conducted to evaluate the potential health risks to relevant receptors due to the presence of measured hydrocarbon concentrations in the soil and groundwater beneath the southeast corner of the Site and to develop were appropriate, remediation objectives that can be used for remediation and/or risk management.
- The potential receptors were determined to be the occupants of the Sears automotive centre building, located on the Sears's property, and occupants of the liquor store and Shopping Centre buildings, located north of the impacted area on the southeast corner of the Site. The main potential pathway of exposure to these receptors was determined to be inhalation of vapours that may migrate into the

buildings from the soil and groundwater beneath the southeast corner of the Site via the foundation system.

- The estimated incremental health risks to occupants of the Sears building, liquor store building and Shopping Centre building due to inhalation of vapours from measured benzene concentrations in the soil and groundwater beneath the southeast corner of the Site are  $1.3 \times 10^{-5}$ ,  $1.1 \times 10^{-5}$ , and  $4.2 \times 10^{-6}$  (90th percentile), respectively. The incremental health risks to occupants of the Sears building and liquor store building slightly exceed the target value of  $1 \times 10^{-5}$ .
- The soil remediation objective for benzene in the impacted area of the southeast corner of the Site (3.5 mg/kg) was derived using the API DSS model. The derived groundwater benzene concentration in the impacted area beneath the southeast corner of the Site is 8.1 mg/L. A maximum acceptable groundwater benzene concentration in BH39 and BH41 of 3.1 mg/L, was derived for the protection of occupants of the liquor store and Shopping Centre buildings. Groundwater benzene concentrations were derived using the RBCA Screening Level calculations and are consistent with CCME Protocol.

**Clifton Associates Ltd.**, *Supplementary Environmental Site Assessment, Former Sears Gas Bar, 1616-14 Avenue NW, Calgary, Alberta*, 08 March 1999.

- Six boreholes drilled off-Site in October 1998 (BH203, BH205 and BH301 to BH304, inclusive).
- Boreholes BH203 and BH205 were previously referenced in the report of 20 November 1998.
- General soil stratigraphy generally consisted of asphalt pavement or topsoil underlain by gravel fill to a maximum depth of 1.8 m below grade. The fill was underlain by fine to medium-grained sand with clay occurring both as lenses and as thin layers between 0.4 and 1.8 m in thickness within the sand. The sand layer ranged in thickness from 3.5 m to 6.8 m. The sand was underlain by clay that extended to the maximum depth of investigation of 9.6 m below grade. Bedrock was not encountered to the maximum depth of investigation (9.6 m below grade).
- The appropriate risk management criteria for soil and groundwater underlying the Site is *Level II* of the AENV 1994 RMC Guidelines for Vapour Inhalation in Coarse-Grained Soil.
- Soil samples from boreholes BH203, BH205, BH301, BH302, and BH304 had concentrations for one or more BTEX constituents that did not meet the applicable criterion.
- Soil samples were not submitted for laboratory analysis from boreholes BH303.
- In borehole BH303 (where no sample was submitted for laboratory analysis), the maximum soil vapour concentration was >10,000 ppm.
- Boreholes BH203, BH205, and BH301 to BH304, inclusive were completed as monitoring wells.
- Groundwater flow direction was interpreted to be south to southwest at an approximate gradient of 0.02.
- Average depth to groundwater was 4 m below grade.
- LPH was encountered in monitoring wells BH205 and BH304.

**Clifton Associates Ltd.**, *Human Health Risk Assessment, Former Sears Gas Bar, 1616-14 Avenue NW, Calgary, Alberta*, 08 March 1999.

- A site-specific human health risk assessment was conducted to evaluate the potential health risks to relevant receptors due to the presence of measured hydrocarbon concentrations in the soil and groundwater beneath the Site and develop, were appropriate, remediation objectives that can be used for remediation and/or risk management.
- The potential receptors were determined to be the occupants of the onsite building. The main potential pathway of exposure to these receptors was determined to be inhalation of vapours that may migrate into the building from the soil and groundwater beneath the Site via the foundation. The API DSS model was used in a probabilistic manner, together with site-specific soil and building parameters, to estimate potential receptor point concentrations, estimate exposure intake, determine

the incremental health risk and develop soil remediation objectives where appropriate. A groundwater remediation objective for benzene was derived using the RBCA Screening Level calculations for vapour transport to enclosed buildings.

- The estimated incremental health risk to occupants of the onsite building due to inhalation of vapours resulting from measured benzene concentrations in the soil and groundwater beneath the Site is  $2.3 \times 10^{-5}$  (90th percentile) which exceeds the target value of  $1 \times 10^{-5}$ .
- Remediation objectives were derived for benzene in soil (1.8 mg/kg) and groundwater (4.2 mg/L) beneath the Site that are protective of the occupants of the onsite building and can be used for risk management.
- Consistent with the CCME Protocol, and for the protection of occupants of the onsite building, the concentration of benzene in the soil gas beneath the floor slab of the onsite building should not exceed 350 mg/m<sup>3</sup>.

**Clifton Associates Ltd.**, *Liquid Petroleum Hydrocarbons Recovery Summary - September 1998 to March 1999, Former Sears Gas Bar, 1616-14<sup>th</sup> Avenue NW, Calgary, Alberta*, 16 April 1999.

#### **Sears Property**

- LPH was detected in two monitoring wells in October 1998 by Clifton (BH205 and BH304).
- Passive bailer installed in monitoring well BH205 (50mm in diameter) on 30 October 1998.
- As of March 1999, 32 L of LPH was recovered from BH205 and 0.5 L recovered from BH304.
- LPH was not detected in monitoring well BH304 between 23 December 1998 and 30 March 1999.

#### **Cadillac Fairview Property**

- LPH was first detected in monitoring well BH24 on 09 September 1998.
- Passive bailer installed in monitoring well BH24 (50mm in diameter) on 30 October 1998.
- As of March 1999, 4.77 L of LPH was recovered from monitoring well BH24.

#### **City of Calgary Property**

- LPH was detected in monitoring well WX on 24 September 1998.
- LPH was detected in monitoring wells BH213 and BH214 in October 1998 by Clifton.
- Passive bailers (50mm in diameter) were installed in monitoring wells BH213 and BH214 on 30 October 1998 and 04 February 1999 respectively.
- As of March 1999, 57.2 L of LPH was recovered from monitoring well WX, 3.89 L was recovered from monitoring well BH213 and 1.63 L recovered from monitoring well BH214.

**Clifton Associates Ltd.**, *Subsurface Air and Groundwater Sampling Program, North Hill Shopping Centre, 1616-14<sup>th</sup> Avenue NW, Calgary, Alberta*, 27 May 1999.

- Five subsurface air samples were collected from monitoring wells BH19, BH39, BH41, BH45 and BH46.
- Four groundwater samples were collected from BH41, BH45, BH46, and a monitoring well located in the Sears Auto Centre basement.
- Benzene concentration in the air sample collected from monitoring well BH45 was 24 mg/cu.m all other air samples had benzene concentrations less than the method detection limit. All air samples met the referenced criteria of 350 mg/m<sup>3</sup>.
- Groundwater benzene concentrations from monitoring well BH45 did not meet the referenced *Level II* criterion of the AENV 1994 RMC Guidelines for Vapour Inhalation in Coarse-Grained Soils (1.6 mg/L) nor the risk-based remediation objective of 4.2 mg/L derived in the HHRA completed for the Sears property.

**Clifton Associates Ltd.,** *Risk Management Plan, Sears Former Gas Bar, North Hill Shopping Centre, 1616-14 Avenue NW, Calgary, Alberta, 28 June 1999.*

- The Site was operated as the Sears Automotive Centre.
- Fuel storage and dispensing facilities at the Site were decommissioned in October 1995.
- The stratigraphy generally consisted of surficial asphalt, organic topsoil or granular fill to a maximum depth of 1.8 m underlain by fine to medium-grained sand with clay occurring both as lenses and as thin layers between 0.4 m and 1.8 m in thickness within the sand. The sand layer ranged in thickness from 3.5 m to 6.8 m. The sand was underlain by clay to the maximum depth of borehole penetration, 9.6 m below surface. Bedrock was not encountered in any of the boreholes drilled by SEACOR or Clifton.
- A search of water well records registered with AEP, conducted as part of the SEACOR investigation, indicated that there are no known drinking water wells within a 1.6 km radius of the Site.
- The average depth to groundwater beneath the Site has ranged between 3.6 m and 5.9 m below grade. On 22 April 1999, the average depth to groundwater was 4 m below ground surface.
- On 22 April 1999, the direction of groundwater flow beneath the Site was interpreted to be southwest at an estimated gradient of 0.02.
- In September 1998, LPH were identified in monitoring well WX.
- A LPH recovery program is ongoing in three on-Site wells (BH205, BH304 and BH15). A total of 34 L of LPH has been recovered from the on-Site wells to date (30 April 1999).
- The results of laboratory analysis of benzene, toluene, ethyl benzene and xylenes (BTEX) in a sample of LPH collected from BH205 indicated that the gasoline was relatively unaltered.
- Concentrations of BTEX and total petroleum hydrocarbons (TPH) measured in soil samples collected from several locations at the Site did not meet *Level II* of the criteria contained in the AENV 1994 RMC Guidelines for Vapour Inhalation in Coarse-Grained Soils.
- Groundwater benzene concentrations measured in samples collected from several locations beneath the Site, did not meet the *Level II* criterion. All measured groundwater concentrations of toluene, ethyl benzene and xylenes met the applicable *Level II* criteria.

1999 - Hobbs, Miller, Maat Inc. (HMM) was retained by SEARS to remediate the Site; Clifton was retained to supervise the remediation activities.

**Clifton Associates Ltd.,** *Liquid Petroleum Hydrocarbons Recovery Program - April 1999 to February 2000, Former Sears Gas Bar, 1616-14<sup>th</sup> Avenue NW, Calgary, Alberta, 10 March 2000.*

#### **Sears Property**

- LPH was recovered from BH15 and BH205 during the reporting period.
- No LPH was recovered from monitoring well BH304 during this reporting period.
- As of February 2000, 74.3 L of LPH was recovered from monitoring well BH205, 0.5 L recovered from monitoring well BH304, and 4 L was recovered from monitoring well BH15 (between September 1998 and February 2000).

#### **Ronmor Property (formerly owned by Cadillac Fairview)**

- LPH recovery continued from monitoring well BH24.
- LPH was detected in monitoring well HMM MW7 (installed by HMM in November or December 1999) on 18 January 2000.
- As of 03 February 2000, 4.78 L of LPH was recovered from monitoring well BH24 (between September 1998 and February 2000).

### **City of Calgary Property**

- LPH was recovered from monitoring wells BH213, BH214 and WX during the reporting period.
- As of 03 February 2000, 103.6 L of LPH has been recovered from monitoring well WX, 8.0 L has been recovered from monitoring well BH213 and 3.4 L recovered from monitoring well BH214 (between September 1998 and February 2000).

**Clifton Associates Ltd.**, *Liquid Petroleum Hydrocarbons Recovery Program - March to August 2000, Former Sears Gas Bar, 1616-14<sup>th</sup> Avenue NW, Calgary, Alberta*, 31 August 2000.

### **Sears Property**

- LPH was recovered from BH205 during the reporting period.
- LPH was detected in BH304 during the reporting period.
- As of August 2000, 90.0 L of LPH was recovered from monitoring well BH205, 0.5 L recovered from monitoring well BH304, and 4 L was recovered from monitoring well BH15 (between September 1998 and August 2000).

### **Ronmor Property (formerly owned by Cadillac Fairview)**

- LPH was detected in monitoring wells BH24 and HMM MW1 (installed by HMM in November or December 1999).
- No LPH was recovered from BH24 or HMM MW1 during the reporting period.
- As of 15 August 2000, 4.78 L of LPH has been recovered from monitoring well BH24 (between September 1998 and August 2000).

### **City of Calgary Property**

- LPH was recovered from monitoring wells BH213, BH214 and WX during the reporting period.
- As of 03 February 2000, 114.4 L of LPH has been recovered from monitoring well WX, 8.7 L has been recovered from monitoring well BH213 and 3.5 L recovered from monitoring well BH214 (between September 1998 and August 2000).

**Clifton Associates Ltd.**, *Monthly Groundwater Monitoring and Sampling – June 2000, North Hill Shopping Centre Site Remediation, 1616-14<sup>th</sup> Avenue NW, Calgary, Alberta*, 31 August 2000.

- 19 monitoring wells (BH10, BH18, BH31, BH35, BH37, BH38, BH39, BH40, BH41, BH43, BH48, BH49, BH50, BH51, BH52, BH201, BH407, BH408 and BH409) were monitored on 09 June 2000.
- Wells monitored formed the perimeter of the planned treatment area.
- Water table varied from 3.7 m to 8.0 m below grade. Flow direction was interpreted to be west to northwest.
- Standpipe vapour concentrations ranged from 7 ppm (BH201) to >10,000 ppm (BH408) as measured with a Gastech TraceTechtor.
- Groundwater samples were collected from nine monitoring wells and analyzed for BTEX constituents (BH18, BH31, BH35, BH40, BH41, BH43, BH48, BH49, and BH201).
- Applicable criteria are listed as AENV 1994 RMC Guidelines, *Level I*, for Vapour Inhalation Pathway Groundwater in Coarse-Grained Soil.
- Groundwater samples from boreholes BH35 and BH40 had concentrations for one or more BTEX constituents that did not meet the referenced criterion.
- Groundwater samples from BH18, BH31, BH41, BH43, BH48, BH49, and BH201 met the referenced criterion.
- LPH was not detected in any of the monitoring wells on 09 June 2000.



**Clifton Associates Ltd.,** *Site Remediation - Field Observations and Soil Sampling, North Hill Shopping Centre, 1616-14 Avenue NW, Calgary, Alberta, 25 October 2000.*

- 11 boreholes were advanced by HMM on 12 October 2000, three more on 13 October 2000.
- Clifton was retained to observe borehole drilling and soil sampling activities being completed by HMM as part of the overall Site Remediation Project.
- Clifton was on-Site for drilling of four boreholes (HMM BH8 to BH11).
- Clifton noted that HMM personnel collected samples as composite samples collected from the entire length of the auger (1.5 m). No on-Site field testing of headspace vapours was observed.
- The remaining 11 boreholes were not observed by Clifton and, as such, we are not aware of the location of these boreholes.
- Clifton collected discrete samples from selected depth intervals and field tested soil samples for headspace hydrocarbon vapours.
- Based on observation by Clifton the following stratigraphy was identified in the four boreholes observed: asphalt overlying a sand layer containing Site up to 4.3 m in thickness. The sand layer overlies clay to the maximum depth of investigation 7.6 m.
- Soil samples from HMM BH9 and BH11 had one or more BTEX constituents that did not meet the applicable criteria.
- Maximum vapour readings in HMM BH8 were >10,000 ppm and 1,000 ppm in BH10.

**Hobbs-Miller-Maat Inc.,** *Progress Report 1, North Hills Soil and Groundwater, Remediation Project, 14 November 2000.*

- The HMM *in situ* biotreatment system has been in operation since 6 September 2000.
- The system consists of two sections, each operated by a specific blower. The blower system B-1 (West) has been in operation since 6 September 2000. Blower system B-2 (east) was put on-line on 17 October 2000.
- HMM reports that free product in monitoring wells BH205, BH304 and WX have been completely eliminated.
- HMM defines three *hot spots* as Zone 1, 2, and 3. They suggest that zone 1 is remediated an average of 69 %, Zone 2 was not assessed due to lack of baseline information, and Zone 3 was remediated an average of 75%. They report that the general area is remediated 100%.

**Hobbs-Miller-Maat Inc.,** *Progress Report 2, North Hills Soil and Groundwater, Remediation Project (Based on Coarse Grained Soil Criteria), 04 January 2001.*

- HMM suggests that monitoring results from MW35 confirm that off-Site migration of contaminants is not a concern.
- HMM stated that concentrations in MW40 had been reduced to below detection limits. At the time of the second report both MW35 and MW40 had higher levels than before, no explanation is given.
- HMM suggests that free product in monitoring wells BH205, BH304, and WX has been completely eliminated. They also suggest that this shows that the free product has been completely emulsified and degraded.
- Extensive soil sampling indicates that at least a portion of the Site falls into the coarse-grained category. As a result, the coarse-grained remediation criteria are assumed for the Site and will be used for evaluation purposes.
- HMM's sampling protocol was to take three discrete samples from each 1.5 m and composite them.
- HMM calculated a total average percent reduction across the Site of 81%.

**Hobbs-Miller-Maat Inc.,** *Progress Report 3, North Hill Shopping Centre, Soil and Groundwater, Remediation Project, January 2002.*

- Approximately 60 new vertical wells have been installed to supplement the horizontal injection and extraction lines subsequent to the last progress report.
- The observation of LPH in BH408 prompted two boreholes to be drilled by HMM (MW23, MW24). These wells are downgradient of BH401, BH405, and BH404 which only had low-level contamination.
- On 21 March 2001, five boreholes were drilled (BH21 to BH25) to determine the western portion of the contaminant plume.
- On 06 April 2001, five boreholes were drilled (BH26 to BH30) to more exactly determine the extent of the high level contamination. Monitoring wells were installed for the purpose of injecting bioproducts into the contaminated zone.
- On 17 May 2001, eight boreholes were drilled for the purpose of reducing the spacing of injection wells in the western portion of the plume and to monitor progress near the original source.
- HMM reported that several high HC level areas were found nearby previous boreholes that had low contaminant levels and that this indicated that a narrow channel of highly permeable soil was allowing hydrocarbons to flow from the original point source to an area approximately 80 m northwest through an area not wider than about 12m wide, then spreading to a plume approximately 30 m wide at the west end of the plume.
- On 05 June 2001, a test pit was advanced.
- On 03 July 2001, ten boreholes were drilled (MW40 to MW49). Nine wells were installed.
- On 16, 17 and 18 July 2001, 30 boreholes were drilled (MW51 to MW81) for the purpose of injecting bioproducts into the contaminant area.
- Since the installation of the new monitoring injection wells, a total of 109,000 USG (412,000 L) of blended bioproduct has been injected across the Site.
- MW64 and MW80 were being used as extraction wells.

**Clifton Associates Ltd.,** *Site Remediation – Interim Progress Report, North Hill Shopping Centre, 1616-14 Avenue NW, Calgary, Alberta, 17 April 2001.*

- Remediation progress was evaluated on the basis of subsurface soil and groundwater chemistry data collected by both Clifton and HMM from hydrocarbon impacted areas of the Site since initiation of Site remediation, and in accordance with the *Framework for Evaluation of Remediation Progress* developed by Clifton in February 2001.
- Benzene concentrations in ten of the 33 soil samples analyzed in October and November 2000 were sufficiently elevated (i.e., from 38 mg/kg to 270 mg/kg) to suggest the presence of *hot spots* beneath portions of the Site.
- Clifton's opinion was that the remediation of hydrocarbons, specifically benzene, within these *hot spots* has not progressed sufficiently for any progress to be reported according to the referenced Clifton *Framework for Evaluation of Remediation Progress*.
- In areas of the Site outside the identified *hot spots*, it was estimated that progress towards the overall Site remediation objectives of 32% and 45% has been made in soil and groundwater respectively.

**Clifton Associates Ltd.,** *Monitoring, Sampling and LPH Recovery Program– September 2000 to May 2001, City of Calgary Property, Vicinity of North Hill Shopping Centre, 14 Avenue between 14 and 19 Streets NW, 13 Avenue between 15 and 16 Streets NW, and Laneway between 15 and 16 Streets NW, and 12 and 13 Avenues NW, Calgary, Alberta, 28 June 2001.*

- Nine monitoring wells (BH31, BH35, BH50, BH51, BH52, BH201, BH204, BH213, and BH214) were monitored on several occasions during the reporting period.
- LPH recovery from monitoring well WX was discontinued in September 2000 because of the remediation activities at the Site.
- Water table varied from 4.2 m to 9.2 m below grade.
- Standpipe vapour concentrations ranged from 12 ppm (WX, 09 February 2001) to 5,000 ppm (BH35, 19 October 2000) as measured with a Gastech TraceTechtor.
- Groundwater samples were collected from four monitoring wells and analyzed for BTEX constituents (BH31, BH35, BH52, and BH201).
- Applicable criteria is listed as AENV 1994 RMC Guidelines, *Level II*, for Vapour Inhalation Pathway Groundwater in Coarse-Grained Soil.
- Groundwater samples from monitoring well BH35 had concentrations for one or more BTEX constituents that did not meet the referenced criterion.
- Groundwater samples from monitoring wells BH31, BH52, and BH201 met the referenced criterion.
- Between September 2000 and May 2001, 0.31 L of LPH was recovered from monitoring well BH213 and 0.55 L of LPH was recovered from BH214.

**Hobbs-Miller-Maat Inc., Progress Report #4, Pneumatic Fracturing and Bioproduct Injections, North Hill Shopping Centre, Soil and Groundwater Remediation Project**

- Pneumatic fracturing took place on 24 and 25 April 2002 in ten locations. Each borehole was fractured over two or three intervals, each interval being approximately 3 feet in depth.
- HMM estimates the zone of influence from fracturing to be a minimum of 6 m to greater than 10 m.
- 27,000 USG of bioproducts were injected in 17 wells (including the ten fractured wells).

**Clifton Associates Ltd., Utilities Excavation-City of Calgary Property – 14<sup>th</sup> Avenue NW, North Hill Shopping Centre, 1616-14 Avenue NW, Calgary, Alberta, 29 October 2002.**

- Hydrocarbon odour was encountered during trenching for a utility corridor along 14<sup>th</sup> Avenue NW on 04 September 2001.
- Utility corridor was excavated from south of BH201 to south and west of BH13.
- Final excavation was approximately 10 m (north-south) by 70 m (east-west).
- Stratigraphy within the excavation was generally sandy silt overlain by pit run gravel.
- The appropriate risk management criteria for soil and groundwater underlying the Site was identified as *Level II* of the AENV 1994 RMC Guidelines for Vapour Inhalation in Coarse-Grained Soil.
- Eleven soil samples were collected from the excavation and submitted for laboratory analyses.
- Three samples (MM02, MM04, and BB11), collected from the walls near the east end of the excavation had concentrations for one or more BTEX constituents that did not meet the applicable criterion.
- On 11 and 12 September 2001, a total of approximately 998 tonnes of hydrocarbon impacted soil excavated from beneath 14<sup>th</sup> Avenue NW was removed for disposal at the WasteCo soil treatment facility located at the City Shepard Landfill.

**Hobbs-Miller-Maat Inc., Progress Report #5, North Hill Shopping Center, Calgary, Alberta, 31 January 2003**

- Groundwater from 11 wells was tested. Seven wells had concentrations of one or more BTEX constituents that exceeded the applicable criteria.

**Clifton Associates Ltd.,** *Supplementary Environmental Site Investigation, City of Calgary Property, South of North Hill Shopping Centre, 16<sup>th</sup> Street N.W., 13<sup>th</sup> Avenue N.W., Laneway between 15<sup>th</sup> and 16<sup>th</sup> Streets N.W., and Lions Park, Calgary, Alberta, 05 March 2003.*

- A total of ten boreholes (BH500 to BH510) were drilled on City property in the Hounsfield Heights community south of Lions Park, as part of this supplementary ESI.
- Two boreholes (BH503 and BH508) were drilled on 13<sup>th</sup> Avenue N.W., immediately west of 16<sup>th</sup> Street N.W. and south of Lions Park. Drilling was completed at these locations on 12 and 13 November 2002.
- Three boreholes (BH501, BH502 and BH510) were drilled in the Lane between 15<sup>th</sup> Street N.W. and 16<sup>th</sup> Street N.W. on 12 and 14 November 2002.
- The remaining five boreholes (BH504, BH505, BH506, BH507 and BH509) were drilled on 16<sup>th</sup> Street N.W., between 13<sup>th</sup> Avenue N.W. and 12<sup>th</sup> Avenue N.W., on 12, 13 and 14 November 2002.
- The general soil stratigraphy underlying the site consists of approximately 6 m of fine-grained sand underlain by silty clay. The silty clay unit is underlain by fine-grained silty sand, contacted at depths of approximately 10 m below ground surface. Bedrock was not encountered in any of the boreholes to the maximum depth of investigation, 16.76 m below ground surface.
- The average depth to groundwater beneath the residential area south of Lions Park was 10.3 m below ground surface and the average depth to groundwater beneath Lions Park was 6.6 m below ground surface, when measured in December 2002. The groundwater flow direction is interpreted to be to the south.
- LPH was identified in existing monitoring well BH214, and in the newly installed well BH509, located on 13<sup>th</sup> Avenue N.W. and 16<sup>th</sup> Street N.W., respectively. A total of 400 mL of LPH was recovered from each of these wells on 14 January 2003. To date, a total volume of 128.275 L of LPH has been recovered from the following monitoring wells: BH213, BH214, WX, and recently BH509.
- Results of laboratory analyses indicate that the soils underlying the City property have been impacted by petroleum hydrocarbons. Concentrations of hydrocarbons from soil samples collected from four of the ten boreholes did not meet the applicable 2001 PST Guidelines for fine-grained soils. Eight of the ten boreholes had petroleum hydrocarbon concentrations that did not meet Level I of the 1994 RMC Guidelines for fine-grained soils.
- Results of laboratory analyses indicate that the groundwater underlying the City property has been impacted by dissolved petroleum hydrocarbons. Groundwater samples collected from two of the sixteen monitoring wells did not meet 2001 PST Guidelines for fine-grained soils, and eight of the sixteen groundwater samples did not meet Level I of the 1994 RMC Guidelines.

**Clifton Associates Ltd.,** *Environmental Site Investigation, Private Property, Calgary, Alberta, 25 August 2003.*

- Three boreholes (BH601 to BH603, inclusive) were drilled to a maximum depth of 15.2 m, to investigate potential impacts to soil and groundwater under a private property within the Hounsfield Heights area.
- The general soil stratigraphy of the Site consisted of alternating layers of fine-grained sand with trace to some silt, pebbles and cobbles (sand) and clay with trace silt (clay) to the maximum depth of exploration (15.2 m below grade).
- In borehole, BH601, an approximately 2.0 m thick layer of sand was underlain by approximately 4.6 m of clay, underlain by 7.8 m of sand. The sand was further underlain by clay to a depth of 15.2 m below grade.

- In borehole, BH602, an approximately 1.8 m thick layer of silt with trace clay and sand (silt) was underlain by 1.4 m of clay then 3.5 m of silt with fine grained sand and little clay. This was further underlain by 5.5 m of sand to a total depth of 12.2 m below grade.
- In borehole, BH603, an approximately 4.1 m thick layer of sand was underlain by approximately 4.7 m of clay. This was further underlain by approximately 2.5 m of sand to a total depth of 12.2 m below grade. Bedrock was not encountered to the maximum depth of exploration of 15.2 m.
- The maximum combustible soil vapour concentrations in the boreholes were 62 ppm in BH601 (10.7 m), 95 ppm in BH602 (8.4 m), and 21 ppm in BH603 (8.8 m). Groundwater was present at depths ranging from 9.504 m (BH602) to 12.182 m (BH603) below ground surface. The average depth to groundwater was 10.46 m below ground surface. Previous investigations in the immediate vicinity of the Site have indicated that the groundwater flow direction is to the south to southeast. LPH was not encountered during this investigation.
- Concentrations of BTEX and PHC F1 to F4 met the applicable AENV 2001 PST Guidelines in all soil and groundwater samples analyzed.

**Clifton Associates Ltd., 2003 Supplemental Environmental Site Investigation Hounsfeld Heights, Calgary, Alberta, 18 December 2003**

- 44 boreholes (BH701 to BH744, inclusive) were drilled to a maximum depth of 21.3 m (BH725 and BH727), to investigate potential impacts to soil and groundwater. Monitoring wells were installed in all boreholes. Boreholes BH701 to BH744, inclusive, were drilled on City property.
- The geology encountered at the Site consisted of three distinguishable native soil units overlain by fill and traffic bearing materials placed in areas of roads and alleys. The observed soil strata underlying fill and traffic material were Silty Sand, Silty Clay, and a lower Silty Sand unit with interbedded Silt, from top to bottom. Bedrock was not encountered to the maximum depth of exploration of 21.3 m.
- The maximum combustible soil vapour concentration in the boreholes was >10,000 ppm in samples BH725-17 (12.8 m to 13.0 m) and BH725-18 (13.9 m to 14.0 m). Liquid petroleum hydrocarbons (LPH) were subsequently measured in the monitoring well installed in this borehole. Borehole BH725 is located in the laneway between 16<sup>th</sup> Avenue N.W. and 15<sup>th</sup> Avenue N.W., proximal to BH510, in which LPH had previously been measured.
- Due to the significant topographic relief of the Site, depths to the groundwater table are variable across the Site. With the exception of Lions Park, the groundwater table beneath the Site occurs within the lower interbedded silty sand and silt stratum at an average depth of 10.62 m and ranged from 5.80 m and 14.40 m.
- North of 13<sup>th</sup> Avenue N.W. in Lions Park, the depth to water from ground surface ranged from 6.48 m to 7.15 m with an average of 6.81 m. The monitoring wells in Lions Park were completed within the upper portion of the silty clay and did not penetrate the lower interbedded silt and silty sand.
- Along 13<sup>th</sup> Avenue N.W. between 15<sup>th</sup> Street N.W. and 16A Street N.W., the depth to water from ground surface ranged from 9.27 m to 13.19 m with an average of 10.50 m.
- Within the topographic high point located midway between 13<sup>th</sup> Avenue N.W. and 11<sup>th</sup> Avenue N.W. between 15<sup>th</sup> Street N.W. and 16A Street N.W., the depth to water from ground surface ranged from 11.21 m to 14.40 m with an average of 12.76 m.
- Along 11<sup>th</sup> Avenue N.W. between 16A Street N.W. and 15<sup>th</sup> Street N.W., the depth to water from ground surface ranged from 5.80 m to 9.38 m with an average of 7.33 m.
- Groundwater flow direction was determined towards south-southeast. The hydraulic gradient ranges from 0.148 within Lions Park to 0.023 south of Lions Park.
- LPH was encountered in previously existing monitoring wells BH214, BH509, and BH510. LPH had previously been measured in these monitoring wells, and LPH recovery has been on going with passive LPH recovery bailers.

- LPH was encountered in newly installed monitoring wells BH705 (2 mm), BH706 (2 mm), and BH725 (749 mm). Monitoring wells BH705 and BH706 are located immediately proximal to monitoring well BH509. Monitoring well BH725 is located near monitoring well BH509.
- Combustible headspace vapour concentrations ranged between 2 ppm (BH721 and BH729) and >10,000 ppm (BH203, BH209, BH213, BH214, BH501, BH502, BH505, BH509, BH510, BH705, BH706, BH716, BH725, BH728, and BH729).
- With the exception of the benzene concentrations in 30 samples and the PHC F1 concentrations in two samples, the concentrations of BTEX and PHC F1 to F4 in all the remaining soil samples met the applicable AENV 2001 PST Guidelines in the remaining soil samples analyzed.
- The soil samples with hydrocarbon concentrations that did not meet the applicable guidelines were all from within the lower silty sand unit.
- With the exception of the benzene concentrations in groundwater samples from nine of the 58 monitoring wells sampled, the concentrations of BTEX and PHC F1 and F2 in all samples met the applicable AENV 2001 PST Guidelines in the groundwater samples analyzed.
- Two of the nine groundwater samples were collected from monitoring wells (BH209 and BH501) that had been previously installed at the Site. The results of the analysis of the samples collected in October 2003 were consistent with previous results from samples collected from those monitoring wells.
- Of the seven remaining groundwater samples, all were collected from monitoring wells installed in boreholes in which soil samples had showed benzene concentrations that did not meet the applicable guidelines.
- Hydraulic conductivity was evaluated by conducting rising head tests at nine monitoring wells (BH50, BH52, BH701, BH716, BH733, BH735, BH737, BH740 and BH744) on-Site.
- Calculated hydraulic conductivities are on the order of  $10^{-6}$  m/s to  $10^{-8}$  m/s.

**Hobbs-Miller-Maat Inc.**, *Progress Report No. 6, North Hills Plaza Sears Canada Inc., Calgary, Alberta*, 17 October 2003

- Impacted soils in the vicinity of the original tank nest area were excavated. Work began on the July 21, 2003 and the excavation was backfilled, compacted, and re-paved by October 11, 2003. A total of 5,500 m<sup>3</sup> of impacted soil was excavated, treated and reused as fill material.

**Clifton Associates Ltd.**, *Shallow Soil-Vapour Survey Residential Properties South of North Hill Shopping Centre, Calgary, Alberta*, 18 December 2003

- A total of 76 SV probes were installed at 25 residences between 03 September and 06 November 2003. Two SV probes (SG12 and SG25) were replaced by alternate probes (SG13 and SG26 respectively), as a result of a metal spacer overheating, causing it to shear and damage the nylon tubing.
- The concentrations of BTEX, F1 and F2 were non-detectable for all sample locations with the exception of sample point SG15 which had a detectable level of benzene at 0.9 µg (8 µg/m<sup>3</sup>).

**Clifton Associates Ltd.**, *Environmental Site Investigation, Private Property, Calgary, Alberta*, 24 February 2004.

- On September 2003, three boreholes (BH801 to BH803, inclusive) were drilled to a maximum depth of 16.8 m, to investigate potential impacts to soil and groundwater.
- Native soils underlying the organic soil are fluvial and lacustrine deposits with noticeable variations observed throughout each soil stratum. The upper native strata were sandy silt, underlain by a silty

clay, which was underlain by a silty sand interbedded with silt. Bedrock was not encountered to the maximum depth of exploration of 16.8 m.

- The maximum combustible soil vapour concentrations in the boreholes were 2,200 ppm in BH801 (11.4 m), 88 ppm in BH802 (11.3 m), and 2,200 ppm in BH803 (11.4 m).
- The depth to groundwater ranged from 11.59 m below ground surface to 12.33 m below ground surface.
- LPH was not encountered during this investigation.
- Concentrations of BTEX and PHC F1 to F4 met the applicable AENV 2001 PST Guidelines in all soil samples analyzed, with the exception of one soil sample (801-16) collected from borehole BH801 at a depth of 12.2 m.
- Concentrations of BTEX and PHC F1 and F2 met the applicable AENV 2001 PST Guidelines in all groundwater samples analyzed.

**Hobbs-Miller-Maat Inc.**, *Progress Report No. 7, North Hills Plaza Sears Canada Inc., Calgary, Alberta*, 29 April 2004.

- The total volume of concentrated bioproducts injected in 2003, was 118,000 gallons. Bioproducts were supplemented with enzyme, nutrient, and hydrogen peroxide.
- HMM scheduled the next injection of 75,000 gallons.
- An area of free product has been noted in the area surrounding BH1010 and BH1011.
- There is some evidence of benzene impact well below the 6 m depth in the silt strata.

**Clifton Associates Ltd.**, *2004 Supplemental Environmental Site Investigation, Hounsfeld Heights, Calgary, Alberta*, 5 May 2004.

- Between February and March 2004, 17 boreholes (BH901 to BH917, inclusive) were drilled to a maximum depth of 12.2 m, to investigate potential impacts to soil and groundwater beneath the Hounsfeld Heights area. Monitoring wells were installed in all boreholes with the exception of BH906.
- Weathered sandstone bedrock was encountered at a depth of 8.5 m in borehole BH914.
- Concentrations of BTEX and PHC F1 to F4 met the applicable AENV 2001 PST Guidelines in all soil samples analyzed.
- Concentrations of BTEX and PHC F1 and F2 met the applicable AENV 2001 PST Guidelines in all groundwater samples analyzed.

**Clifton Associates Ltd.**, *2004 Confirmatory Drilling Program, North Hill Shopping Centre, 1614-14 Avenue NW, Calgary, Alberta*, 17 May 2004.

- 16 boreholes (BH1001 to BH1016, inclusive) were drilled to investigate potential impacts to soil and groundwater beneath the Site. Monitoring wells were installed in all boreholes with the exception of BH1006. Bedrock was not encountered to the maximum depth of exploration of 16.8 m.
- The maximum combustible soil vapour concentration in the boreholes was >10,000 ppm in samples BH1001-5 (3.8 m), BH1003-5 (3.8 m), BH1004-3 (2.1 m to 2.3 m), BH1006-5 (3.5 m to 3.8 m), BH1010-5 (3.7 m to 3.8 m), BH1010-6 (4.4 m to 4.6 m), BH1011-6 (4.3 m to 4.6 m), BH1011-7 (5.2 m to 5.3 m), and BH1013-8 (5.8 m to 6.1 m).
- Liquid petroleum hydrocarbons (LPH) were subsequently measured in the monitoring wells installed in boreholes BH1010 and BH1011, located in the western portion of the Site.
- LPH was encountered in newly installed monitoring well BH1010 (188 mm) when monitored on 11 March 2004. A sheen was noted on the surface of the groundwater from monitoring well BH1011 when sampled on 17 March 2004.

- Combustible headspace vapour concentrations ranged between 34 ppm (BH1012) to 9,300 ppm (BH1001).
- Soil samples collected from all of the 1000 series boreholes drilled in February 2004 did not meet the applicable AENV 1994 RMC Guidelines, with the exception of boreholes BH1015 and BH1016, located east and north of the Sears Service Centre, respectively.
- The concentrations of one or more BTEX did not meet the applicable AENV 1994 RMC Guidelines in 11 of the 14 groundwater samples analyzed.

**Hobbs-Miller-Maat Inc.,** *Progress Report No. 9, North Hills Plaza Sears Canada Inc., Calgary, Alberta,* 15 December 2004.

- Impacted soils in the vicinity MW1007 area were excavated. Excavation was done on 2, 3 and 4 December 2004. A total of 875 m<sup>3</sup> of soil was excavated, 200 m<sup>3</sup> of which was impacted. The clean overburden was used as backfill, while the impacted soil was stockpiled and treated on-Site. The depth of the excavation was approximately 5 m.
- HMM will remove the impacted material upon completion of treatment which will most likely occur in the spring 2005.

**Clifton Associates Ltd.,** *Remedial Excavation - June 2004, North Hill Shopping Centre, Sears Service Centre, 1616-14 Avenue NW, Calgary, Alberta,* 16 May 2005.

- A remedial excavation conducted by HMM and observed by Clifton was initiated 26 May 2004.
- The excavation extended to a maximum width of 14 m (north/south) and a maximum length of 40 m (east/west). The depth of the excavation was approximately 6 m.
- Approximately 770 m<sup>3</sup> of impacted soil was excavated and stockpiled on-Site for treatment. An additional 1560 m<sup>3</sup> of overburden was excavated and retained for use as backfill.
- Clifton collected a total of 51 soil samples from the walls of the excavation for field testing of combustible soil headspace vapour concentrations.
- Clifton collected a total of 10 soil samples from the walls of the excavation for laboratory analysis.
- All ten soil samples submitted for laboratory analysis had concentrations of one or more BTEX constituents that did not meet the applicable criterion.
- A total of six soil samples submitted for laboratory analysis had concentrations of total volatile hydrocarbons that did not meet the applicable criterion.
- The excavation was backfilled with the treated soil and final paving was completed on 01 August 2004.

**Clifton Associates Ltd.,** *March 2004 Supplemental Drilling Program Completed, Lions Park, South of North Hill Shopping Centre, Sears Service Centre, 1614 – 14<sup>th</sup> Avenue NW, Calgary, Albert,* May 2005.

- The maximum combustible soil vapour concentration in the boreholes was >10,000 ppm in sample BH1103-12 collected from borehole BH1103 at a depth between 9.0 m and 9.3 m, sample BH1103-13 collected from borehole BH1103 at a depth between 9.5 and 9.8 m, sample BH1103-14 collected from bore BH1103 at a depth between 10.3 m and 10.6 m and sample BH1104-15 collected from borehole BH1104 at a depth between 11.5 and 11.8 m.
- LPH was not encountered in monitoring wells BH1101 to BH1107 inclusive when monitored on 5<sup>th</sup> April 2004.
- Combustible headspace vapour concentrations ranged between 12 ppm (monitoring well BH1102) to 2,800 ppm (monitoring well BH1105) All but two of the soil samples collected from the boreholes met the applicable AENV 2001 RMC Guidelines for benzene. Benzene concentrations in sample



BH1103-14 collected from bore BH1103 at a depth between 10.3 m and 10.6 m and sample BH1105-19 collected from borehole BH1105 at a depth between 13.7 m and 14.0 m, located south-east and south of the Sears Service Centre, respectively, were the exceptions.

- The concentrations of all toluene, ethylbenzene, xylene and PHC F1 to F4 in all analyzed soil samples met the applicable AENV 2001 RMC Guidelines. The soil samples yielding hydrocarbon concentrations that did not meet the applicable guidelines were from within the lower silty sand unit. The concentrations of PHC fraction F1 did not meet the applicable AENV 2001 RMC Guidelines in two of the eight groundwater samples analyzed in April 2004 (sample BH1103 and the duplicate for BH1103 labeled as BH1113). Monitoring well BH1103 is located south southeast of the Sears Service Centre.
- All other groundwater samples from each sampling event met the applicable criteria

**Clifton Associates Ltd.**, *December 2004 Excavation Report, North Hill Shopping Centre, Sears Service Centre, 1616-14 Avenue NW, Calgary, Alberta*, 16 May 2005.

- A remedial excavation conducted by HMM and observed by Clifton was initiated 02 December 2004 and completed on 11 December 2004.
- The excavation extended to a maximum width of 22 m (east/west) and a maximum length of 34 m (north/south). The depth of the excavation was approximately 4.75 m.
- Clifton collected a total of 37 soil samples from the walls of the excavation for field testing of combustible soil headspace vapour concentrations.
- Clifton collected a total of eight soil samples from the walls of the excavation for laboratory analysis.
- A total of six soil samples submitted for laboratory analysis had concentrations of one or more BTEX constituents that did not meet the applicable criterion.
- A total of six soil samples submitted for laboratory analysis had concentrations of total petroleum hydrocarbons that did not meet the applicable criterion.
- Sheen was noticed on groundwater encountered along the eastern portion of the excavation.
- A water sample was collected from the excavation and submitted for laboratory analysis.
- The water sample had benzene concentrations that did not meet the applicable criterion.
- The excavation was backfilled with the non-impacted overburden and imported pit-run and crushed gravel.

**Clifton Associates Ltd.**, *May 2004 Supplementary Drilling Program, Sears Parking Lot and 14<sup>th</sup> Avenue N.W., North Hill Shopping Centre, 1614 – 14<sup>th</sup> Avenue N.W., Calgary, Alberta*, June 2005.

- On May 3 2004, Clifton advanced eight boreholes (BH1201 to BH1208 inclusive) to a maximum depth of approximately 15.2m (BH1204 to BH1207 inclusive) and completed them as monitor wells. Boreholes BH1204 and BH1205 were hydrovaced to 3.0m bgs to aid location of underground utilities, therefore the depth to native soil in these boreholes could not be determined. Bedrock was not encountered during this event.
- The maximum combustible soil vapour concentration in the boreholes was >10,000 ppm in samples BH1201-10 collected from borehole BH1201 at a depth of 3.6 m to 3.8 m, BH1201-16 collected from borehole BH1201 at a depth of 6.1 m to 6.4 m, BH1202-9 collected from borehole BH1202 at a depth of 3.6 m to 3.8 m, and BH1202-11 collected from borehole BH1202 at a depth of 4.3 m to 4.6 m.
- No liquid petroleum hydrocarbons (LPH) were measured in the monitoring wells.
- Combustible headspace vapour concentrations ranged between 20 ppm (monitor well BH1208) to >10,000 ppm (monitor well BH1203).
- One of the fifteen soil samples collected from the boreholes drilled in May 2004 did not meet the applicable AENV 2001 PST Guidelines for benzene, toluene and total xylenes (BH1202-11 at a depth of 4.3m to 4.6m bgs).

- Six of the fifteen soil samples collected from the boreholes drilled in May 2004 did not meet the applicable AENV 2001 PST Guidelines for benzene. Concentrations of PHC Fractions F1 to F4 in all the soil samples met the applicable AENV 2001 PST Guidelines.
- One of the groundwater samples collected from the monitor wells did not meet the applicable AENV 2001 PST Guidelines for benzene concentrations (BH1203).

**Clifton Associates Ltd.,** *December 2004 Supplementary Drilling Program, West of 16<sup>th</sup> Street NW and South of 11<sup>th</sup> Avenue NW, Hounsfield Heights, Calgary, Alberta, July 2005.*

- On 15 December 2004, Clifton advanced three boreholes (BH1301 to BH1303, inclusive).
- The depth to water from ground surface was recorded as 1.2m bgs for monitoring well BH1301, and 3.2m bgs for monitoring wells BH1302 and BH1303.
- The maximum combustible soil vapour concentration in the boreholes was 200 ppm in sample BH1303-5 collected from borehole BH1303 at a depth of 3.7 m – 4.4 m bgs.
- No LPH was encountered in the newly installed monitoring wells BH1301 and BH1302 when monitored on 11 January 2005. After measuring fluid levels with an interface probe on 11 January 2005, the groundwater interface in monitoring wells BH1301 and BH1302 were checked with a disposable bailer to confirm the presence or absence of LPH.
- Combustible headspace vapour concentrations ranged between 10 ppm (monitoring well BH1301) to 92 ppm (monitoring well BH1302). All but one of the soil samples collected from the 1300 series boreholes drilled in December 2004 met the applicable AENV 2001 PST Guidelines. The benzene concentration in sample number 1303-10 (collected from borehole BH1303 at a depth of 7.6m to 8.2m bgs) located at the eastern side of the Site was the exception.
- The concentration of benzene did not meet the applicable AENV 2001 PST Guidelines in 1 of the 2 groundwater samples analyzed.
- The groundwater sample yielding hydrocarbon concentrations that did not meet the applicable guidelines was collected from monitoring well BH1302.

**Clifton Associates Ltd.,** *January 2005 Supplemental Drilling Investigation Completed, North Hill Shopping Centre, 1614-14 Avenue NW, Calgary, Alberta, July 2005.*

- On 25 January 2005, Clifton advanced five boreholes (BH1401 to BH1405, inclusive).
- Soil samples from boreholes BH1401, BH1402 and BH1404 met the applicable criterion.
- Soil samples were not submitted for laboratory analysis from boreholes BH1403 and BH1405
- In boreholes where no sample was submitted for laboratory analysis, maximum soil vapour concentrations were 4 ppm in borehole BH1403 and 480 ppm in borehole BH1405.
- Boreholes BH201 to BH214, inclusive were completed as monitoring wells.
- Groundwater samples were collected from monitoring wells BH1401 and BH1402 on 03 February 2005 and 04 March 2005 and from BH1405 on 04 February 2005. Groundwater samples collected from monitoring wells BH1401, BH1402 and BH1405 met the applicable criterion.

**Clifton Associates Ltd.,** *Shallow Soil-Vapour Sampling Shallow Soil-Vapour Sampling, August 2005, Residential Properties South of North Hill Shopping Centre, Calgary, Alberta, 24 October 2005.*

- The concentrations of BTEX, and PHC fractions F1 and F2 were non-detectable for all SV samples collected in August 2005.
- Results from this round of soil vapour sampling were submitted to Cantox for the purpose of evaluating potential health risks to homeowners in the Hounsfield Heights neighborhood on the basis of site conditions and SV characteristics. Based on the information received, Cantox has determined there to be no immediate or obvious health risks in the areas sampled. Residents participating in the soil vapour

study have received individualized letters from Cantox documenting the results of this toxicological analysis.

**Clifton Associates Ltd.,** *Site Management, Plan North Hill Shopping Centre, Kal-Tire Automotive Centre & Hounsfield Heights, Calgary, Alberta, 31 May 2006.*

- Clifton made some recommendations for activities to be completed in order to address petroleum hydrocarbon impacts found within the soils and groundwater beneath the Kal-Tire Automotive Centre (Site) and North Hill Shopping Centre parking lot located at 1614 - 14<sup>th</sup> Avenue NW, and deep in the subsurface of the area south to 10<sup>th</sup> Avenue NW between 15<sup>th</sup> Street NW and 16A Street NW in the community of Hounsfield Heights (off-Site).

**Cantox Environmental Inc. (Intrinsic Environmental Sciences Inc.),** *Community-Wide Assessment of Potential Health Impacts Associated with Subsurface Petroleum Hydrocarbons in the Hounsfield Heights Community of Calgary, Alberta, 31 May 2006.*

- Cantox (Intrinsic) was retained by Clifton to develop a community-wide Health Risk Assessment in order to investigate the potential impacts on human health and/or the environment from the hydrocarbon-affected subsurface soils and groundwater beneath the Hounsfield Heights area.
- The findings ruled out any reasonable opportunity for exposure of the residents to the hydrocarbons discovered at depth.
- Cantox (Intrinsic) also developed Tier 3 Site Specific Soil and Groundwater Quality Objectives (Tier 3 Objectives) for benzene and PHC fraction F1-BTEX that summarize the typical features of the Site, including the depth of the hydrocarbon impacts, the soil stratigraphy and the soil properties.
- The Tier 3 Objectives were deemed to be equivalent to the Tier 1 Generic PST Guidelines for Residential Land Use in terms of the level of protection afforded.
- The measured concentrations of benzene and F1-BTEX in the subsurface soils and groundwater were below the Tier 3 Objectives developed for the Site.
- The Tier 3 Objectives were developed for the zones 1 and 2 (Area between the south of 13 Avenue NW and north of 11 Avenue NW; and, between 15 Street NW and 16 Street NW), which were established within the Hounsfield Heights areas where the risk was potentially elevated.
- Zone 3, which encompasses the area around zones 1 and 2, is regulated by the current applicable AESRD 2010 Tier 1 Soil and Groundwater Remediation guidelines.

**Clifton Associates Ltd.,** *Remediation of Petroleum Hydrocarbons Impacts, North Hill Shopping Centre, 1616-14 Avenue NW, Calgary, Alberta .*

- A total of approximately 69,000 m<sup>3</sup> of PHC impacted soil and approximately 12,000 m<sup>3</sup> of clean overburden were excavated from the Site. Soil treatment was done using allu buckets to volatilize PHC constituents prior to placing and compacting the soil back in the excavation.
- Between 2006 and 2007, 176 soil samples were submitted to ALS laboratories for analysis of PHCs.
- The remediation program was guided using the 2001 AENV *Risk Management Guidelines for Petroleum Storage Tank Sites*, (2001 PST Guidelines). Due to the depth of the hydrocarbon impact, the limited space during each phase of the excavation, safety considerations, and the soil and groundwater conditions present during the execution of the Work Plan, some limited volumes of hydrocarbon impacted soil with concentrations in excess of generic AENV 2001 PST Guidelines remain on-Site.

**Clifton Associates Ltd.,** *Confirmatory Drilling Program and Application for Tier 2 Guideline Acceptance, North Hill Shopping Centre, 1616-14 Avenue NW, Calgary, Alberta, 2009.*

- Ten monitoring wells (1801 through 1810) were installed within the parking lot to the west of the Kal-Tire building. The monitoring wells were located within the remedial excavation footprint (1805 through 1809), in the edges of the excavation (1801 through 1803 and 1810) or completely out of the excavation footprint (1804).
- Six samples exceeded the 2001 PST Guidelines in concentrations of benzene.
- 16 soil samples exceed the current 2010 AESRD Tier 1 Guidelines for concentrations of benzene, toluene and/or ethyl-benzene. A total of 39 soil samples and five field duplicates were submitted to ALS for laboratory analysis of PHCs.
- The hydraulic conductivity was determined to be between  $1.04 \times 10^{-7}$  m/s and  $2.14 \times 10^{-7}$  m/s. The sustained yield determined from these monitoring wells was between  $2.83 \times 10^{-6}$  m<sup>3</sup>/s and  $5.37 \times 10^{-6}$  m<sup>3</sup>/s.
- A 5 meters layer of undisturbed, fine-grained material (according with AESRD definition) has not been proved yet in order to exclude the DUA pathway.

**Clifton Associates Ltd.,** *Site Monitoring Reports 2005 to 2013, North Hill Shopping Centre and Hounsfeld Heights, 1616-14 Avenue NW, Calgary, Alberta.*

- Numerous groundwater monitoring and sampling events were completed since 2005. Groundwater samples exceeded the applicable guidelines (prior 2007) the Alberta Environment (AENV) Risk Management Guidelines for Petroleum Storage Tank Sites, October 2001 (2001 PST Guidelines), Generic Hydrocarbon Criteria for Vapour Inhalation Pathway for Groundwater in Fine Grained Soils. The exceedances were mainly in concentrations of benzene and PHC fraction 1.
- Concentrations compared against the current applicable guidelines (2010 AESRD Tier 1 Soil and Groundwater Remediation Guidelines), exceedances in concentrations of BTEX and fraction 1 are encountered. In addition, some concentrations of toluene, ethyl-benzene and xylenes are exceeding the 2010 guidelines as well.

## REGULATORY CRITERIA

As discussed previously, Cantox (Intrinsik) developed Tier 3 Objectives for benzene and PHC fraction F1-BTEX that better captured the unique characteristics of the Hounsfeld Heights Area, including the depth of the hydrocarbon impacts, the soil stratigraphy and the soil properties. The Tier 3 Objectives were developed under the guidance documents prepared by Alberta Environment (AENV) that were in place at the time (2006).

In communication dated June 27 2007, AENV accepted those revised site specific soil and groundwater quality objectives (site-specific guidelines) with the following conditions:

“Inclusive in Alberta Environment’s acceptance of the SMP are the site specific remediation objectives for zones 1 and 2 derived by Intrinsik Environmental Inc. for BTEX in soil and groundwater. Soil Remediation objectives for F1 and F2 in Zones 1 and 2 will require compliance with the *Alberta Tier 1 (2007)* management limit. Remediation criteria for zone 3 are as defined by the *2007 Alberta Tier 1 Soil and Groundwater Remediation Guidelines*.”

According to a new communication from AESRD, dated July 20, 2012, the formerly included areas in Zones 1 and 2 along the 11<sup>th</sup> Avenue now need to be contained within Zone 3 which comprised areas south of 11<sup>th</sup> Avenue and west of 16<sup>th</sup> Street NW and east of 15<sup>th</sup> Street NW, south of 13<sup>th</sup> Avenue NW. This zone is under the 2010 AESRD Tier 1 Guidelines.

The Tier 3 Objectives are property specific and only for benzene and PHC F1 concentrations in soils and benzene concentrations in groundwater.

It should be noted that the limits for concentrations of toluene, ethyl-benzene, xylenes and PHC F2 in the 2001 PST Guidelines were higher than today's guidelines limits, therefore many of the laboratory results are now exceeding the current applicable criteria.

In 2006 concentrations of toluene, ethyl-benzene, xylenes and PHC F2 were not reviewed and Tier 3 guidelines were not developed, because all the laboratory results, at that time, were below the applicable guidelines.

The most recent guidelines are the 2010 AESRD *Tier 1 Soil and Groundwater Remediation Guidelines* from December 2010. These guidelines are now the applicable guidelines for the Site with the exception of Zone 1 and Zone 2, within the Hounsfeld Heights Area, which are subject to the Tier 3 Guidelines developed by Cantox (Intrinsic), only for concentrations of benzene and PHC Fraction 1 in soils and concentration of benzene in groundwater, and approved by Alberta Environment in 2007.

The remaining of the Site is governed now by the 2010 Tier 1 Guidelines for Residential/Park Land Use and Fine-Grained Soils with the Protection of Freshwater Aquatic Life pathway excluded. Concentrations of toluene, ethyl-benzene, xylenes and PHC F2 to F4 for soils and groundwater beneath the zones 1 and 2 would also need to be compared to the above mentioned criteria.



**Clifton Associates Ltd.**  
engineering science technology

## Appendix B

**SEACOR ENVIRONMENTAL ENGINEERING INC.**

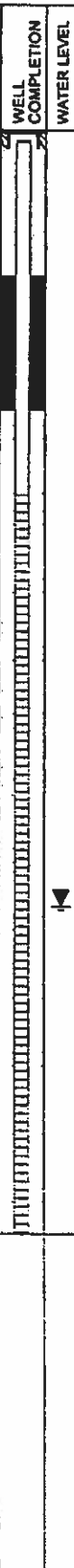
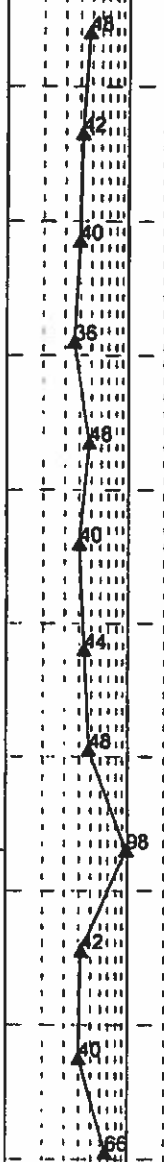
CLIENT Sunoco Inc.  
PROJECT NORTH HILL SEARS GAS BAR  
1616 - 14TH AVENUE NE  
Calgary, Alberta

**BOREHOLE LOG**

BOREHOLE NO BH50  
ELEVATION 100.82 m

SEACOR JOB NO. H0149-005

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
0.0		TOPSOIL									0.0
0.0		SAND (NATIVE)	Fine grained, silty, compact, brown, and dry Rootlets to 1.1 m. Wet at 4.6 m. Increasing silt and clay content with depth beginning at 4.6 m. No hydrocarbon odour or staining								0.0
1.0											1.0
2.0											2.0
3.0											3.0
4.0											4.0
5.0											5.0
6.0											6.0
7.0		CLAY (NATIVE)	Very silty, some sand, trace rounded pebbles, stiff, plastic, brown with some grey mottling, and wet No hydrocarbon odour or staining								7.0
8.0											8.0
9.0											9.0
End of borehole at 9.1 m											9.0



road box & concrete seal  
clean sand  
bentonite seal  
010 screen pipe with sand pack  
April 30/98

# SEACOR ENVIRONMENTAL ENGINEERING INC.

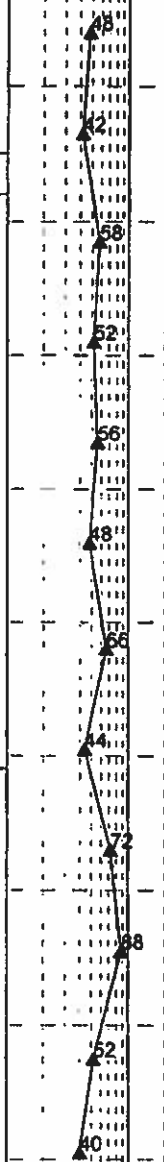
CLIENT Sunoco Inc.  
PROJECT NORTH HILL SEARS GAS BAR  
1616 - 14TH AVENUE NE  
Calgary, Alberta

## BOREHOLE LOG

BOREHOLE NO BH51  
ELEVATION 100.24 m

SEACOR JOB NO: H0149-005

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
0.0 - 1.0		TOPSOIL	SAND FILL Silty, loose to compact. Rootlets throughout No hydrocarbon odour or staining							road box & concrete seal	0.0
1.0 - 2.0		BURIED TOPSOIL	No hydrocarbon odour or staining.							clean sand	1.0
2.0 - 6.0		SAND (NATIVE)	Fine grained, silty, compact, brown, and dry Increasing silt and clay content with depth beginning at 4.6 m. Wet at 4.4 m No hydrocarbon odour or staining							bentonite seal	2.0
6.0 - 9.1		CLAY (NATIVE)	Very silty, some sand, trace rounded pebbles, stiff, plastic, brown with some grey mottling, and wet. Thin, fine grained sand lenses from 7.0 m to 8.8 m. Some small gravel from 7.9 m to 8.8 m No hydrocarbon odour or staining							010 screen pipe with sand pack	6.0
9.1			End of borehole at 9.1 m							April 30/98	9.0





**SEACOR ENVIRONMENTAL ENGINEERING INC.**

CLIENT: Sunoco Inc.  
PROJECT: NORTH HILL SEARS GAS BAR  
1616 - 14TH AVENUE NE  
Calgary, Alberta

**BOREHOLE LOG**

BOREHOLE NO. BH52  
ELEVATION 100.20 m

SEACOR JOB NO: H0149-005

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
0.0			TOPSOIL								
0.0 - 6.0			SAND (NATIVE) Fine grained, silty, compact, brown, and dry Increasing silt and clay content with depth beginning at 4.9 m. No hydrocarbon odour or staining		55 52 50 50 52 58					road box & concrete seal clean sand bentonite seal	
6.0 - 10.7			SILT AND CLAY (NATIVE) Some sand, trace rounded pebbles, stiff, plastic, brown with some grey mottling, and wet. Fine grained sand lenses from 6.4 m to 8.8 m Hydrocarbon odour from 6.1 m to 8.8 m. Minor hydrocarbon staining at 6.4 m			1200 5800 2000 1200 800 520 520			010 screen pipe with sand pack April 30/98 bentonite		
10.7			End of borehole at 10.7 m								

DRILLING METHOD: Rotary Auger Drill

DATE DRILLED 4/21/98

Notes

-  NO RECOVERY
-  AUGER SAMPLE
-  SPLIT SPOON SAMPLE
-  CONTINUOUS SAMPLE

**SEACOR**  
ENVIRONMENTAL ENGINEERING INC.

CLIENT: Sunoco Inc.  
PROJECT: NORTH HILL SEARS GAS BAR  
1616 - 14TH AVENUE NE  
Calgary, Alberta

**BOREHOLE LOG**

BOREHOLE NO: BH53  
ELEVATION 98.77 m

SEACOR JOB NO: H0149-005

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
0.0 - 1.0		TOPSOIL	Organics, firm, black, and moist.							clean soil cuttings bentonite seal	
1.0 - 4.3		SAND (NATIVE)	Fine grained, silty, compact, brown, and dry Increasing silt and clay content with depth beginning at 4.3 m. No hydrocarbon odour or staining								
4.3 - 6.0										clean soil cuttings	
6.0 - 7.5		CLAY (NATIVE)	Silty, some sand, trace rounded pebbles, stiff, plastic, brown with some grey mottling, and wet Fine grained sand lenses from 7.3 m to 8.8 m Hydrocarbon odour from 7.5 m to 8.7 m No hydrocarbon staining								
7.5 - 8.8											
8.8 - 9.0											
9.0 - 10.0										bentonite seal	
10.0 - 10.7			End of borehole at 10.7 m.								

DRILLING METHOD: Rotary Auger Drill  
DATE DRILLED: 4/21/98

Notes

- NO RECOVERY
- AUGER SAMPLE
- SPLIT SPOON SAMPLE
- CONTINUOUS SAMPLE

# SEACOR ENVIRONMENTAL ENGINEERING INC.

CLIENT: Sunoco Inc.  
 PROJECT: NORTH HILL SEARS GAS BAR  
 1616 - 14TH AVENUE NE  
 Calgary, Alberta

## BOREHOLE LOG

BOREHOLE NO: BH54  
 ELEVATION: 98.34 m

SEACOR JOB NO: H0149-005

DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
0.0			<b>TOPSOIL</b>								
0.0			<b>SAND (NATIVE)</b> Fine grained, silty, compact, brown, and dry No hydrocarbon odour or staining							road box & concrete seal	
1.0					72					clean sand	
2.0					64						
2.0					58					bentonite seal	
3.0					92						
4.0			<b>CLAY (NATIVE)</b> Very silty, some sand, trace rounded pebbles, stiff, plastic, brown with some grey mottling, and wet Saturated at 3.8 m No hydrocarbon odour or staining								
4.0					58						
5.0					90						
6.0					74						
6.0					70					010 screen pipe with sand pack April 30/98	
7.0					180						
8.0					120						
8.0					88						
9.0					120						
9.0			End of borehole at 9.1 m								

DRILLING METHOD: Rotary Auger Drill

DATE DRILLED: 4/21/98

Notes

- NO RECOVERY
- AUGER SAMPLE
- SPLIT SPOON SAMPLE
- CONTINUOUS SAMPLE

**SEACOR ENVIRONMENTAL ENGINEERING INC.**

CLIENT **Sunoco Inc.**  
 PROJECT **NORTH HILL SEARS GAS BAR**  
 1816 - 14TH AVENUE NE  
 Calgary, Alberta

**BOREHOLE LOG**

BOREHOLE NO **BH55**  
 ELEVATION **99.65 m**

SEACOR JOB NO: **H0149-005**

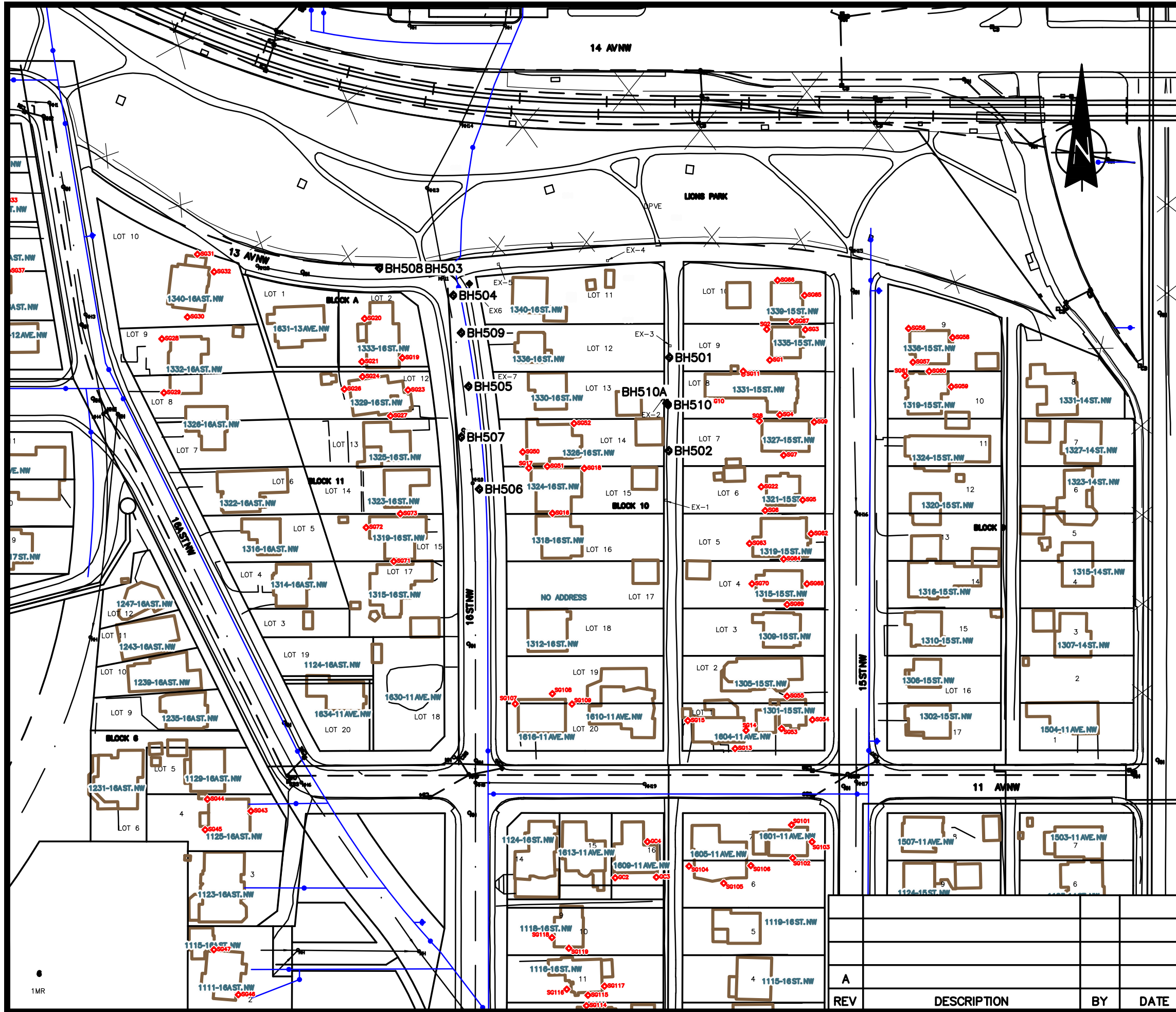
DEPTH (m)	SAMPLE TYPE	SOIL TYPE	SOIL DESCRIPTION	TEST DATA				WELL COMPLETION	WATER LEVEL	FIELD NOTES	DEPTH (m)
				HYDROCARBON VAPOUR LEVEL (ppmv)							
				10	100	1000	10000				
0.0			TOPSOIL								
1.0			SAND (NATIVE) Fine grained, silty, compact, brown, and dry No hydrocarbon odour or staining		50						
2.0						78					
3.0						88					
4.0						58					
5.0			SILT AND CLAY (NATIVE) Some sand, trace rounded pebbles, stiff, plastic, brown with some grey mottling, and wet. Thin, fine grained sand lenses from 6.4 m to 7.3 m No hydrocarbon odour or staining		54						
6.0						4					
7.0						120					
8.0						40					
9.0			End of borehole at 9.1 m.		120						

DRILLING METHOD: Rotary Auger Drill

DATE DRILLED: 4/21/98

Notes

-  NO RECOVERY
-  AUGER SAMPLE
-  SPLIT SPOON SAMPLE
-  CONTINUOUS SAMPLE



**LEGEND:**

- BOREHOLE LOCATION
- MONITORING WELL
- BOREHOLE BY OTHERS
- INVESTIGATION BOUNDARY
- LRT TRACKS
- FENCE LINE
- LEGAL LINE
- FACILITY/FEATURE
- BUILDING
- EXCAVATION LINER
- TREES

**UTILITIES & SYMBOLS**

- NATURAL GAS LINE
- SANITARY SEWER
- STORM SEWER
- WATER
- FIBRE OPTICS CABLE
- UNDERGROUND POWER
- TELEPHONE
- POWER POLE
- CATCH BASIN
- FIRE HYDRANT
- LIGHT STANDARD
- MANHOLE
- VALVE
- TRAFFIC ISLAND

**NOTES:**

- DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES), SITE ASSESSMENT INFORMATION, AND TRONNES SURVEYS LTD SURVEY DONE JUNE 14,15 OF 2005. ADDITIONAL REFERENCES FROM SEACOR ENVIRONMENTAL ENGINEERING INC., DRAWINGS 149-5A6.DWG AND 149-5A6.DWG
- TEMPORARY BENCHMARKS: ASCM 75838 AT COORDINATES N. 5658986.637 E. -6668.803 N. 5658680.491 E. -6627.858 ELEVATION 1090.078m ASL.

0 10 25 50 75 m



CLIENT  
**SEARS Canada Inc.**

PROJECT  
**SITE MONITORING REPORT  
 HOUNSFIELD HEIGHTS  
 CALGARY, ALBERTA**

TITLE  
**MONITOR WELL LOCATION PLAN  
 BH500 SERIES**

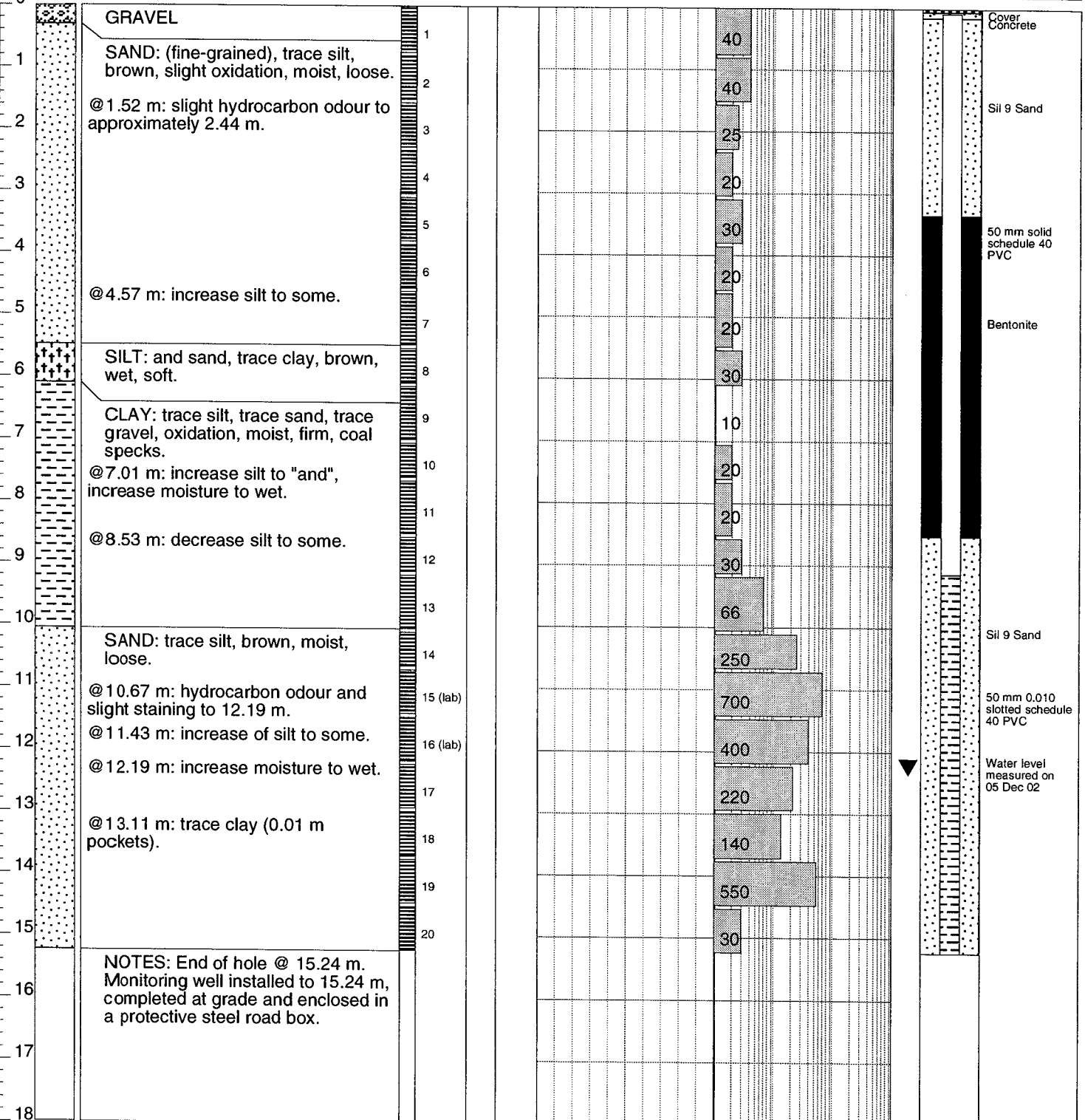
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SCALE	1:1250	DWN. BY	RSD	DWG. NO.
				1

REV	DESCRIPTION	BY	DATE
A			



Client: Sears	Northing: 5658590	Date Drilled: 12 November 2002
Project: Phase II ESA Off-Site	Easting: -6798.53	Drill: B-57
Location: 13 Ave & 16 St NW, Calgary, AB	Ground Elev.: 1090.092 m	Drilling Method: Solid Stem Auger
Project No: CG909	Top Casing Elev.: 1090.027 m	Logged by: CB/MH

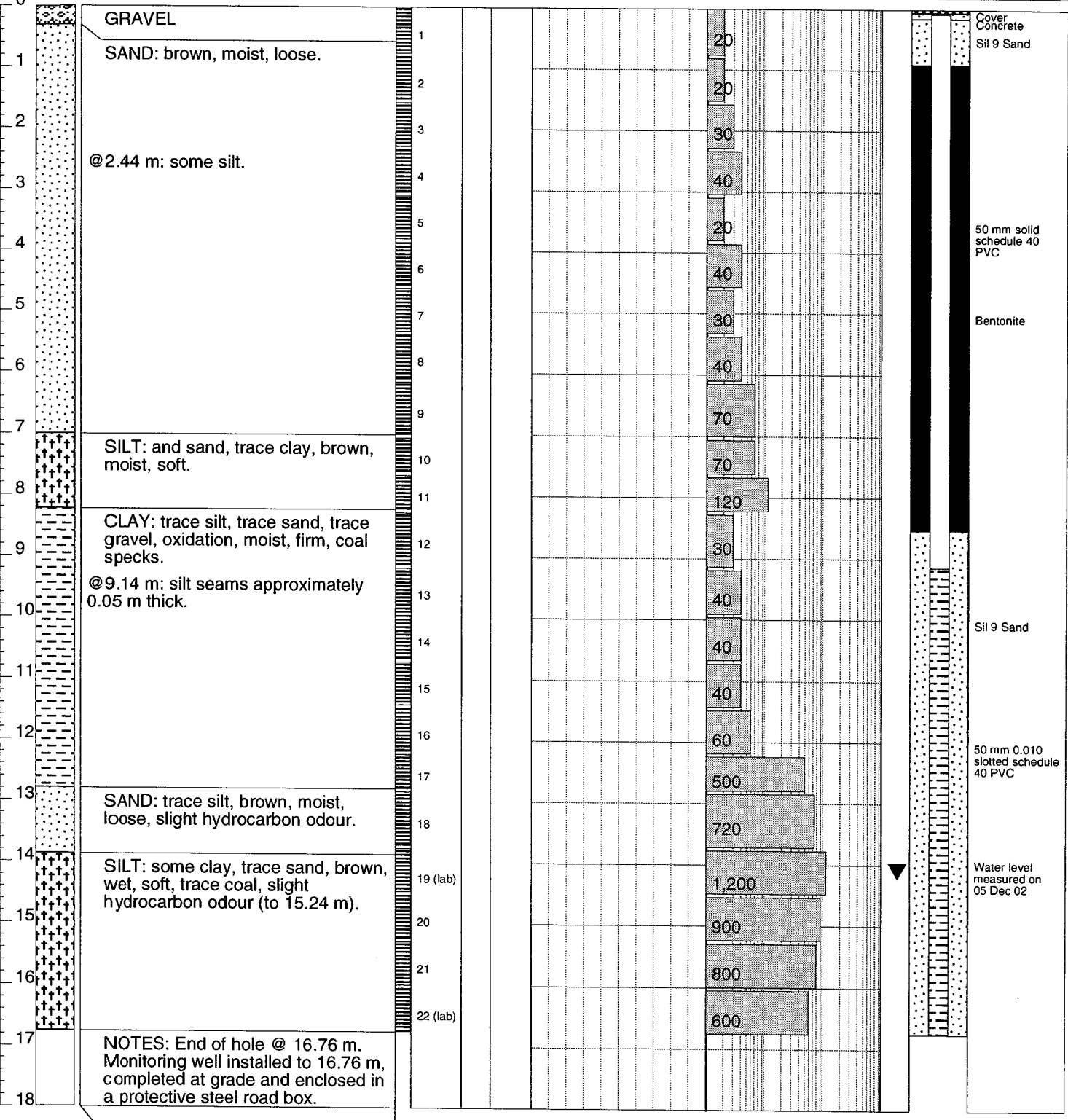
Depth (m)	Symbol	Soil Description	Sample		Moisture Content percent			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit +	Natural Moisture O	Liquid Limit D	10	100	





Client: Sears	Northing: 5658560	Date Drilled: 12 November 2002
Project: Phase II ESA Off-Site	Easting: -6798.72	Drill: B-57
Location: 13 Ave & 16 St NW, Calgary, AB	Ground Elev.: 1091.556 m	Drilling Method: Solid Stem Auger
Project No: CG909	Top Casing Elev.: 1091.439 m	Logged by: CB/MH

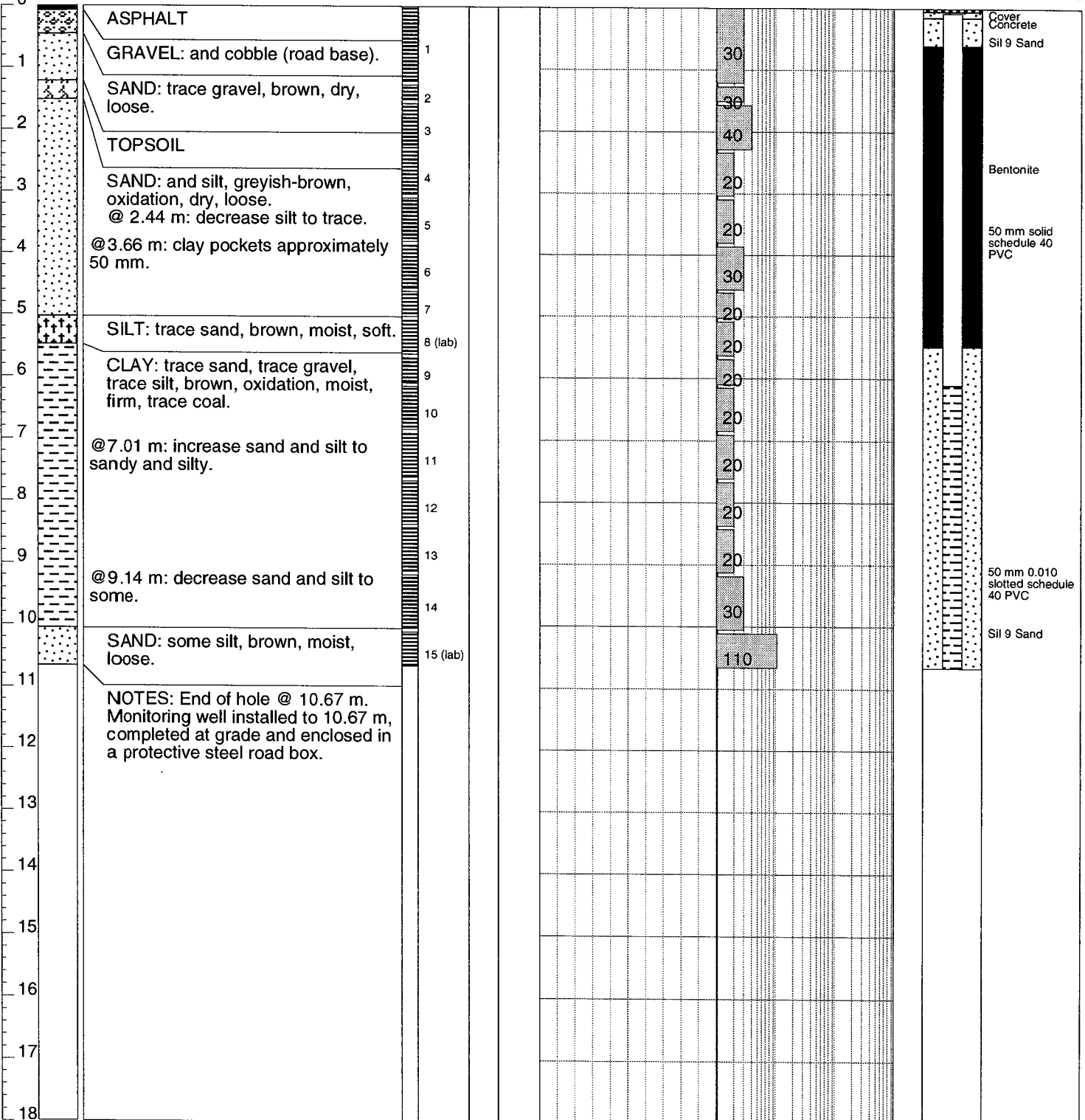
Depth (m)	Symbol	Soil Description	Sample				Moisture Content percent				Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit +	Natural Moisture ○	Liquid Limit ◇						





Client: Sears	Northing: 5658619	Date Drilled: 12 November 2002
Project: Phase II ESA Off-Site	Easting: -6876.40	Drill: B-57
Location: 13 Ave & 16 St NW, Calgary, AB	Ground Elev.: 1090.08 m	Drilling Method: Solid Stem Auger
Project No: CG909	Top Casing Elev.: 1090.007 m	Logged by: CB/MH

Depth (m)	Symbol	Soil Description	Sample		Moisture Content percent			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit +	Natural Moisture O	Liquid Limit D	10	100	

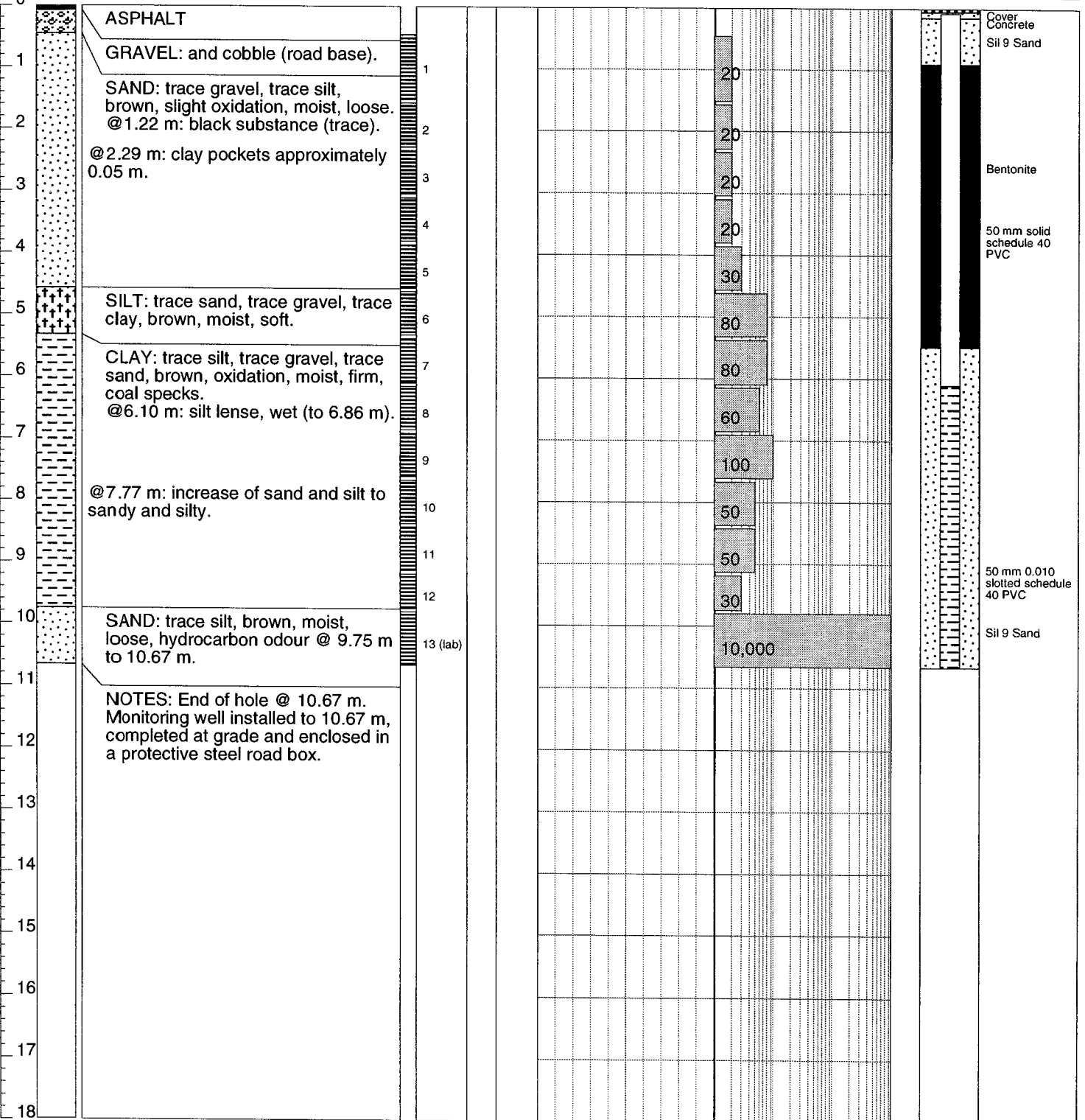






Client: Sears	Northing: 5658610	Date Drilled: 12 November 2002
Project: Phase II ESA Off-Site	Easting: -6868.01	Drill: B-57
Location: 13 Ave & 16 St NW, Calgary, AB	Ground Elev.: 1089.797 m	Drilling Method: Solid Stem Auger
Project No: CG909	Top Casing Elev.: 1089.713 m	Logged by: CB/MH

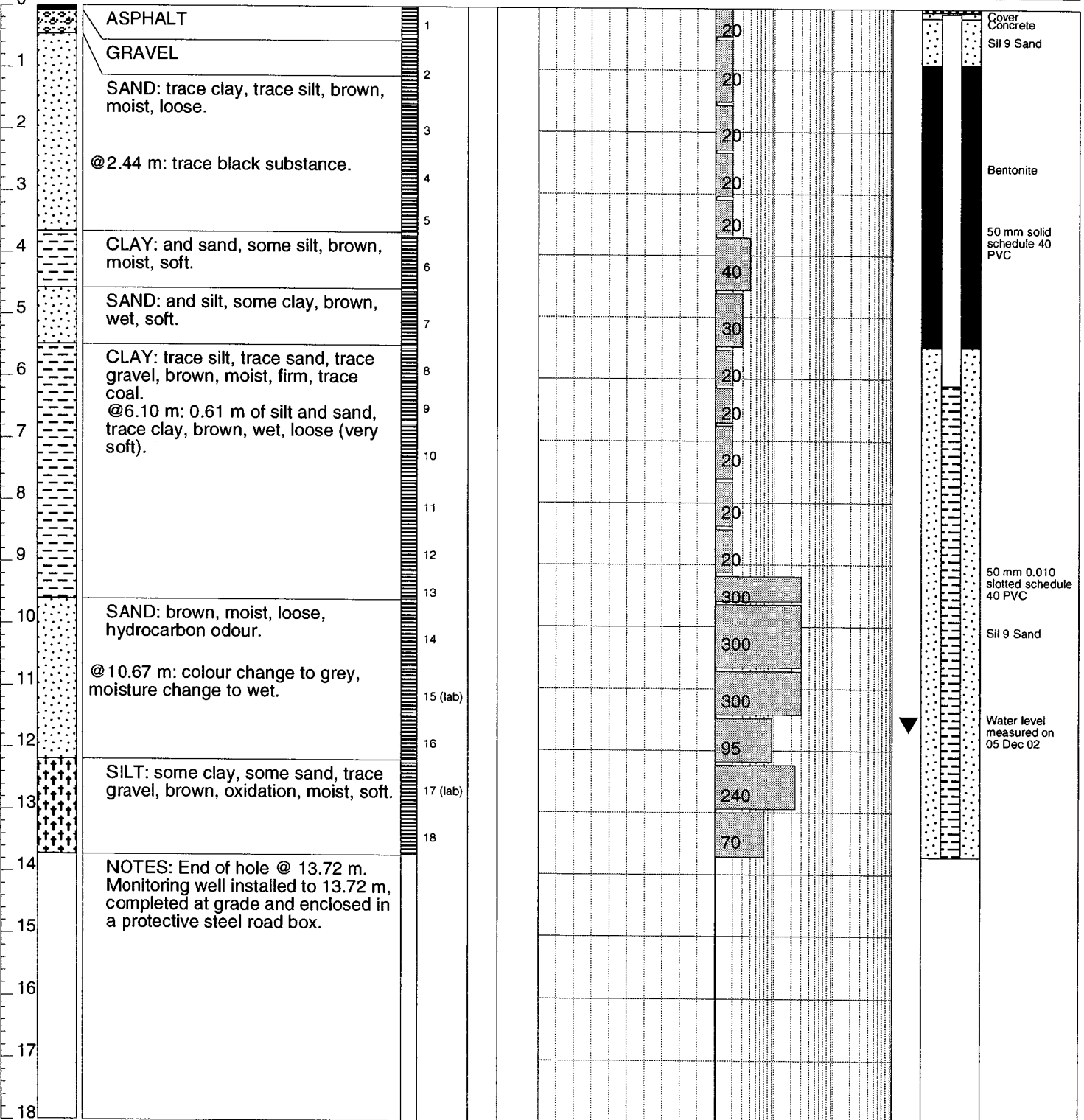
Depth (m)	Symbol	Soil Description	Sample		Moisture Content percent			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.	SPT N	USC	Plastic Limit +	Natural Moisture O	Liquid Limit D	10	100	





Client: Sears	Northing: 5658581	Date Drilled: 13 November 2002
Project: Phase II ESA Off-Site	Easting: -6863.06	Drill: B-57
Location: 13 Ave & 16 St NW, Calgary, AB	Ground Elev.: 1089.469 m	Drilling Method: Solid Stem Auger
Project No: CG909	Top Casing Elev.: 1089.378 m	Logged by: CB/MH

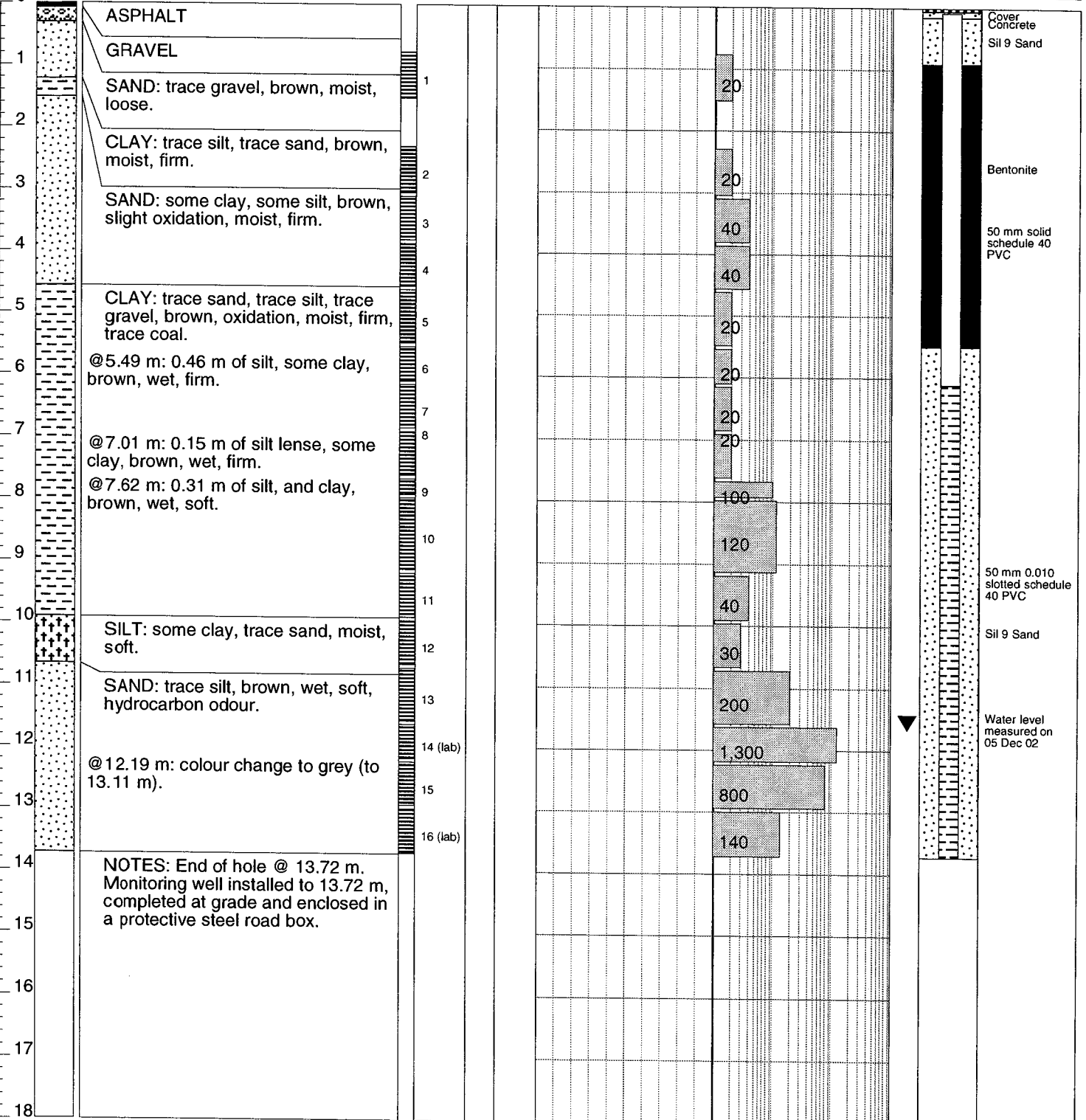
Depth (m)	Symbol	Soil Description	Sample		Moisture Content percent			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.	Plastic Limit +	Natural Moisture ○	Liquid Limit ◇	10	100	1000	10000	





Client: Sears	Northing: 5658548	Date Drilled: 13 November 2002
Project: Phase II ESA Off-Site	Easting: -6859.65	Drill: B-57
Location: 13 Ave & 16 St NW, Calgary, AB	Ground Elev.: 1088.941 m	Drilling Method: Solid Stem Auger
Project No: CG909	Top Casing Elev.: 1088.878 m	Logged by: CB/MH

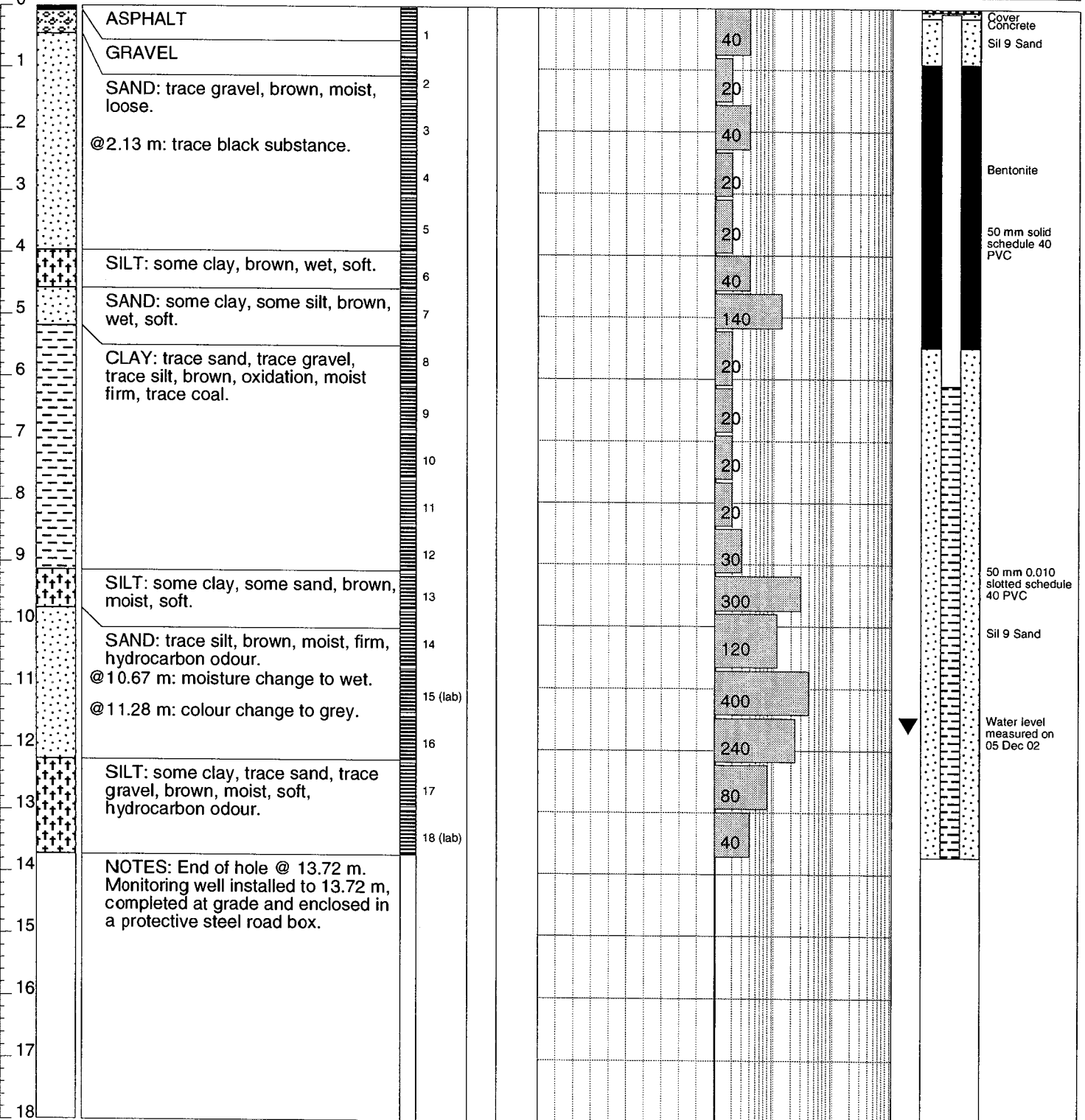
Depth (m)	Symbol	Soil Description	Sample				Moisture Content percent				Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit +	Natural Moisture O	Liquid Limit Diamond						





Client: Sears	Northing: 5658564	Date Drilled: 13 November 2002
Project: Phase II ESA Off-Site	Easting: -6865.45	Drill: B-57
Location: 13 Ave & 16 St NW, Calgary, AB	Ground Elev.: 1089.191 m	Drilling Method: Solid Stem Auger
Project No: CG909	Top Casing Elev.: 1089.101 m	Logged by: CB/MH

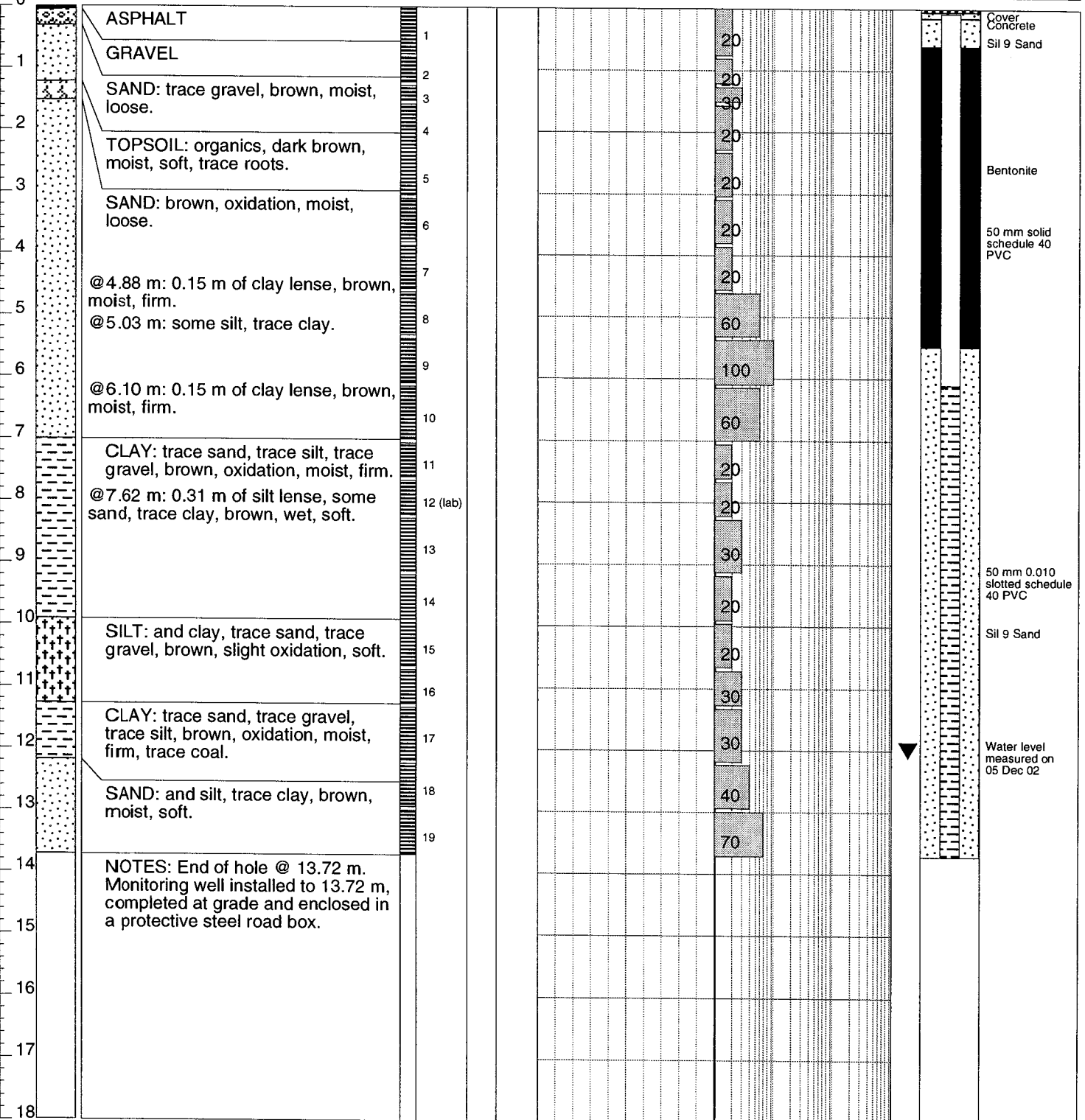
Depth (m)	Symbol	Soil Description	Sample		Moisture Content percent			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit +	Natural Moisture ○	Liquid Limit ◇	10	100	





Client: Sears	Northing: 5658619	Date Drilled: 13 November 2002
Project: Phase II ESA Off-Site	Easting: -6891.74	Drill: B-57
Location: 13 Ave & 16 St NW, Calgary, AB	Ground Elev.: 1091.259 m	Drilling Method: Solid Stem Auger
Project No: CG909	Top Casing Elev.: 1091.176 m	Logged by: CB/MH

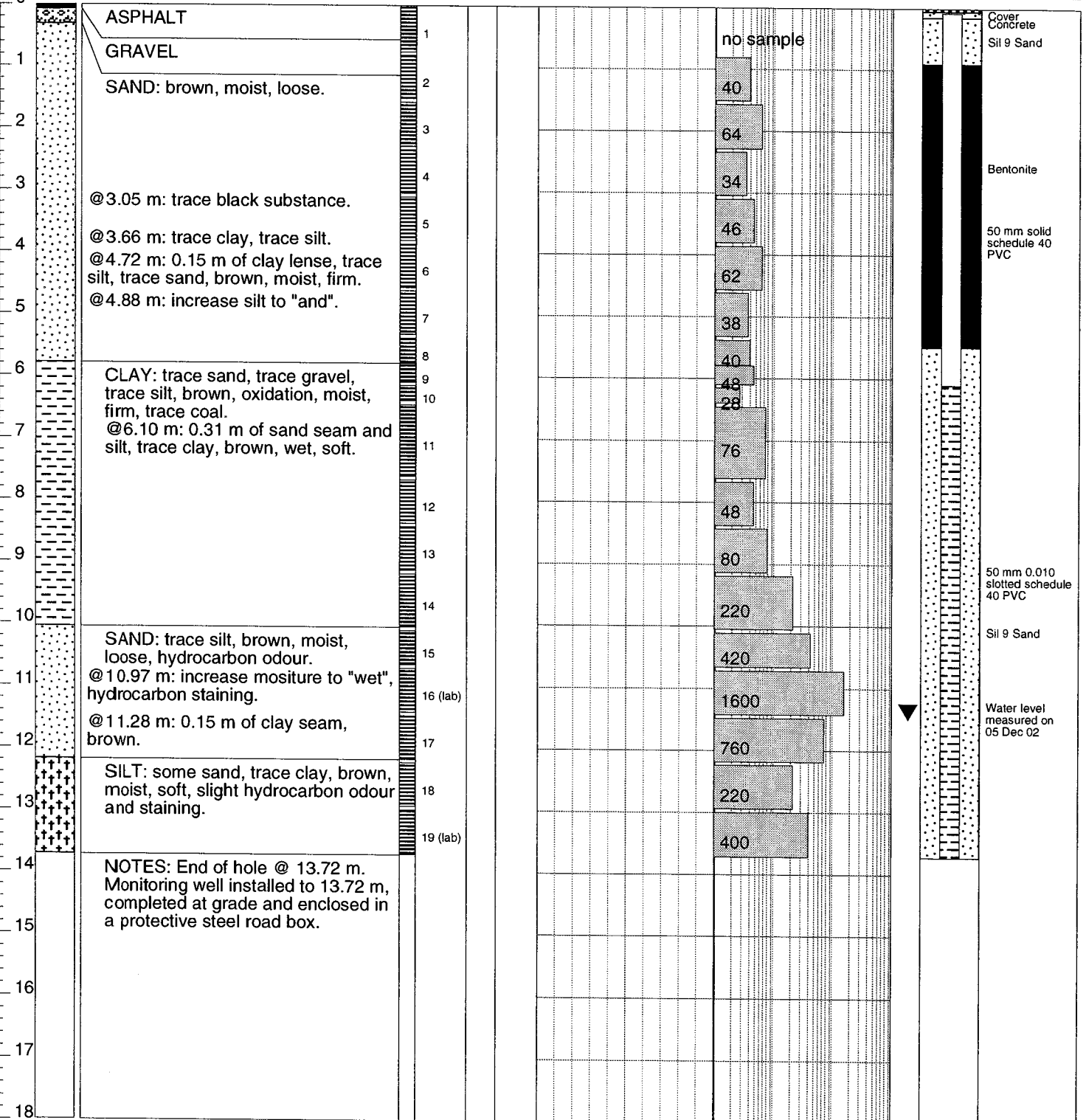
Depth (m)	Symbol	Soil Description	Sample				Moisture Content percent				Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit +	Natural Moisture O	Liquid Limit ◇						





Client: Sears	Northing: 5658598	Date Drilled: 14 November 2002
Project: Phase II ESA Off-Site	Easting: -6865.40	Drill: B-57
Location: 13 Ave & 16 St NW, Calgary, AB	Ground Elev.: 1089.651 m	Drilling Method: Solid Stem Auger
Project No: CG909	Top Casing Elev.: 1089.588 m	Logged by: CB/MH

Depth (m)	Symbol	Soil Description	Sample				Moisture Content percent				Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit +	Natural Moisture O	Liquid Limit Diamond	10	100	1000	10000		





# BOREHOLE LOG

Borehole: **BH510**

Client: **Sears**  
Project: **Phase II ESA Off-Site**  
Location: **13 Ave & 16 St NW, Calgary, AB**  
Project No: **CG909**

Northing: **5658575**  
Easting: **-6798.95**  
Ground Elev.: **1091.148 m**  
Top Casing Elev.: **1091.037 m**

Page: **1 of 1**  
Date Drilled: **14 November 2002**  
Drill: **B-57**  
Drilling Method: **Solid Stem Auger**  
Logged by: **CB/MH**

Depth (m)	Symbol	Soil Description	Sample				Moisture Content percent			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit +	Natural Moisture ○	Liquid Limit ◇	10	100	1000	10000	
0		SAND: trace gravel, brown, moist, loose.												Cover Concrete Sil 9 Sand
1														
2														
3		@2.13 m: 0.15 m of clay seam, trace silt, trace sand, brown, moist, soft.												Bentonite
4														
5		@3.66 m: 0.15 m of clay seam, some silt, trace sand, brown, moist, soft.												50 mm solid schedule 40 PVC
6														
7		@5.18 m: trace black substance.												
8														
9		@6.10 m: some clay, some silt.												
10														
11		@6.71 m to 7.32 m: increase moisture to wet.												
12														
13		CLAY: trace silt, trace sand, trace gravel, brown, oxidation, moist, soft, trace coal.												50 mm 0.010 slotted schedule 40 PVC
14														Sil 9 Sand
15														
16		SAND: some clay, trace silt, brown, moist, soft, hydrocarbon odour.												
17														
18														Water level measured on 05 Dec 02

NOTES: End of hole @ 15.24 m. Monitoring well installed to 15.24 m, completed at grade and enclosed in a protective steel road box.

Env. BH in CAL v03.dcf



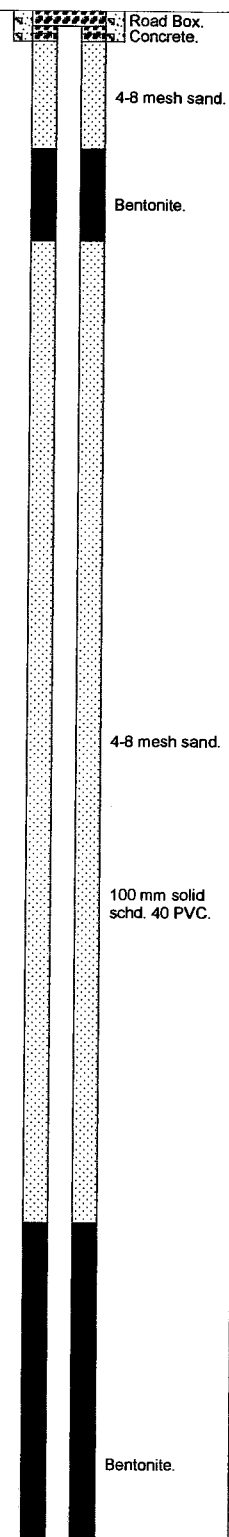
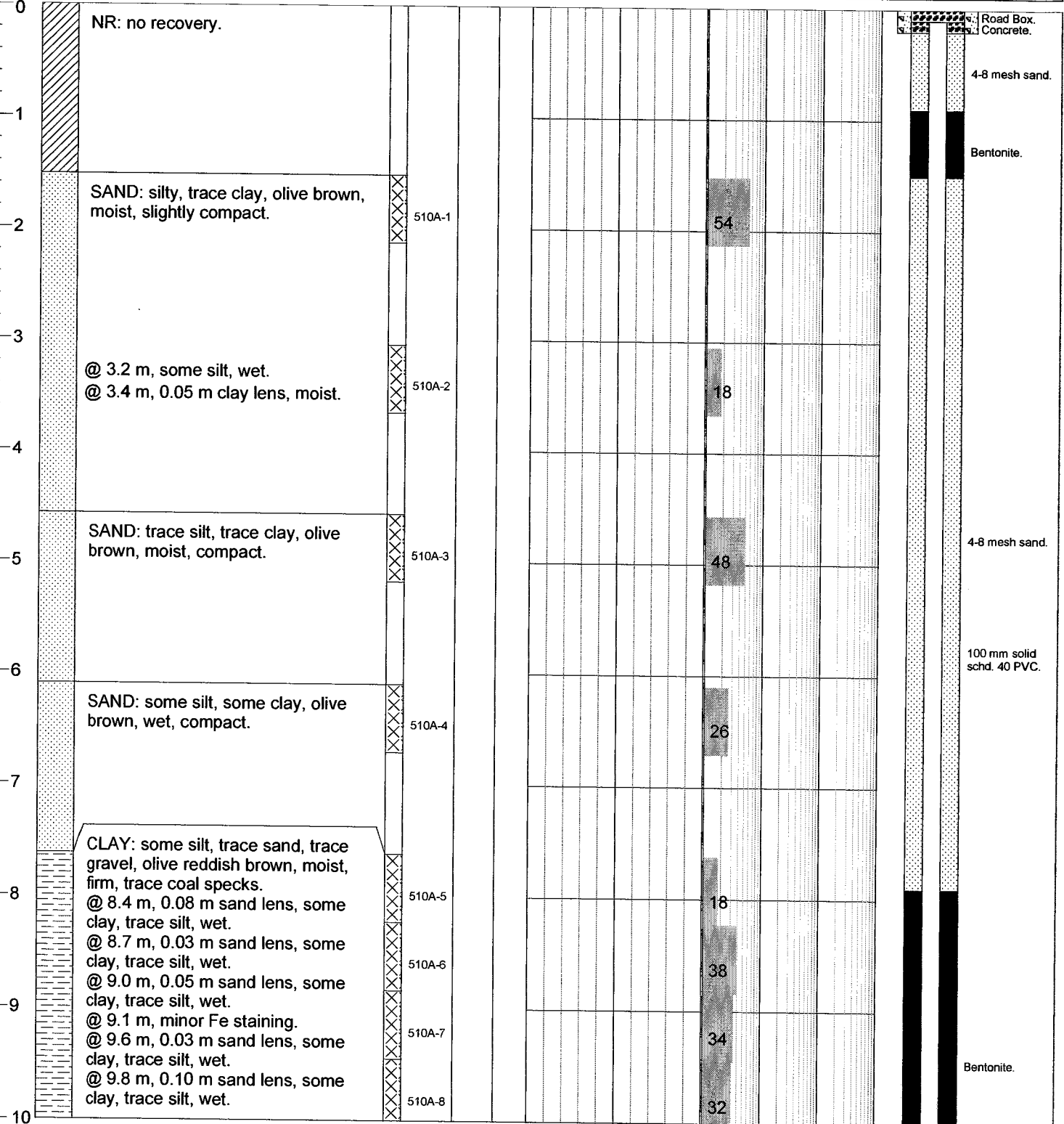
**Clifton Associates Ltd.**  
engineering science technology

# BORE HOLE LOG

**Bore Hole: BH510-A**  
Page: 1 of 2

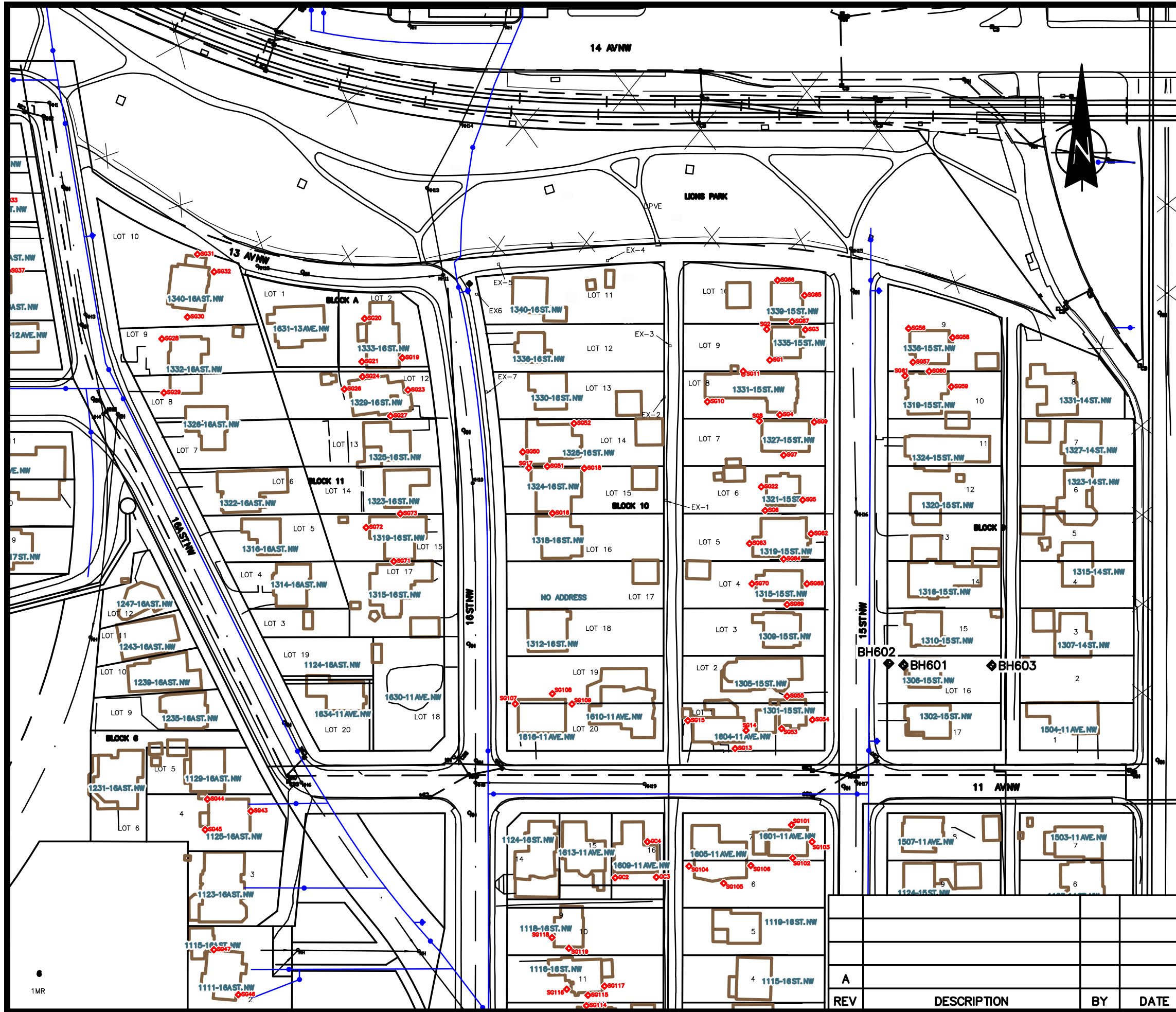
Client: Sears Canada Inc.	Northing:	Date Drilled: 21 December 2004
Project: Offsite Environmental Site Investigation	Easting:	Drill: B-61
Location: Hounsfeld Heights, Calgary, AB	Ground Elev.:	Drilling Method: Hollow Stem Auger
Project No.: CG909	Top Casing Elev.:	Logged by: BHP

Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	Natural Moisture	Liquid Limit	percent	ppm	ppm	ppm		









**LEGEND:**

- BOREHOLE LOCATION
- MONITORING WELL
- BOREHOLE BY OTHERS
- INVESTIGATION BOUNDARY
- LRT TRACKS
- FENCE LINE
- LEGAL LINE
- FACILITY/FEATURE
- BUILDING
- EXCAVATION LINER
- TREES

**UTILITIES & SYMBOLS**

- NATURAL GAS LINE
- SANITARY SEWER
- STORM SEWER
- WATER
- FIBRE OPTICS CABLE
- UNDERGROUND POWER
- TELEPHONE
- POWER POLE
- CATCH BASIN
- FIRE HYDRANT
- LIGHT STANDARD
- MANHOLE
- VALVE
- TRAFFIC ISLAND

**NOTES:**

- DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES), SITE ASSESSMENT INFORMATION, AND TRONNES SURVEYS LTD SURVEY DONE JUNE 14,15 OF 2005. ADDITIONAL REFERENCES FROM SEACOR ENVIRONMENTAL ENGINEERING INC., DRAWINGS 149-5A6.DWG AND 149-5A6.DWG
- TEMPORARY BENCHMARKS:  
 ASCM 75838 AT COORDINATES N. 5658986.637 E. -6668.803  
 ASCM 57265 AT COORDINATES N. 5658680.491 E. -6627.858  
 ELEVATION 1091.344m ASL. ELEVATION 1090.078m ASL.



CLIENT  
**SEARS Canada Inc.**

PROJECT  
**SITE MONITORING REPORT  
 HOUNSFIELD HEIGHTS  
 CALGARY, ALBERTA**

TITLE  
**MONITOR WELL LOCATION PLAN  
 BH600 SERIES**

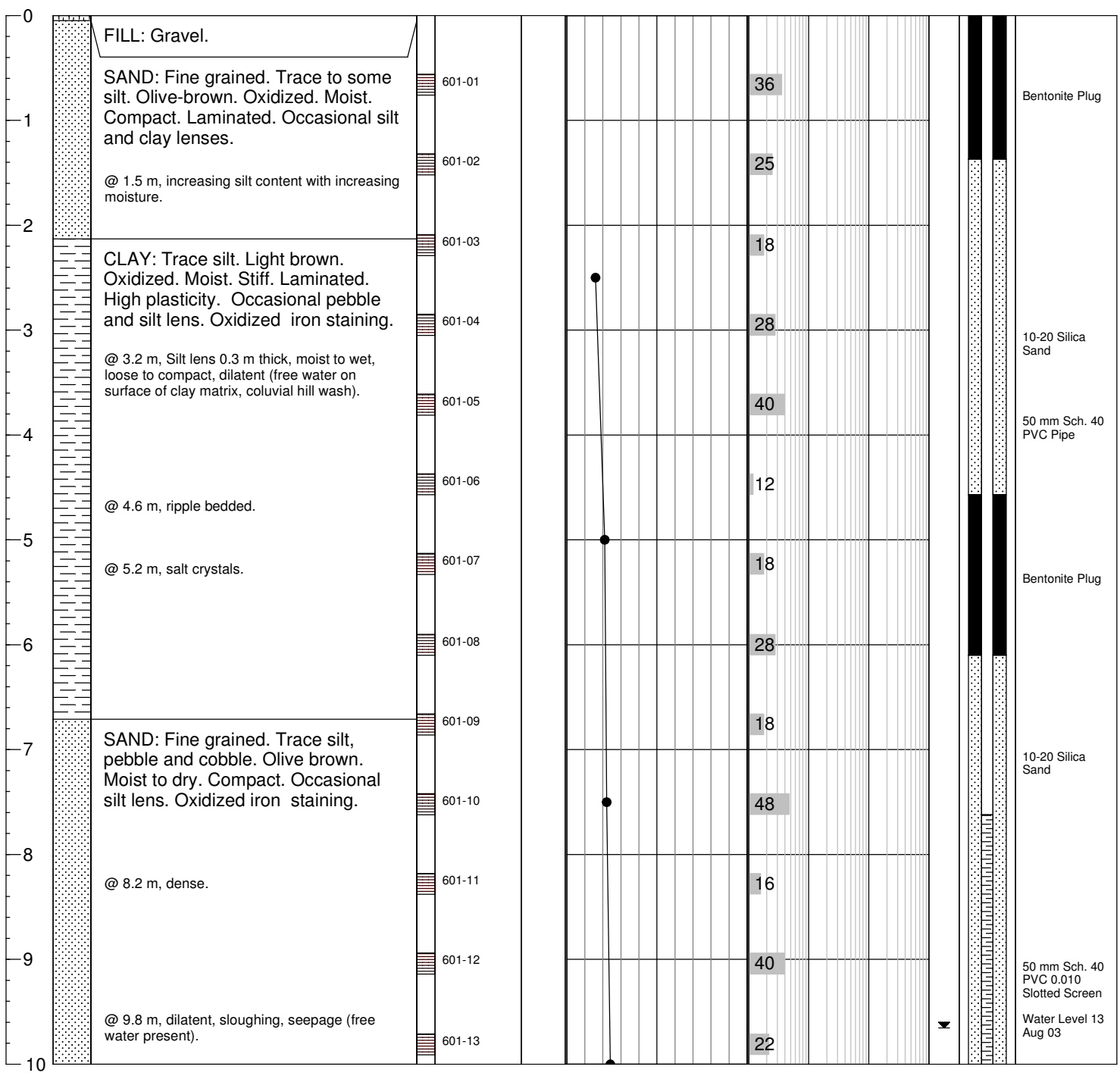
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SCALE	1:1250	DWN. BY	RSD	DWG. NO.
				2

REV	DESCRIPTION	BY	DATE
A			



Client: Sears Canada Inc.	Northing: -	Date Drilled: 11-Aug-03
Project: Phase II ESI	Easting: -	Drill: Beck Rig 28
Location: Calgary, AB	Ground Elev.: -	Drilling Method: 6" Solid Stem
Project No.: CG909	Top Casing Elev.: -	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	10	100	1000	



ENV.BH.m.CAL.v03.lbf



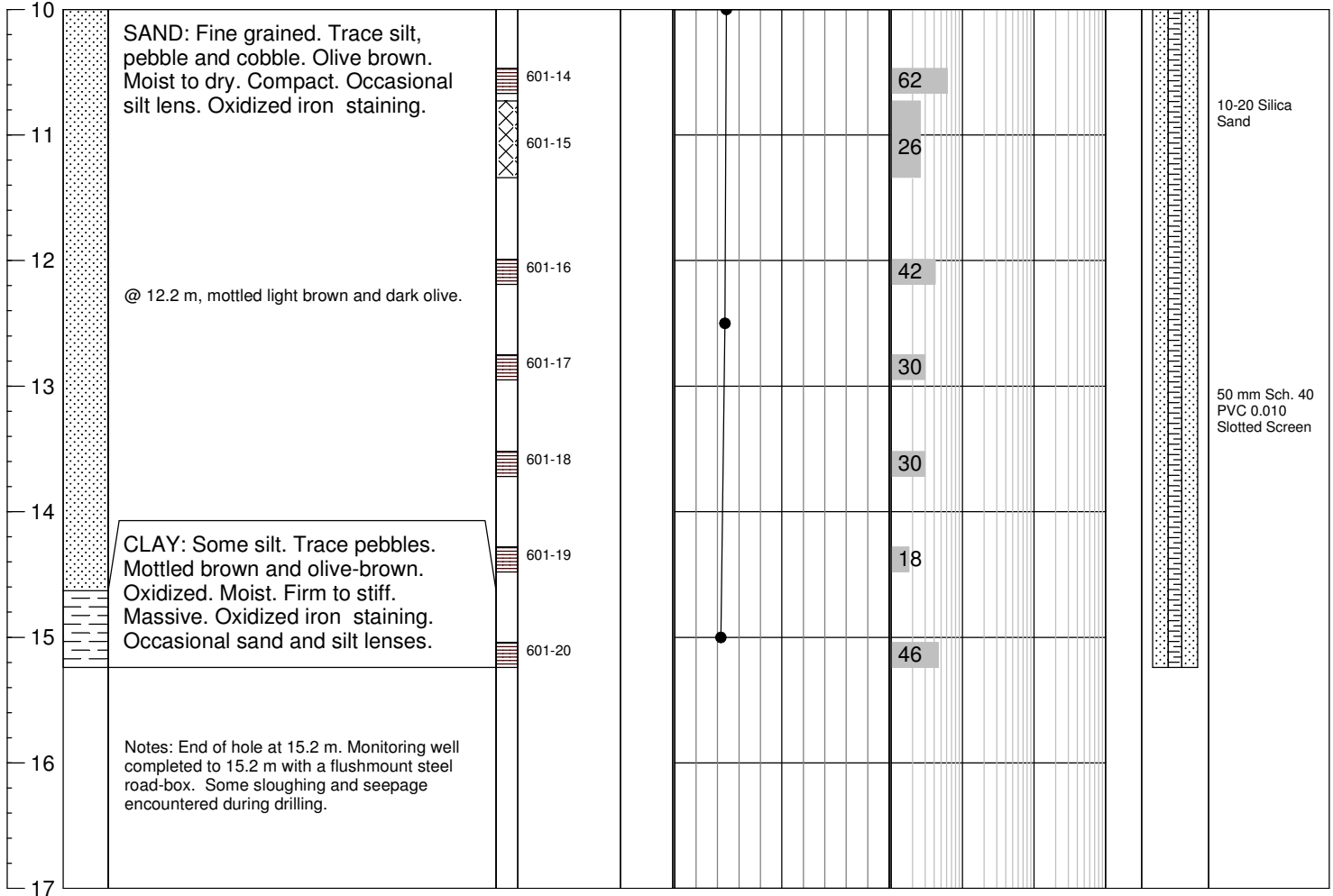
# BORE HOLE LOG

**Bore Hole: BH601**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: -	Date Drilled: 11-Aug-03
Project: Phase II ESI	Easting: -	Drill: Beck Rig 28
Location: Calgary, AB	Ground Elev.: -	Drilling Method: 6" Solid Stem
Project No.: CG909	Top Casing Elev.: -	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	10	100	1000	

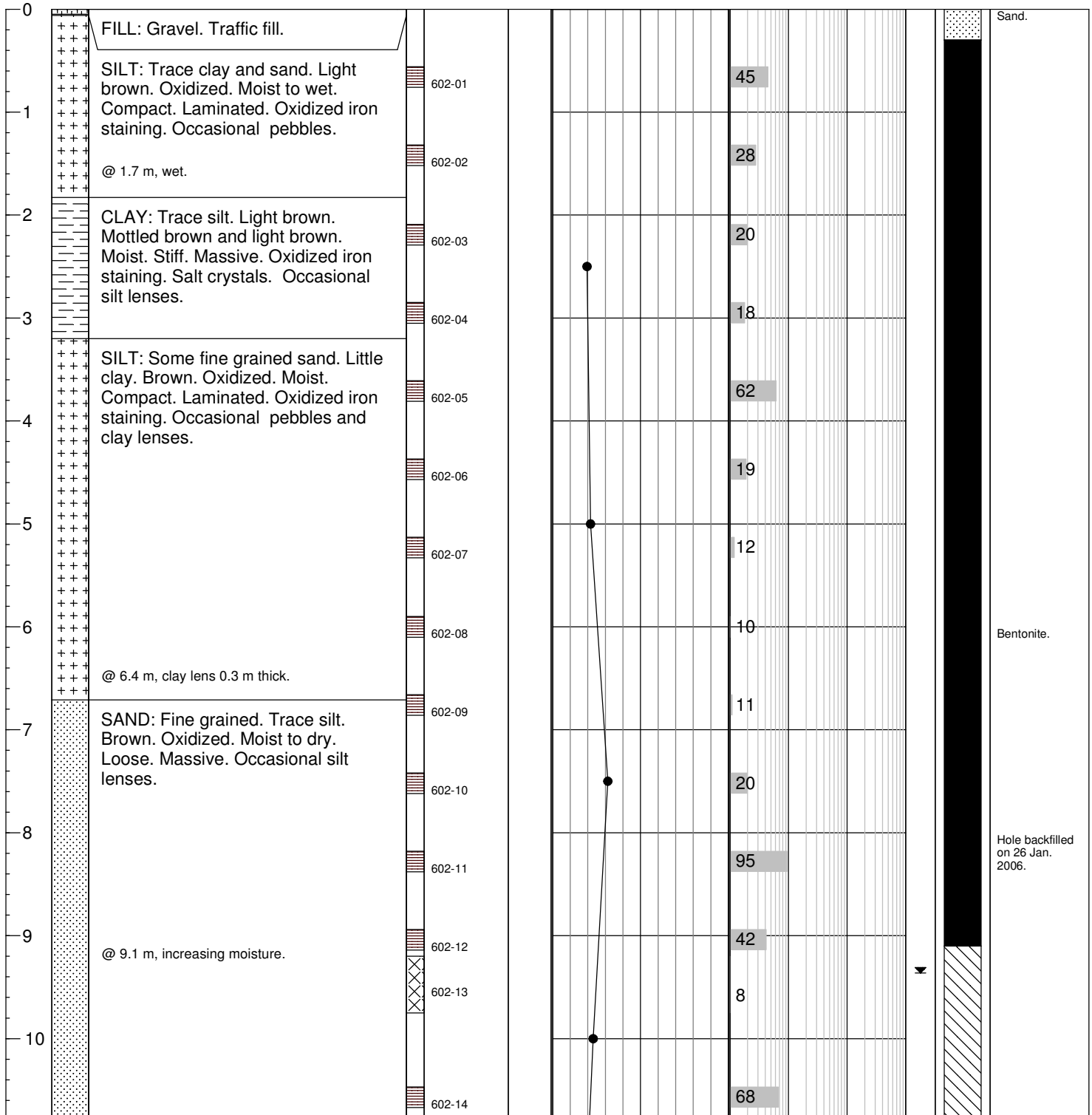


ENV-BH m CAL v03.lbf



Client: Sears Canada Inc.	Northing: -	Date Drilled: 11-Aug-03
Project: Phase II ESI	Easting: -	Drill: Beck Rig 28
Location: Calgary, AB	Ground Elev.: -	Drilling Method: 6" Solid Stem
Project No.: CG909	Top Casing Elev.: -	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour ppm				Monitor Well Construction Detail	
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit					
						0	▲	●	◆	10	100	1000	10000	



ENV BH m CAL v03.lbf



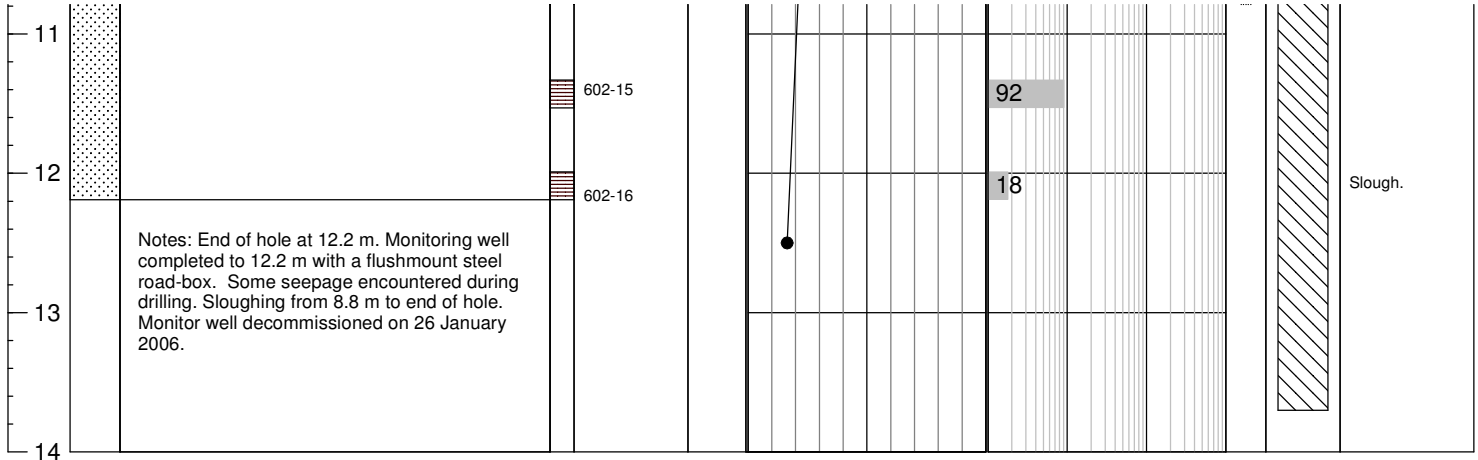
# BORE HOLE LOG

**Bore Hole: BH602**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: -	Date Drilled: 11-Aug-03
Project: Phase II ESI	Easting: -	Drill: Beck Rig 28
Location: Calgary, AB	Ground Elev.: -	Drilling Method: 6" Solid Stem
Project No.: CG909	Top Casing Elev.: -	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
						▲	●	◆	10	100	1000	10000	





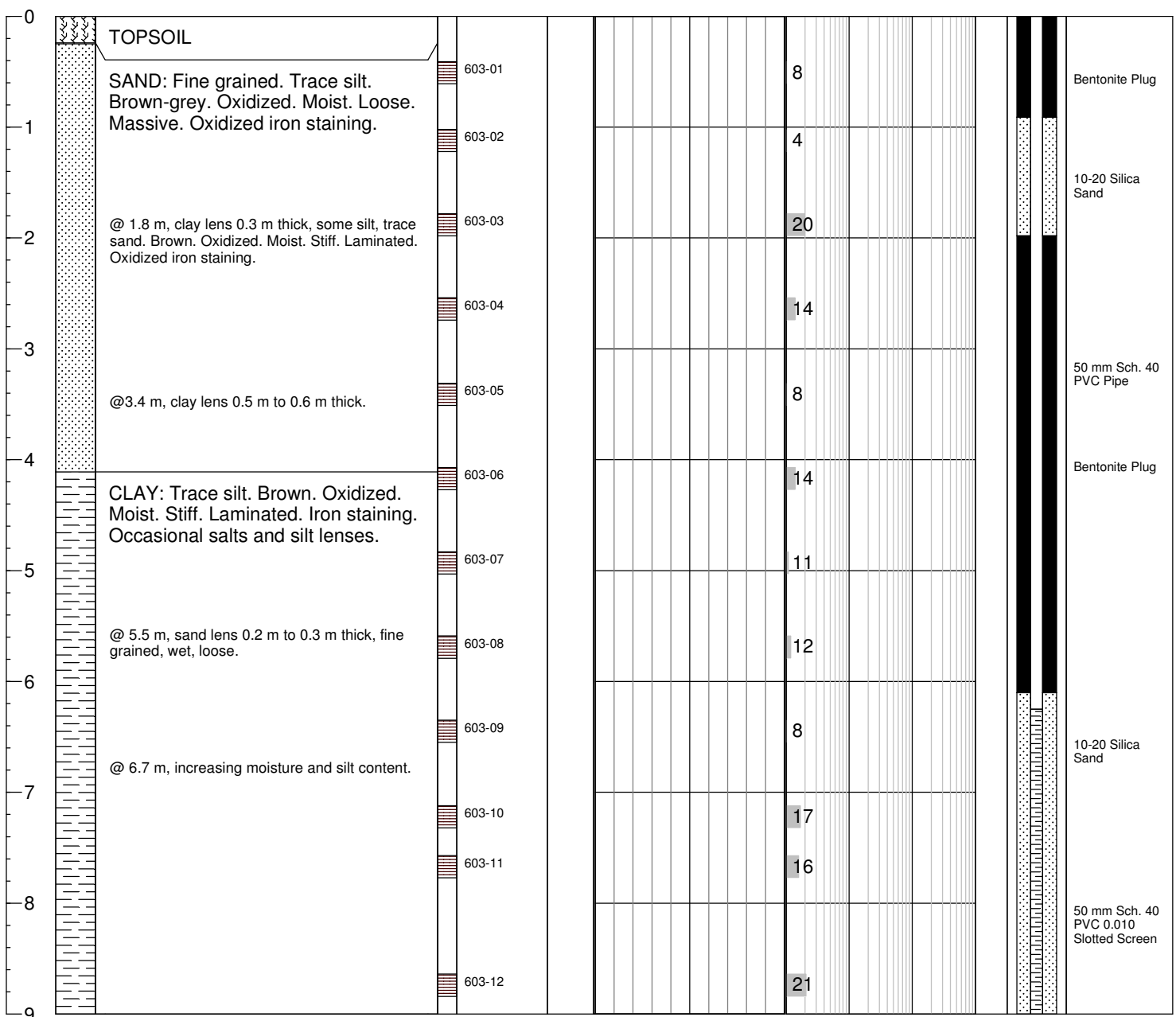
# BORE HOLE LOG

**Bore Hole: BH603**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: -	Date Drilled: 11-Aug-03
Project: Phase II ESI	Easting: -	Drill: Beck Rig 28
Location: Calgary, AB	Ground Elev.: -	Drilling Method: 6" Solid Stem
Project No.: CG909	Top Casing Elev.: -	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail	
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm				
						0	▲	●	◆	10	100	1000	10000	

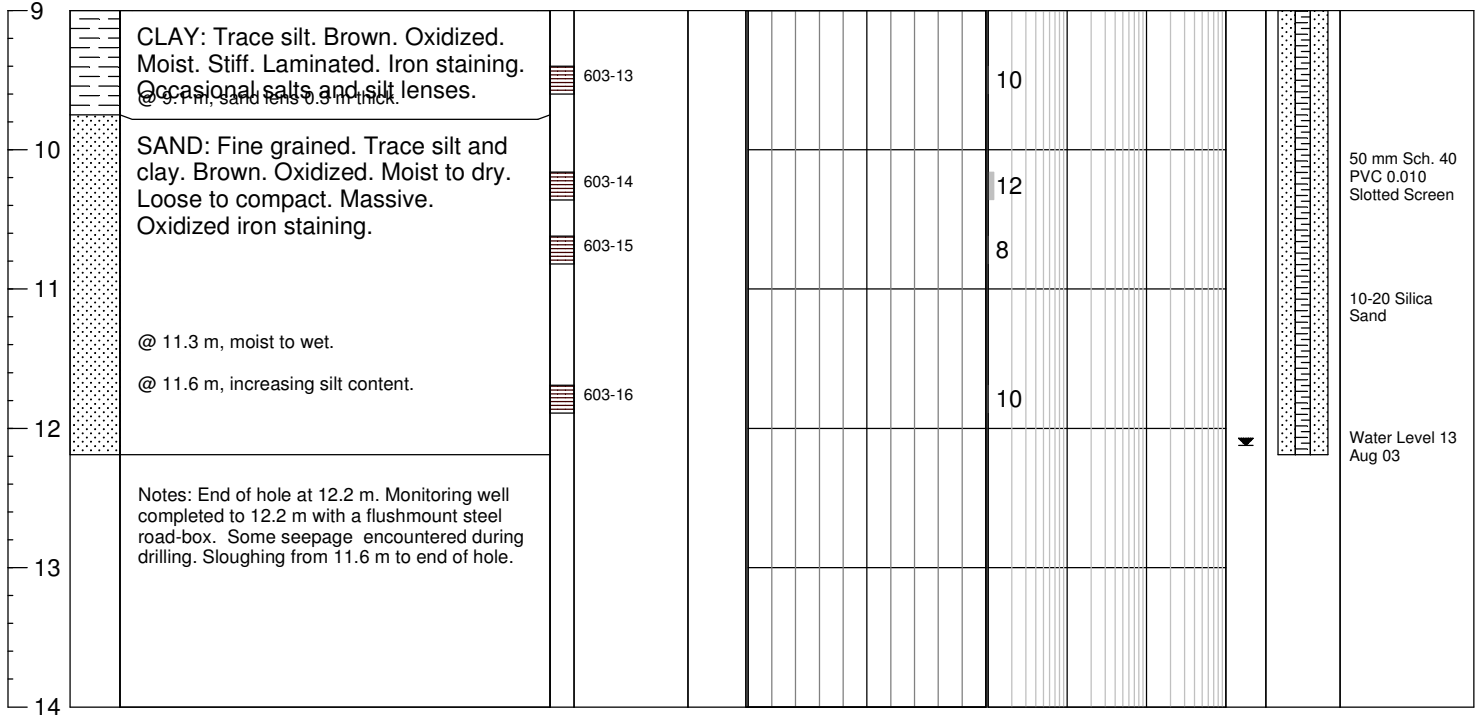


ENV-BH m CAL v03.lbf

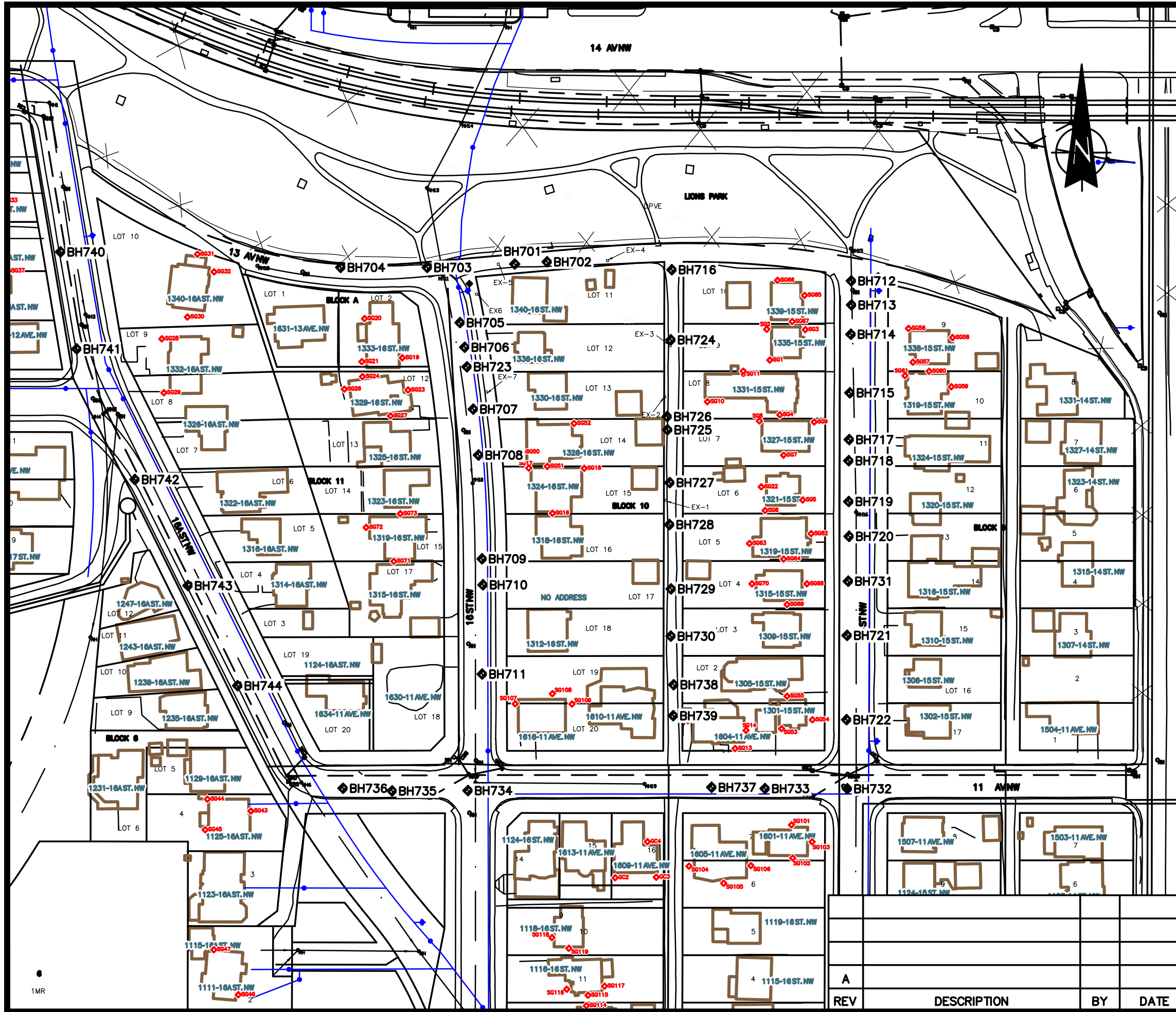


Client: Sears Canada Inc.	Northing: -	Date Drilled: 11-Aug-03
Project: Phase II ESI	Easting: -	Drill: Beck Rig 28
Location: Calgary, AB	Ground Elev.: -	Drilling Method: 6" Solid Stem
Project No.: CG909	Top Casing Elev.: -	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail	
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm				
						0	▲	●	◆	10	100	1000	10000	







**LEGEND:**

- BOREHOLE LOCATION
- MONITORING WELL
- BOREHOLE BY OTHERS
- INVESTIGATION BOUNDARY
- LRT TRACKS
- FENCE LINE
- LEGAL LINE
- FACILITY/FEATURE
- BUILDING
- EXCAVATION LINER
- TREES

**UTILITIES & SYMBOLS**

- NATURAL GAS LINE
- SANITARY SEWER
- STORM SEWER
- WATER
- FIBRE OPTICS CABLE
- UNDERGROUND POWER
- TELEPHONE
- POWER POLE
- CATCH BASIN
- FIRE HYDRANT
- LIGHT STANDARD
- MANHOLE
- VALVE
- TRAFFIC ISLAND

**NOTES:**

- DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES), SITE ASSESSMENT INFORMATION, AND TRONNES SURVEYS LTD SURVEY DONE JUNE 14,15 OF 2005. ADDITIONAL REFERENCES FROM SEACOR ENVIRONMENTAL ENGINEERING INC., DRAWINGS 149-5A6.DWG AND 149-5A6.DWG
- TEMPORARY BENCHMARKS: ASCM 75838 AT COORDINATES N. 5658986.637 E. -6668.803 ELEVATION 1091.344m ASL.  
 ASCM 57265 AT COORDINATES N. 5658680.491 E. -6627.858 ELEVATION 1090.078m ASL.



**Clifton Associates Ltd.**  
 engineering science technology

CLIENT  
**SEARS Canada Inc.**

PROJECT  
 SITE MONITORING REPORT  
 HOUNSFIELD HEIGHTS  
 CALGARY, ALBERTA

TITLE

**MONITOR WELL LOCATION PLAN  
 BH700 SERIES**

DATE (dd/mm/yy)	24/04/13	APPD. BY	FILE NO.	CG909.6B3A
SCALE	1:1250	DWN. BY	RSD	DWG. NO.
				3

REV	DESCRIPTION	BY	DATE
A			



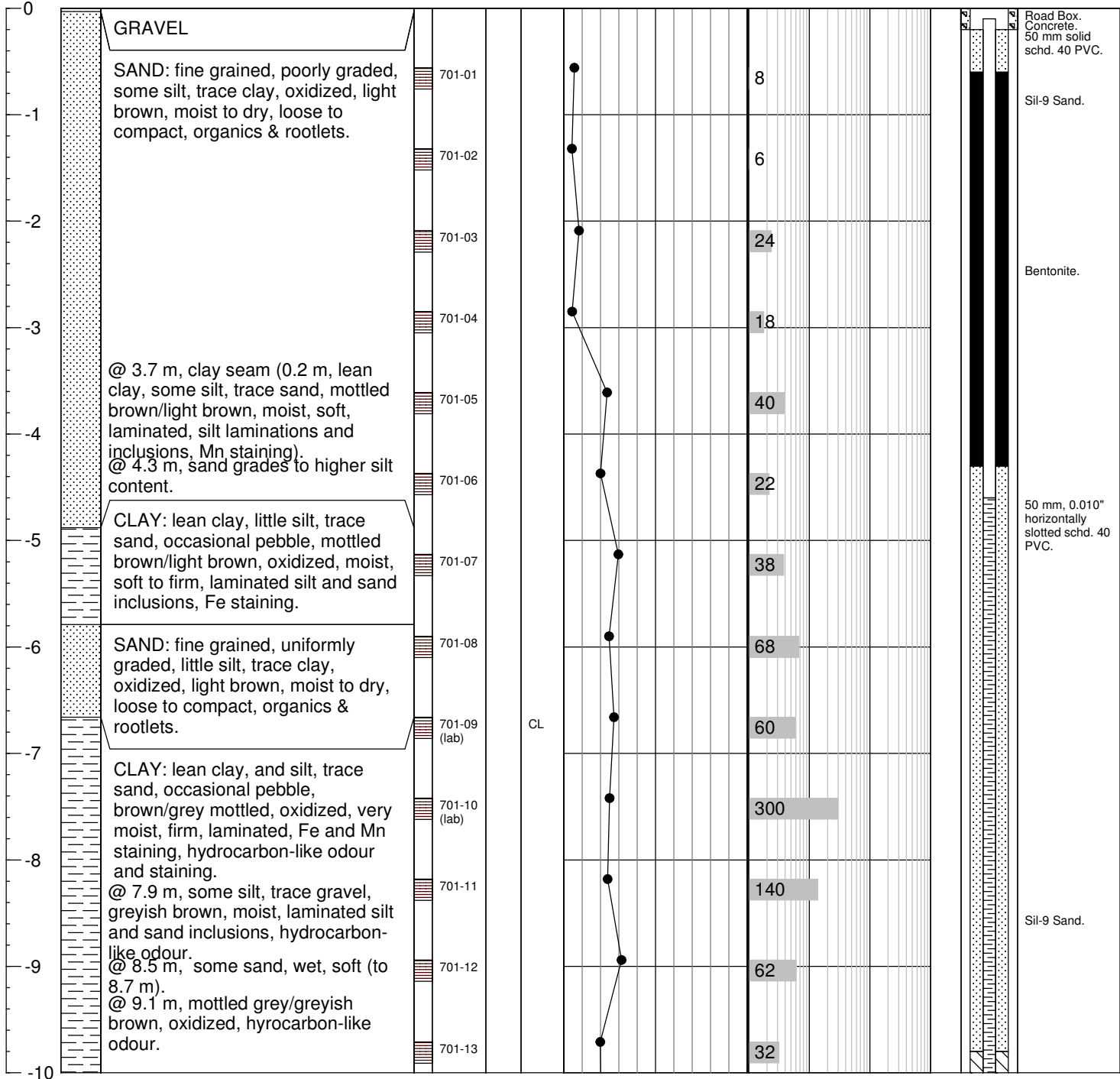
# BORE HOLE LOG

**Bore Hole: BH701**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658620.088	Date Drilled: 08-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6848.287	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.458	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.328	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	Natural Moisture	Liquid Limit	ppm		
								10	100	1000	10000	

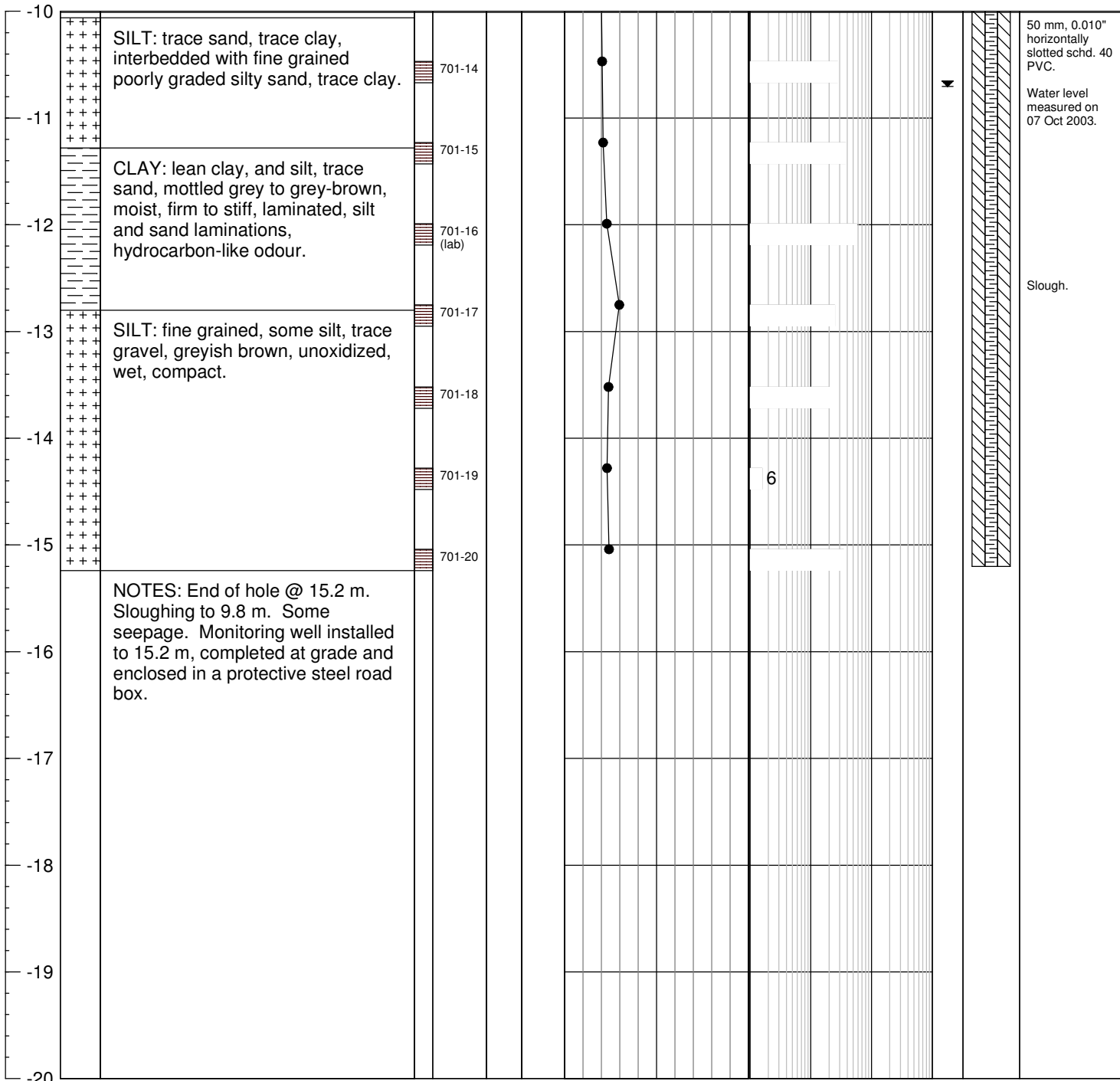




# BORE HOLE LOG

Client: Sears Canada Inc.	Northing: 5658620.088	Date Drilled: 08-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6848.287	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.458	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.328	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						





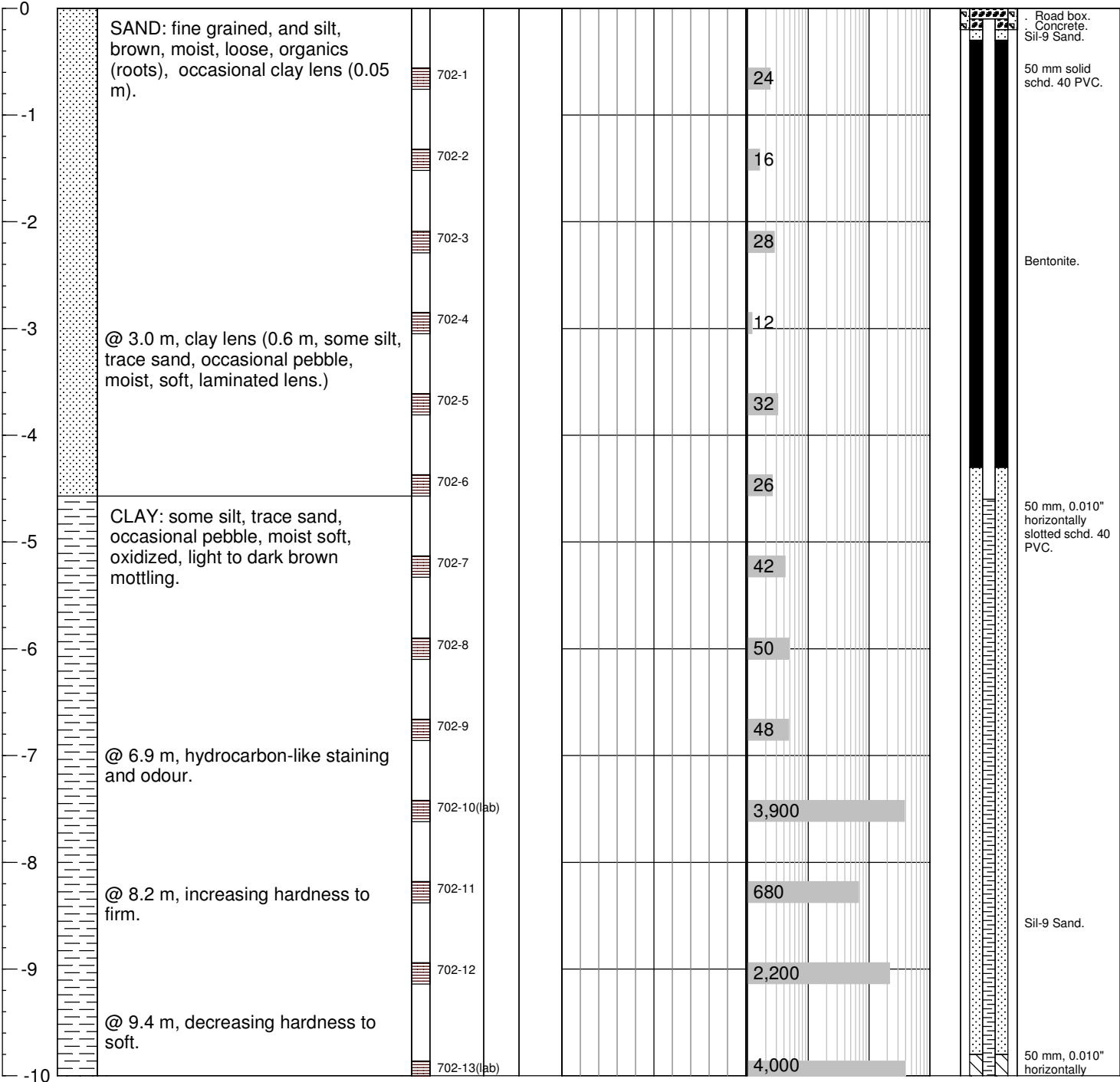
# BORE HOLE LOG

**Bore Hole: BH702**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658620.783	Date Drilled: 08-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6837.868	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.318	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.187	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						





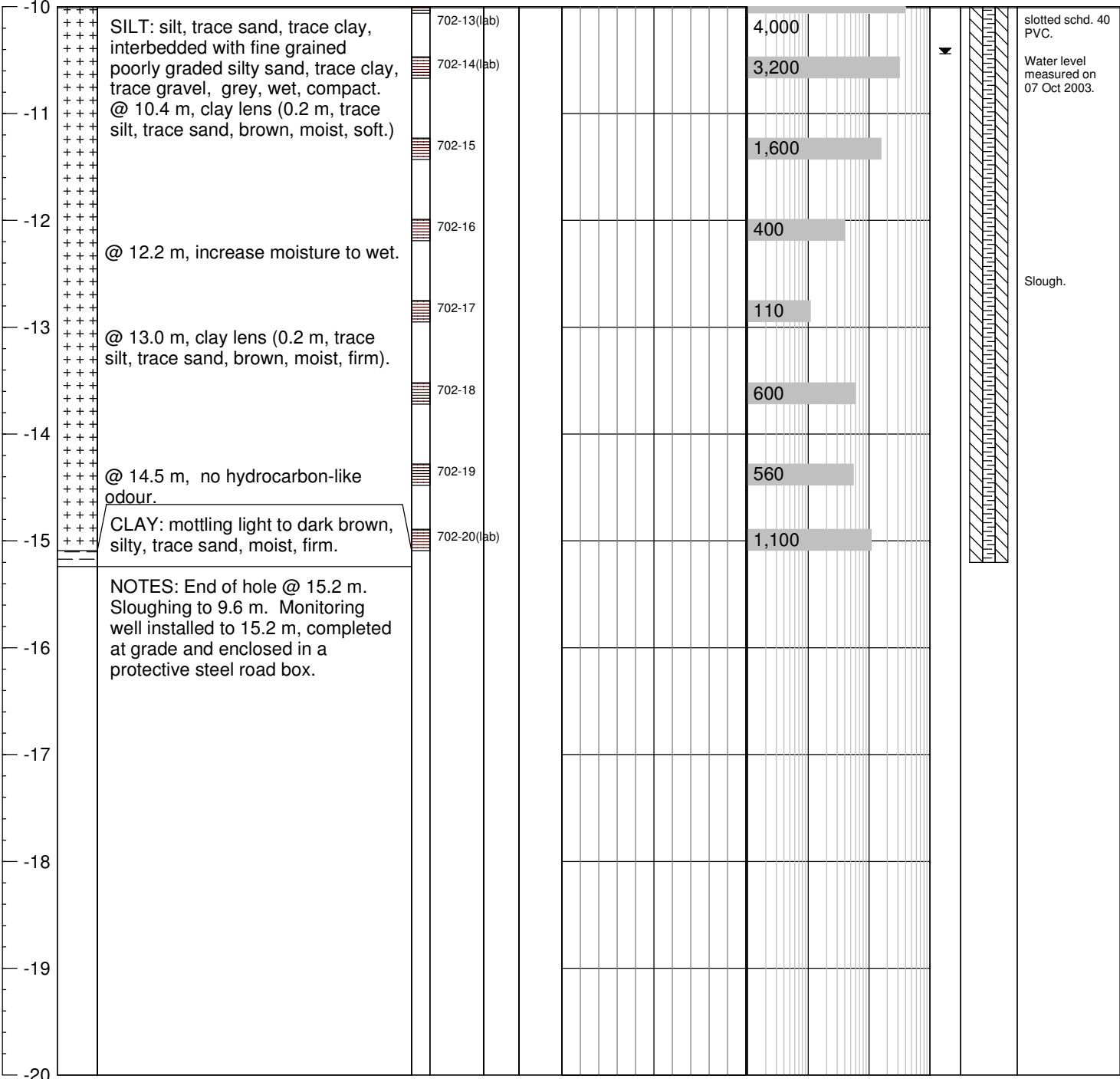
# BORE HOLE LOG

**Bore Hole: BH702**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658620.783	Date Drilled: 08-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6837.868	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.318	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.187	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample Type No. SPT 'N' USC	Moisture Content percent			Headspace Vapour ppm				Monitor Well Construction Detail
				Plastic Limit ▲	Natural Moisture ●	Liquid Limit ◆	10	100	1000	10000	





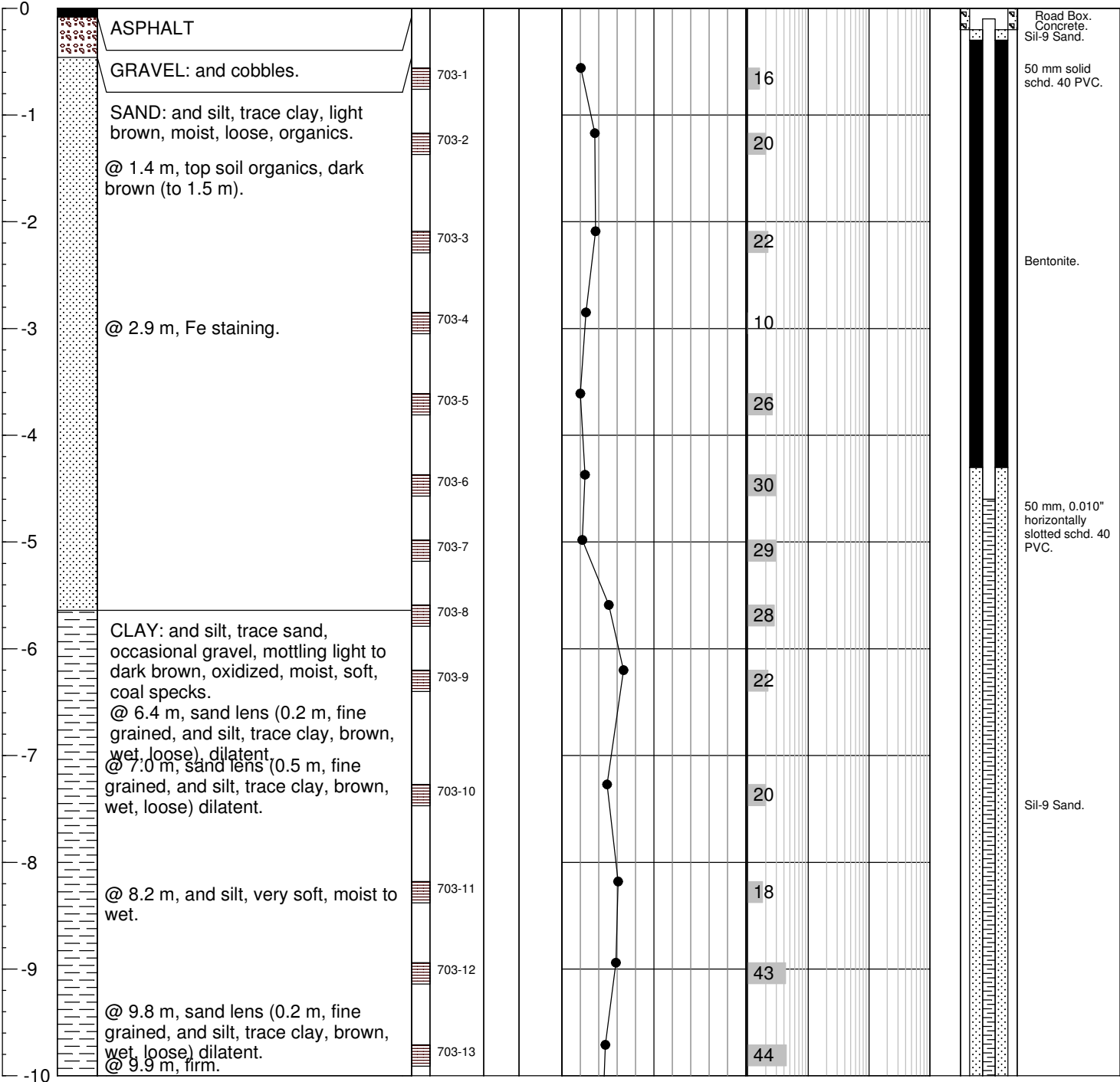
# BORE HOLE LOG

**Bore Hole: BH703**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658618.694	Date Drilled: 08-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6879.013	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1090.280	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.172	Logged by: CRC/CB

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						





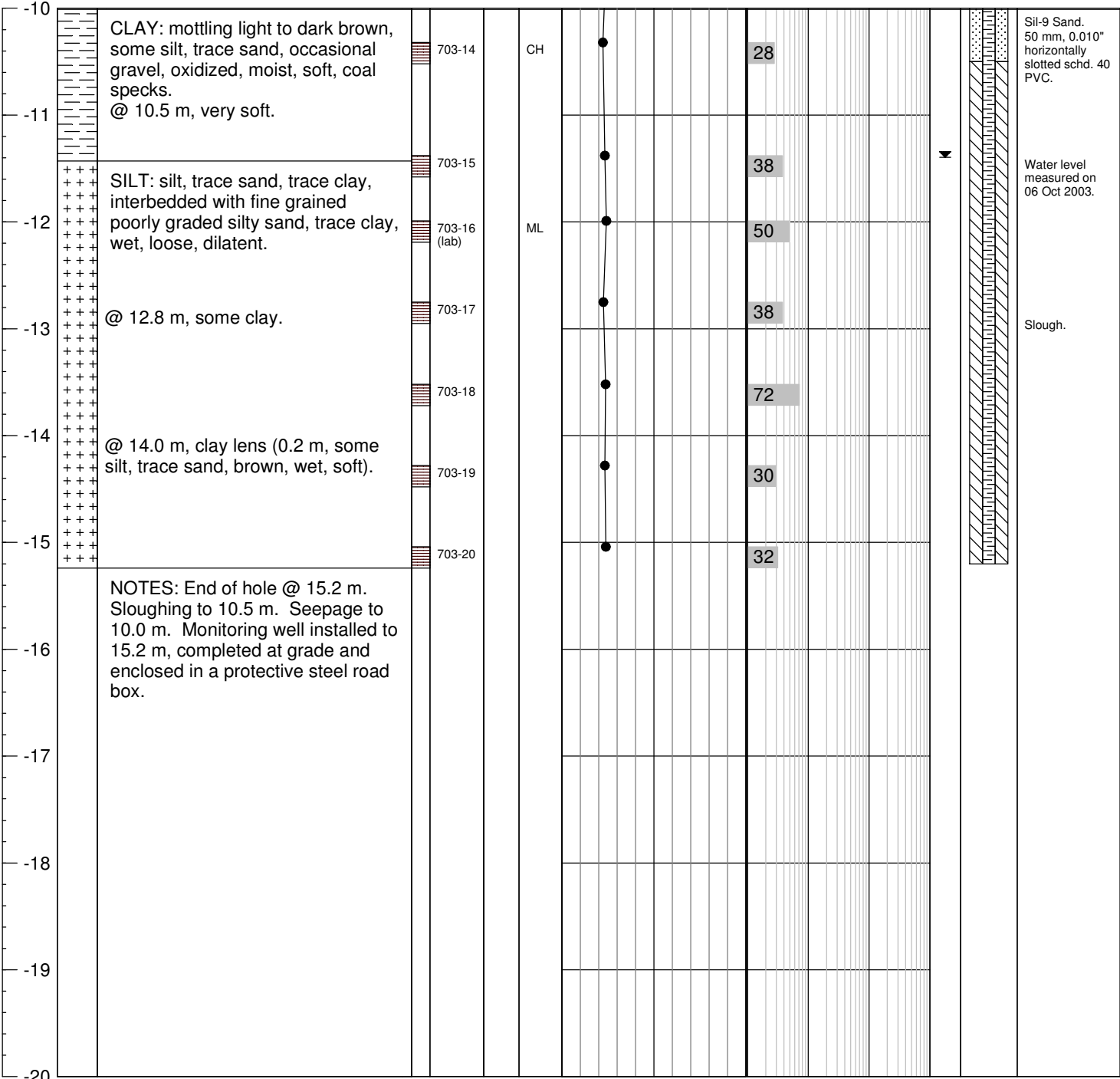
# BORE HOLE LOG

**Bore Hole: BH703**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658618.694	Date Drilled: 08-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6879.013	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1090.280	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.172	Logged by: CRC/CB

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
								10	100	1000	10000	





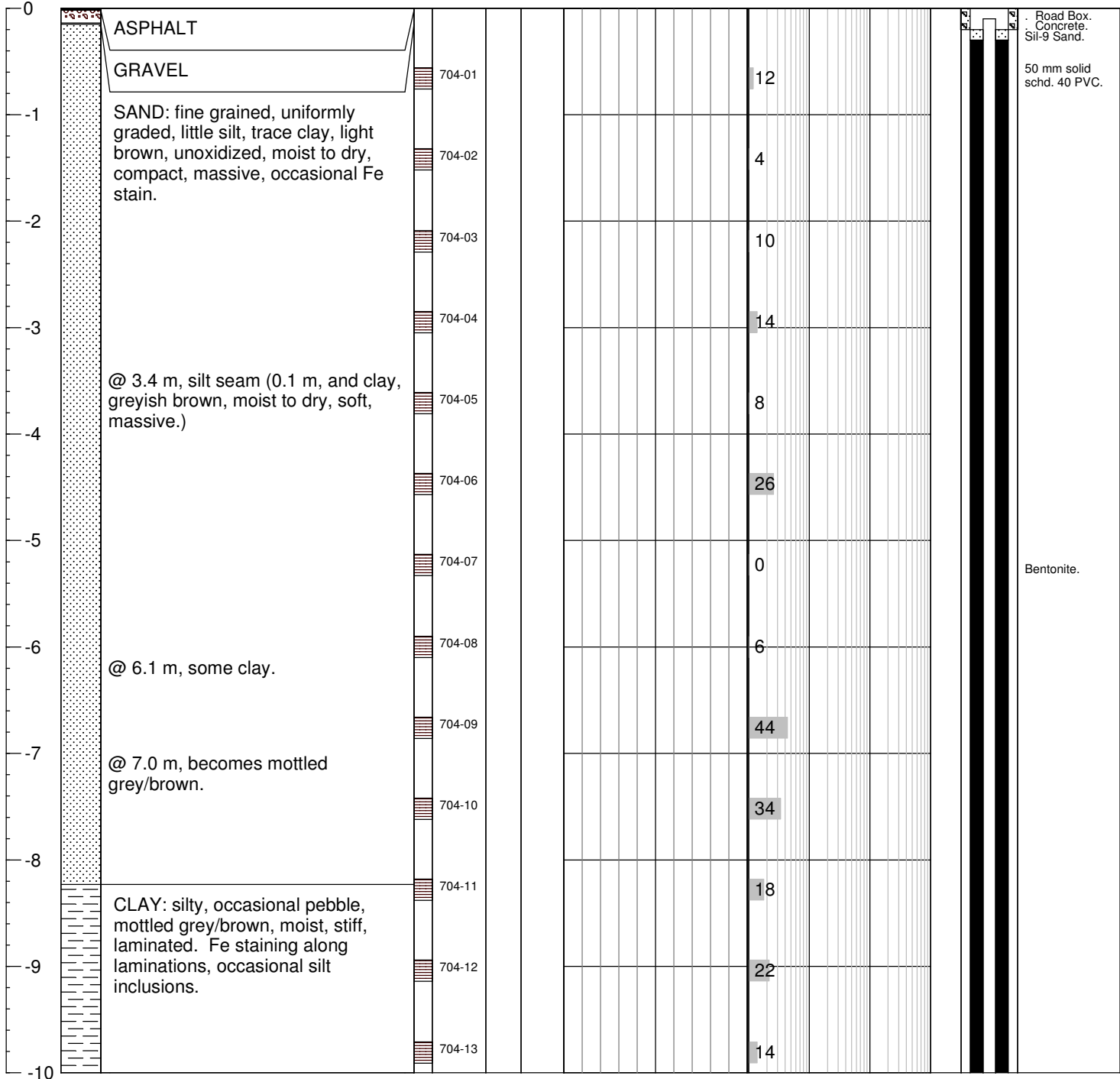
# BORE HOLE LOG

**Bore Hole: BH704**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658618.998	Date Drilled: 08-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6904.233	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1092.450	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1092.368	Logged by: CRC/GAC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
							0	▲	●	◆	100	10	100	1000	10000







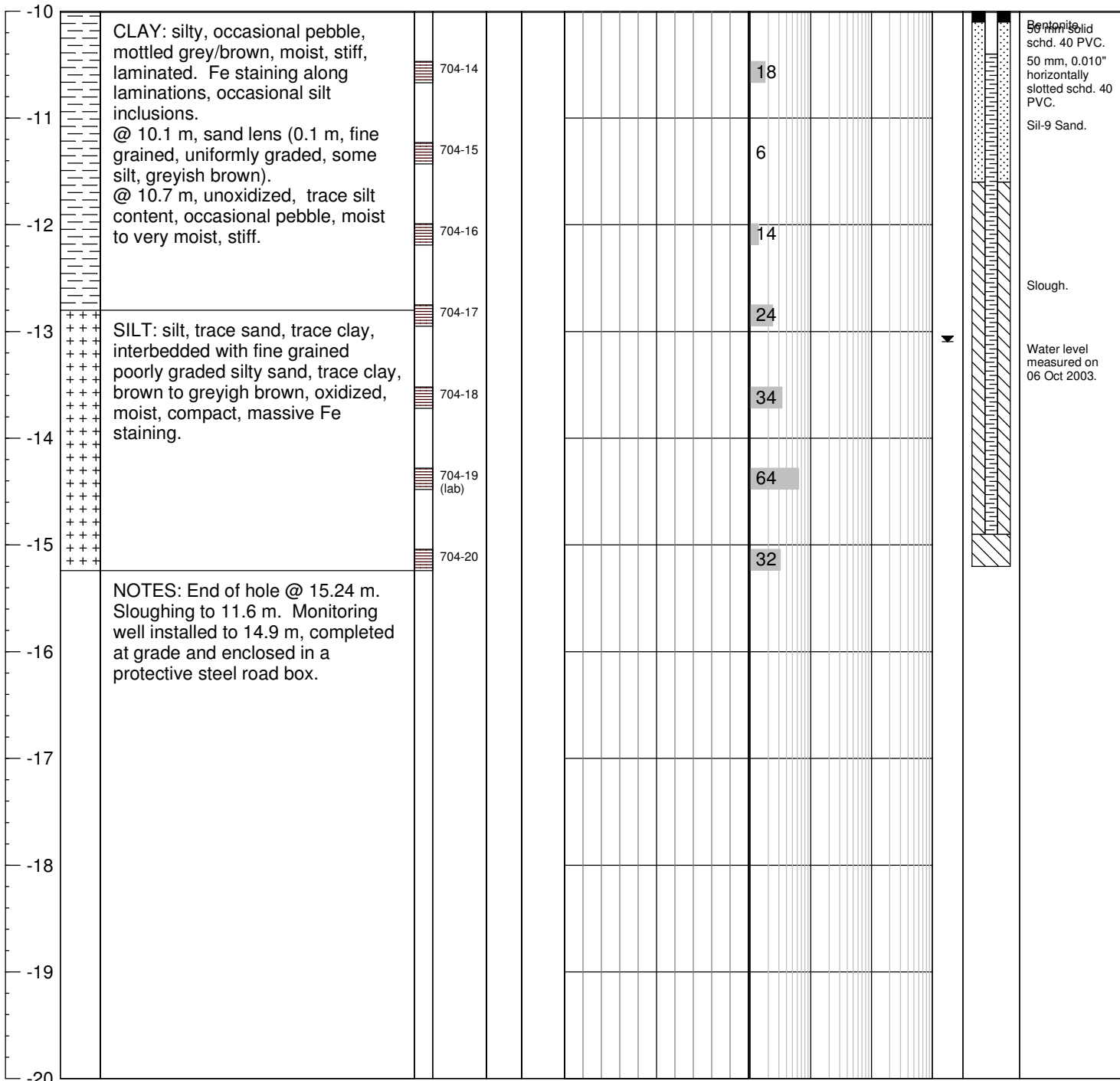
# BORE HOLE LOG

**Bore Hole: BH704**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658618.998	Date Drilled: 08-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6904.233	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1092.450	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1092.368	Logged by: CRC/GAC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit								
							0	▲	50	●	100	◆	10	100	1000	10000	





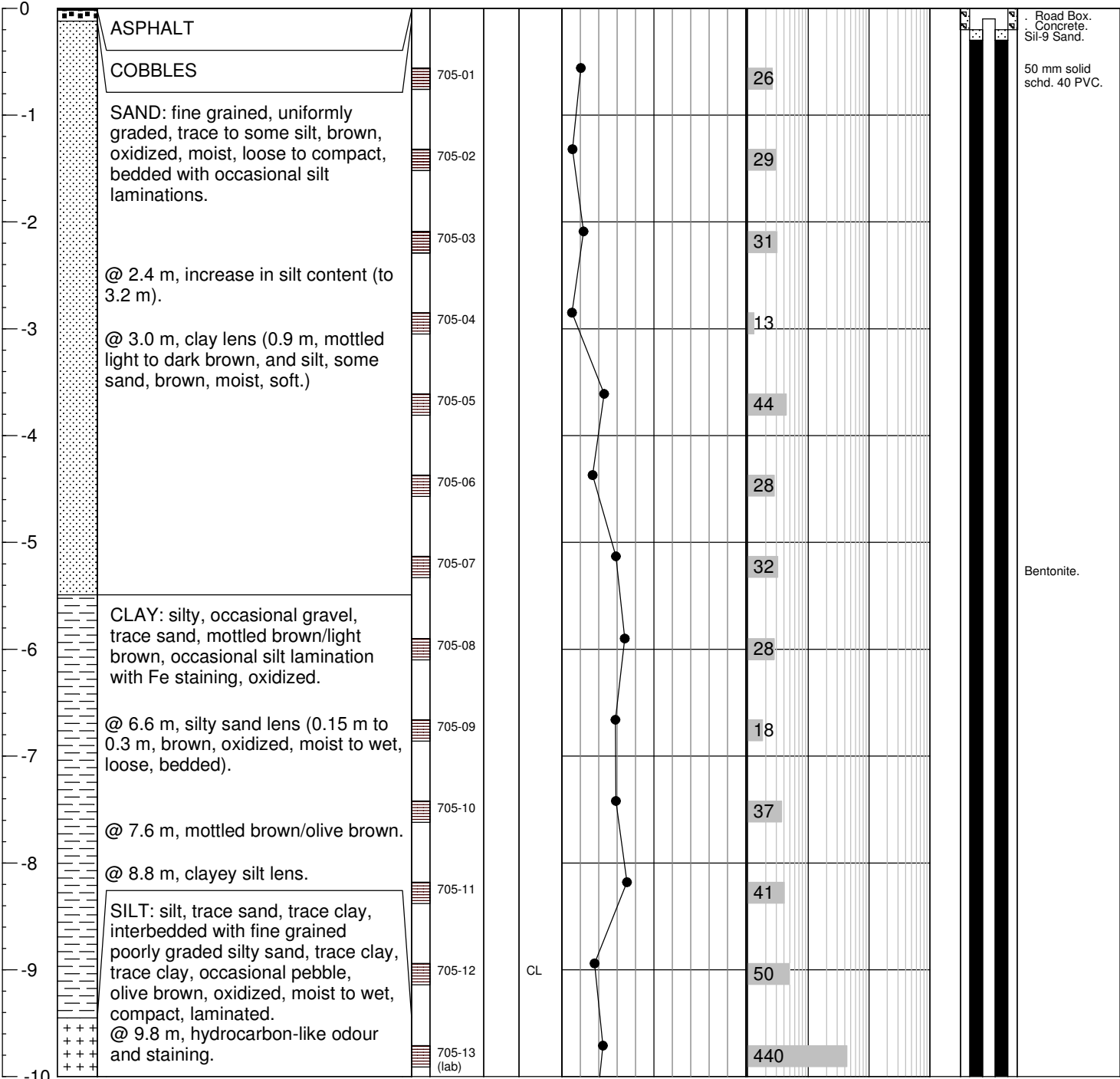
# BORE HOLE LOG

**Bore Hole: BH705**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658601.247	Date Drilled: 09-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6865.872	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.730	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.614	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour ppm	Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit			





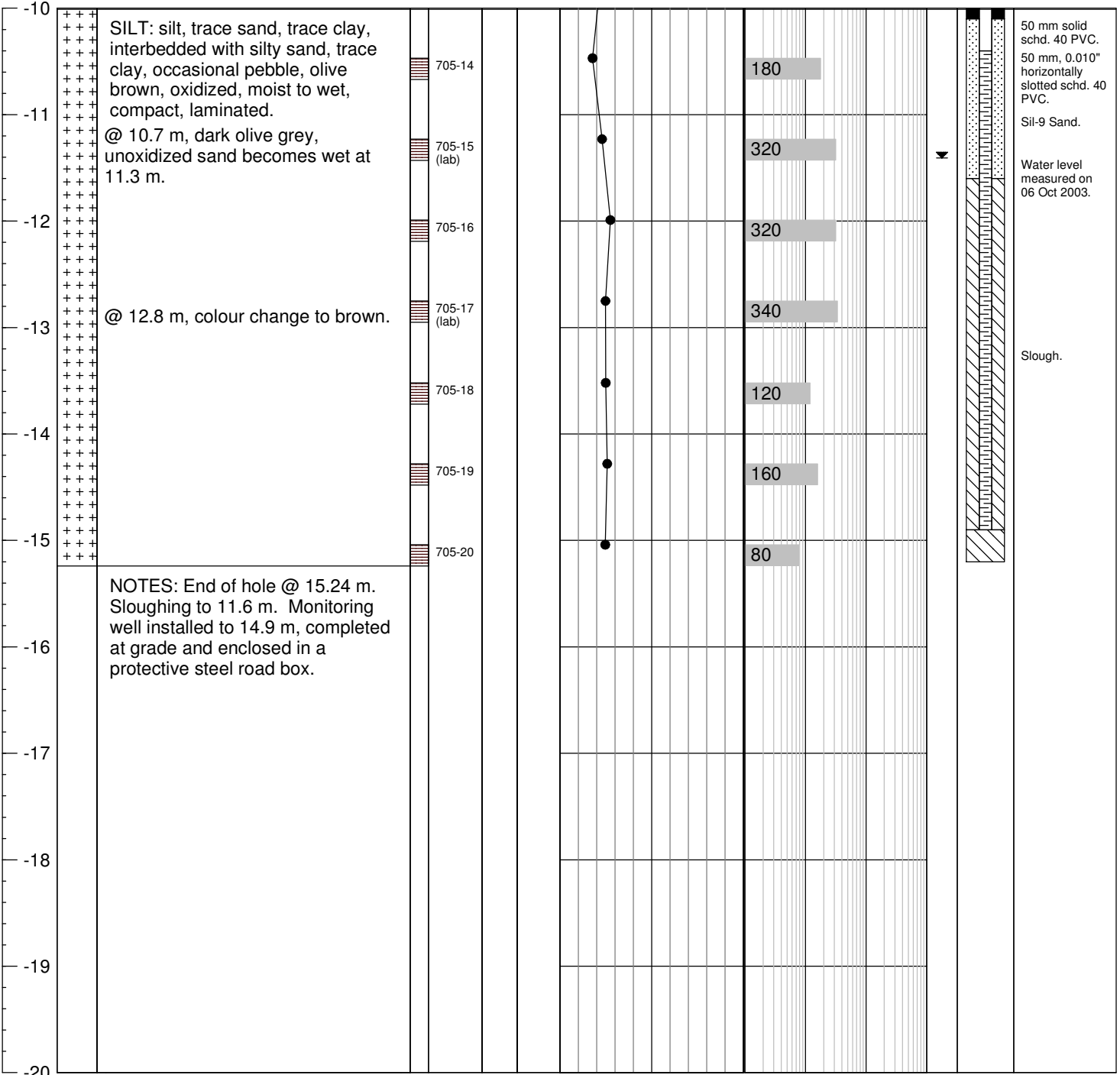
# BORE HOLE LOG

**Bore Hole: BH705**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658601.247	Date Drilled: 09-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6865.872	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.730	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.614	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						





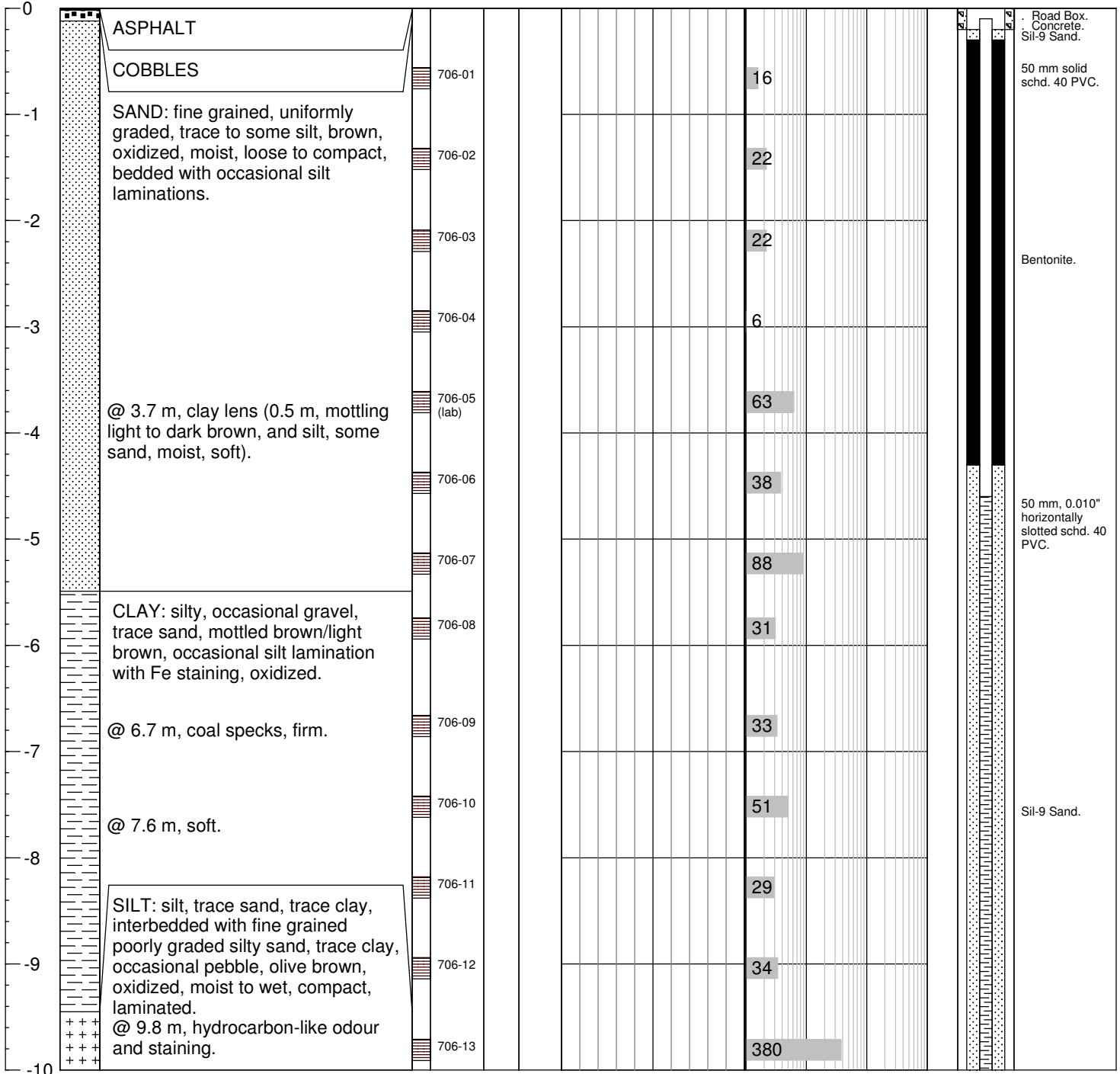
# BORE HOLE LOG

**Bore Hole: BH706**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658593.346	Date Drilled: 09-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6864.360	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1089.626	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.518	Logged by: CRC/CB

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
							0	▲	●	◆	100	10	100	1000	10000







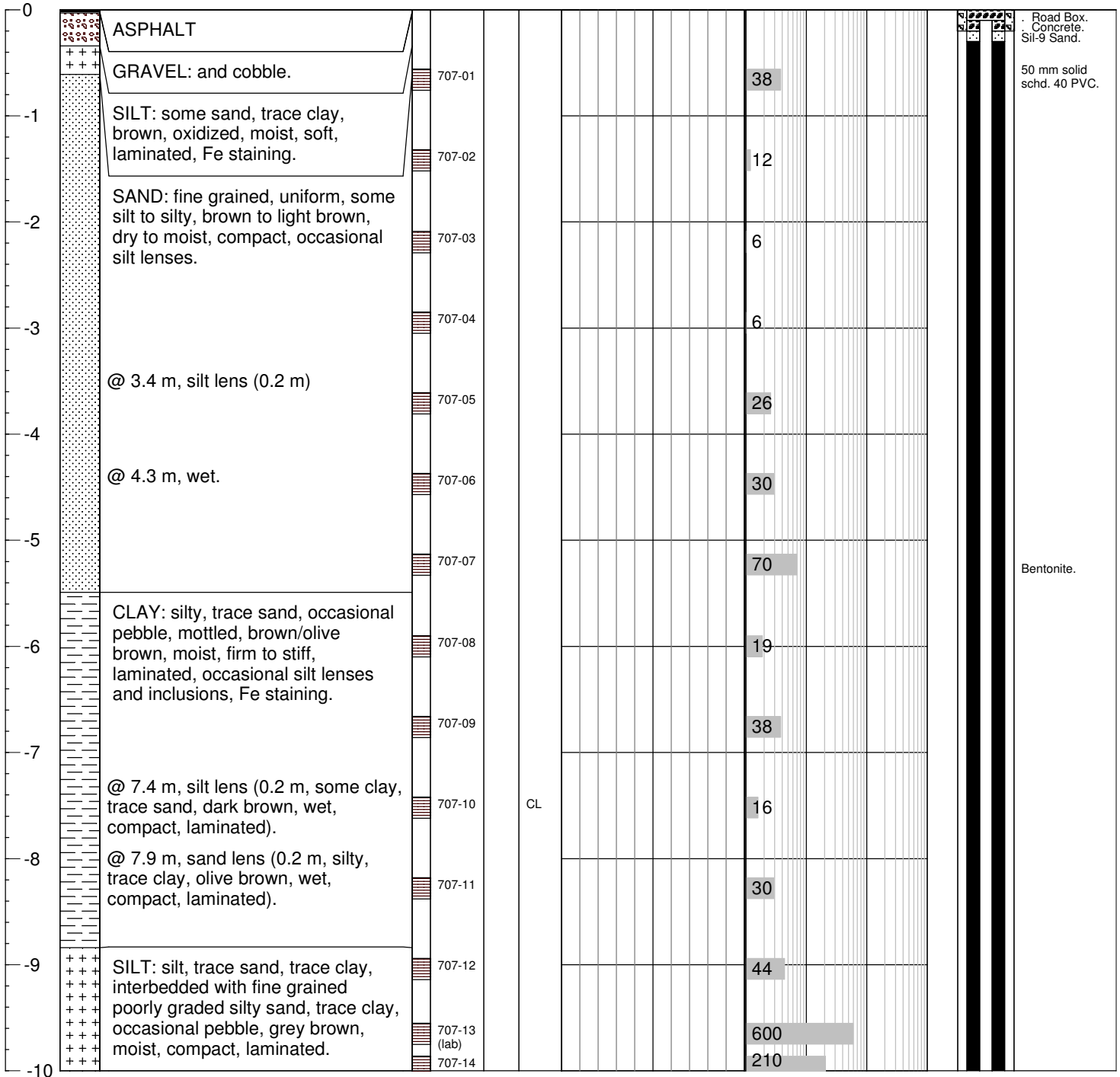
# BORE HOLE LOG

**Bore Hole: BH707**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658573.413	Date Drilled: 09-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6861.614	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.419	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.309	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	Natural Moisture	Liquid Limit	percent	ppm	ppm	ppm				
							0	▲	50	●	100	◆	10	100	1000	10000	

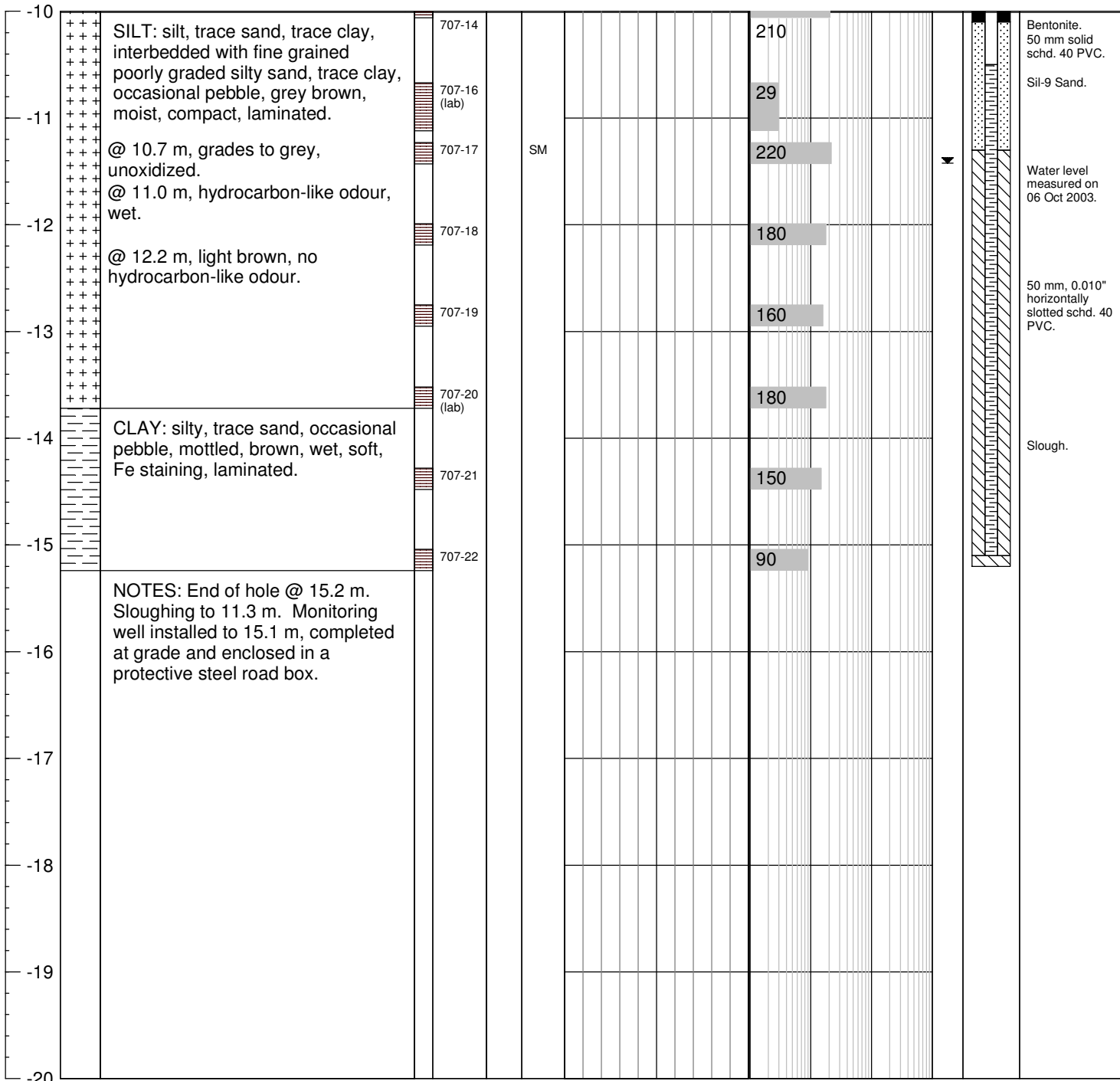




# BORE HOLE LOG

Client: Sears Canada Inc.	Northing: 5658573.413	Date Drilled: 09-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6861.614	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1089.419	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.309	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	10	100	





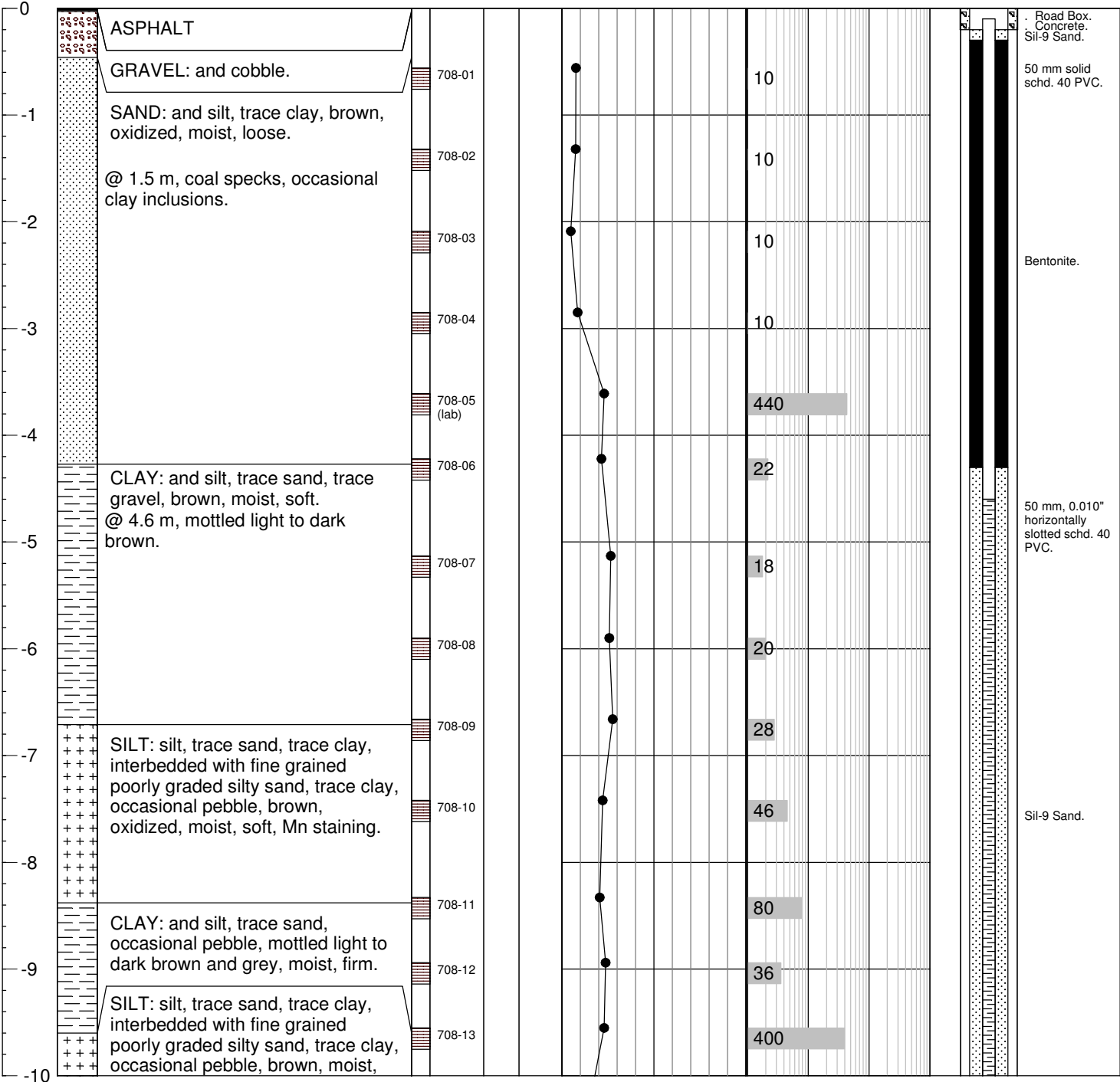
# BORE HOLE LOG

**Bore Hole: BH708**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658558.680	Date Drilled: 09-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6859.931	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1089.252	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.171	Logged by: CRC/CB

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	ppm	ppm	ppm		







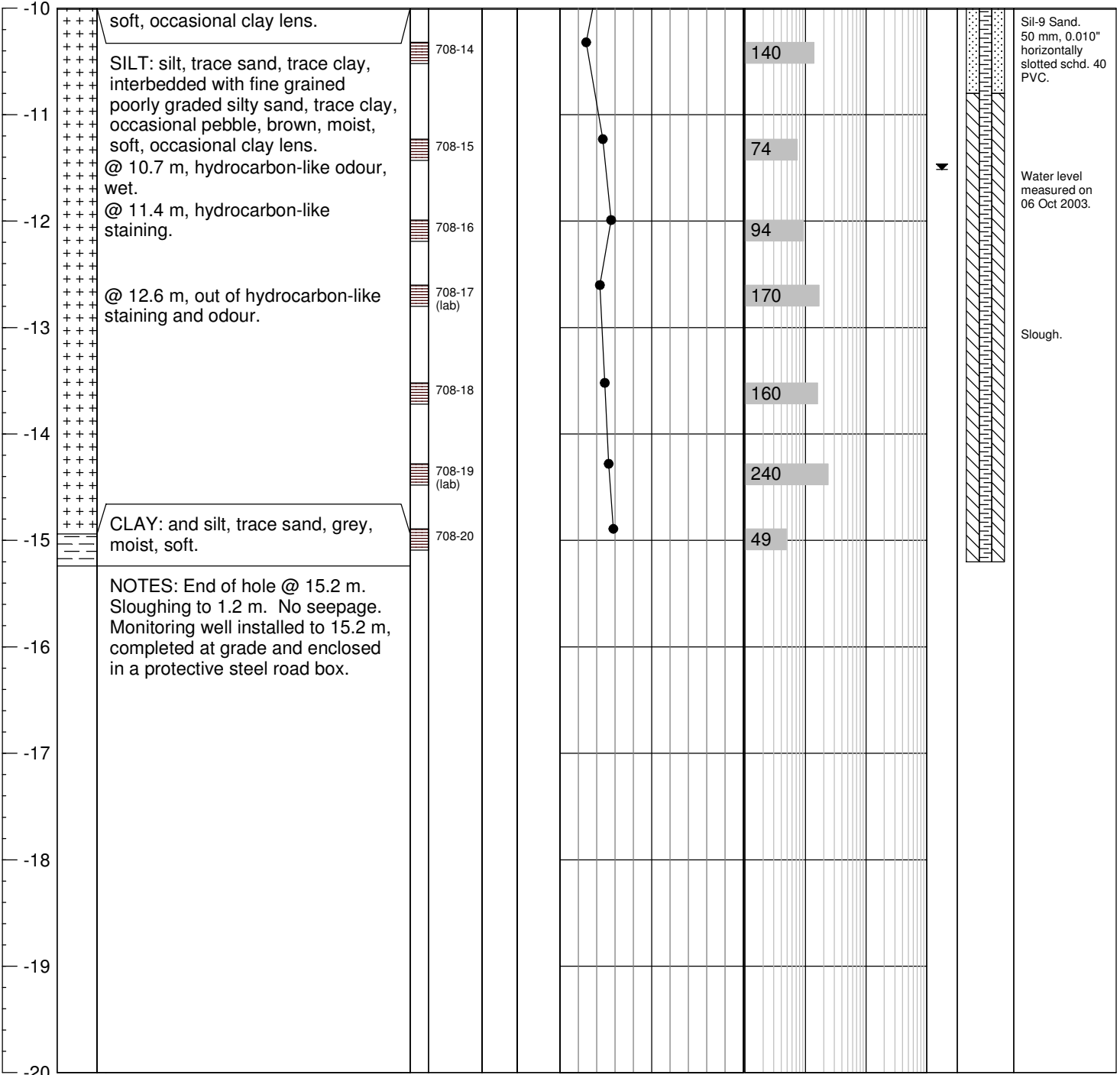
# BORE HOLE LOG

**Bore Hole: BH708**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658558.680	Date Drilled: 09-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6859.931	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.252	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.171	Logged by: CRC/CB

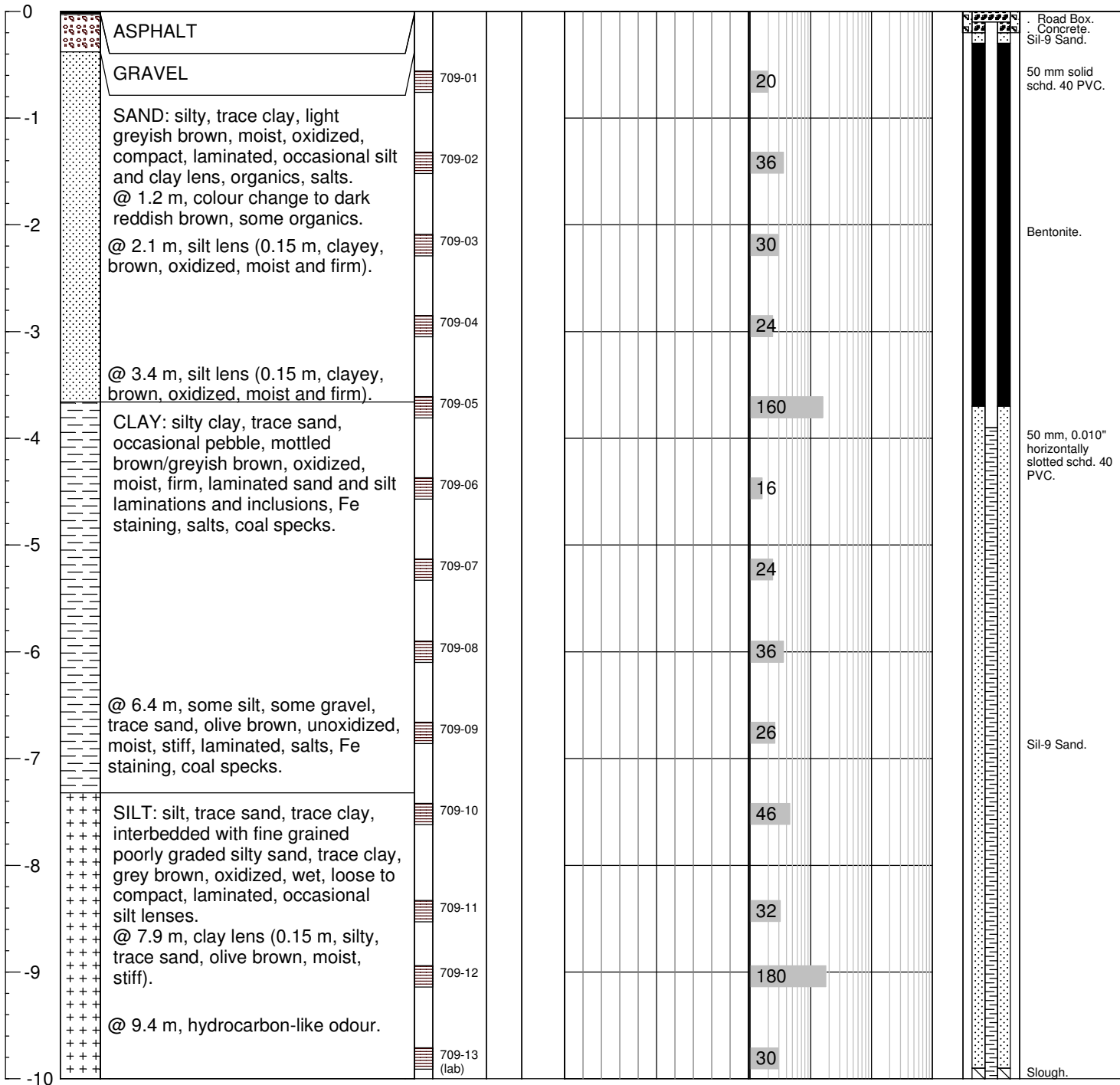
Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour ppm	Monitor Well Construction Detail
			Type No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture		





Client: Sears Canada Inc.	Northing: 5658525.319	Date Drilled: 10-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6858.790	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1088.047	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1087.951	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	10	100	

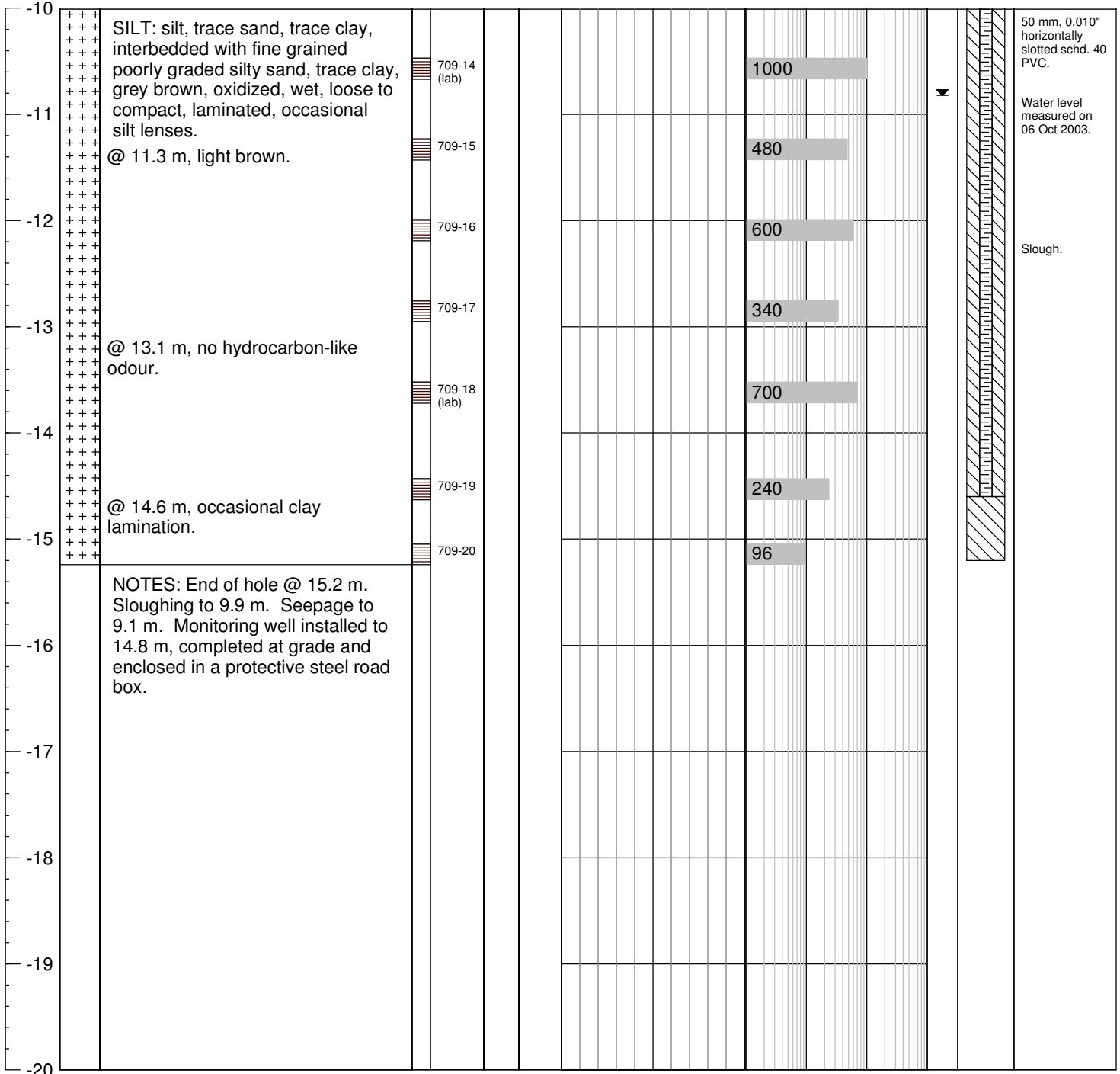




# BORE HOLE LOG

Client: Sears Canada Inc.	Northing: 5658525.319	Date Drilled: 10-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6858.790	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1088.047	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1087.951	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit								
							0	▲	50	●	100	◆	10	100	1000	10000	





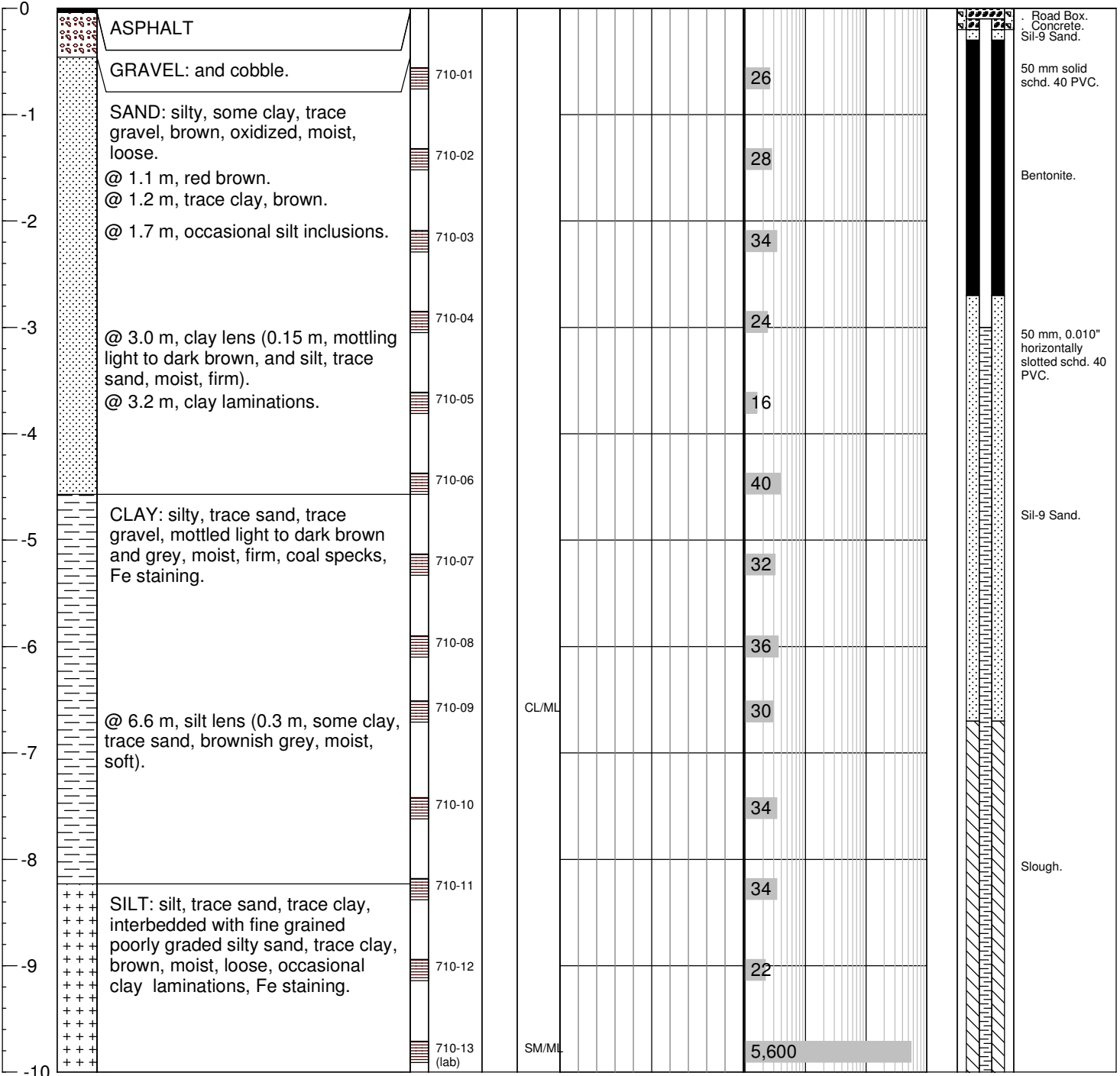
# BORE HOLE LOG

**Bore Hole: BH710**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658516.958	Date Drilled: 10-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6858.485	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1087.542	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1087.464	Logged by: CRC/CB

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	10	100	





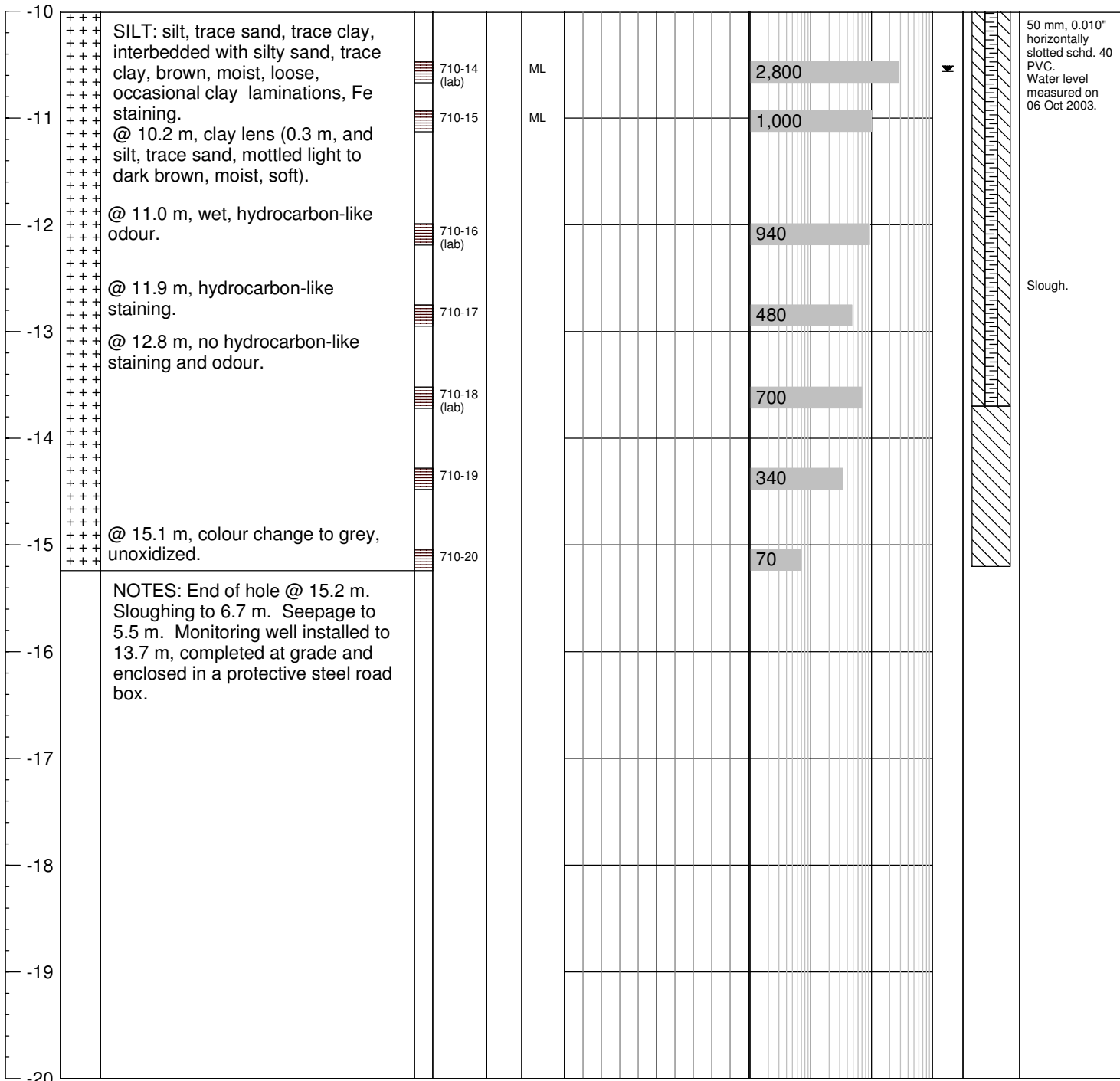
# BORE HOLE LOG

**Bore Hole: BH710**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658516.958	Date Drilled: 10-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6858.485	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1087.542	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1087.464	Logged by: CRC/CB

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail					
			Type	No.	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm								
								0	▲	50	●	100	◆	10	100	1000	10000





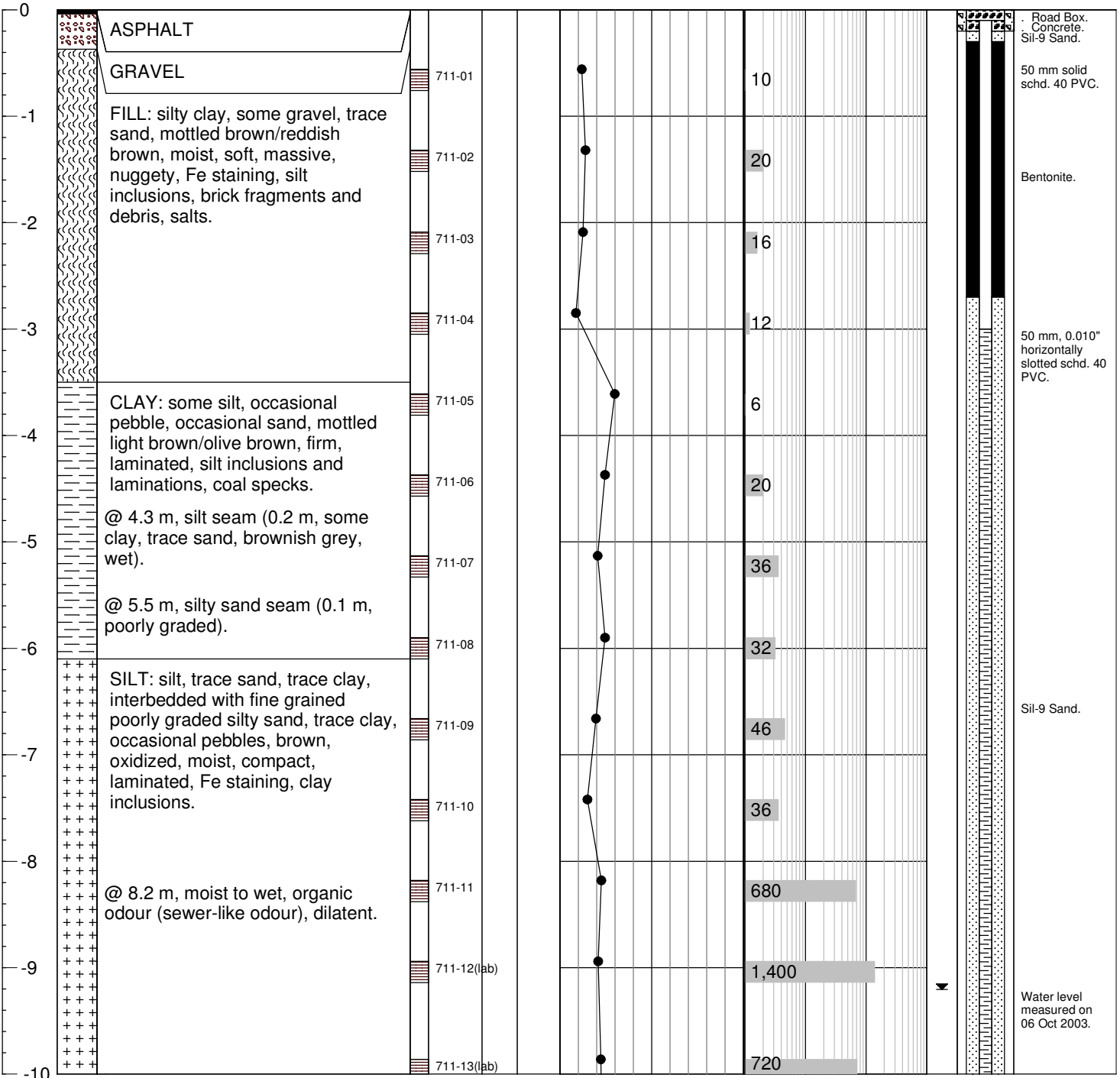
# BORE HOLE LOG

**Bore Hole: BH711**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658488.278	Date Drilled: 10-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6858.715	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1085.285	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1085.195	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour ppm	Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit			

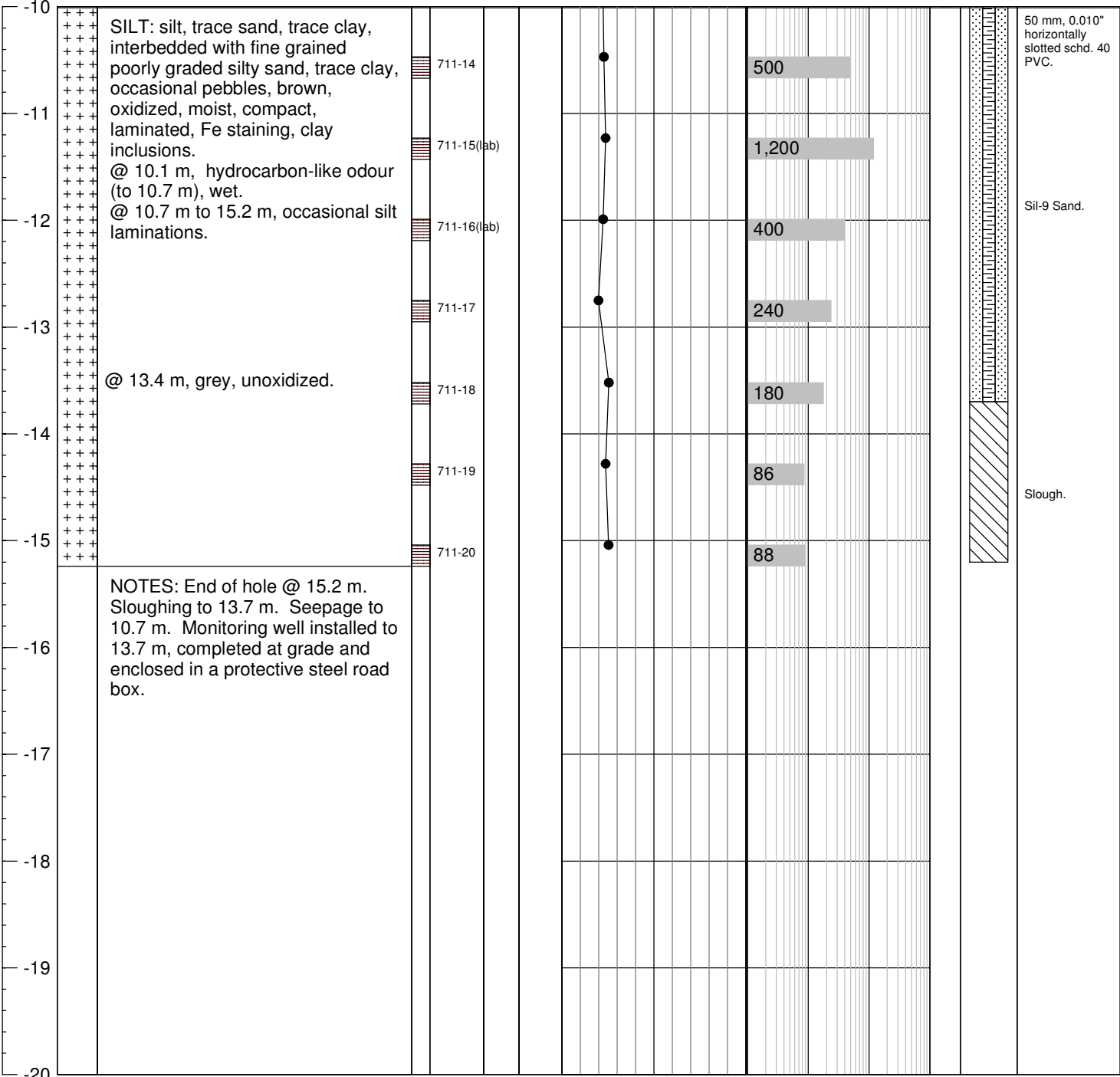




# BORE HOLE LOG

Client: Sears Canada Inc.	Northing: 5658488.278	Date Drilled: 10-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6858.715	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1085.285	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1085.195	Logged by: CRC

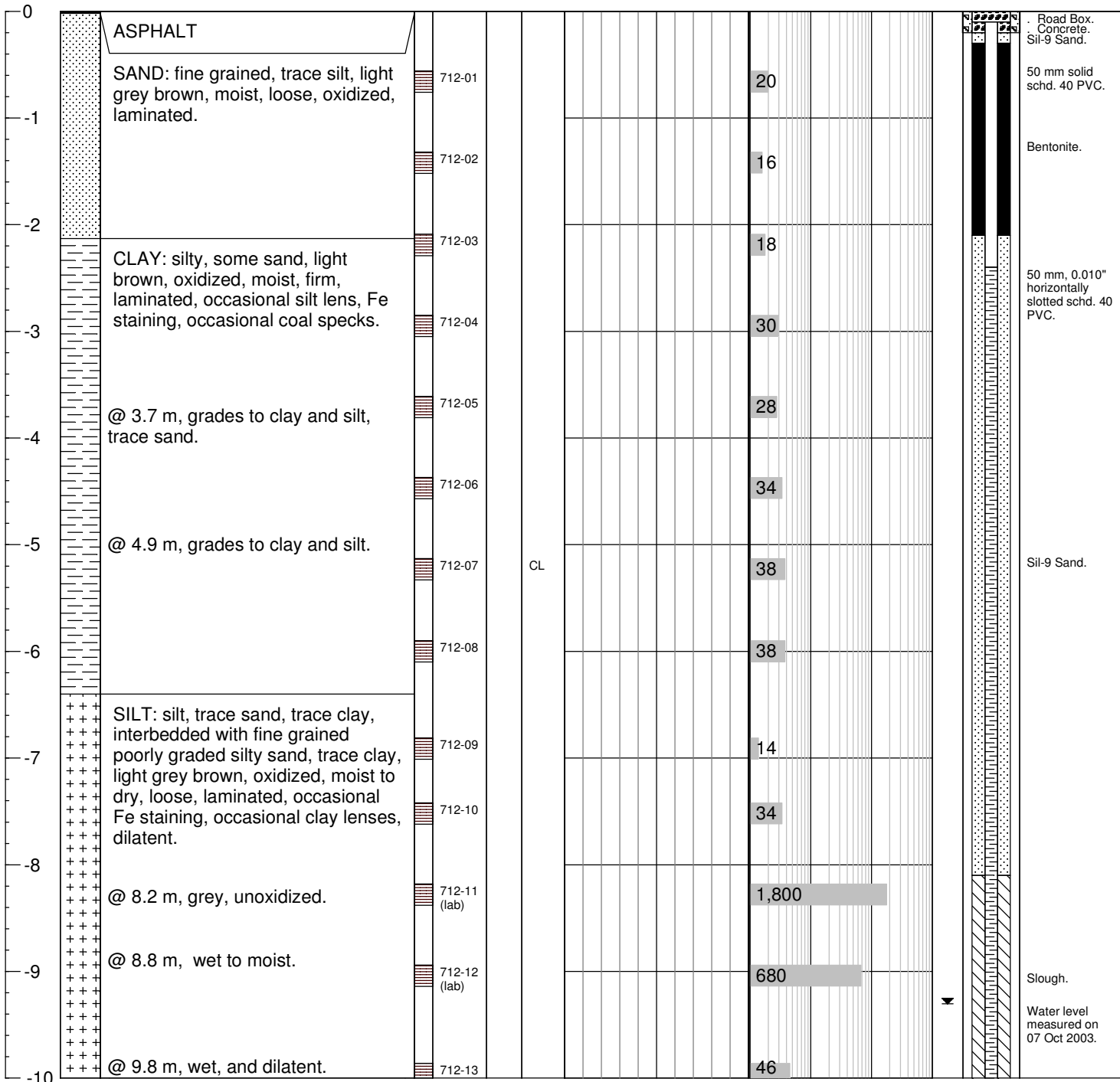
Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						





Client: Sears Canada Inc.	Northing: 5658614.672	Date Drilled: 11-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6740.079	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1087.997	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1087.901	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	10	100	







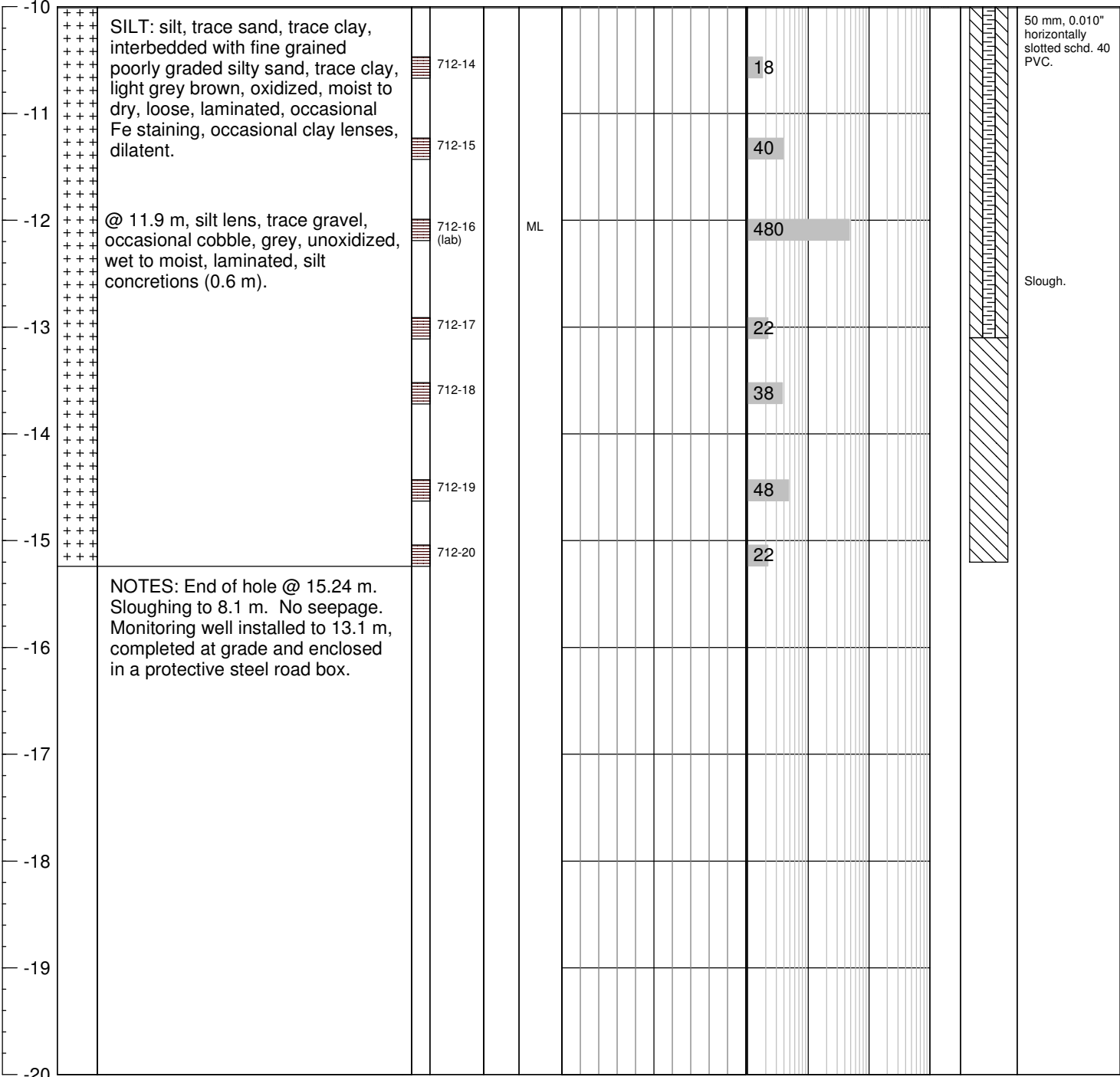
# BORE HOLE LOG

**Bore Hole: BH712**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658614.672	Date Drilled: 11-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6740.079	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1087.997	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1087.901	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	10	100	





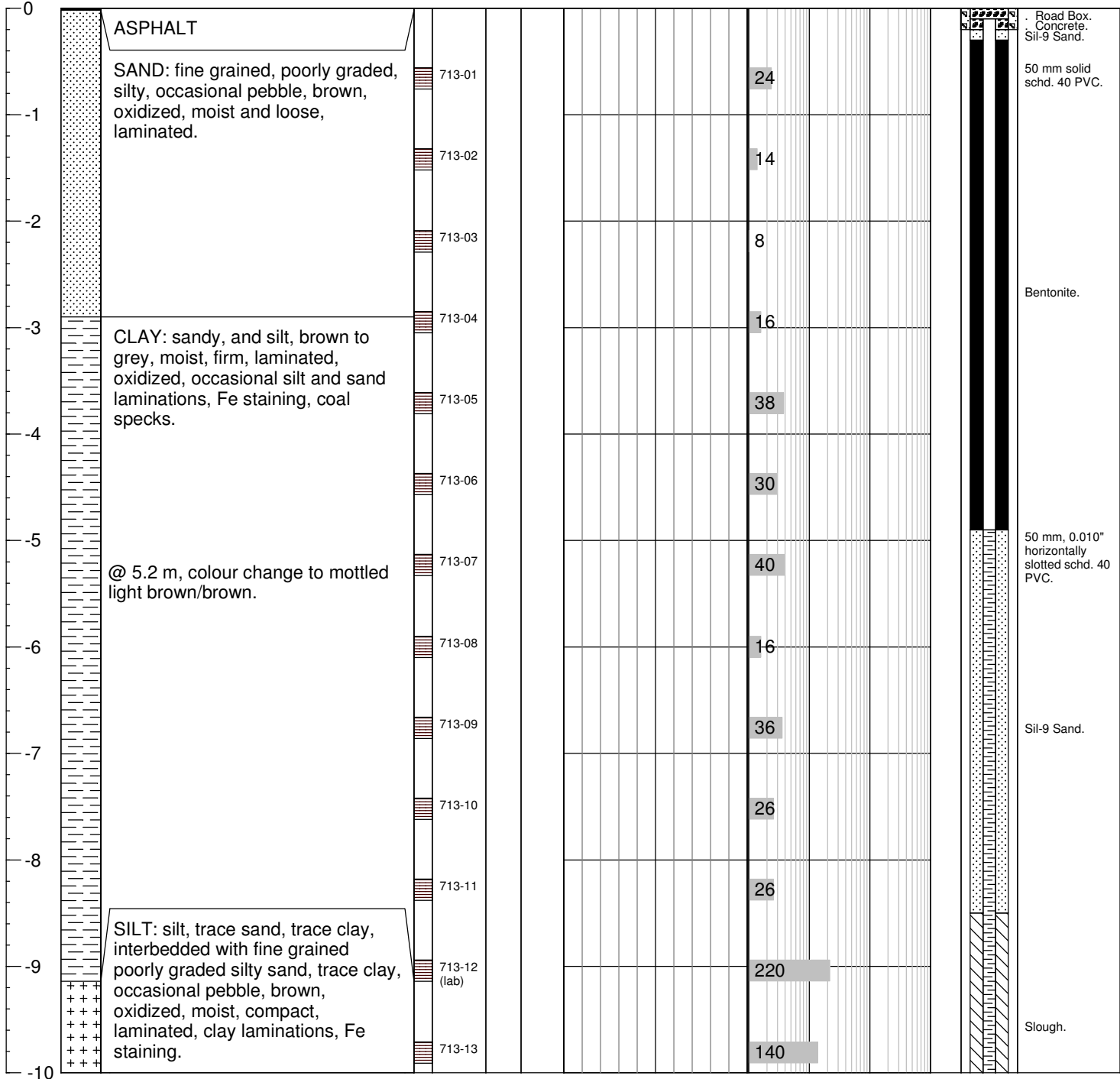
# BORE HOLE LOG

**Bore Hole: BH713**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658606.945	Date Drilled: 11-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6740.010	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1088.609	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1088.498	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit								
							0	▲	50	●	100	◆	10	100	1000	10000	







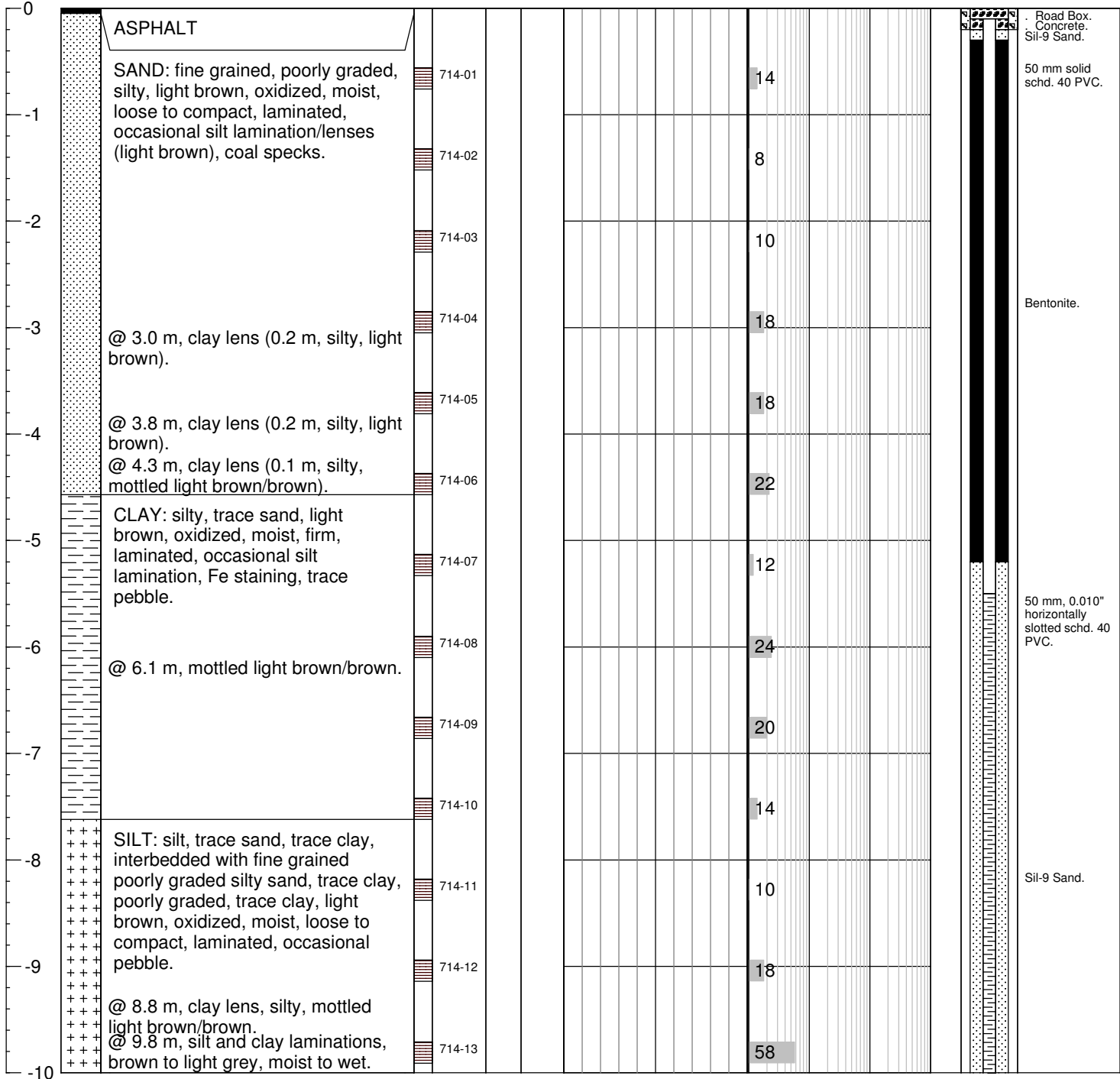
# BORE HOLE LOG

**Bore Hole: BH714**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658597.495	Date Drilled: 11-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6740.210	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.202	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.078	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
							0	▲	●	◆	100	10	100	1000	10000





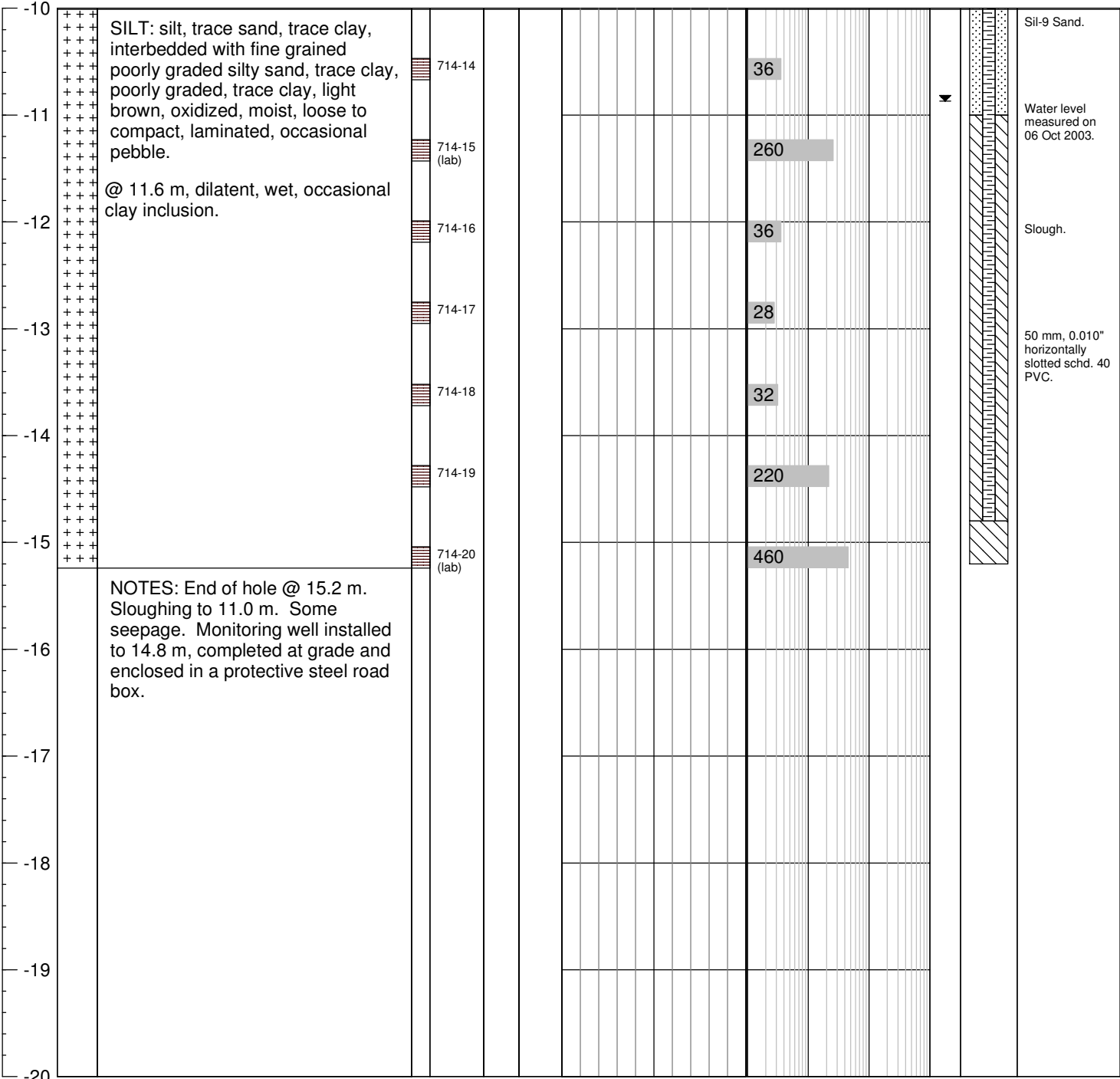
# BORE HOLE LOG

**Bore Hole: BH714**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658597.495	Date Drilled: 11-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6740.210	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.202	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.078	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit								
							0	▲	50	●	100	◆	10	100	1000	10000	





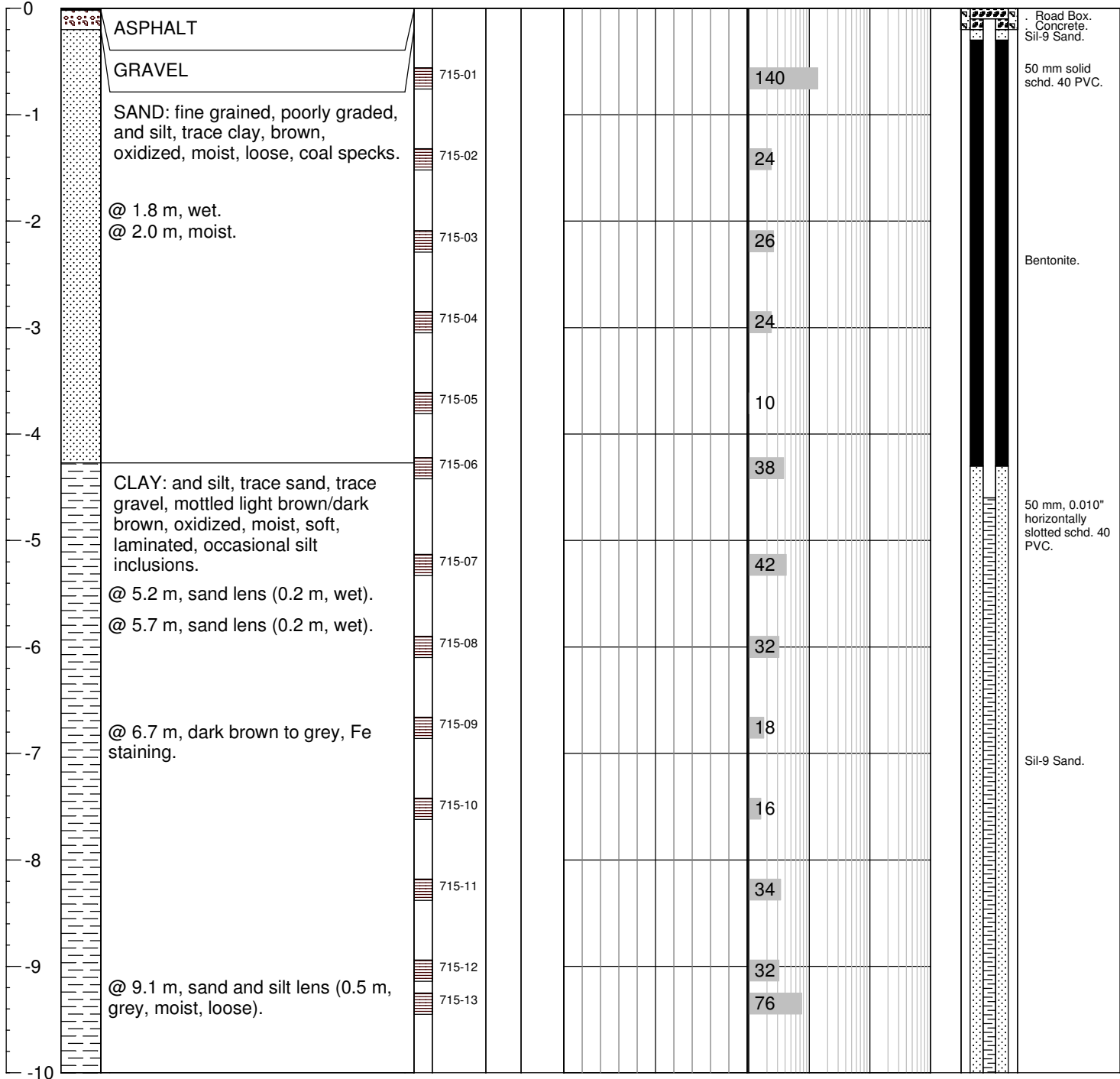
# BORE HOLE LOG

**Bore Hole: BH715**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658578.695	Date Drilled: 11-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6740.529	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.798	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.690	Logged by: CRC/CB

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
							0	▲	●	◆	100	10	100	1000	10000





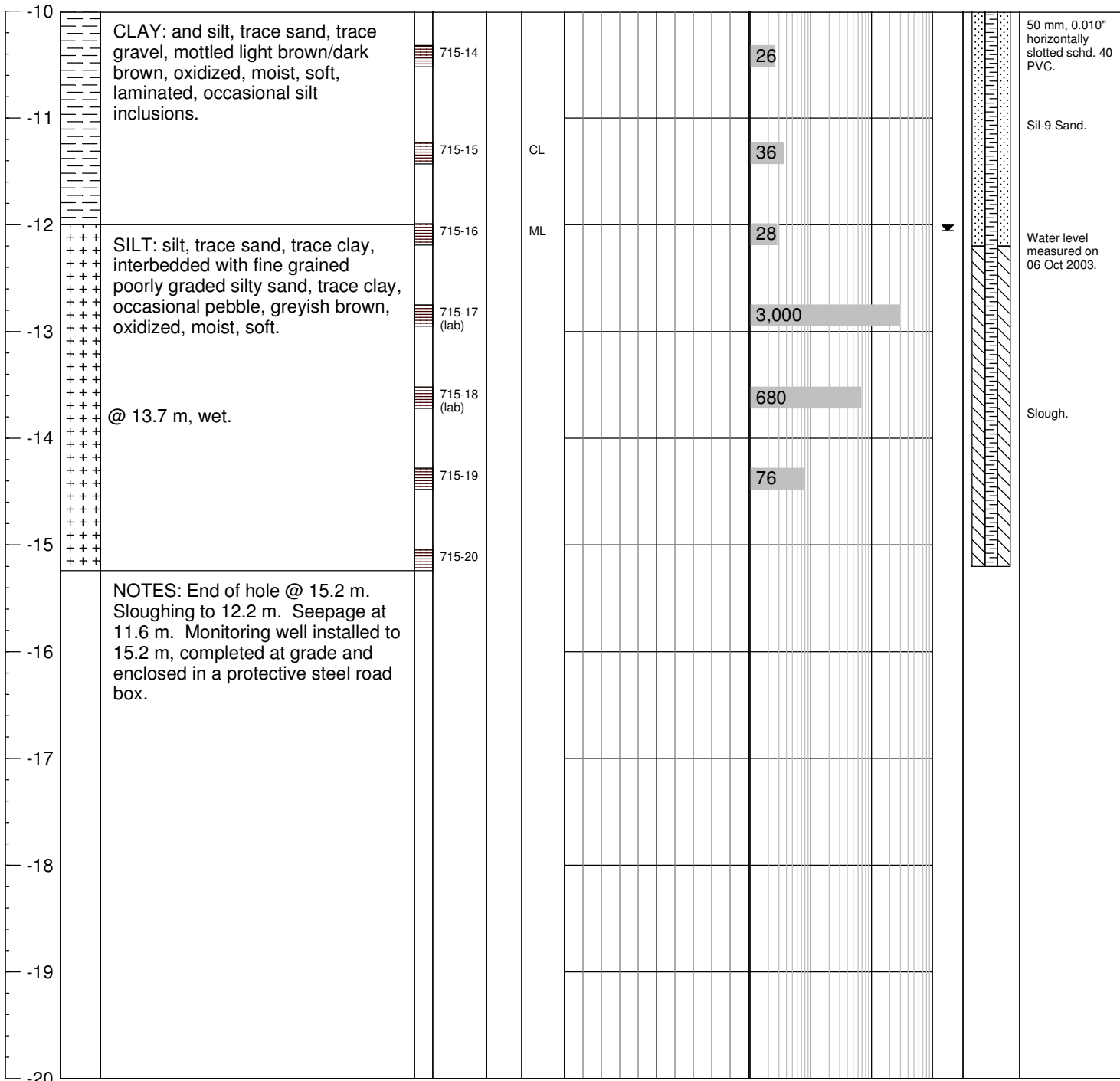
# BORE HOLE LOG

**Bore Hole: BH715**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658578.695	Date Drilled: 11-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6740.529	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.798	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.690	Logged by: CRC/CB

Elev (m) Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour ppm				Monitor Well Construction Detail
			Type No.	SPT 'N'		Plastic Limit	percent Natural Moisture	Liquid Limit	10	100	1000	10000	





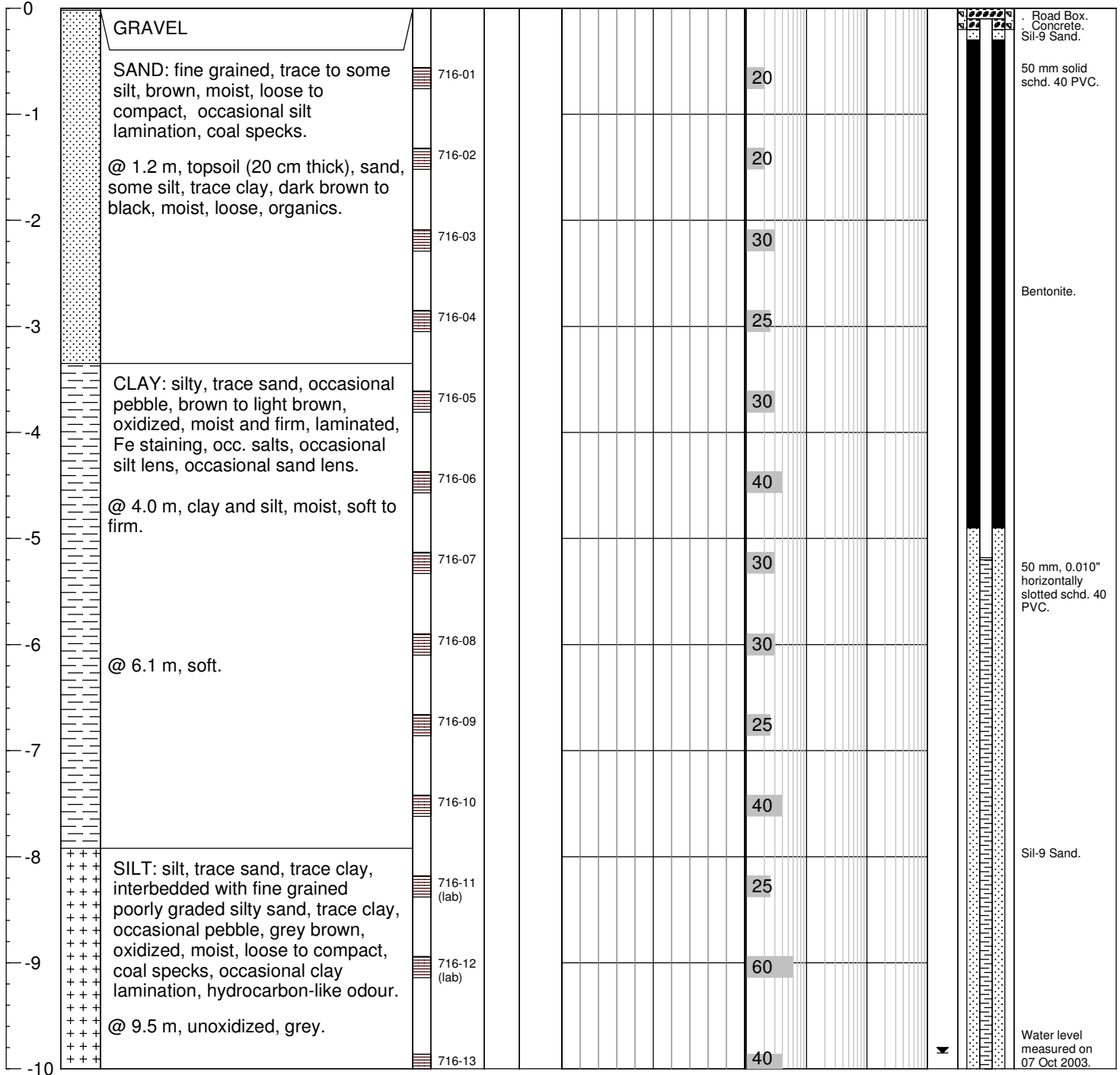
# BORE HOLE LOG

**Bore Hole: BH716**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658618.236	Date Drilled: 12-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6797.758	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1088.688	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1088.589	Logged by: CRC/CB

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
							0	▲	●	◆	100	10	100	1000	10000







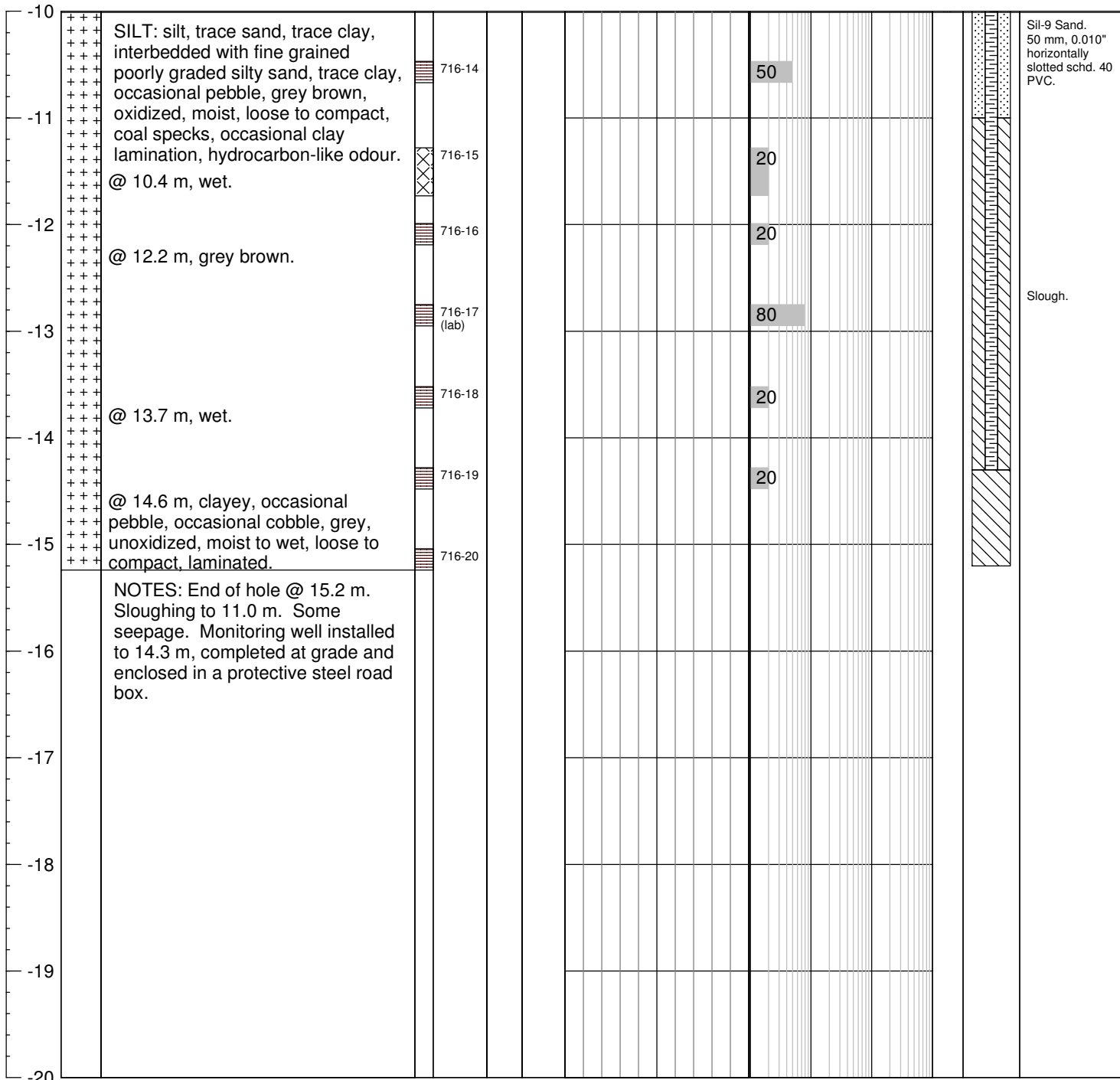
# BORE HOLE LOG

**Bore Hole: BH716**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658618.236	Date Drilled: 12-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6797.758	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1088.688	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1088.589	Logged by: CRC/CB

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit								
							0	▲	50	●	100	◆	10	100	1000	10000	





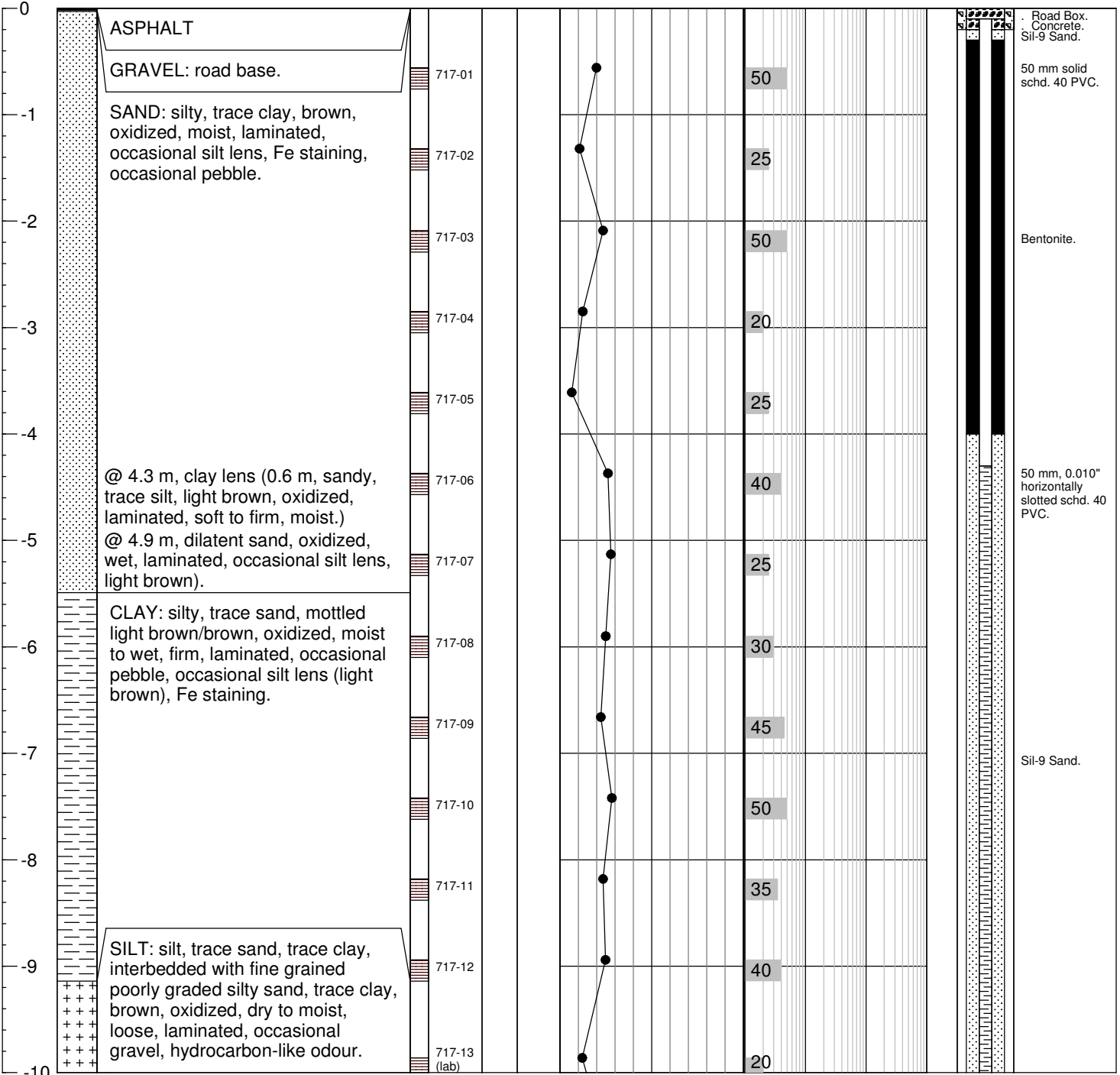
# BORE HOLE LOG

**Bore Hole: BH717**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658563.662	Date Drilled: 12-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6740.741	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.750	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.656	Logged by: CRC/BJ

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour ppm	Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit			





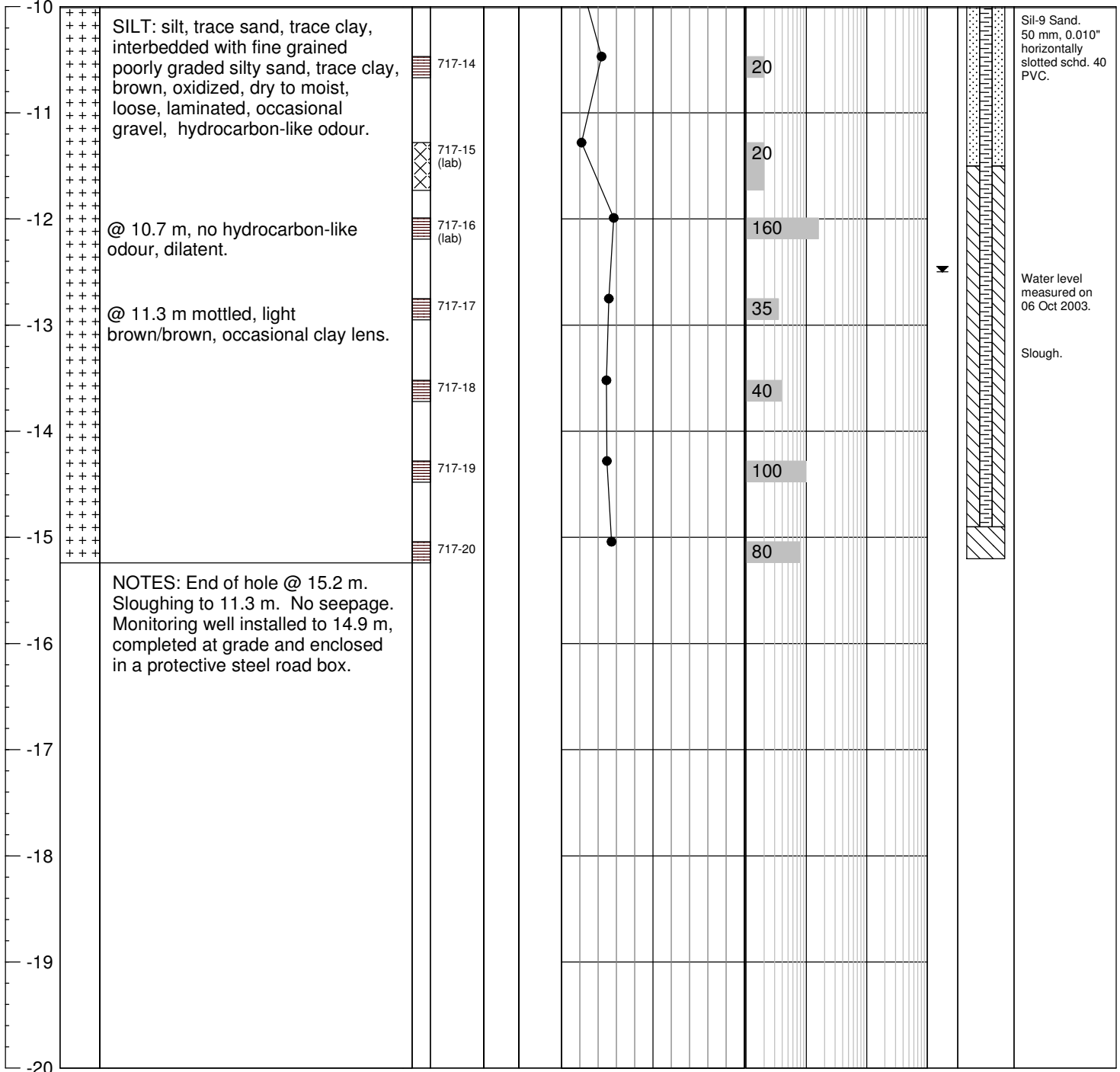
# BORE HOLE LOG

**Bore Hole: BH717**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658563.662	Date Drilled: 12-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6740.741	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.750	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.656	Logged by: CRC/BJ

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
							0	▲	●	◆	100	10	100	1000	10000





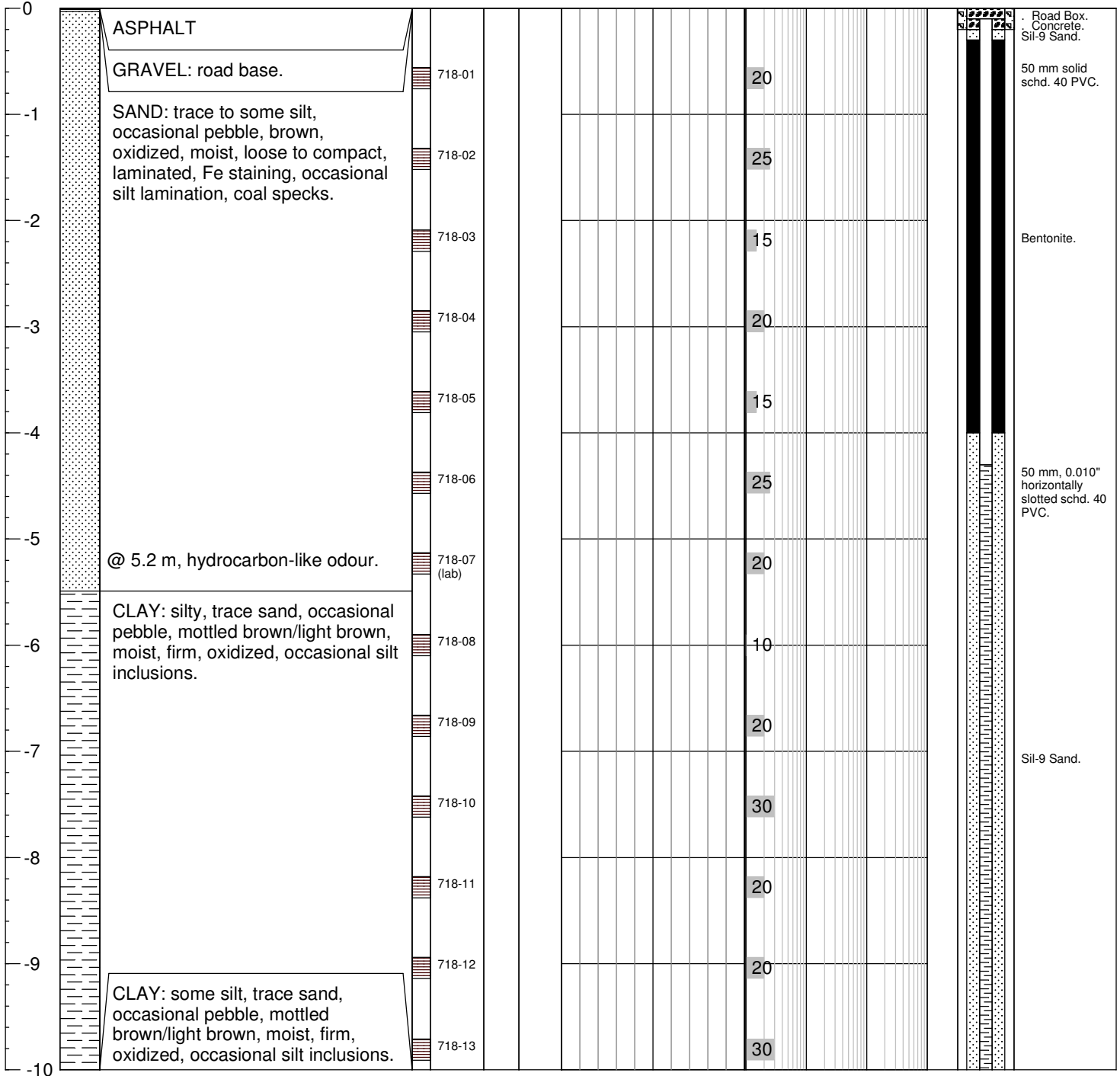
# BORE HOLE LOG

**Bore Hole: BH718**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658556.848	Date Drilled: 12-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6740.923	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.624	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.554	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
							0	▲	●	◆	100	10	100	1000	10000





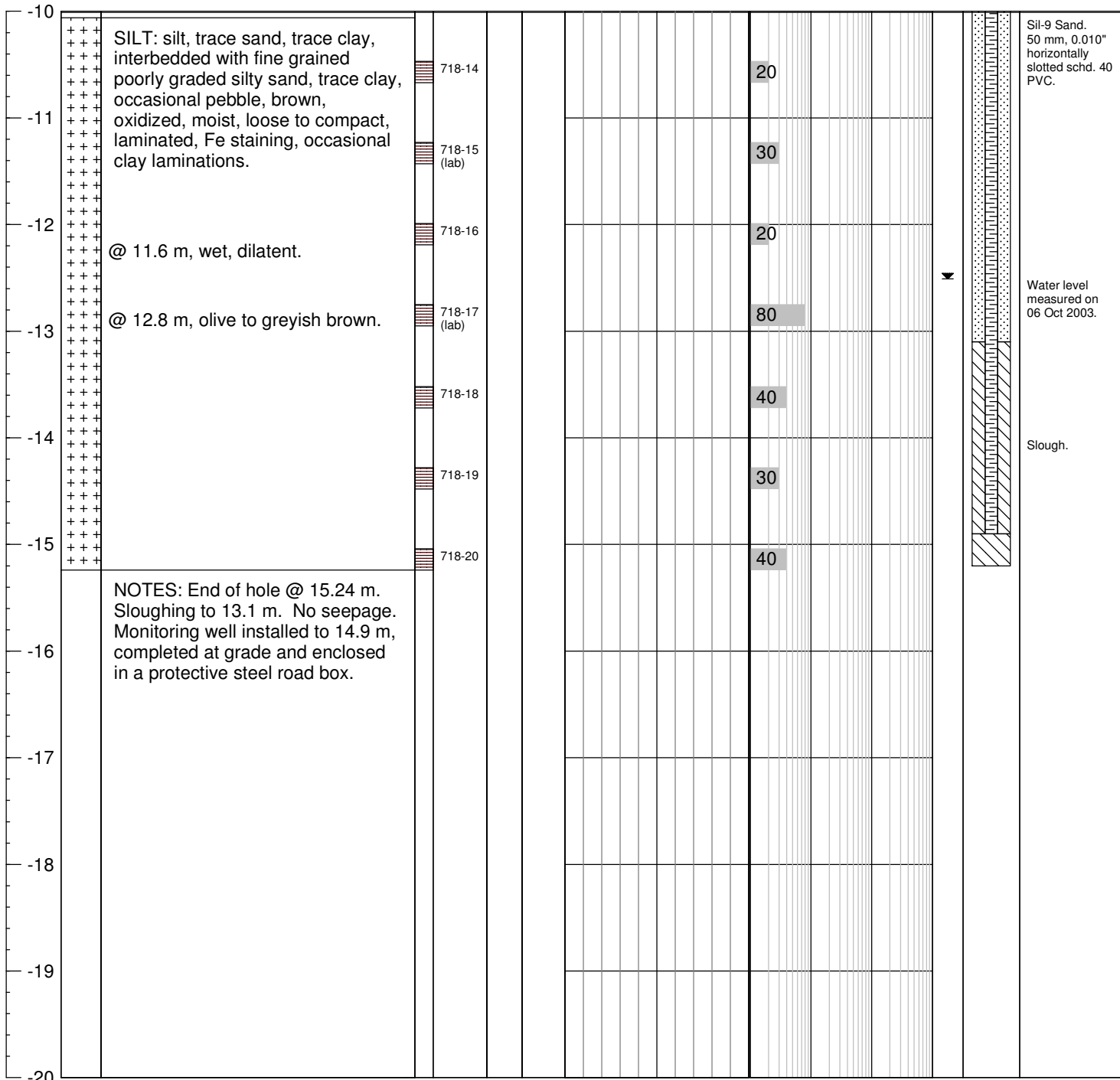
# BORE HOLE LOG

**Bore Hole: BH718**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658556.848	Date Drilled: 12-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6740.923	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.624	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.554	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit								
							0	▲	50	●	100	◆	10	100	1000	10000	





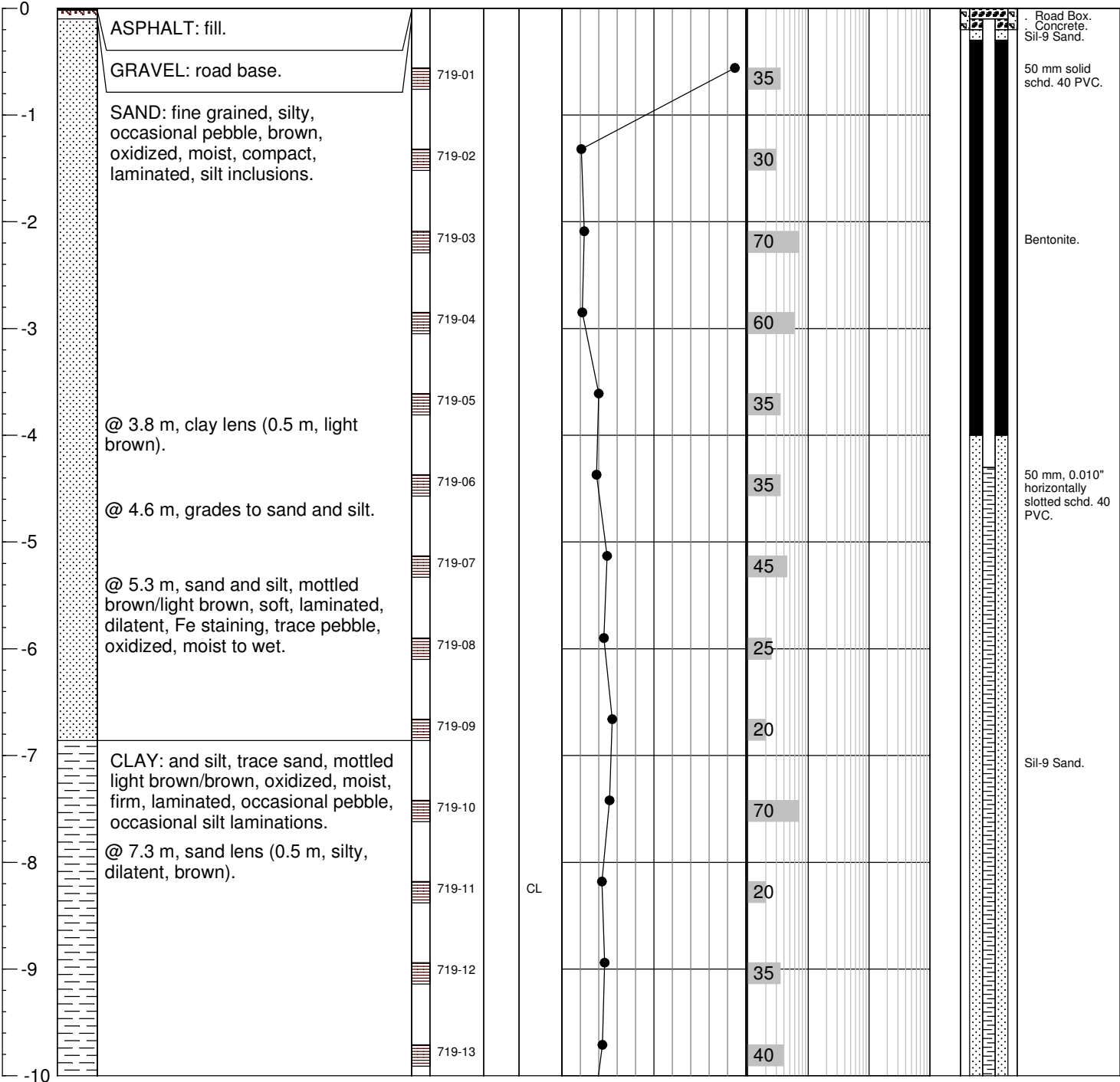
# BORE HOLE LOG

**Bore Hole: BH719**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658543.730	Date Drilled: 12-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6740.914	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.231	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.127	Logged by: CRC/BJ

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	10	100	1000	





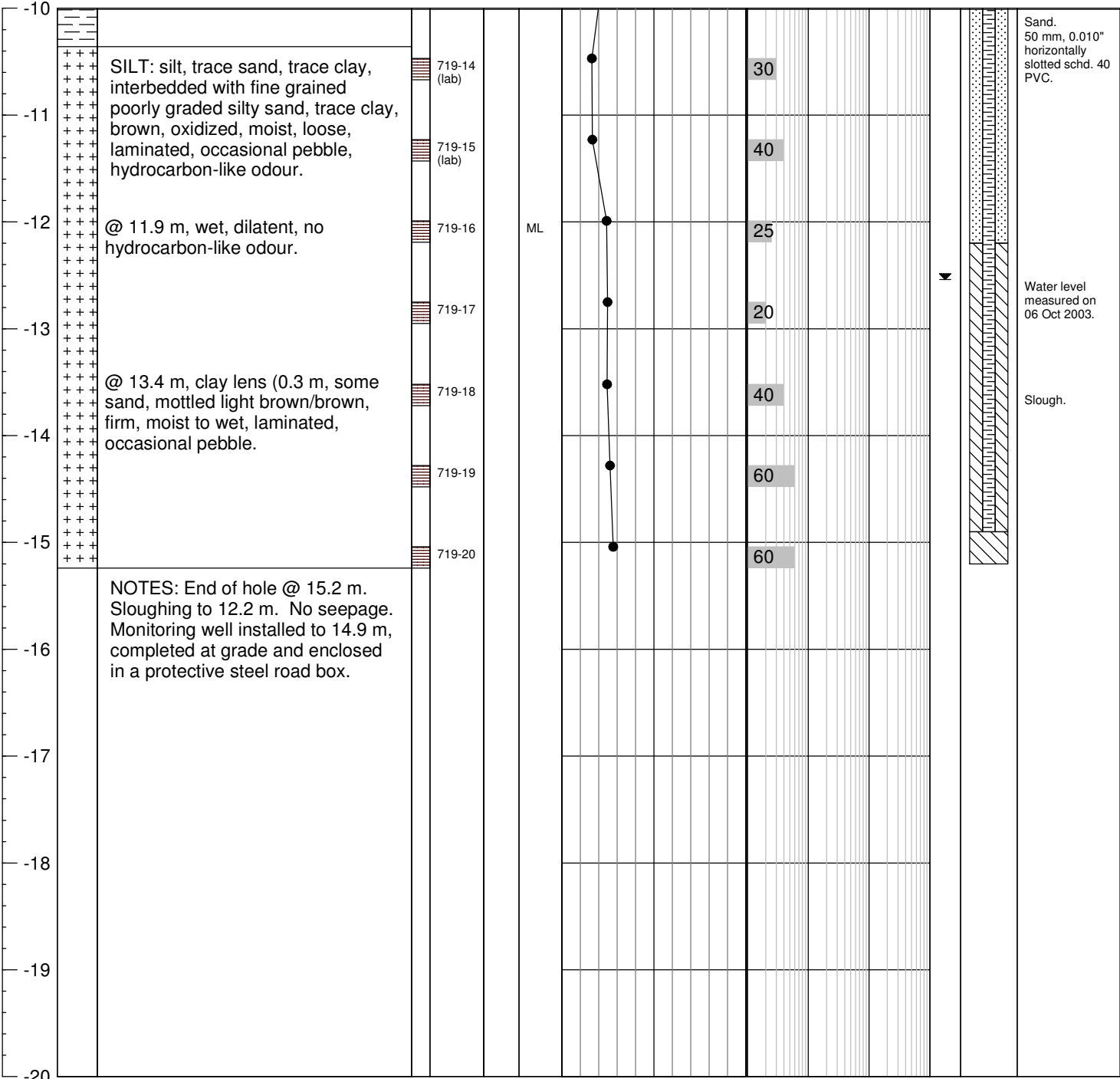
# BORE HOLE LOG

**Bore Hole: BH719**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658543.730	Date Drilled: 12-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6740.914	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.231	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.127	Logged by: CRC/BJ

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail				
			Type No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm							
								0	▲	●	◆	100	10	100	1000	10000





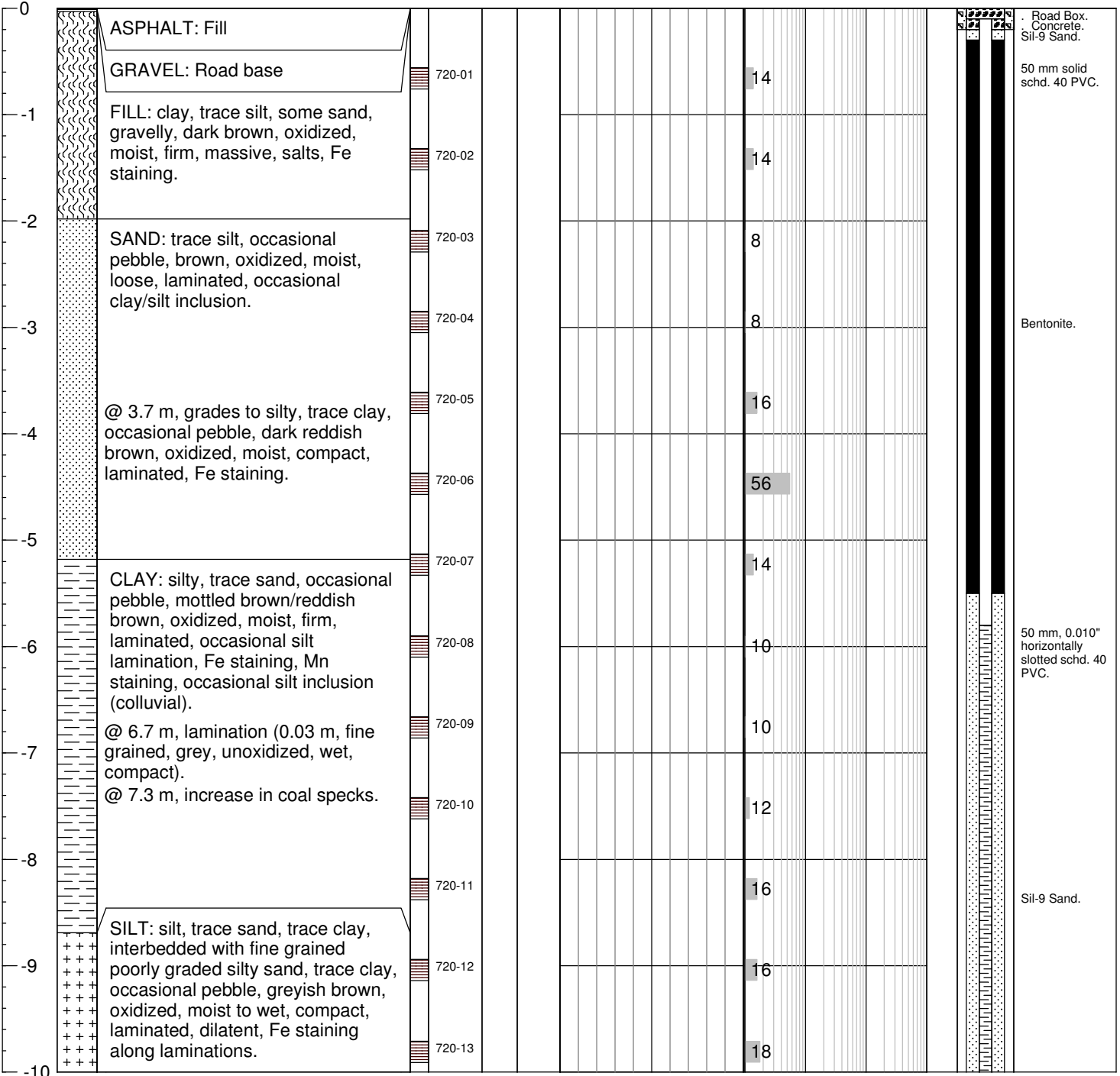
# BORE HOLE LOG

**Bore Hole: BH720**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658532.556	Date Drilled: 15-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6740.800	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1088.495	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1088.371	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	plastic	Natural	Liquid	ppm				
					Limit	Moisture	Limit	10	100	1000	10000	







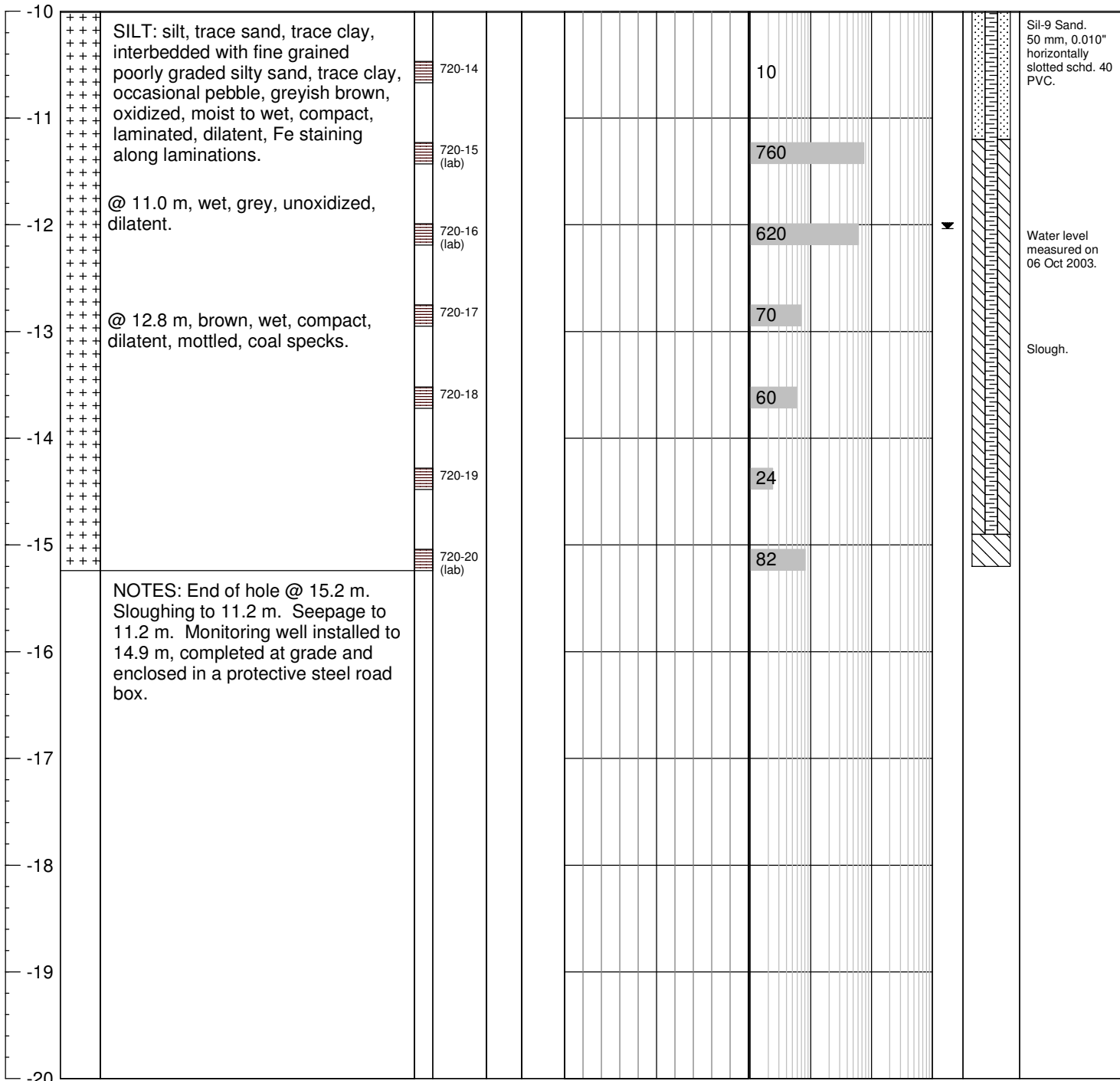
# BORE HOLE LOG

**Bore Hole: BH720**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658532.556	Date Drilled: 15-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6740.800	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1088.495	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1088.371	Logged by: CRC

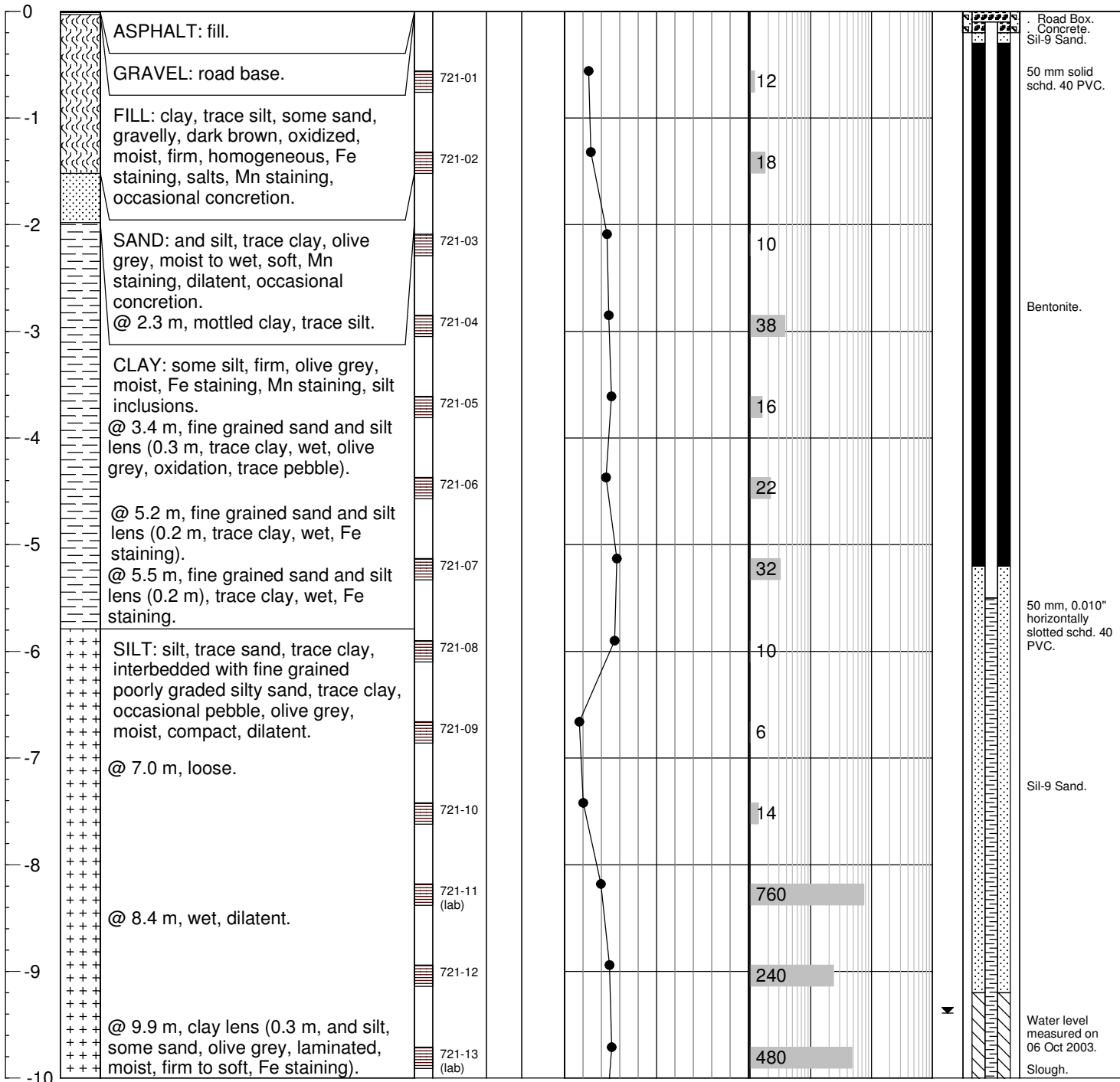
Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						





Client: Sears Canada Inc.	Northing: 5658500.723	Date Drilled: 15-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6741.436	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1085.211	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1085.091	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	10	100	





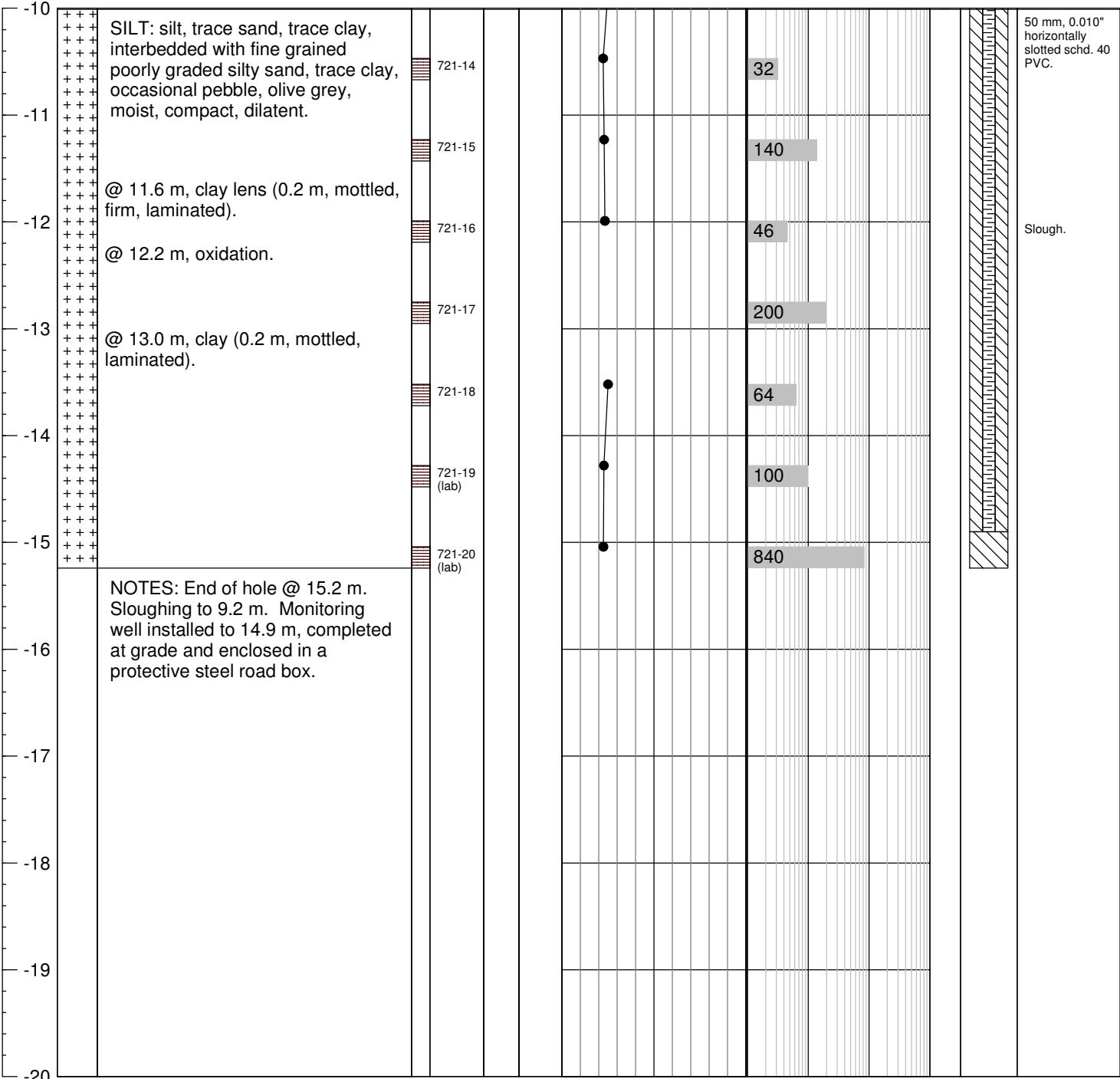
# BORE HOLE LOG

**Bore Hole: BH721**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658500.723	Date Drilled: 15-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6741.436	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1085.211	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1085.091	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						





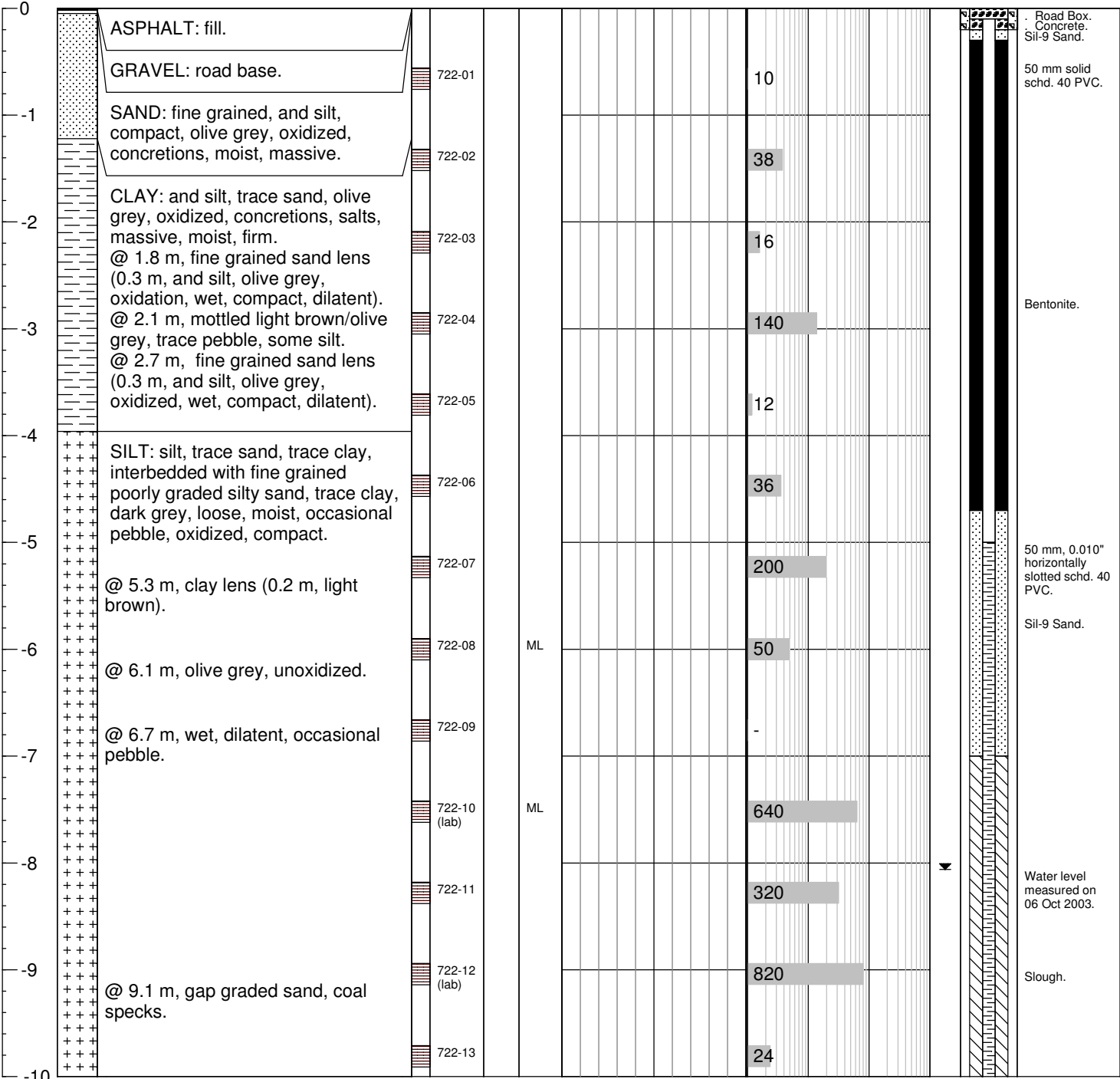
# BORE HOLE LOG

**Bore Hole: BH722**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658473.607	Date Drilled: 15-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6741.600	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1082.443	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1082.362	Logged by: CRC/MH

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail			
			Type	No.	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm						
								0	▲	●	◆	10	100	1000	10000





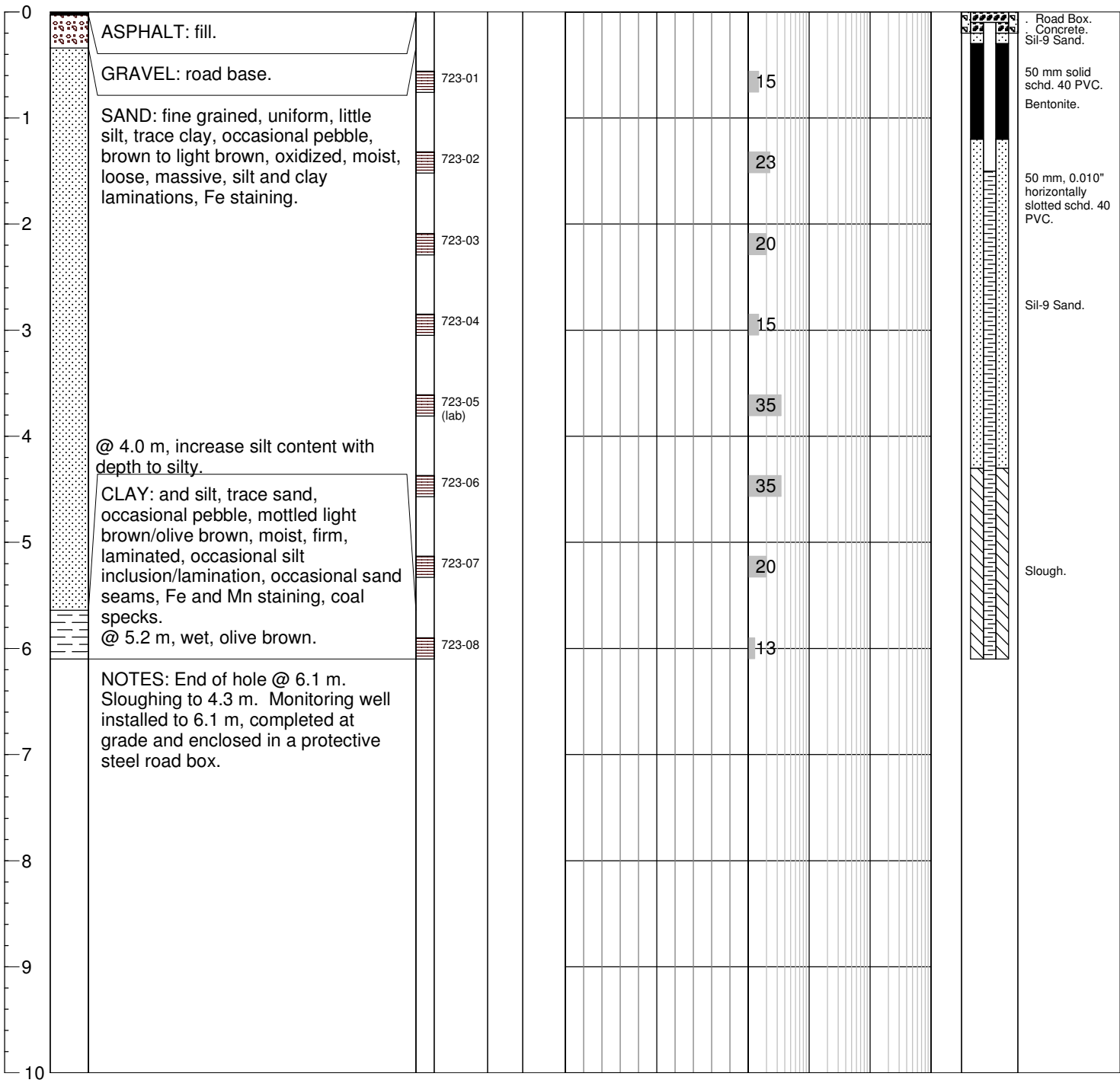


# BORE HOLE LOG

Bore Hole: **BH723**  
Page: 1 of 1

Client: Sears Canada Inc.	Northing: 5658587.058	Date: 16-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6863.618	Equipment: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.570	Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.470	Logged by: CRC/MH

Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit								
							0	▲	50	●	100	◆	10	100	1000	10000	





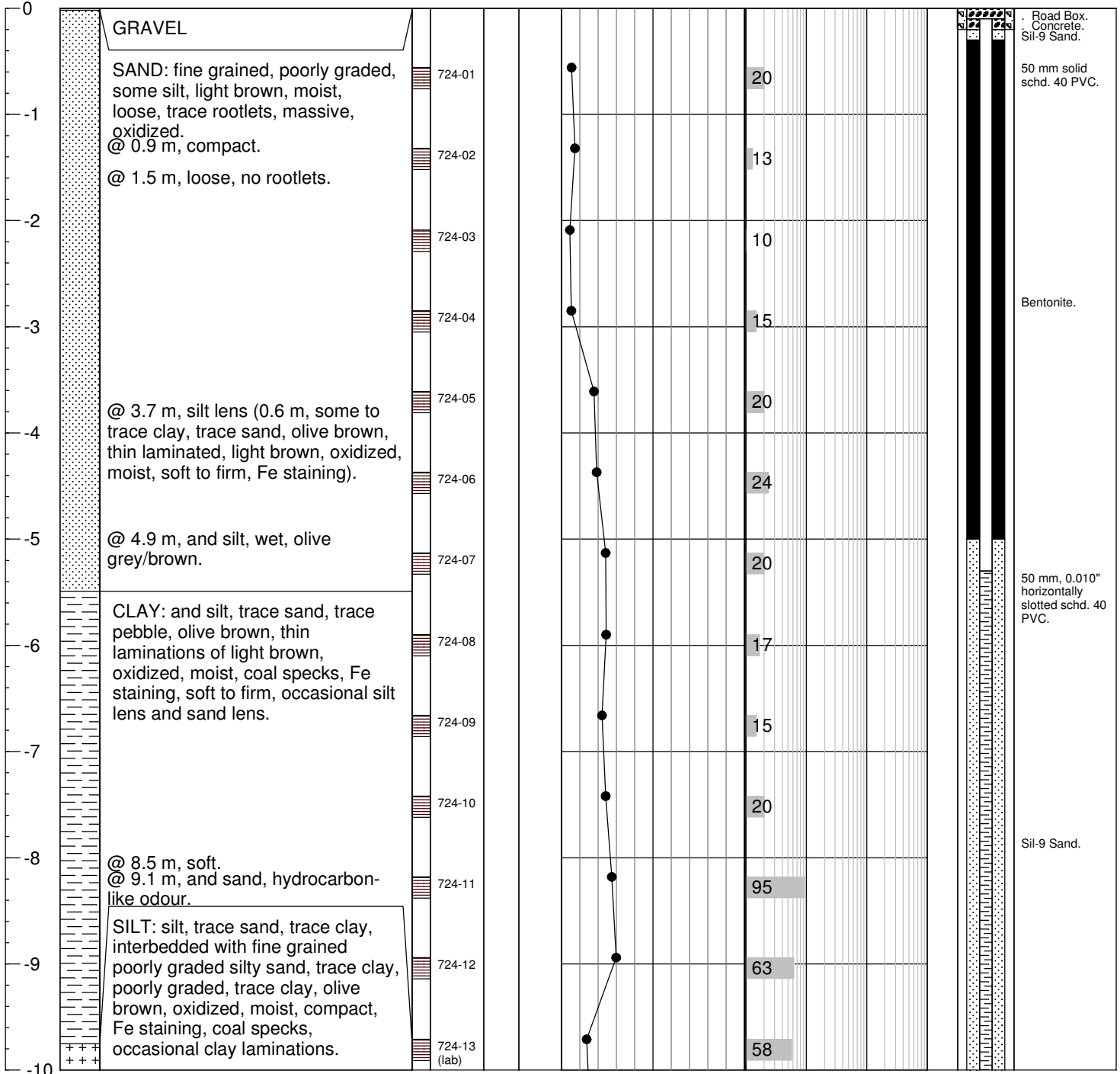
# BORE HOLE LOG

**Bore Hole: BH724**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658595.711	Date Drilled: 16-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6798.080	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1089.623	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: -6798.080	Logged by: CRC/MH

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
							0	▲	●	◆	100	10	100	1000	10000





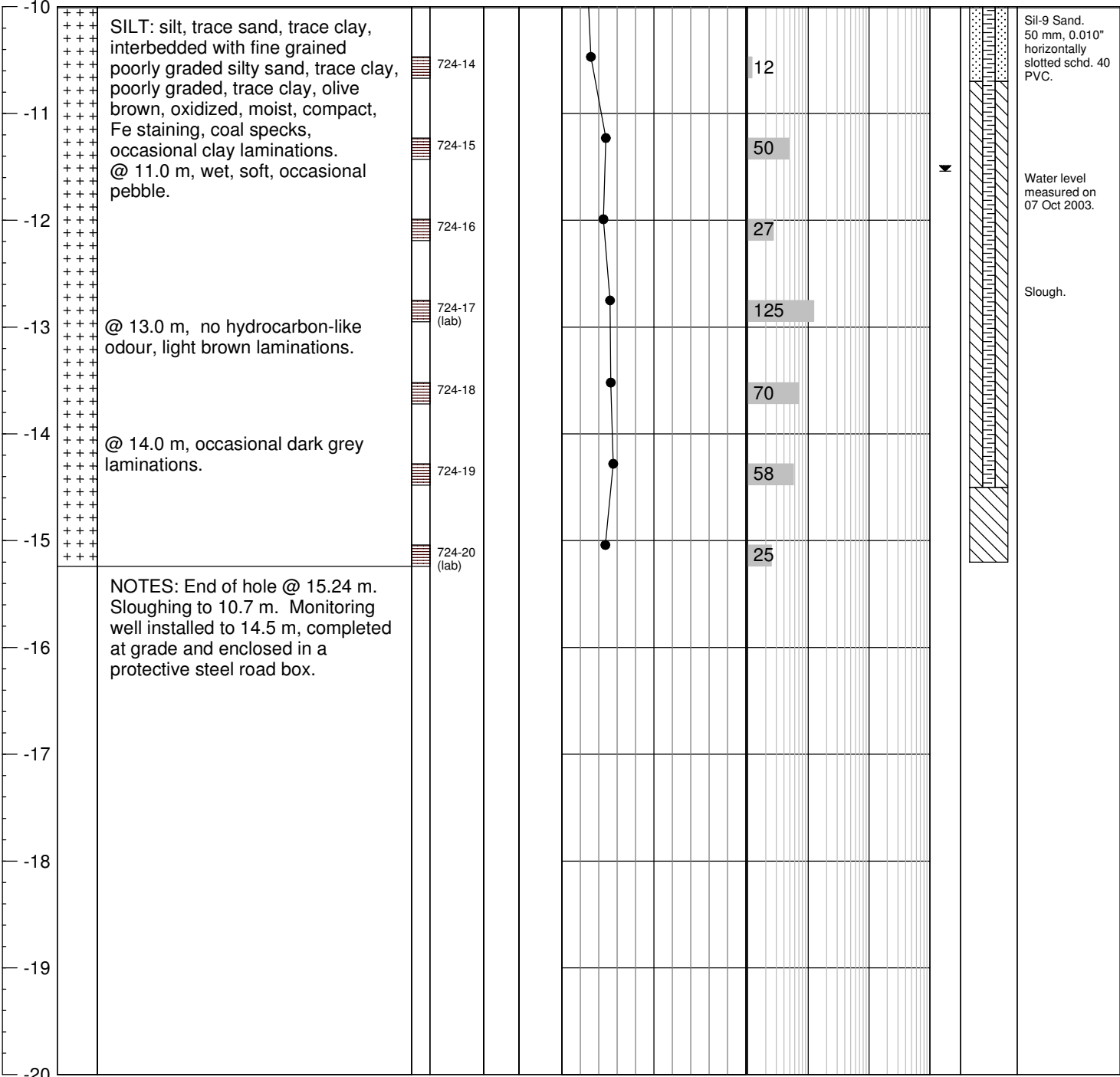
# BORE HOLE LOG

**Bore Hole: BH724**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658595.711	Date Drilled: 16-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6798.080	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1089.623	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: -6798.080	Logged by: CRC/MH

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail			
			Type No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm						
								0	▲	●	◆	10	100	1000	10000

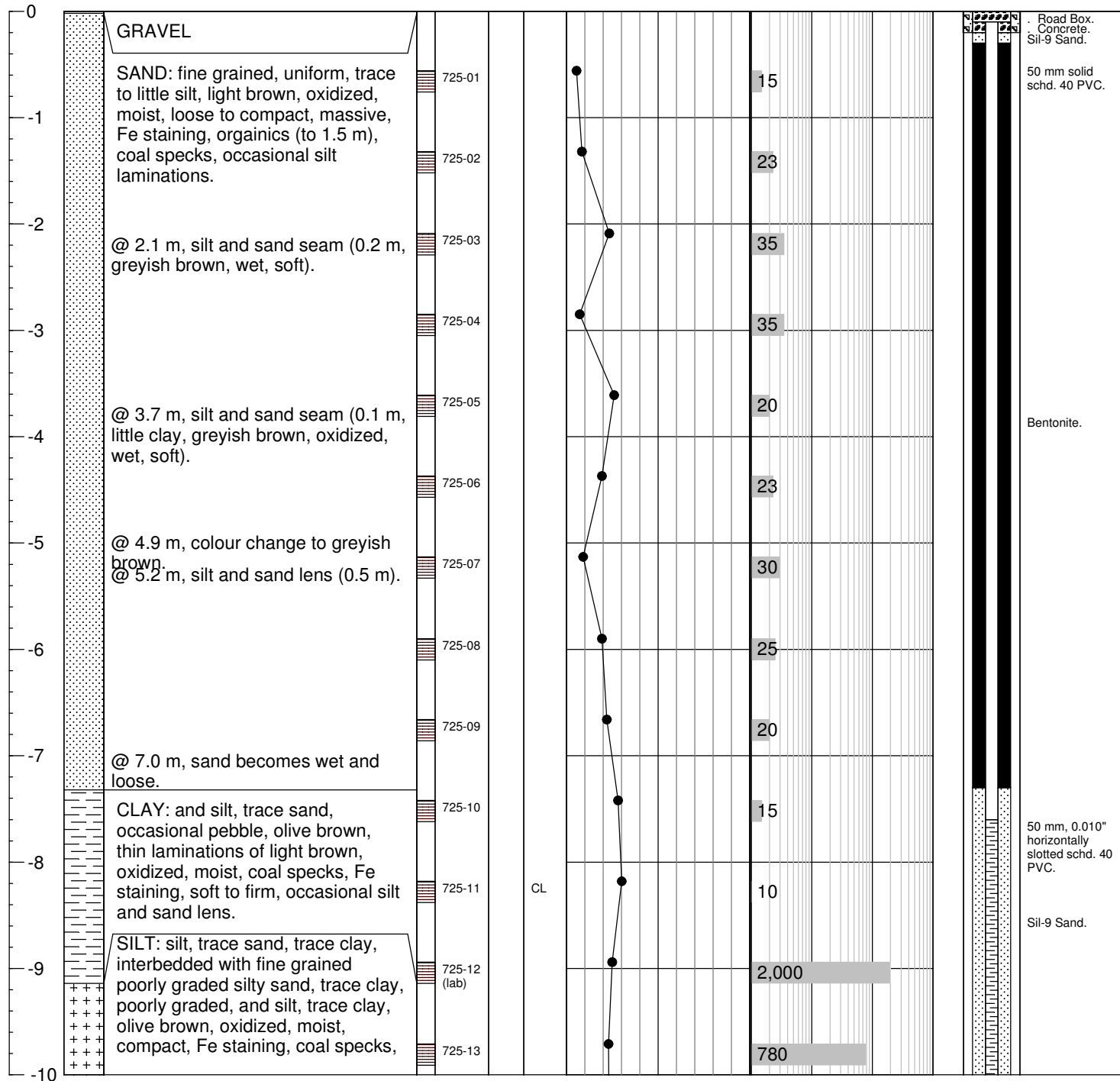






Client: Sears Canada Inc.	Northing: 5658566.797	Date Drilled: 16-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6799.155	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1091.410	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1091.321	Logged by: CRC/MH

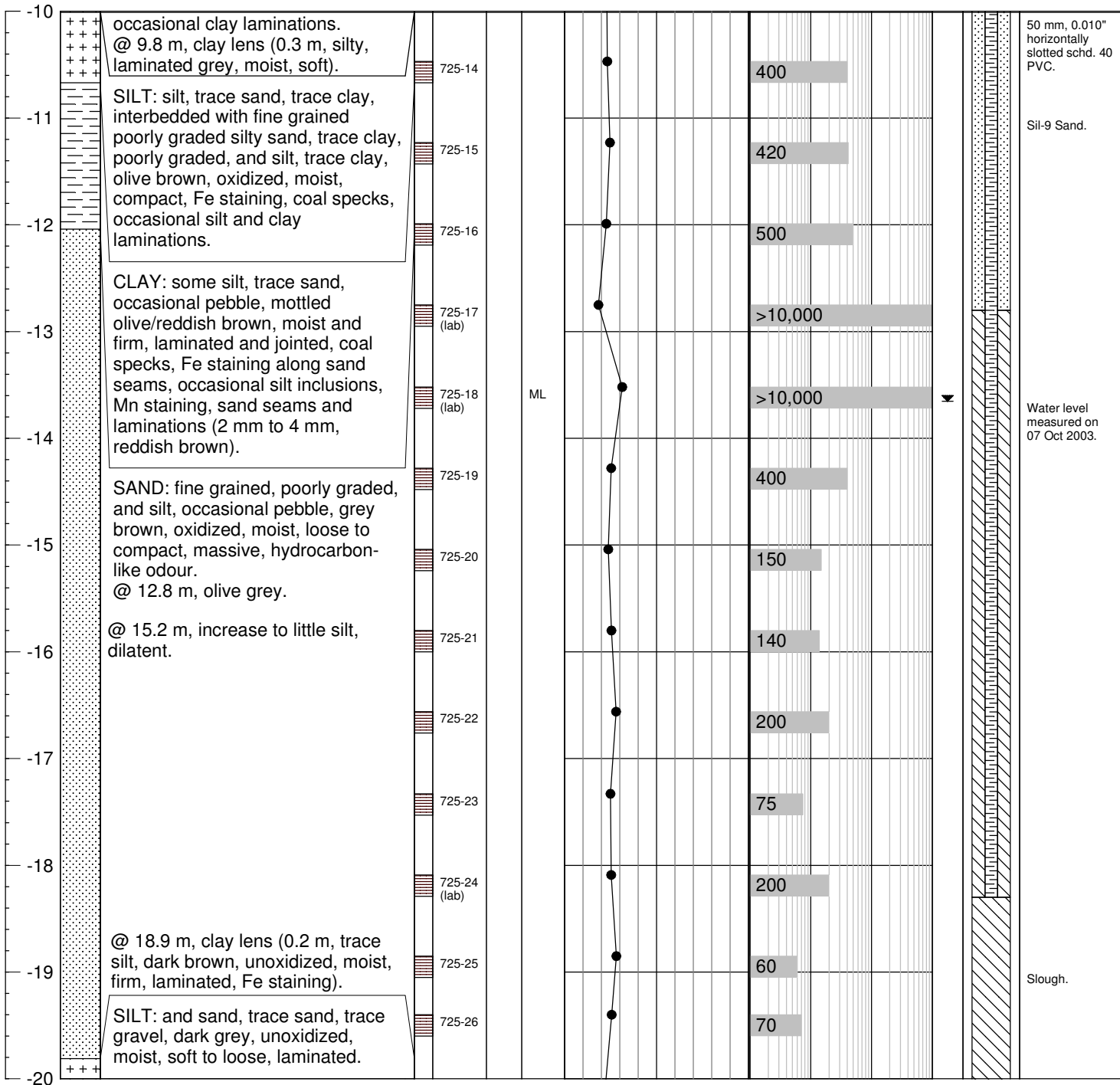
Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	10	100	





Client: Sears Canada Inc.	Northing: 5658566.797	Date Drilled: 16-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6799.155	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1091.410	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1091.321	Logged by: CRC/MH

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour ppm	Monitor Well Construction Detail
			Type No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture		











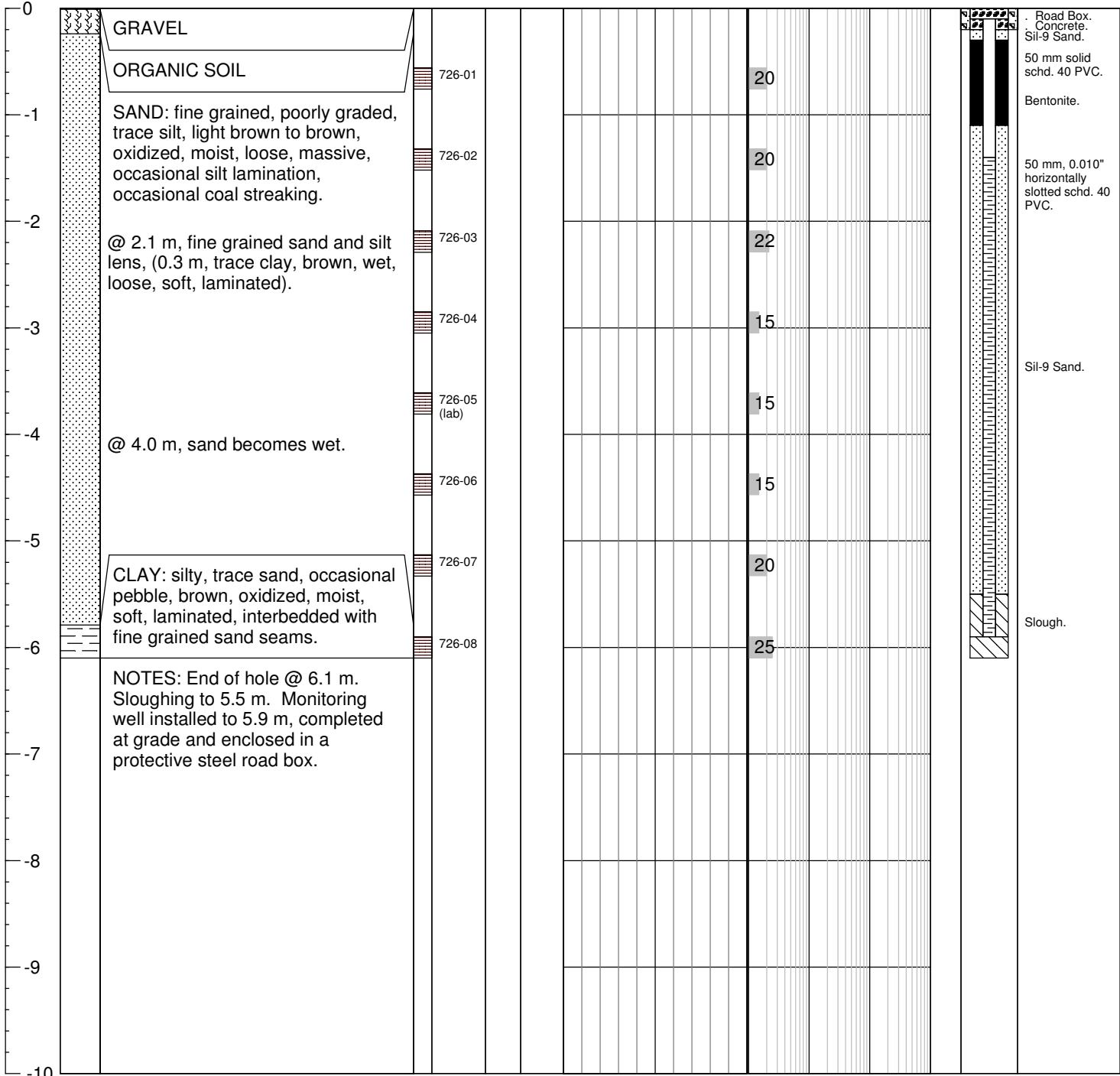
# BORE HOLE LOG

**Bore Hole: BH726**

**Page: 1 of 1**

Client: Sears Canada Inc.	Northing: 5658571.039	Date Drilled: 17-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6799.275	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1091.260	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1091.178	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit								
							0	▲	50	●	100	◆	10	100	1000	10000	





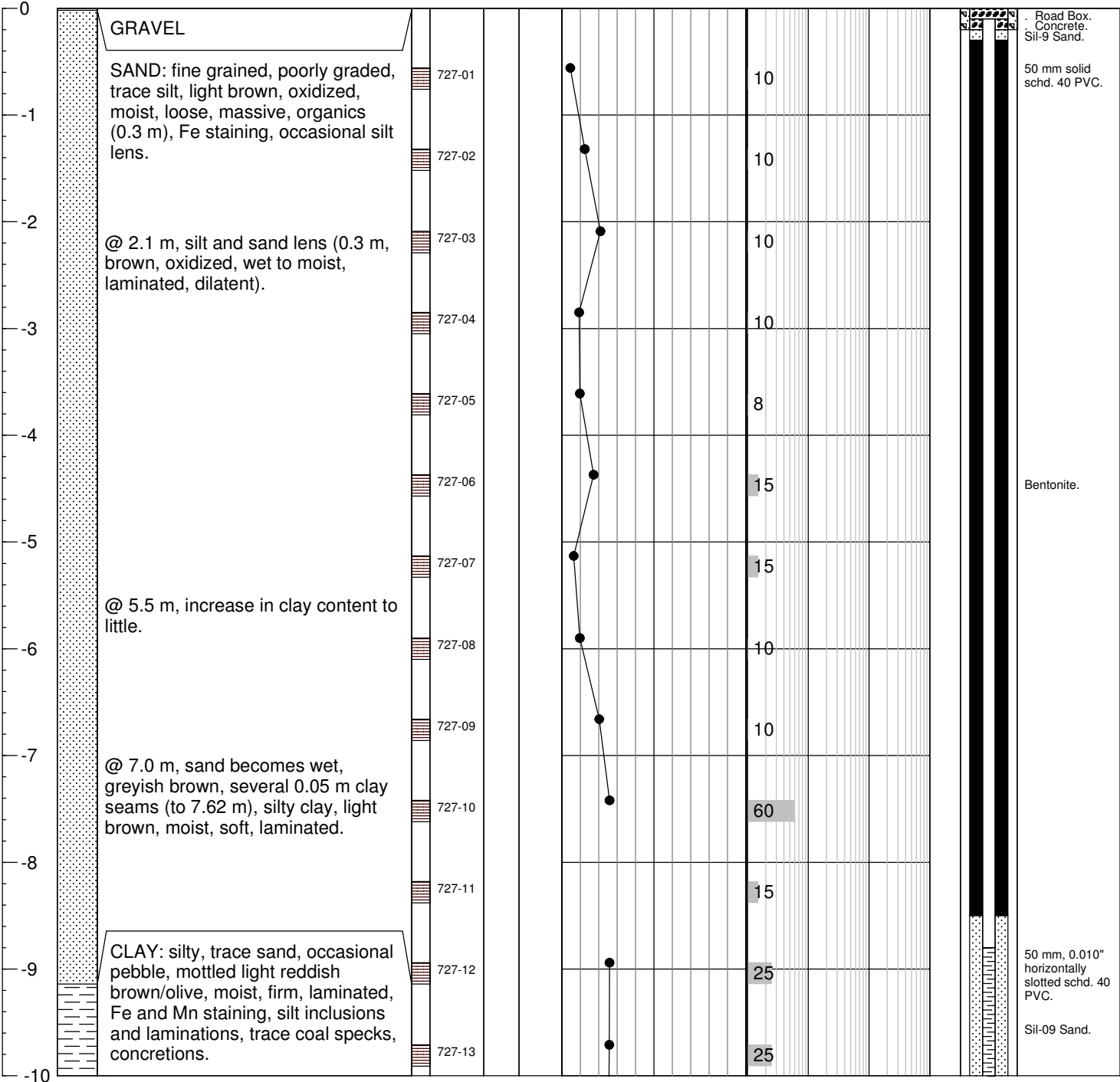
# BORE HOLE LOG

**Bore Hole: BH727**

**Page: 1 of 3**

Client: Sears Canada Inc.	Northing: 5658549.821	Date Drilled: 17-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6798.427	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1091.412	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1091.331	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	Natural Moisture	Liquid Limit	percent	ppm	ppm	ppm		

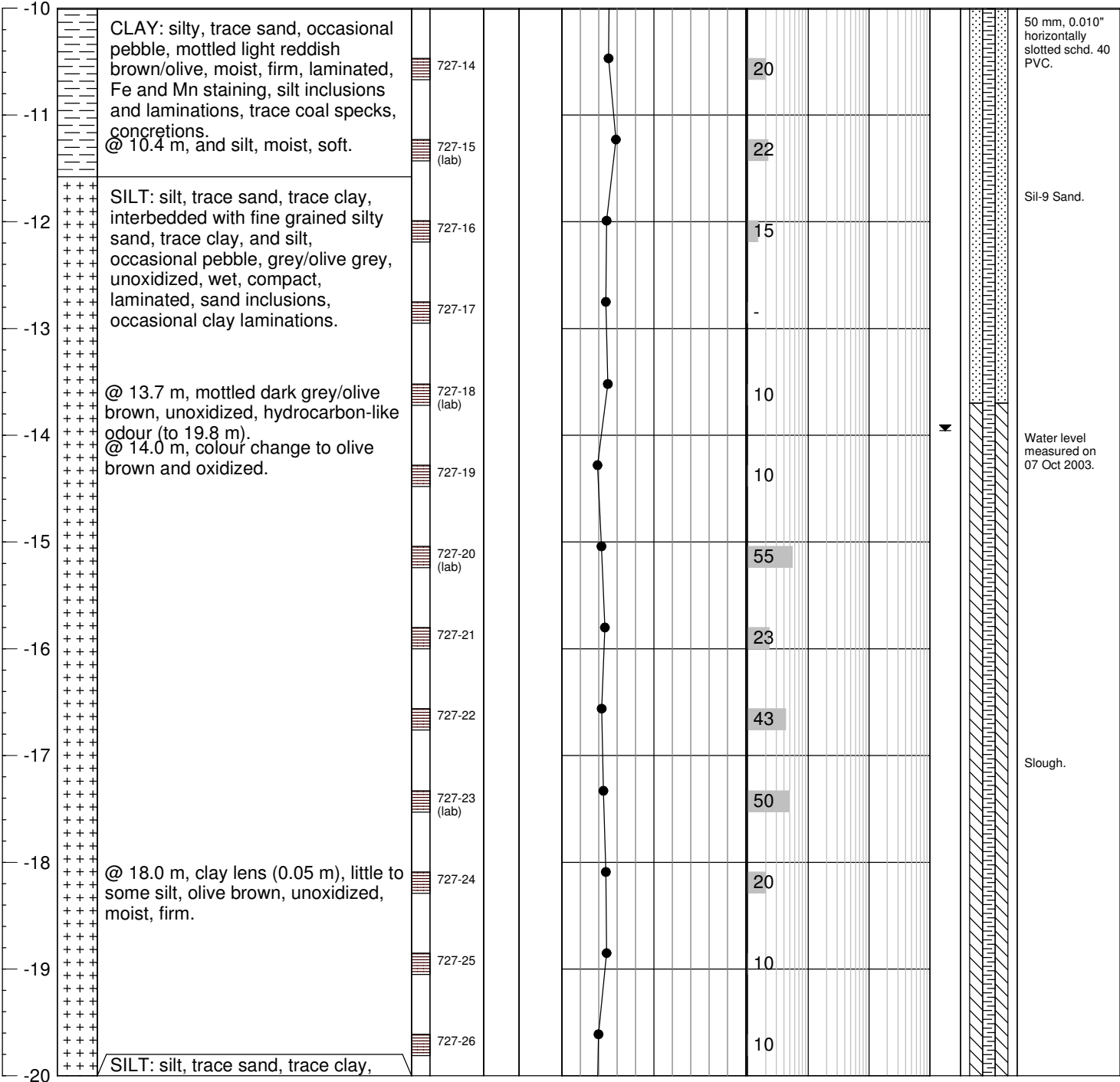




# BORE HOLE LOG

Client: Sears Canada Inc.	Northing: 5658549.821	Date Drilled: 17-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6798.427	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1091.412	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1091.331	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
								10	100	1000	10000	







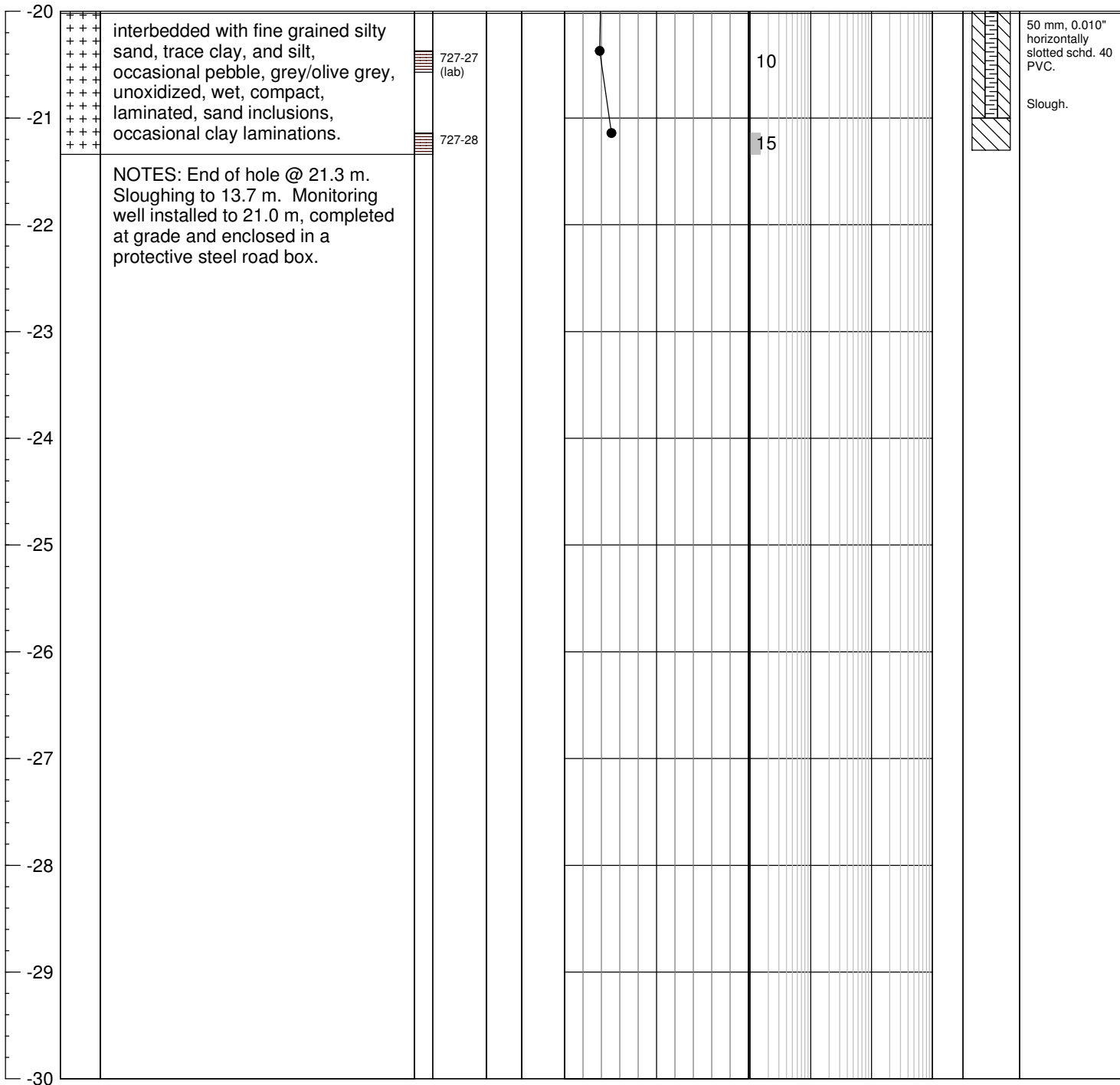
# BORE HOLE LOG

**Bore Hole: BH727**

**Page: 3 of 3**

Client: Sears Canada Inc.	Northing: 5658549.821	Date Drilled: 17-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6798.427	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1091.412	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1091.331	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail	
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit							





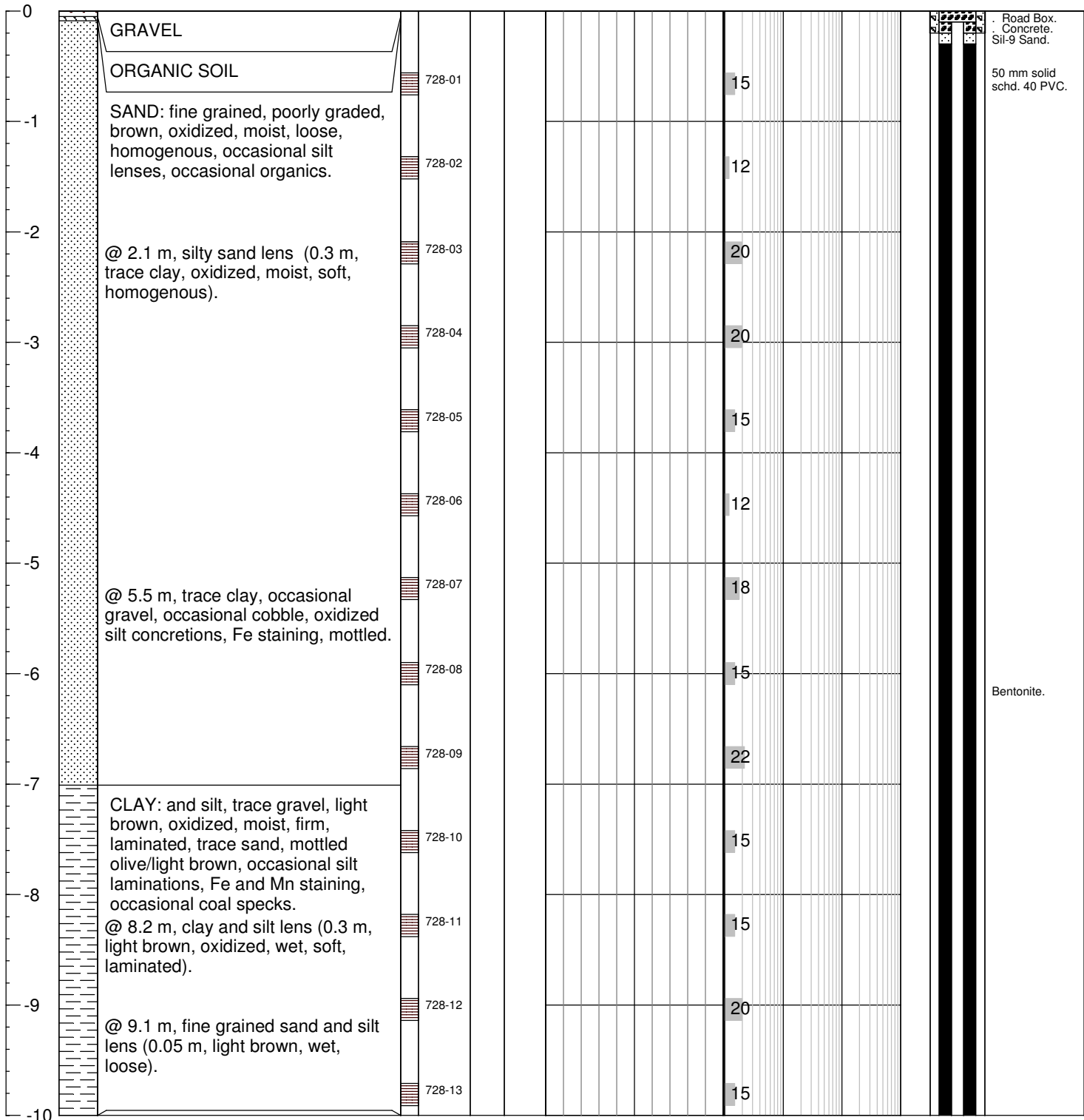
# BORE HOLE LOG

**Bore Hole: BH728**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658536.325	Date Drilled: 17-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6798.511	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1090.651	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.553	Logged by: CRC/CAH

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	Natural Moisture	Liquid Limit	percent	ppm	ppm	ppm		
							0	▲	●	◆	100	10	100	1000	10000

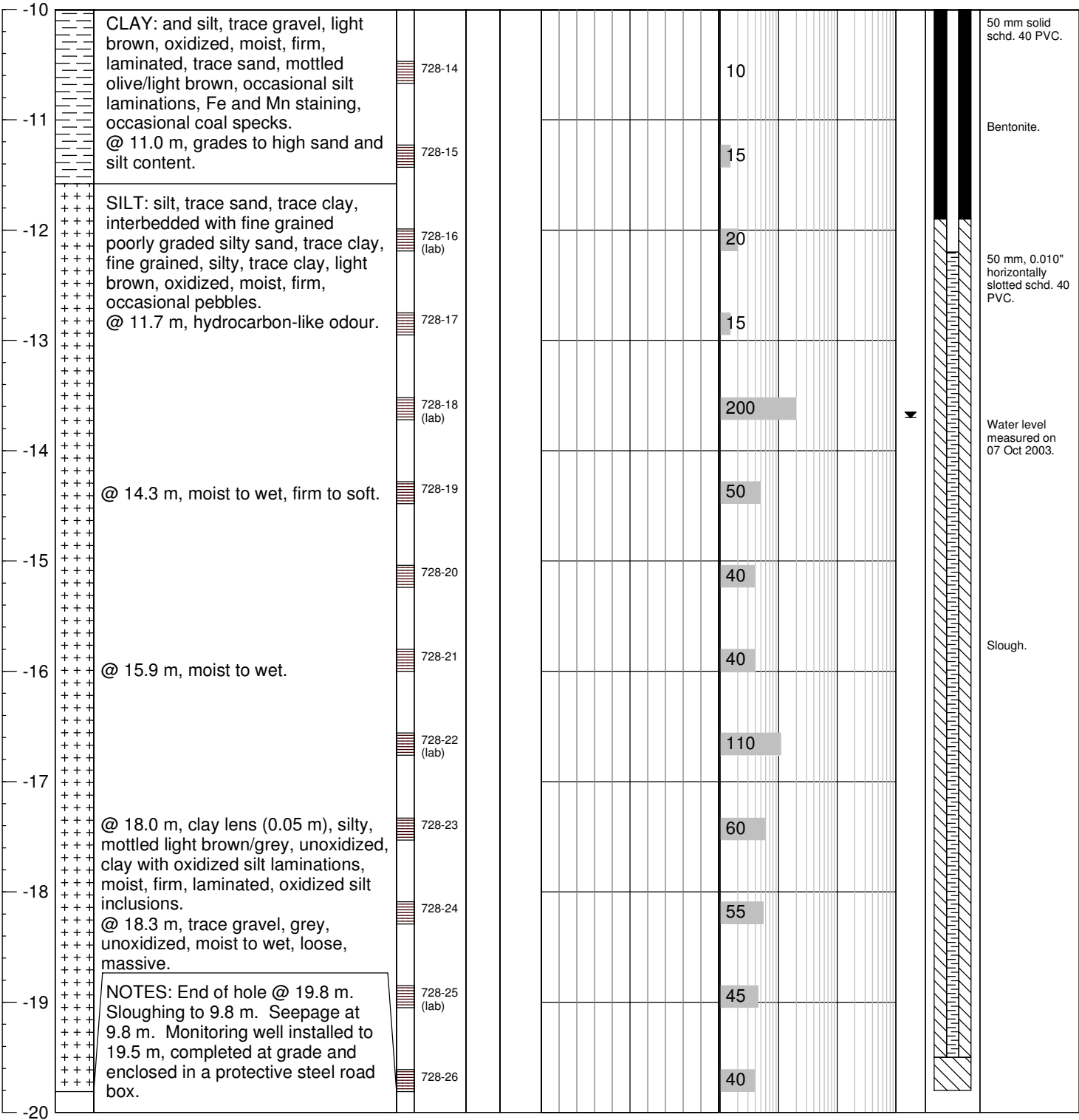




# BORE HOLE LOG

Client: Sears Canada Inc.	Northing: 5658536.325	Date Drilled: 17-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6798.511	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1090.651	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.553	Logged by: CRC/CAH

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail	
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	ppm		ppm





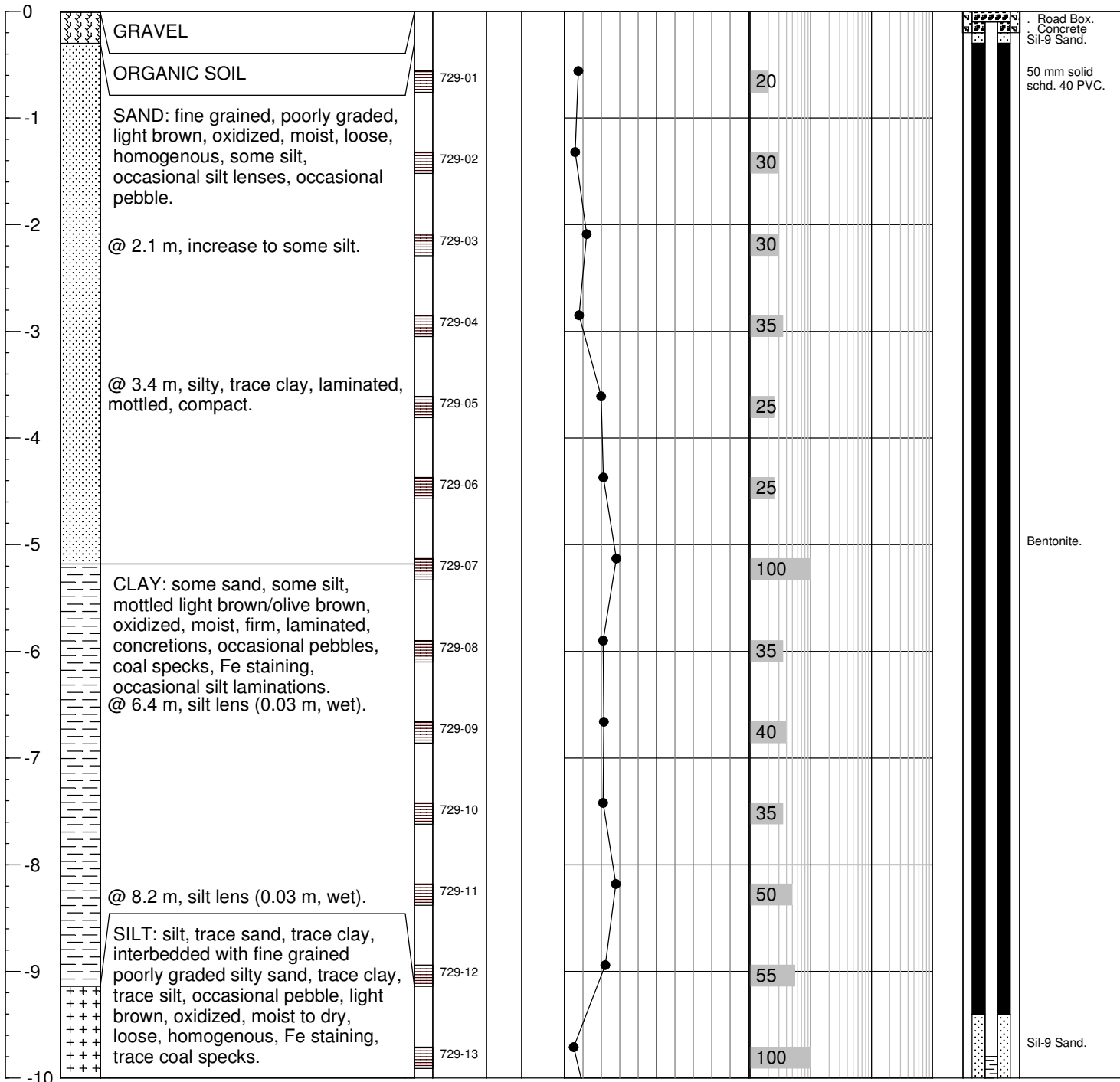
# BORE HOLE LOG

**Bore Hole: BH729**

**Page: 1 of 2**

Client: Sears Canada	Northing: 5658515.668	Date Drilled: 18-Sep-03
Project: Offsite Environmental Site Assessment	Easting: -6798.024	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1088.621	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1088.514	Logged by: CRC/CAH

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						

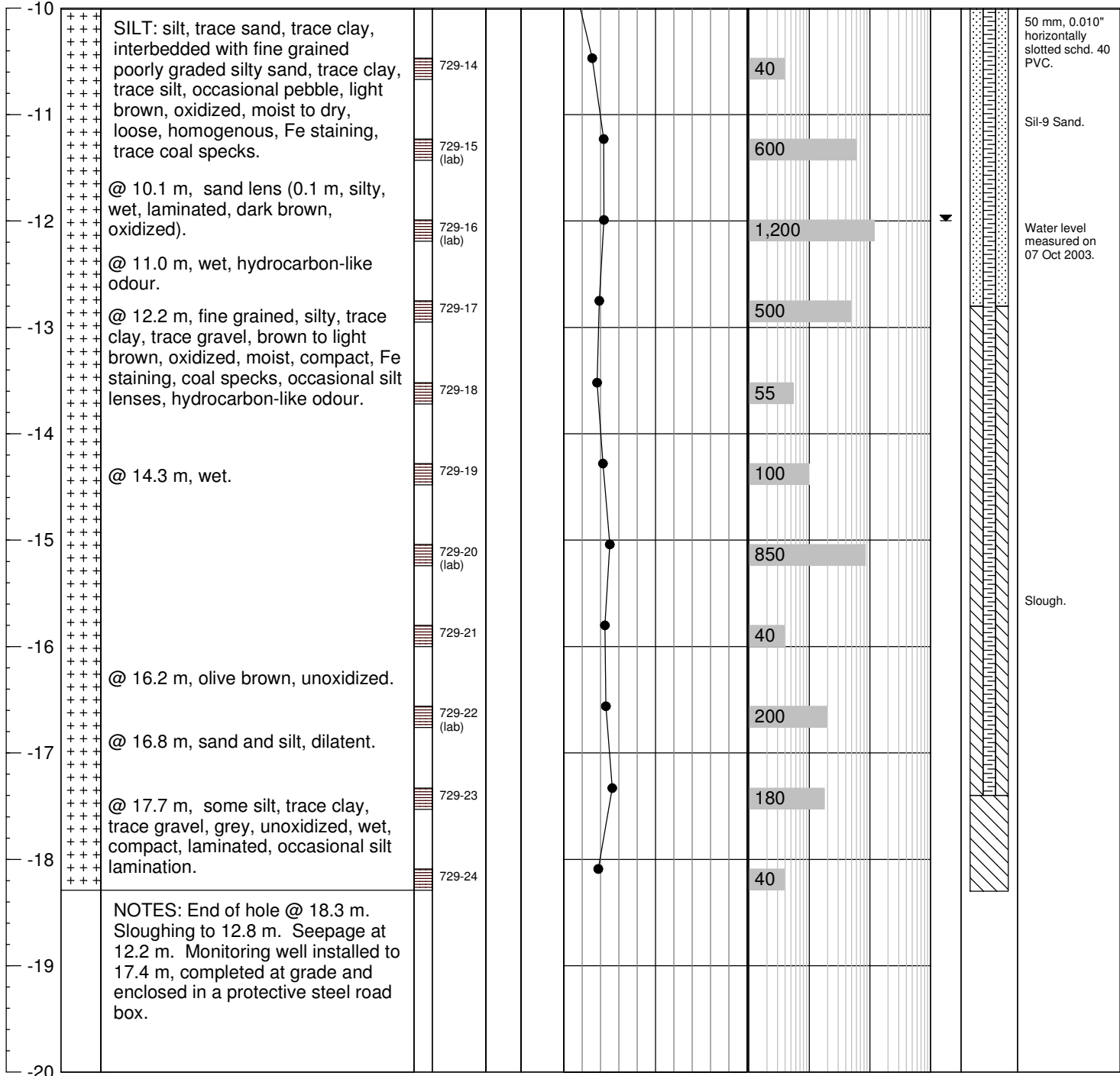




# BORE HOLE LOG

Client: Sears Canada	Northing: 5658515.668	Date Drilled: 18-Sep-03
Project: Offsite Environmental Site Assessment	Easting: -6798.024	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1088.621	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1088.514	Logged by: CRC/CAH

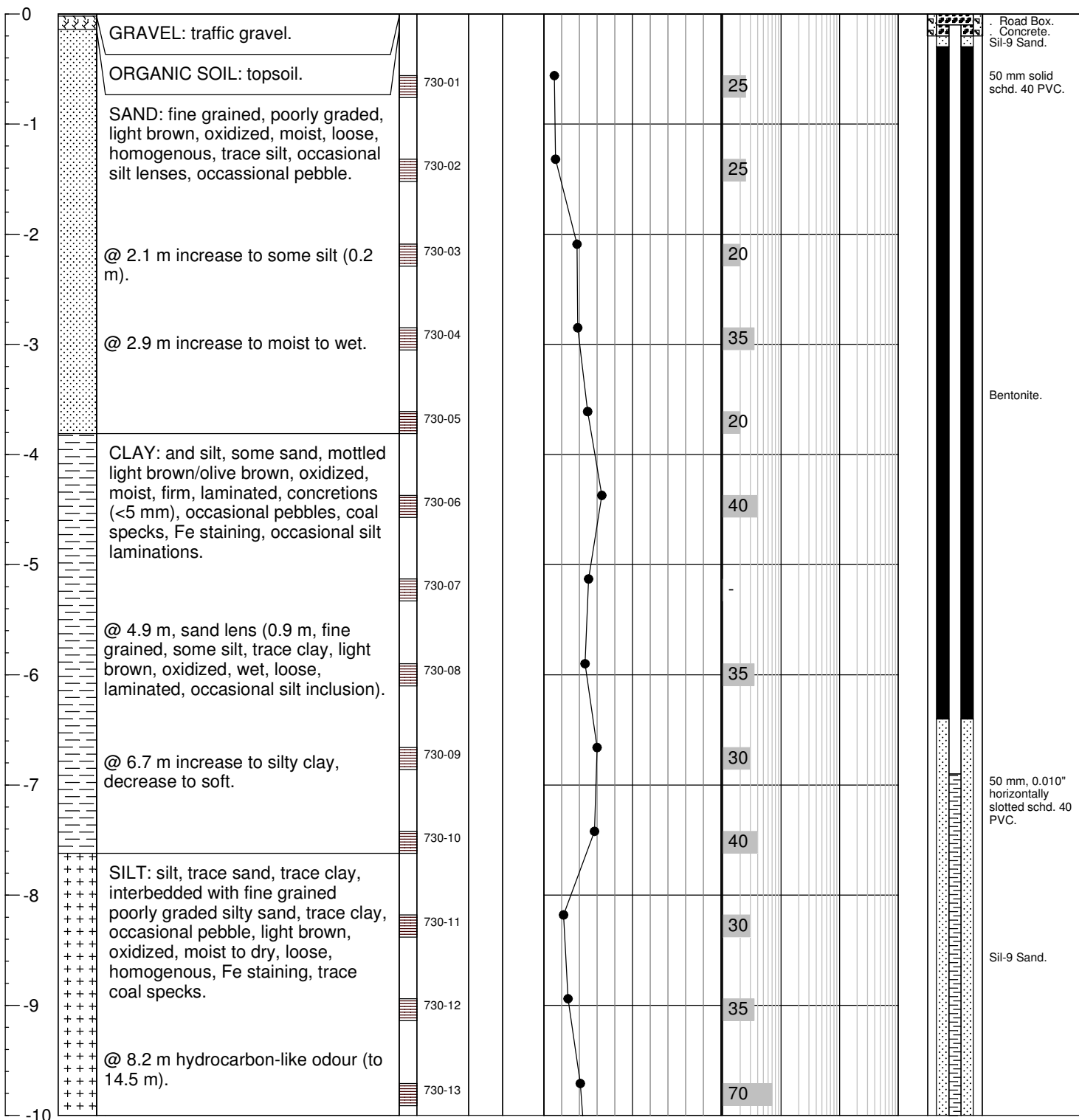
Elev (m) Depth (m)	Symbol	Soil Description	Sample Type No. SPT 'N' USC	Moisture Content percent			Headspace Vapour ppm	Monitor Well Construction Detail
				Plastic Limit ▲	Natural Moisture ●	Liquid Limit ◆		
				0	50	100	10 100 1000 10000	





Client: Sears Canada Inc.	Northing: 5658500.469	Date Drilled: 18-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6798.087	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1086.825	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1086.744	Logged by: CRC/CAH

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	USC	Plastic Limit	Natural Moisture	Liquid Limit	ppm	10	100	

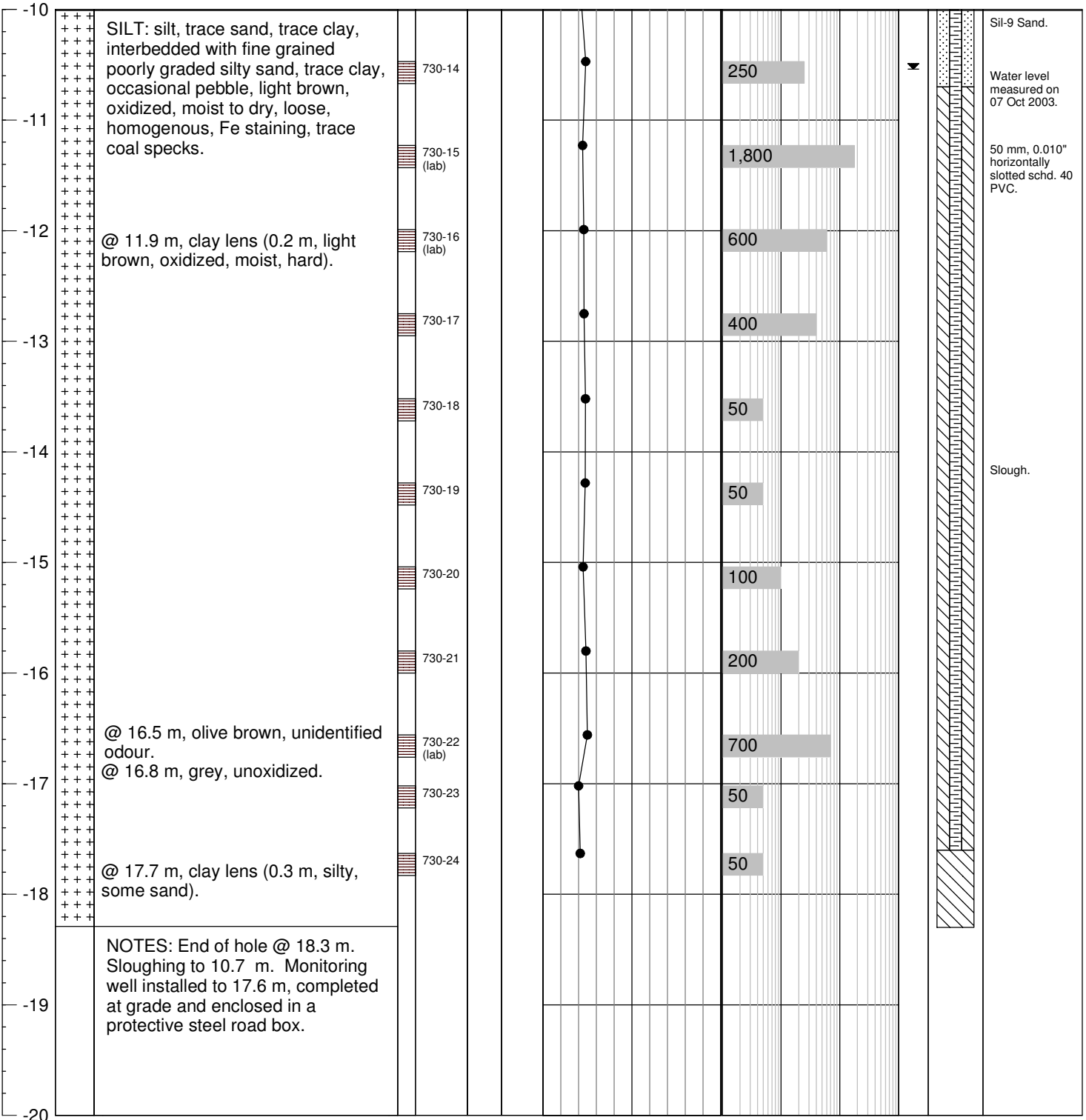




# BORE HOLE LOG

Client: Sears Canada Inc.	Northing: 5658500.469	Date Drilled: 18-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6798.087	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1086.825	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1086.744	Logged by: CRC/CAH

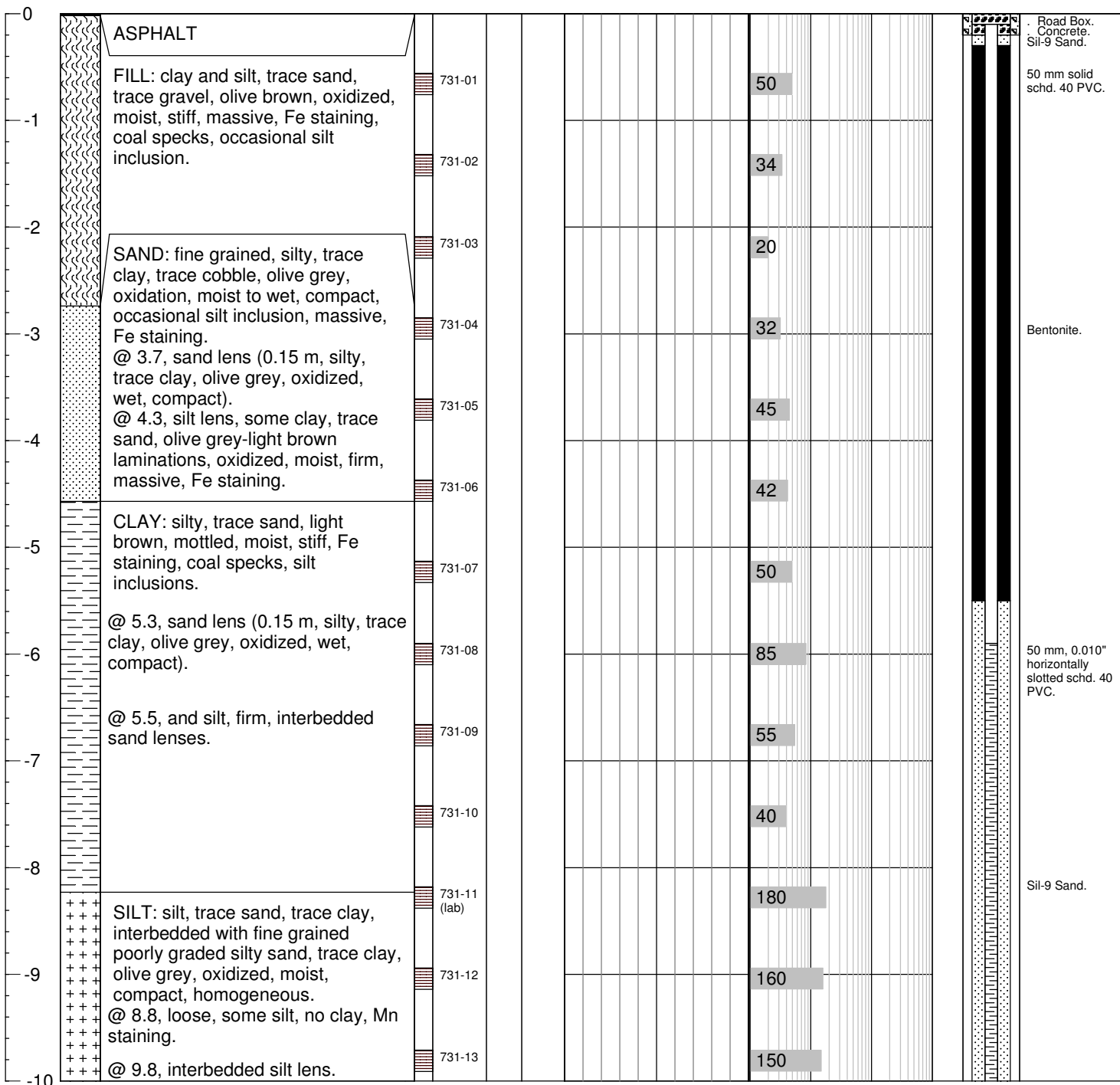
Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						





Client: Sears Canada Inc.	Northing: 5658518.118	Date Drilled: 19-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6741.057	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1087.137	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1087.050	Logged by: CRC/MH

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit								
							0	▲	50	●	100	◆	10	100	1000	10000	







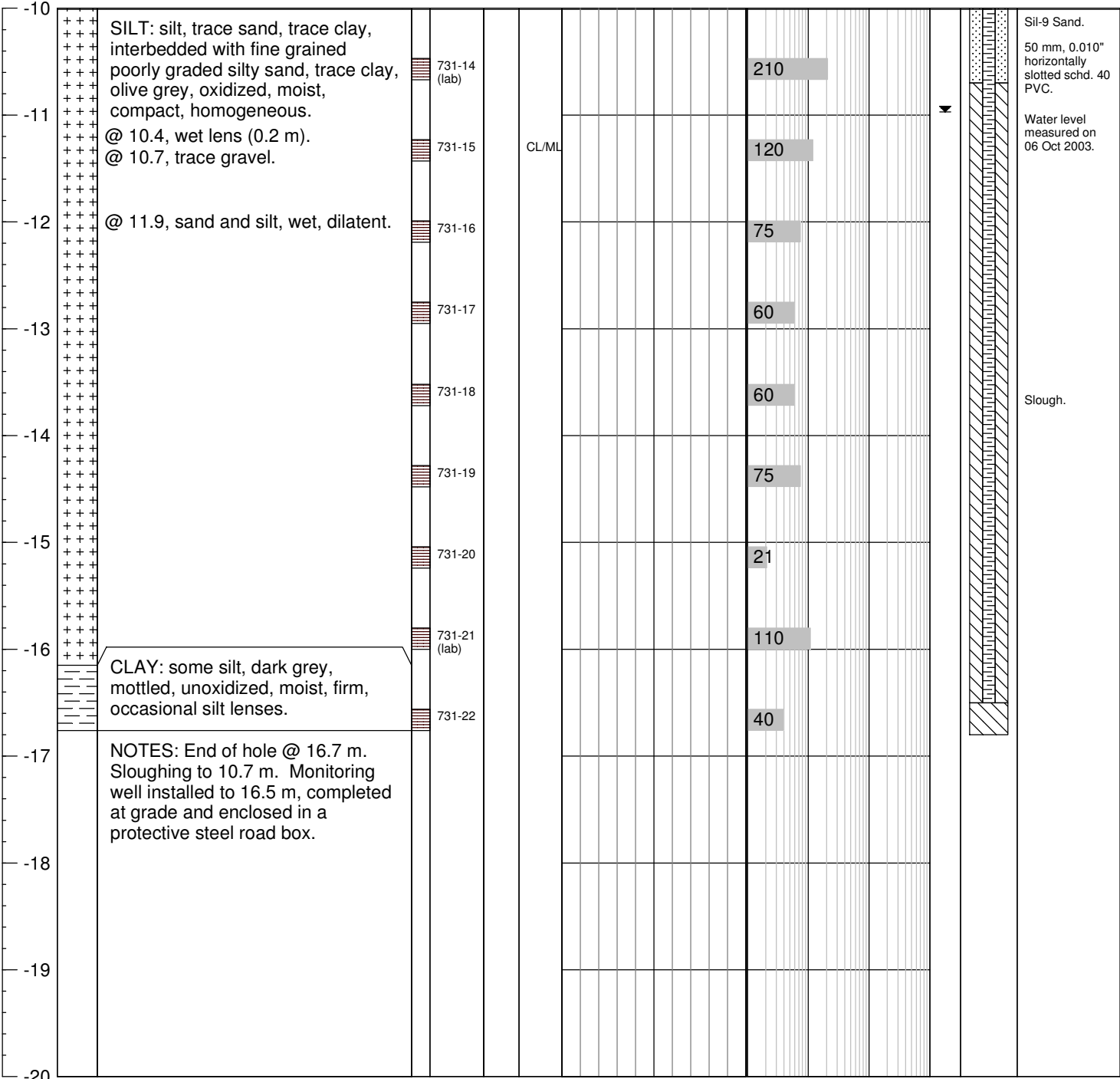
# BORE HOLE LOG

**Bore Hole: BH731**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658518.118	Date Drilled: 19-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6741.057	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1087.137	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1087.050	Logged by: CRC/MH

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	10	100	





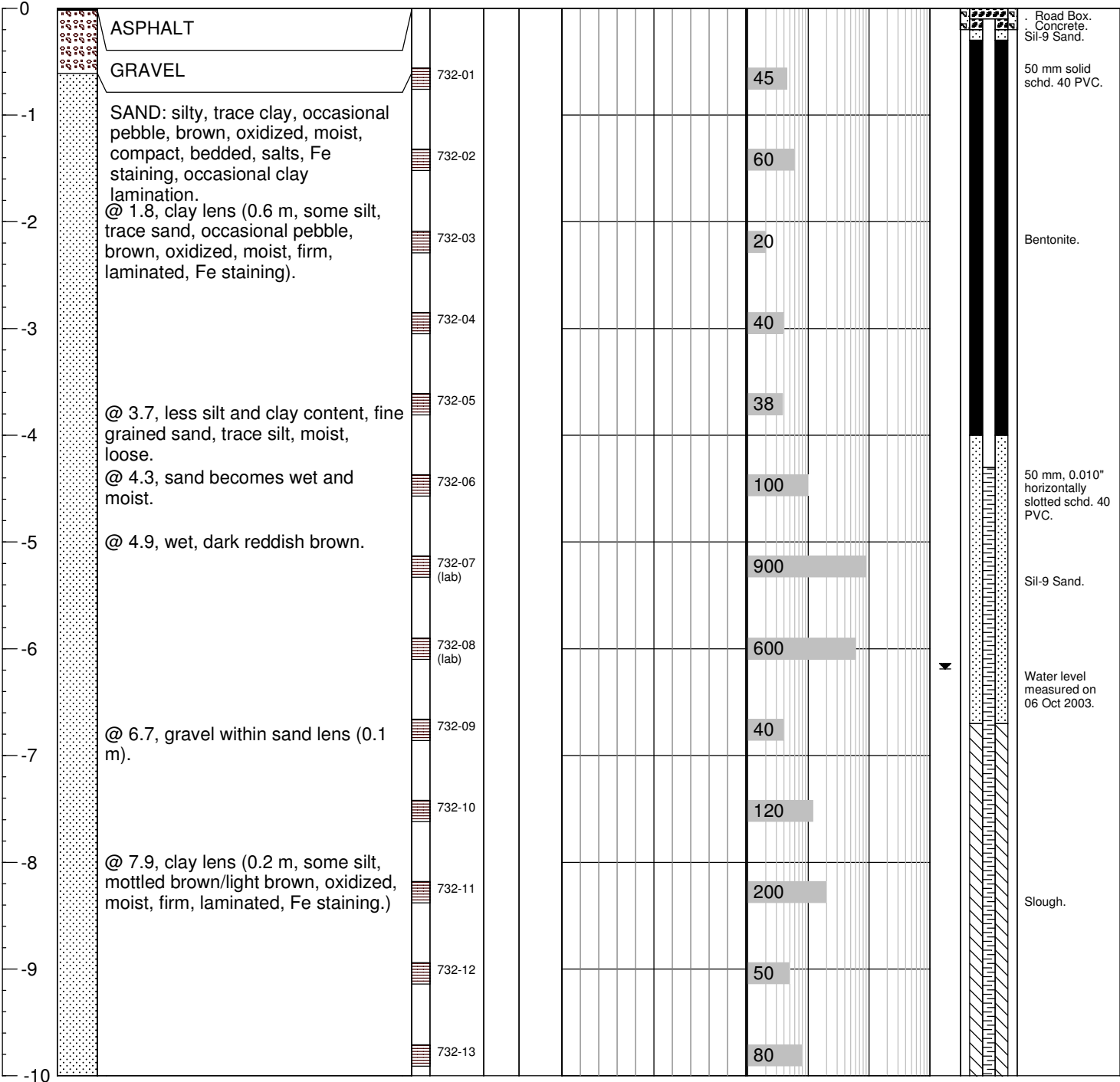
# BORE HOLE LOG

**Bore Hole: BH732**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658451.412	Date Drilled: 19-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6741.364	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1080.602	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1080.541	Logged by: CRC/MH

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	10	100	





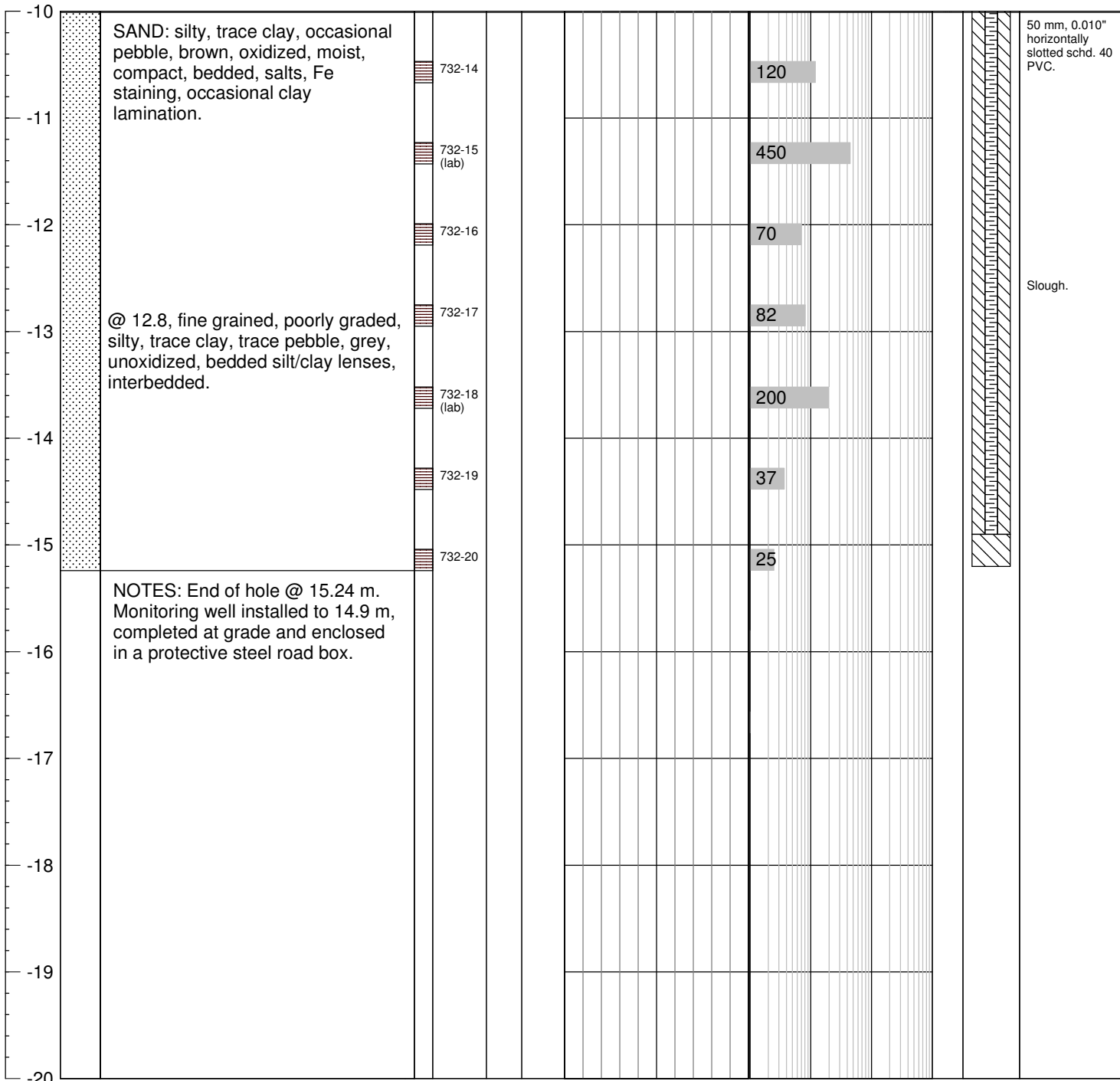
# BORE HOLE LOG

**Bore Hole: BH732**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658451.412	Date Drilled: 19-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6741.364	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1080.602	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1080.541	Logged by: CRC/MH

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
							0	▲	●	◆	100	10	100	1000	10000

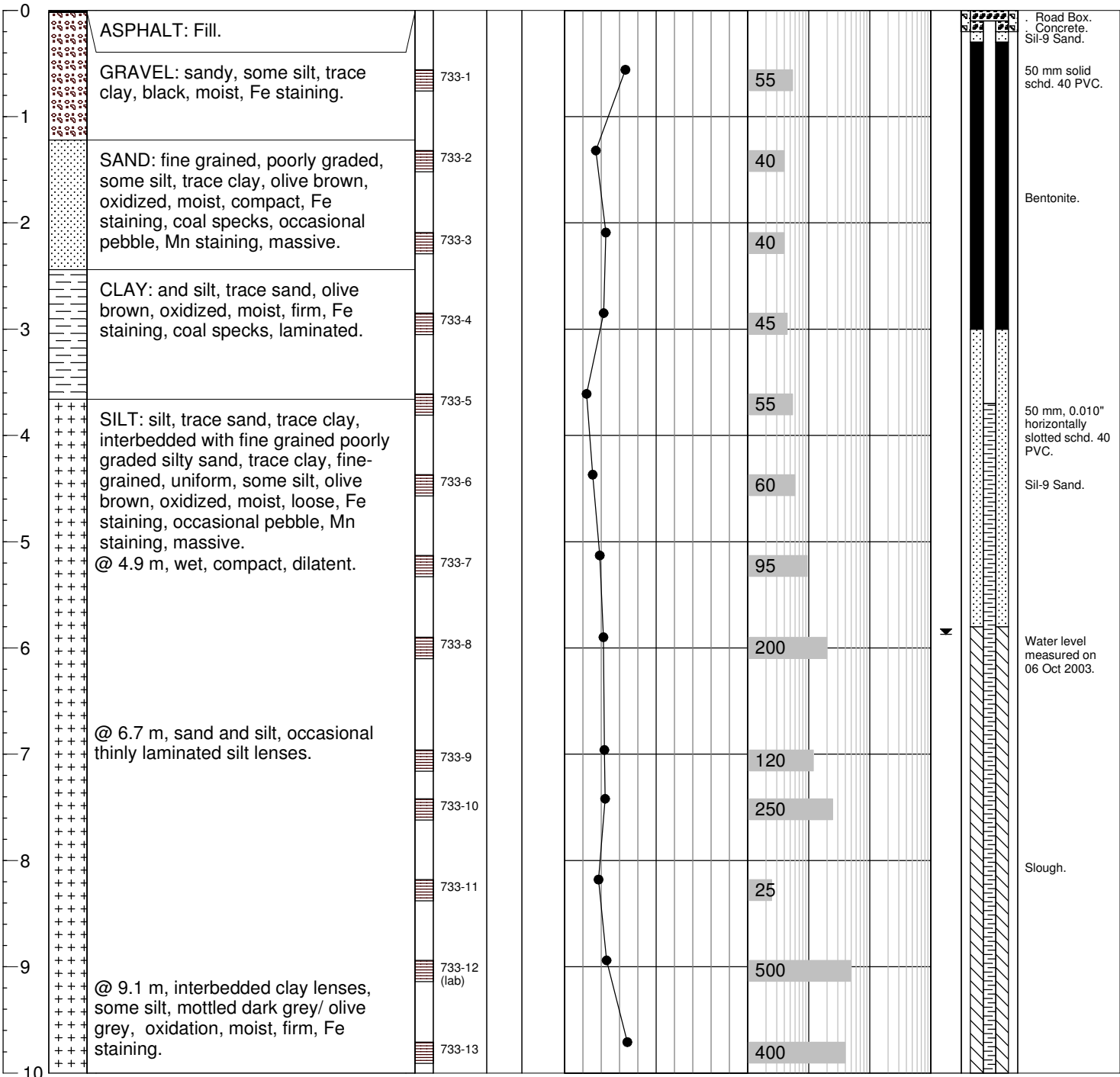




# BORE HOLE LOG

Client: Sears Canada Inc.	Northing: 5658451.470	Date: 19-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6767.817	Equipment: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1080.706	Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1080.609	Logged by: CRC/MH

Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail			
			Type	No.	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm						
							0	▲	●	◆	10	100	1000	10000	





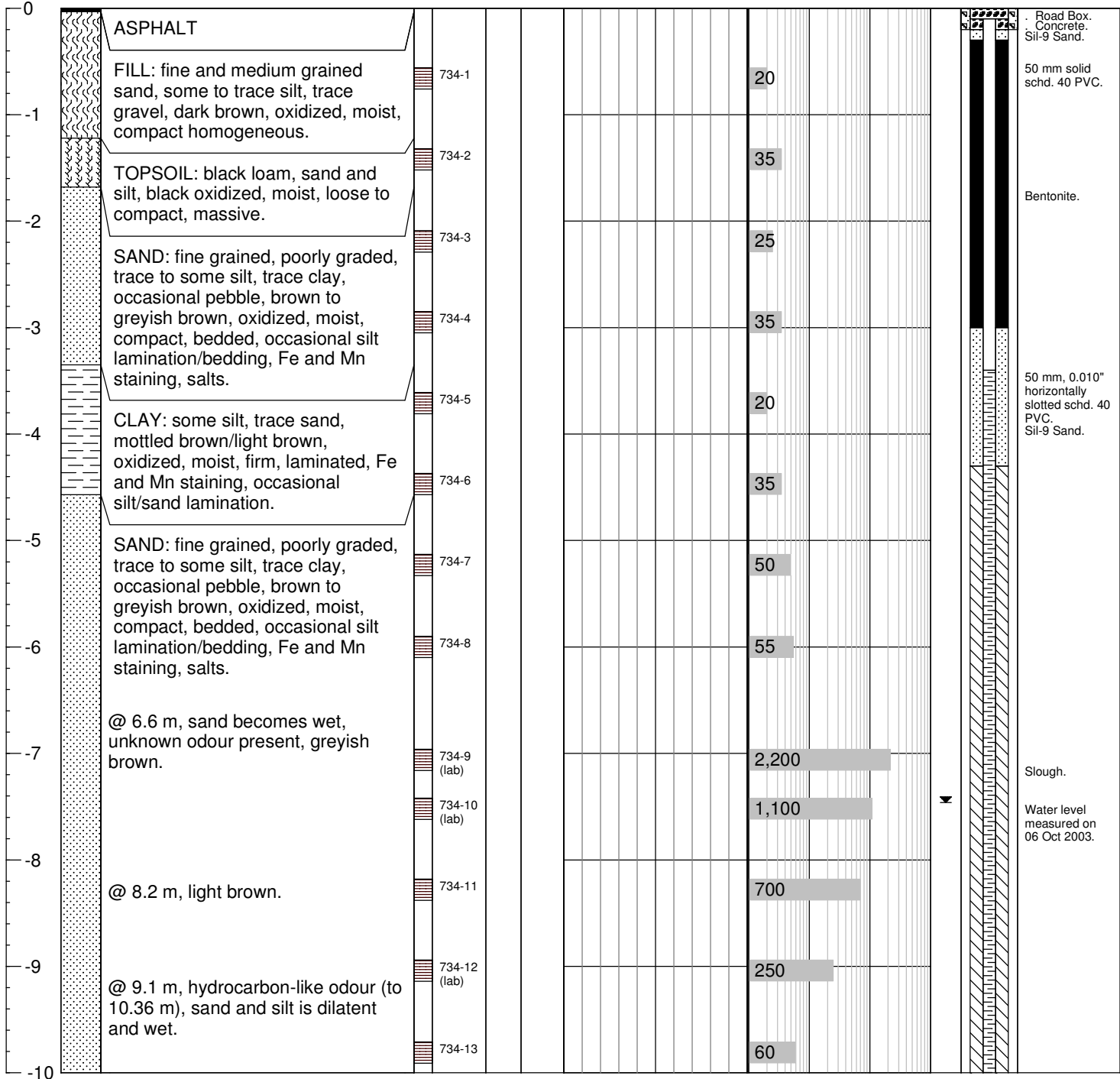
# BORE HOLE LOG

**Bore Hole: BH734**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658450.827	Date Drilled: 22-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6863.296	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1082.710	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1082.607	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
							0	▲	●	◆	100	10	100	1000	10000





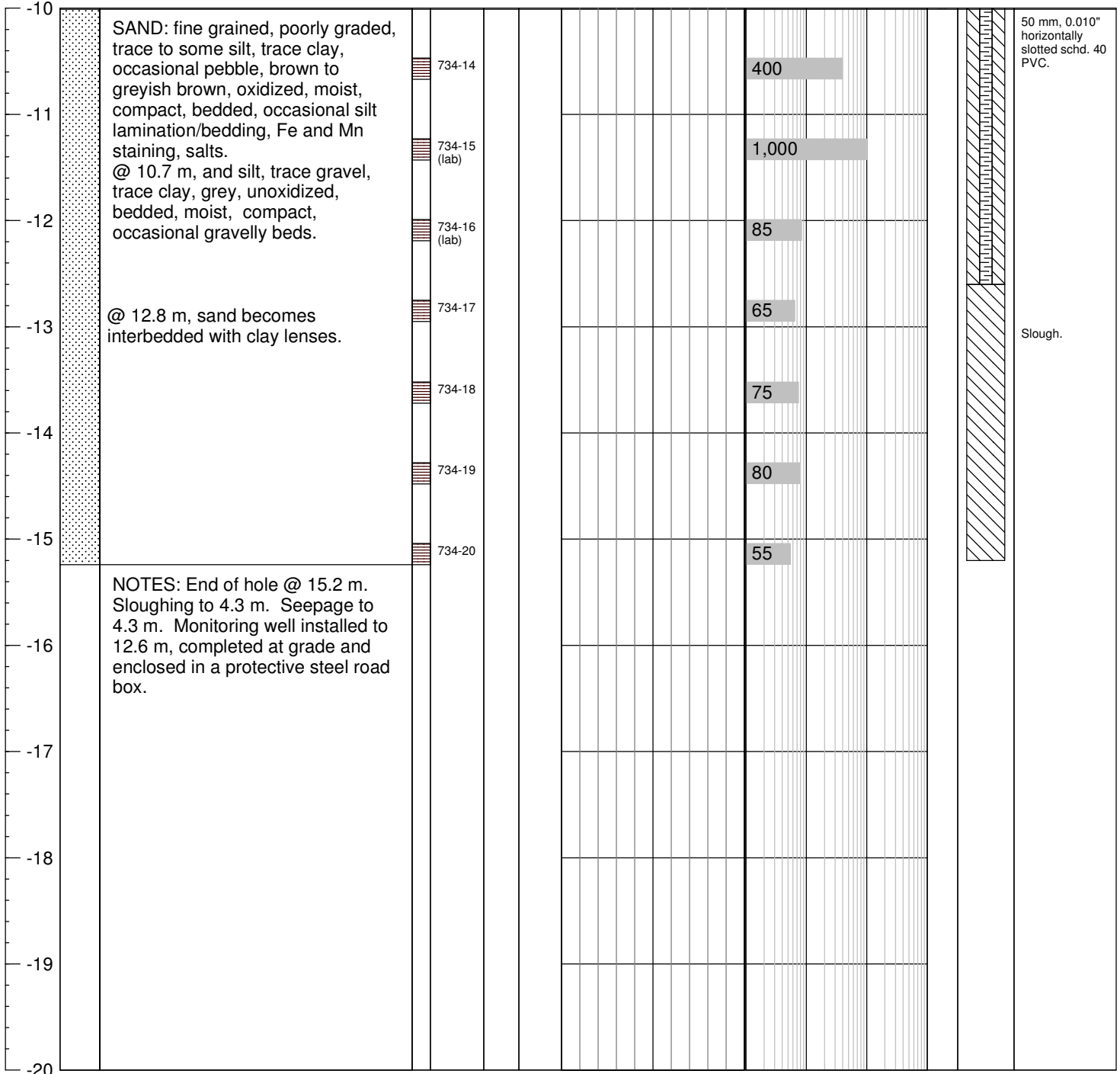
# BORE HOLE LOG

**Bore Hole: BH734**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658450.827	Date Drilled: 22-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6863.296	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1082.710	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1082.607	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
							0	▲	●	◆	100	10	100	1000	10000





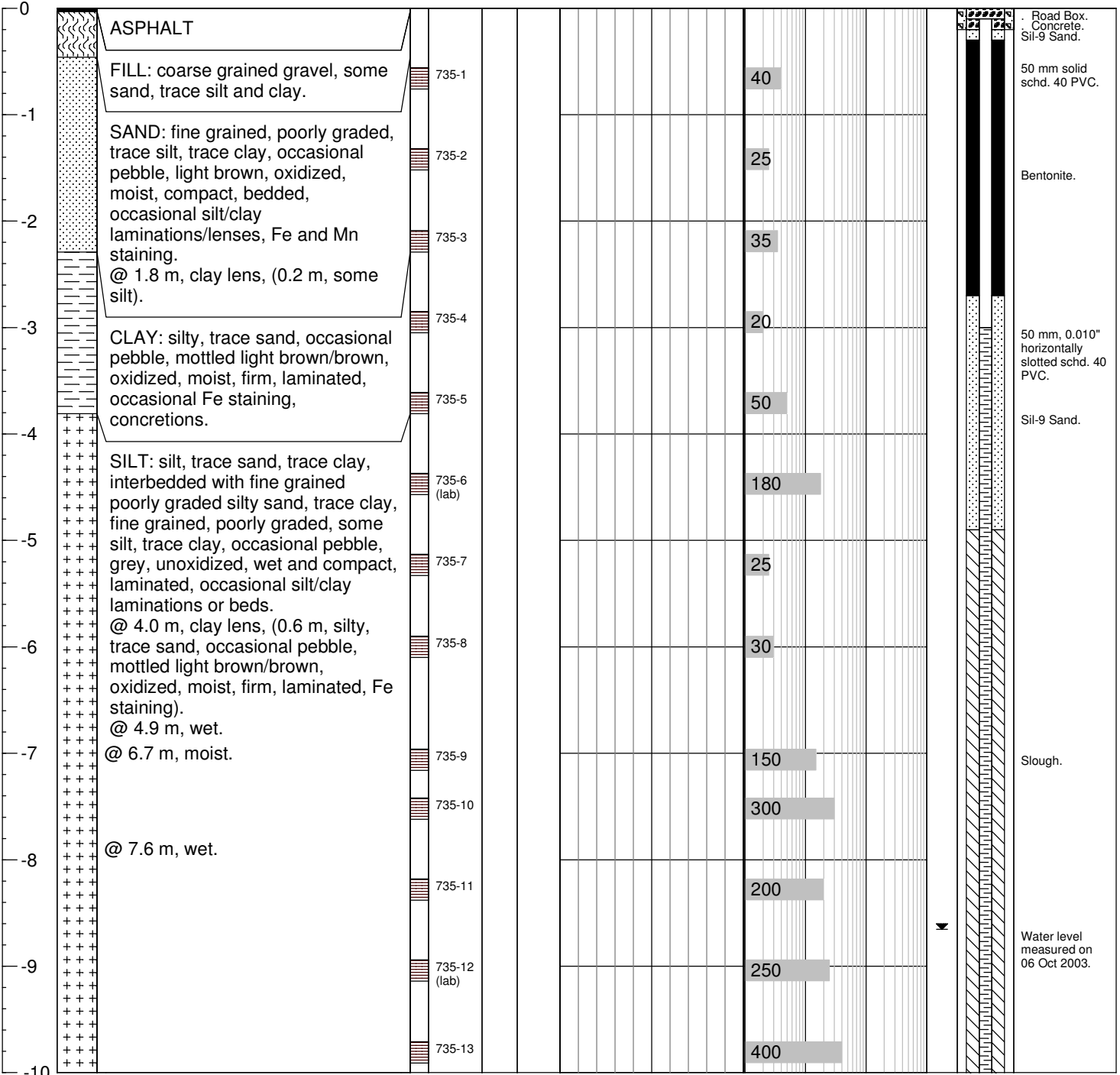
# BORE HOLE LOG

**Bore Hole: BH735**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658450.734	Date Drilled: 22-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6887.690	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1083.980	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1083.894	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	10	100	

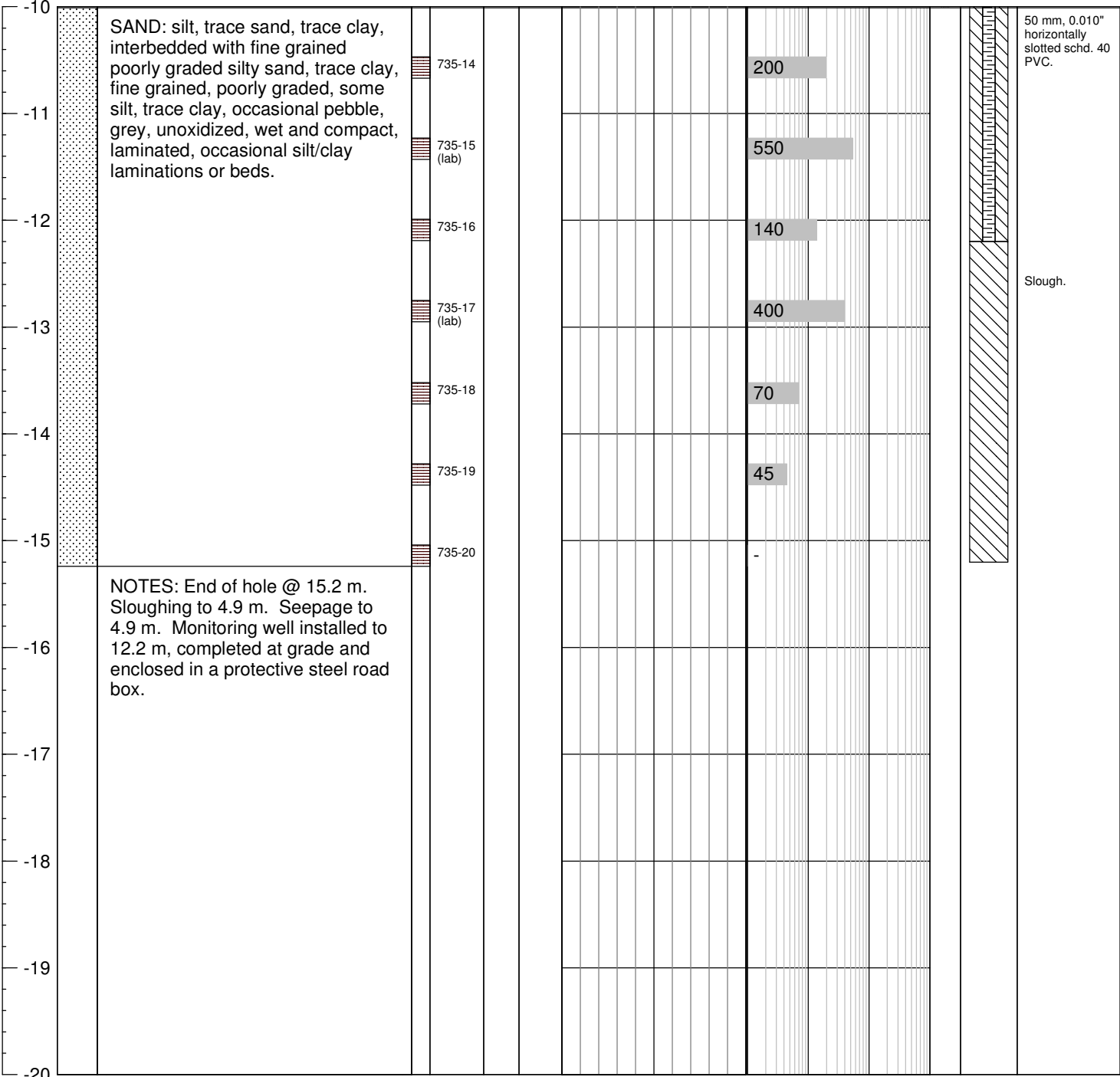




# BORE HOLE LOG

Client: Sears Canada Inc.	Northing: 5658450.734	Date Drilled: 22-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6887.690	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1083.980	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1083.894	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail	
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit							
							0	▲	●	◆	100	10	100	1000	10000	







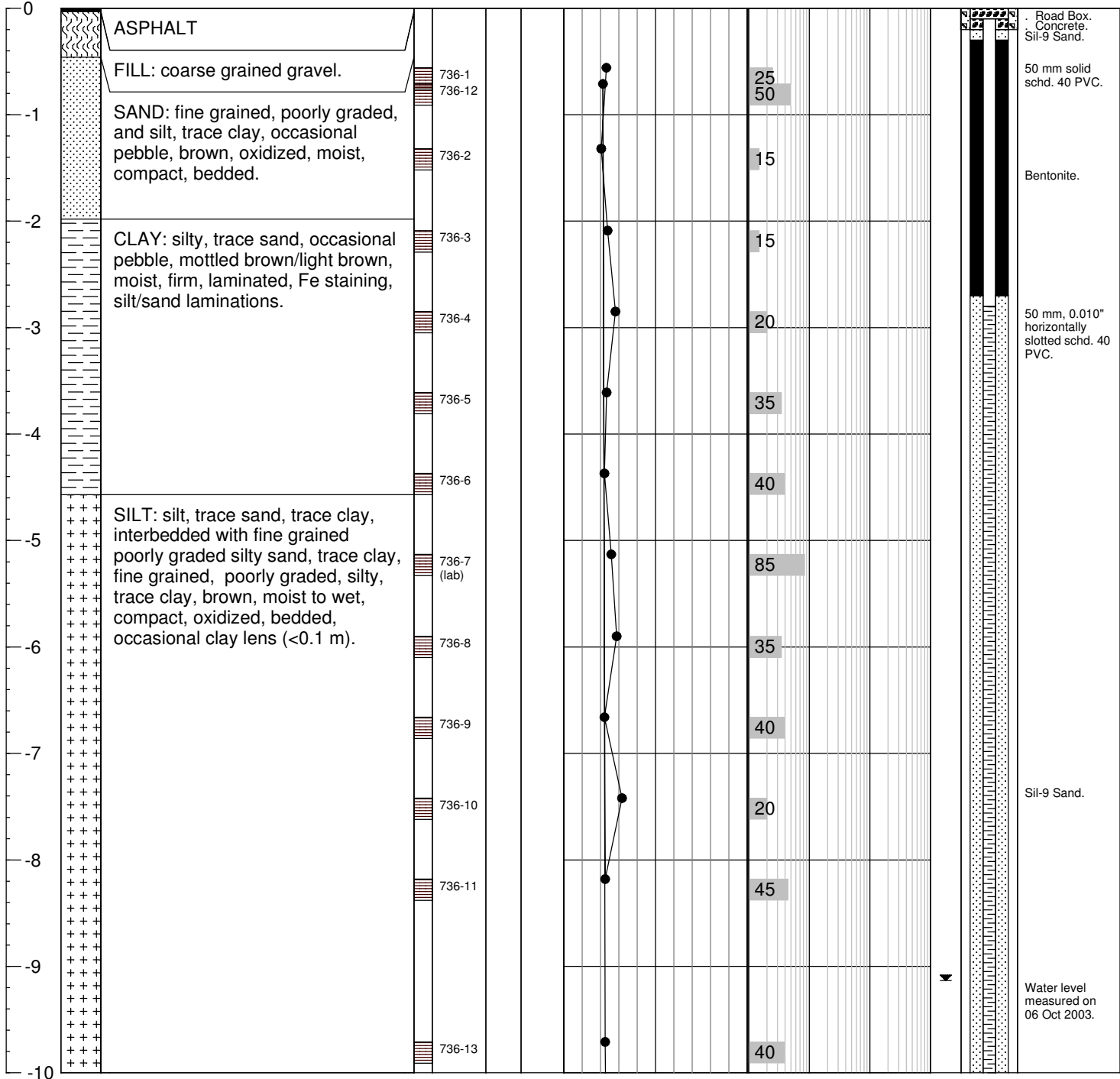
# BORE HOLE LOG

**Bore Hole: BH736**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658451.574	Date Drilled: 22-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6903.473	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1084.617	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1084.519	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
0							▲	●	◆	10	100	1000	10000		





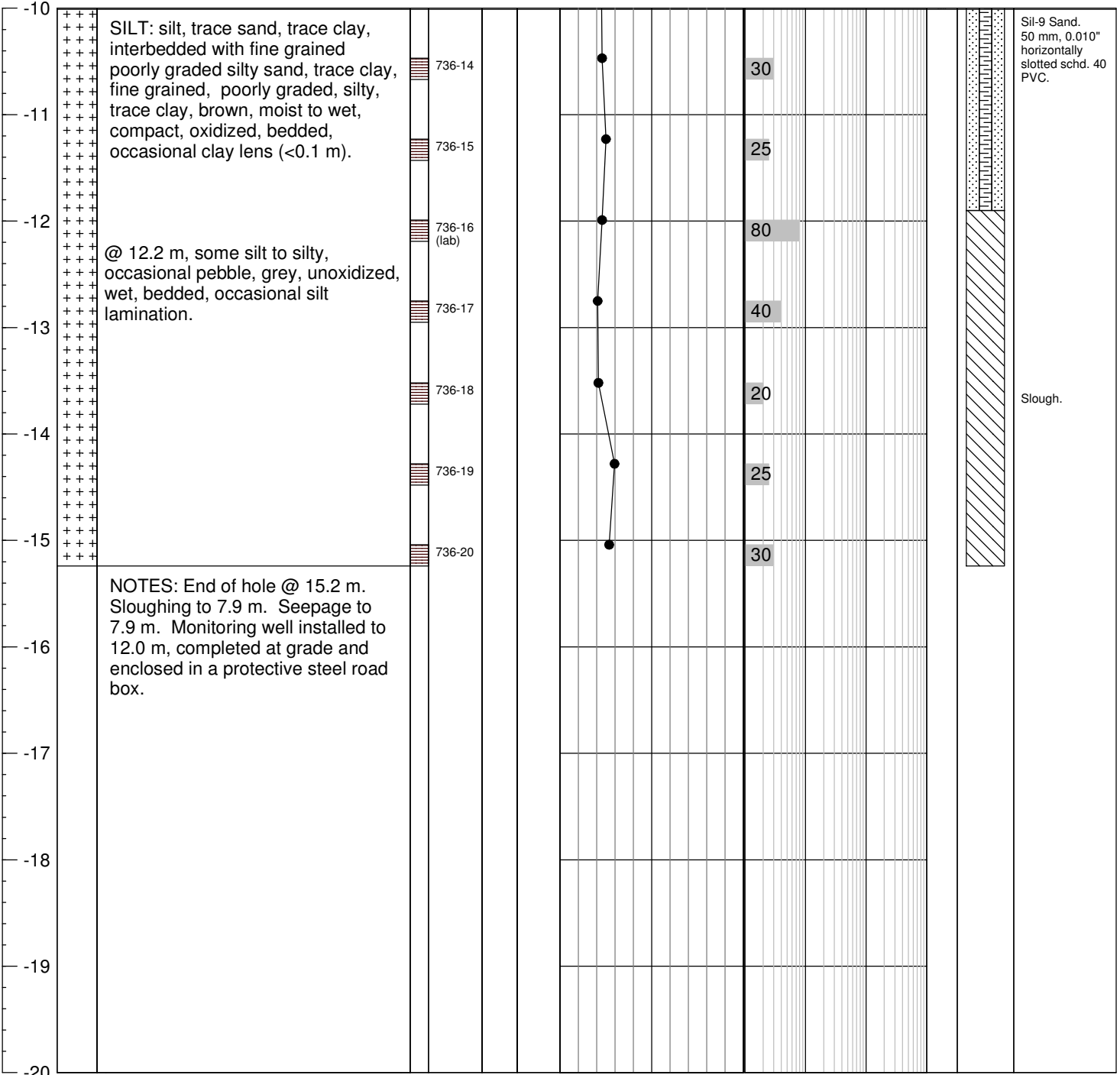
# BORE HOLE LOG

**Bore Hole: BH736**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658451.574	Date Drilled: 22-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6903.473	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1084.617	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1084.519	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						





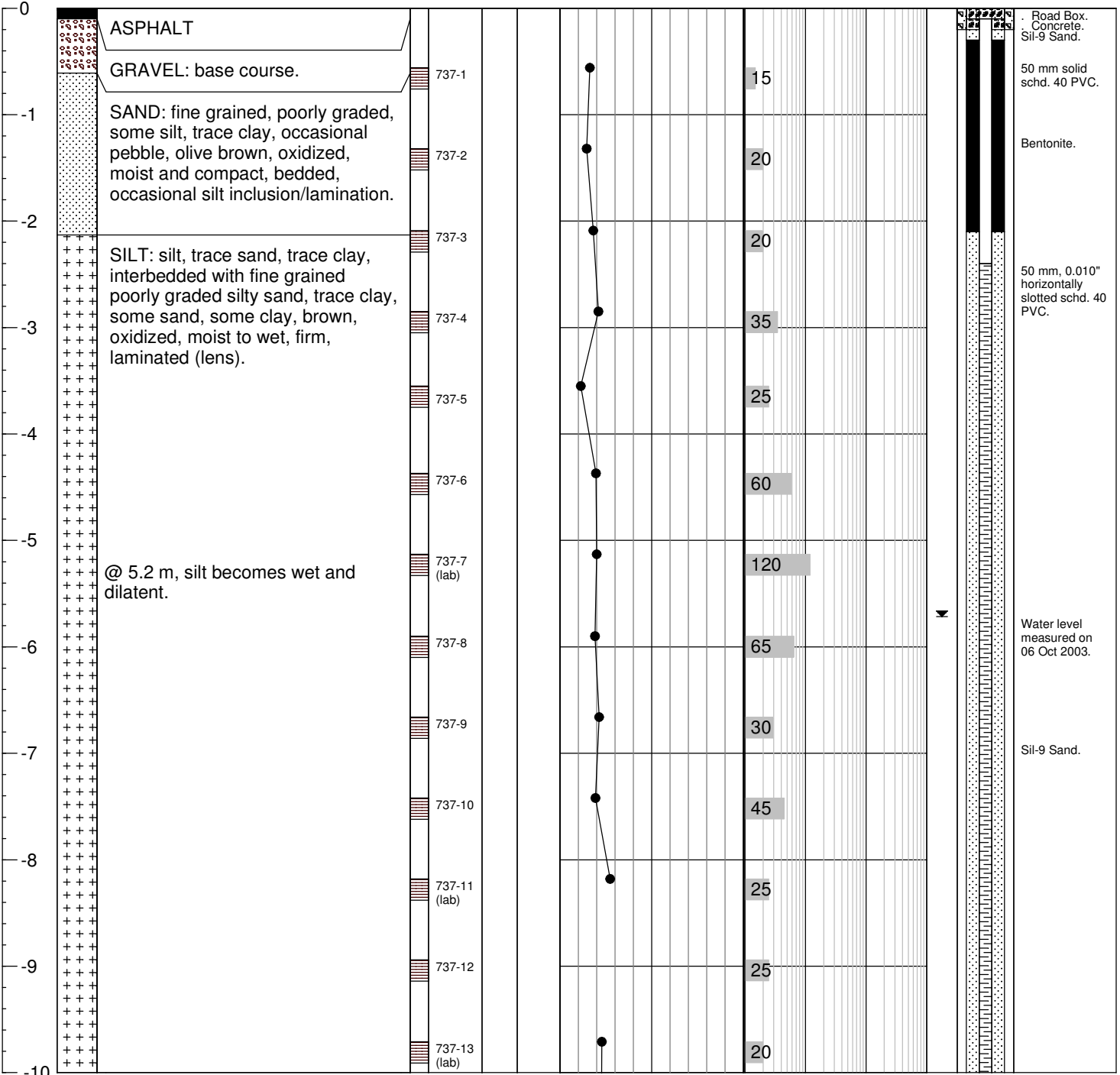
# BORE HOLE LOG

**Bore Hole: BH737**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658451.888	Date Drilled: 23-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6784.950	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1080.782	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1080.693	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour ppm	Monitor Well Construction Detail
			Type No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture		

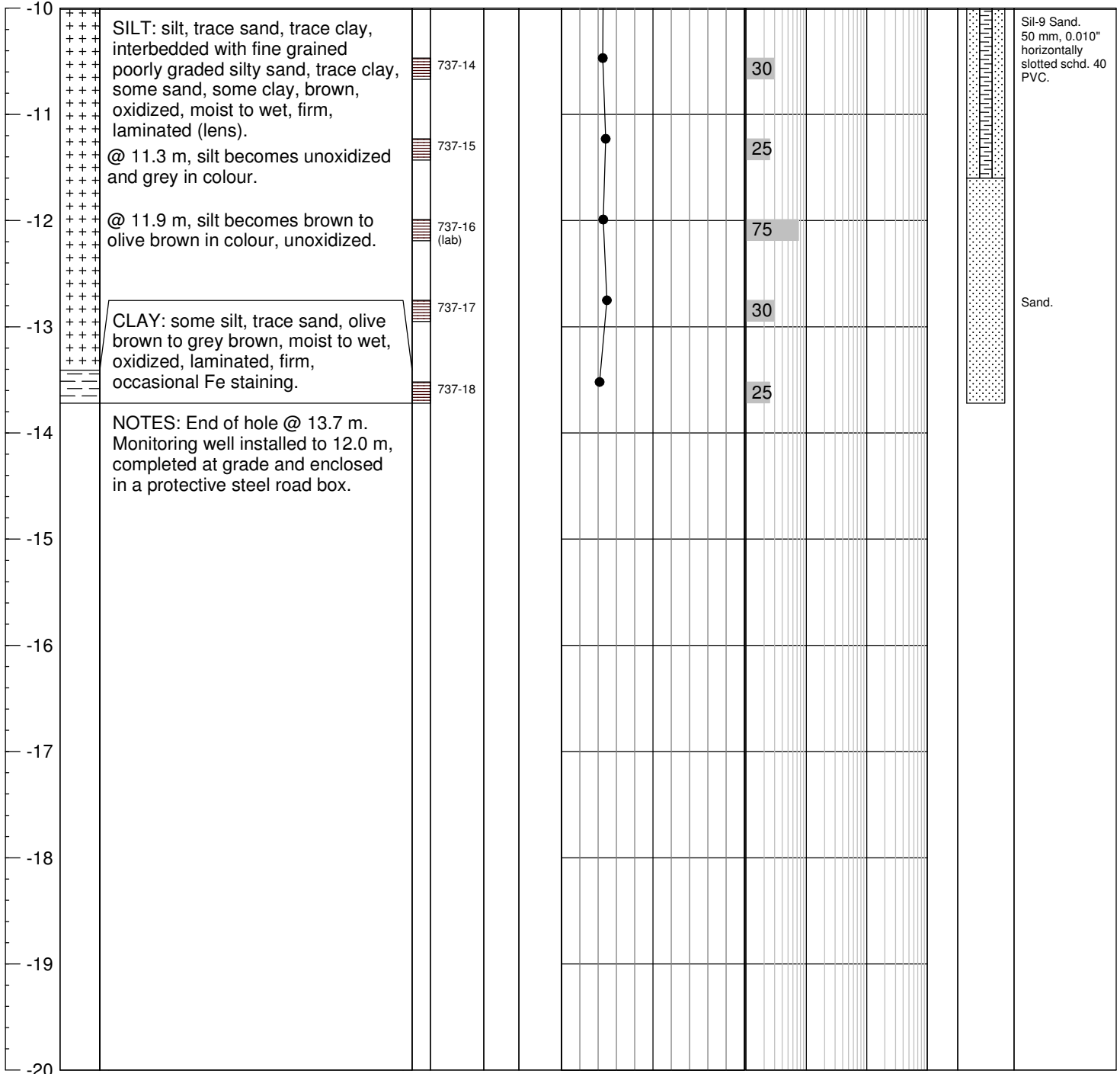




# BORE HOLE LOG

Client: Sears Canada Inc.	Northing: 5658451.888	Date Drilled: 23-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6784.950	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1080.782	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1080.693	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit								
							0	▲	50	●	100	◆	10	100	1000	10000	





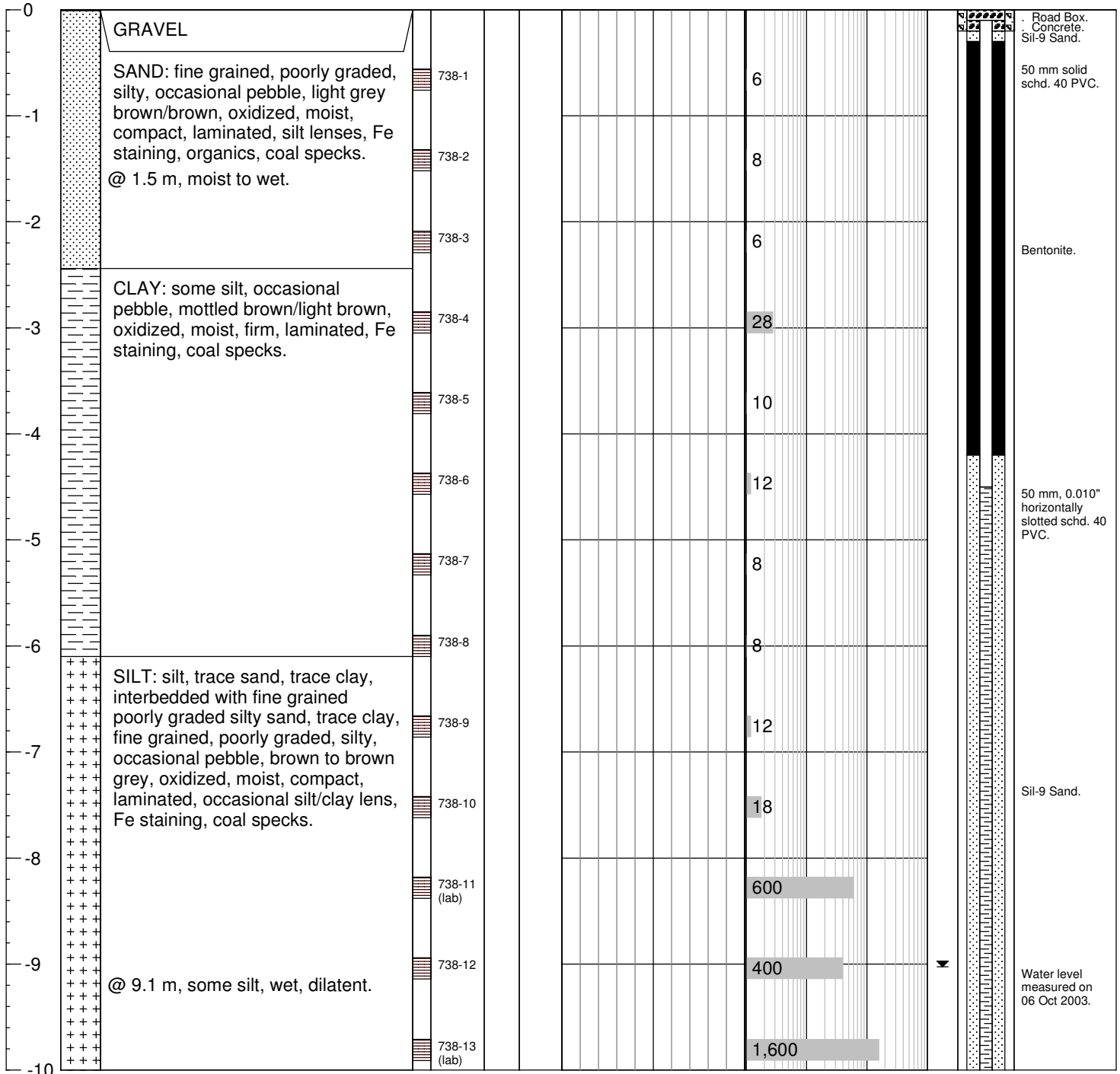
# BORE HOLE LOG

**Bore Hole: BH738**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658484.873	Date Drilled: 24-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6797.195	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1084.857	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1084.778	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit								
							0	▲	50	●	100	◆	10	100	1000	10000	





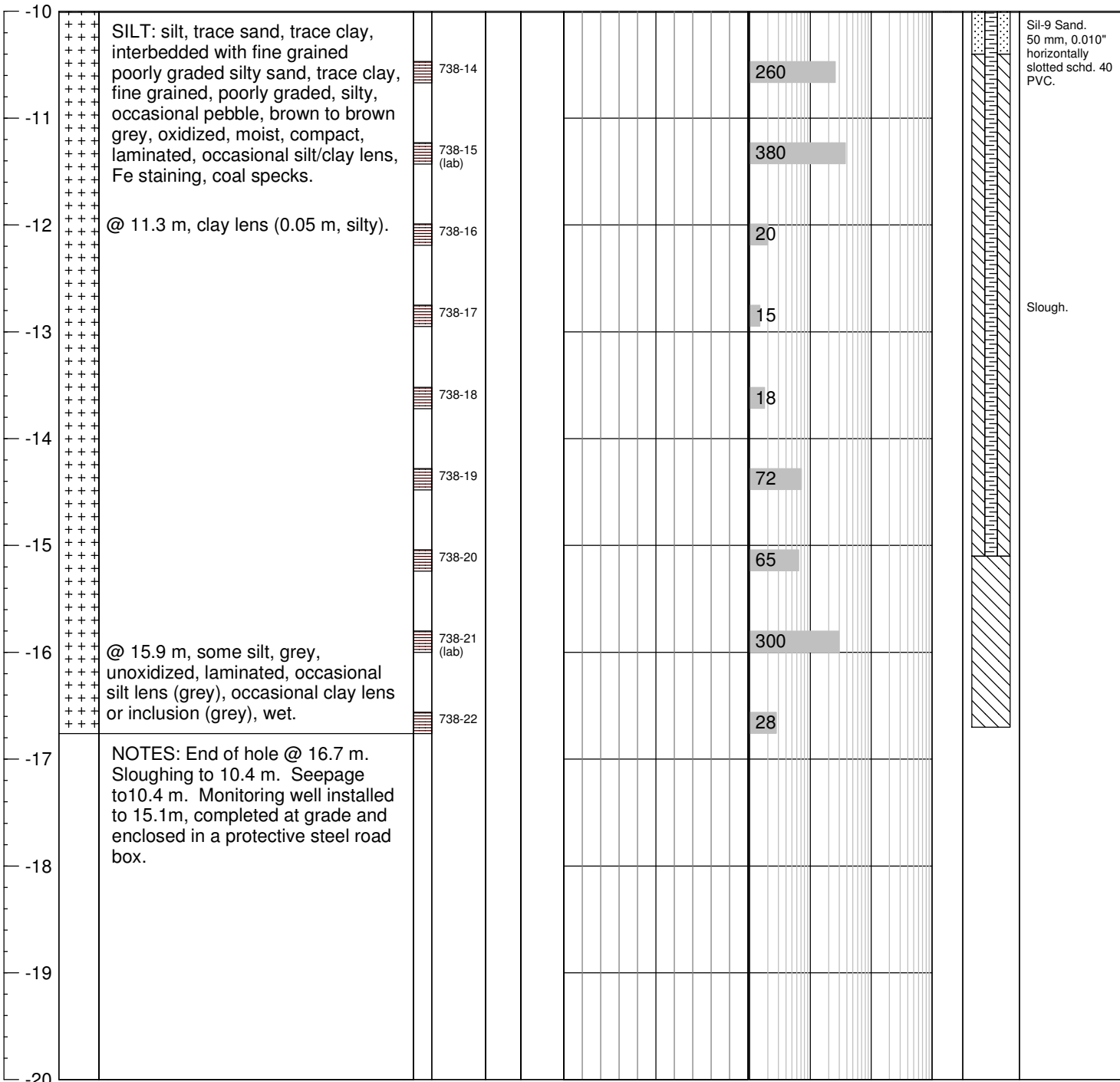
# BORE HOLE LOG

**Bore Hole: BH738**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658484.873	Date Drilled: 24-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6797.195	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1084.857	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1084.778	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						





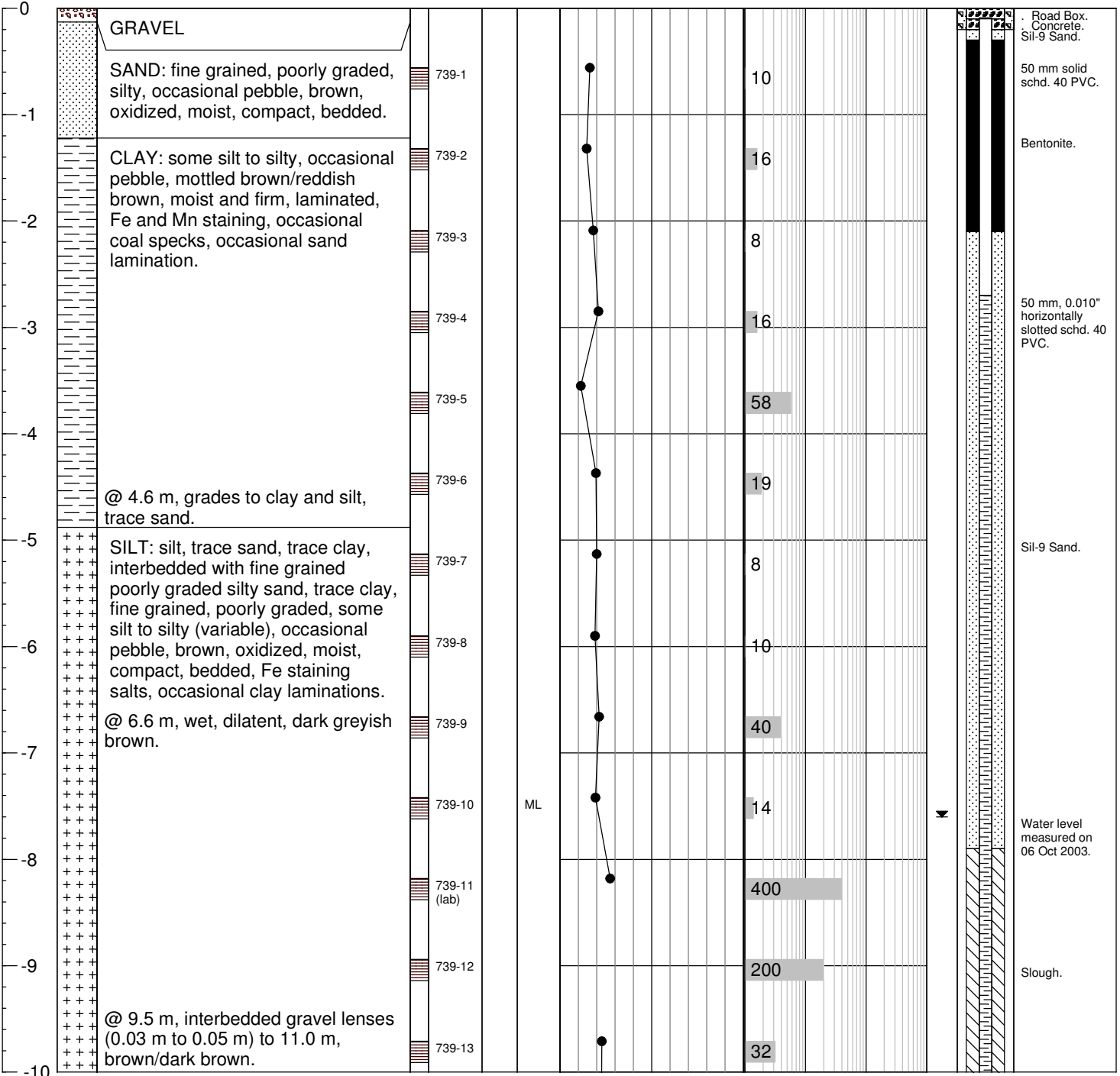
# BORE HOLE LOG

**Bore Hole: BH739**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658474.917	Date Drilled: 24-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6797.328	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1083.295	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1083.178	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	10	100	





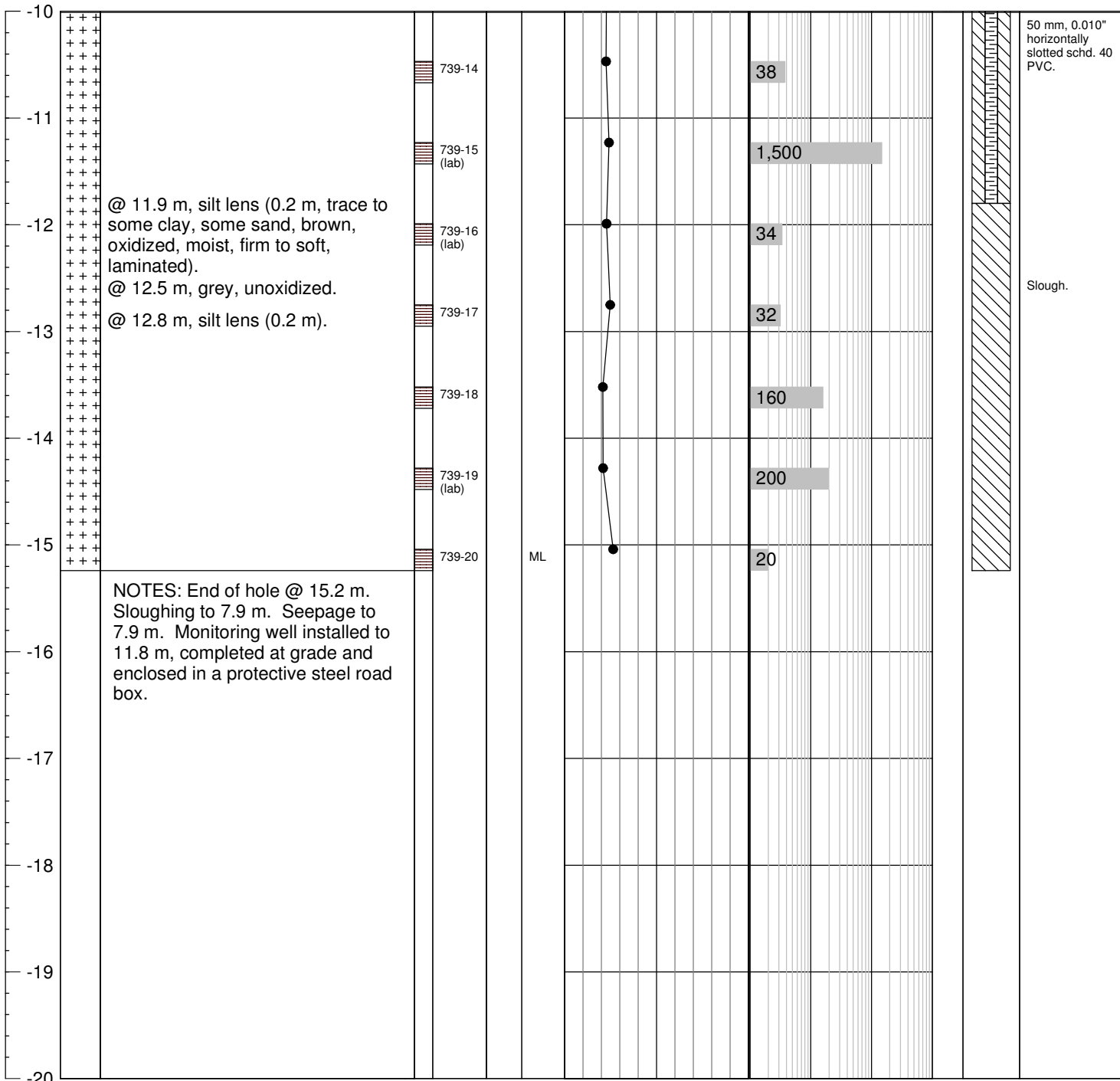
# BORE HOLE LOG

**Bore Hole: BH739**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658474.917	Date Drilled: 24-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6797.328	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1083.295	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1083.178	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
							0	▲	●	◆	100	10	100	1000	10000







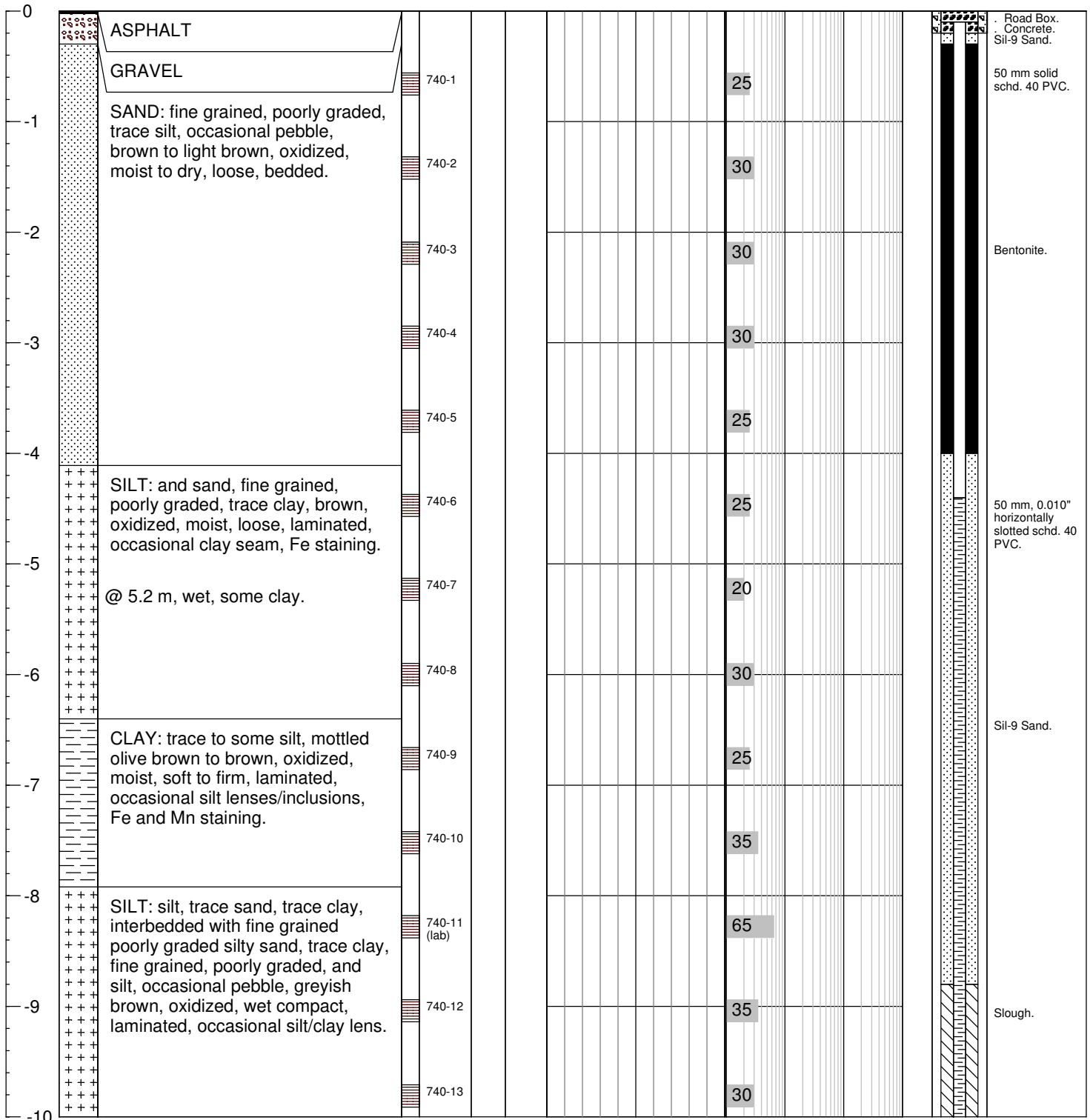
# BORE HOLE LOG

**Bore Hole: BH740**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658623.974	Date Drilled: 29-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6994.263	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1091.054	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.953	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	ppm	ppm	ppm				
							0	▲	50	●	100	◆	10	100	1000	10000	





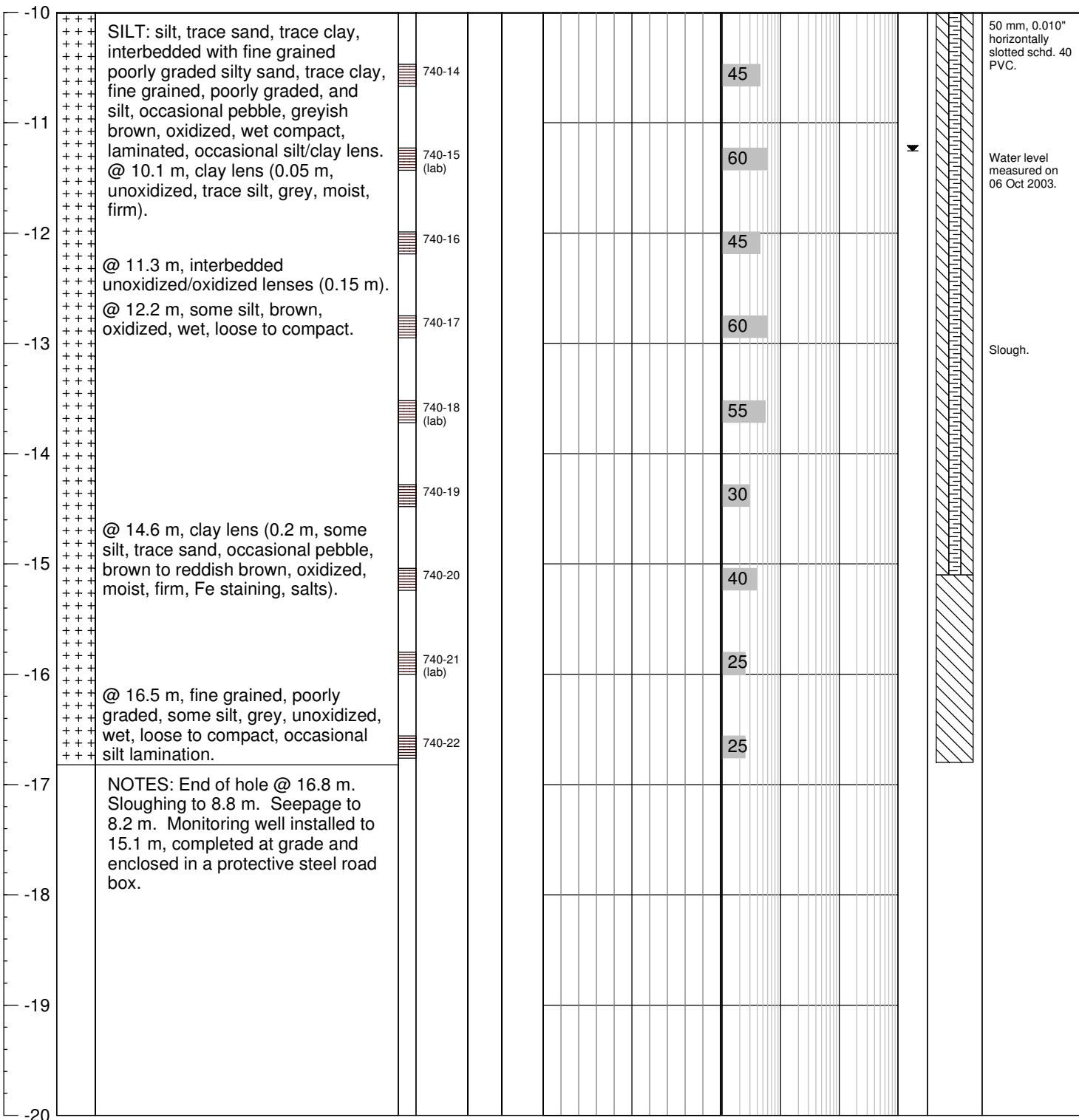
# BORE HOLE LOG

**Bore Hole: BH740**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658623.974	Date Drilled: 29-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6994.263	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1091.054	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.953	Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	10	100	





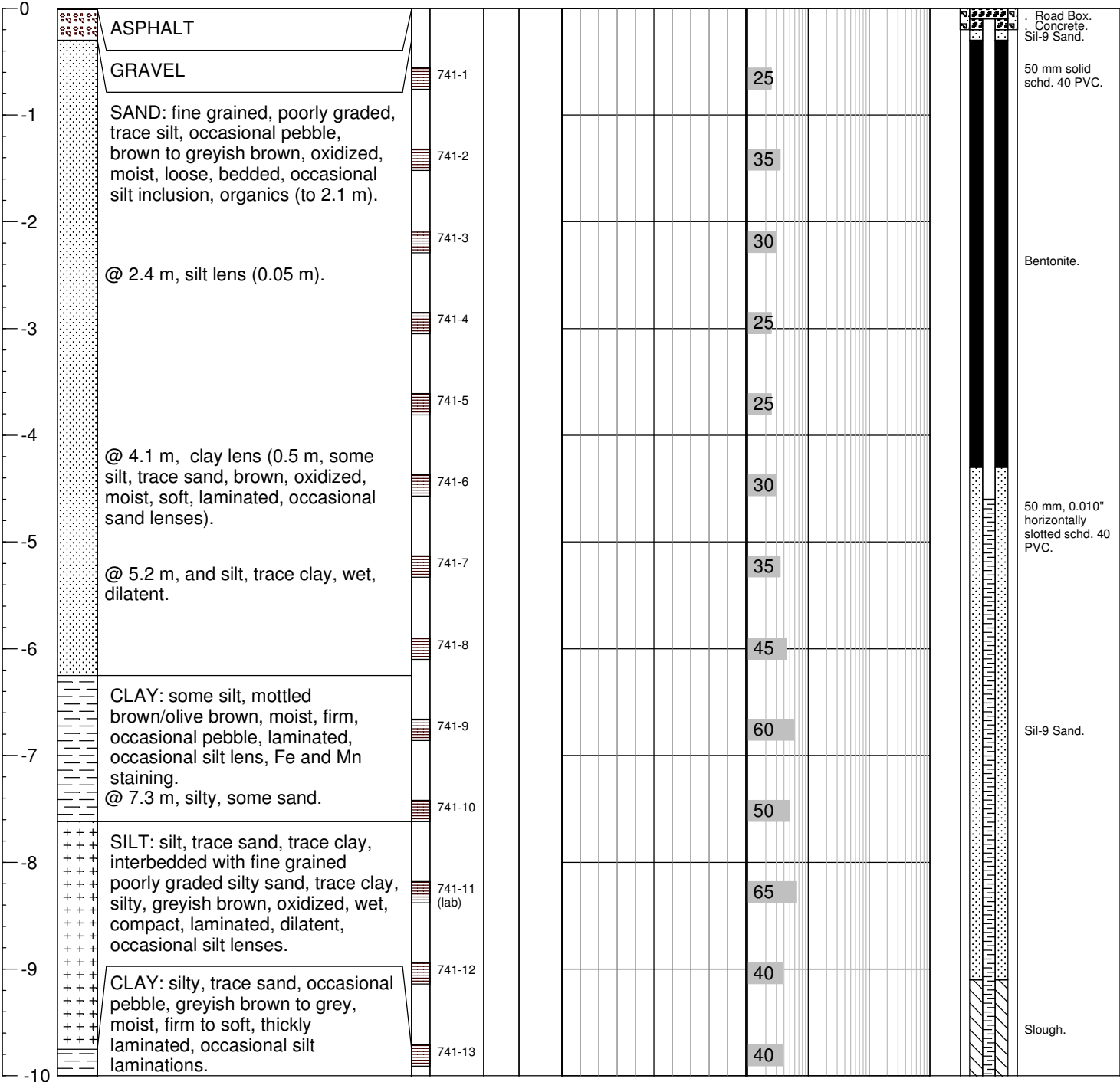
# BORE HOLE LOG

**Bore Hole: BH741**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658592.778	Date Drilled: 29-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6989.095	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1090.871	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.784	Logged by: CRC/GAC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit								
							0	▲	50	●	100	◆	10	100	1000	10000	





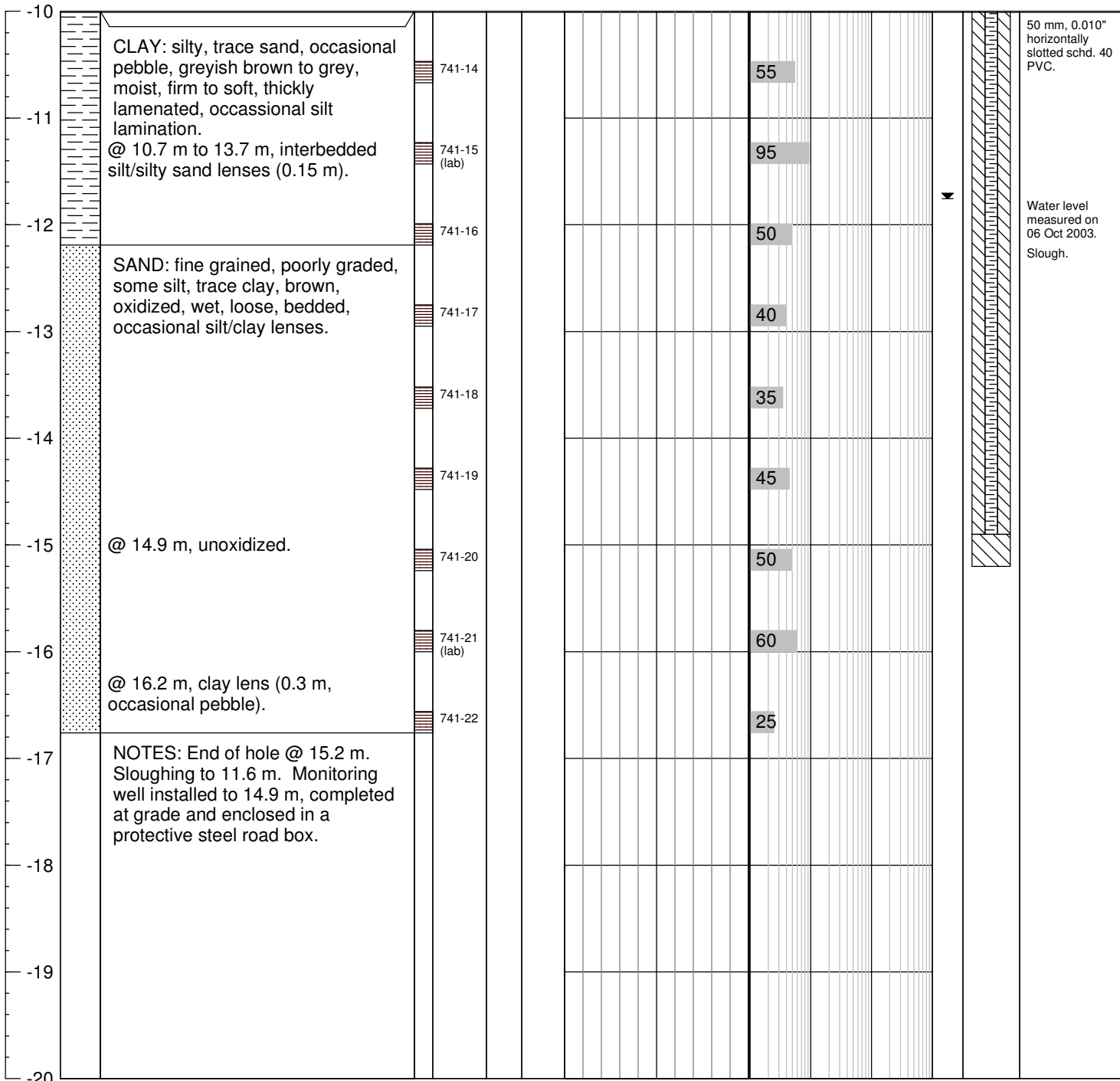
# BORE HOLE LOG

**Bore Hole: BH741**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658592.778	Date Drilled: 29-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6989.095	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1090.871	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.784	Logged by: CRC/GAC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit								
							0	▲	50	●	100	◆	10	100	1000	10000	





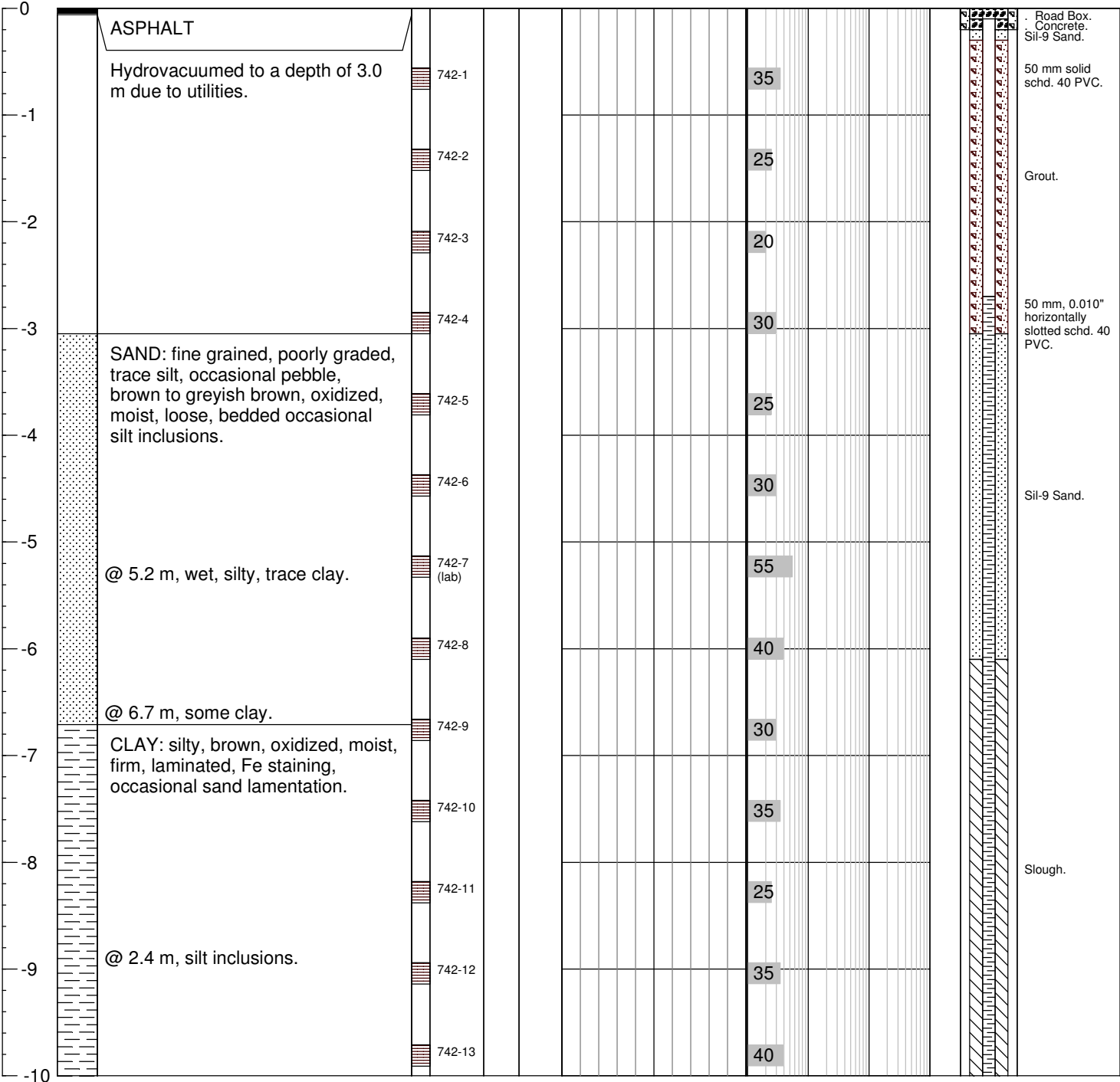
# BORE HOLE LOG

**Bore Hole: BH742**

**Page: 1 of 2**

Client: Sears Canada	Northing: 5658550.810	Date Drilled: 29-Sep-03
Project: Offsite Environmental Site Assessment	Easting: -6970.380	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1090.553	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.484	Logged by: CRC/GAC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	10	100	1000	10000		





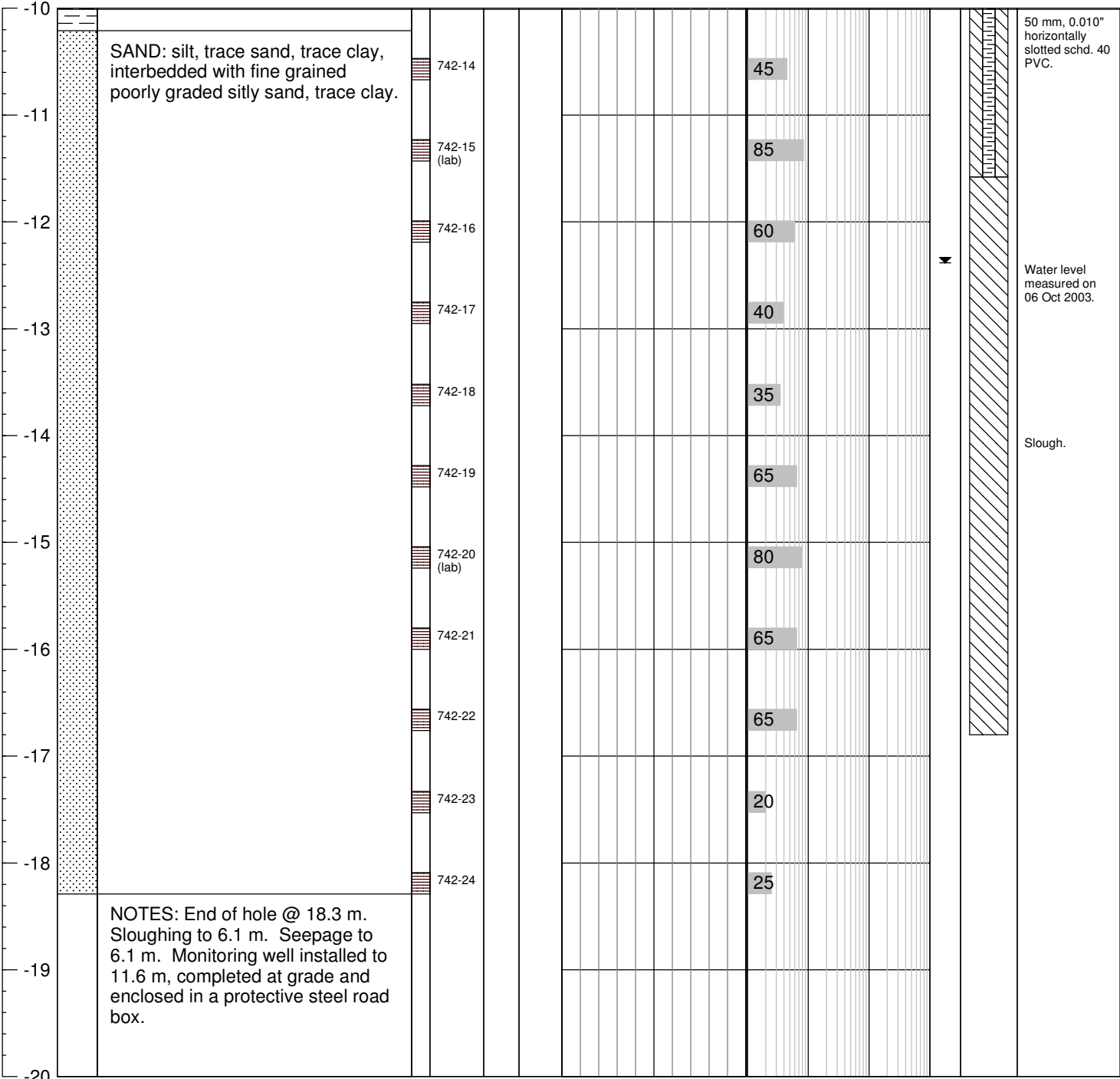
# BORE HOLE LOG

**Bore Hole: BH742**

**Page: 2 of 2**

Client: Sears Canada	Northing: 5658550.810	Date Drilled: 29-Sep-03
Project: Offsite Environmental Site Assessment	Easting: -6970.380	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1090.553	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.484	Logged by: CRC/GAC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						





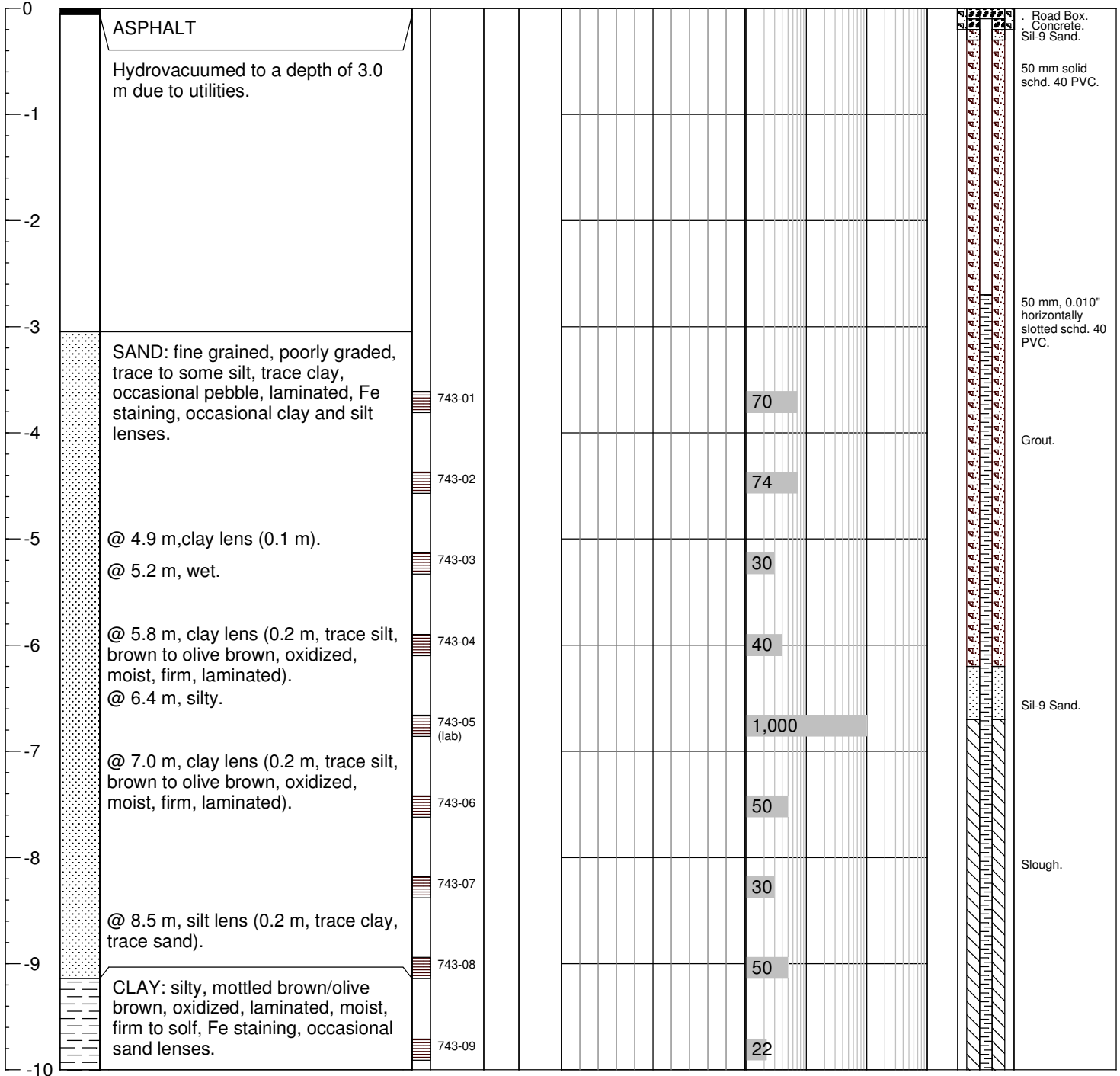
# BORE HOLE LOG

**Bore Hole: BH743**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658516.708	Date Drilled: 29-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6953.310	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1088.978	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.:	Logged by: CRC/GAC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
							0	▲	●	◆	100	10	100	1000	10000

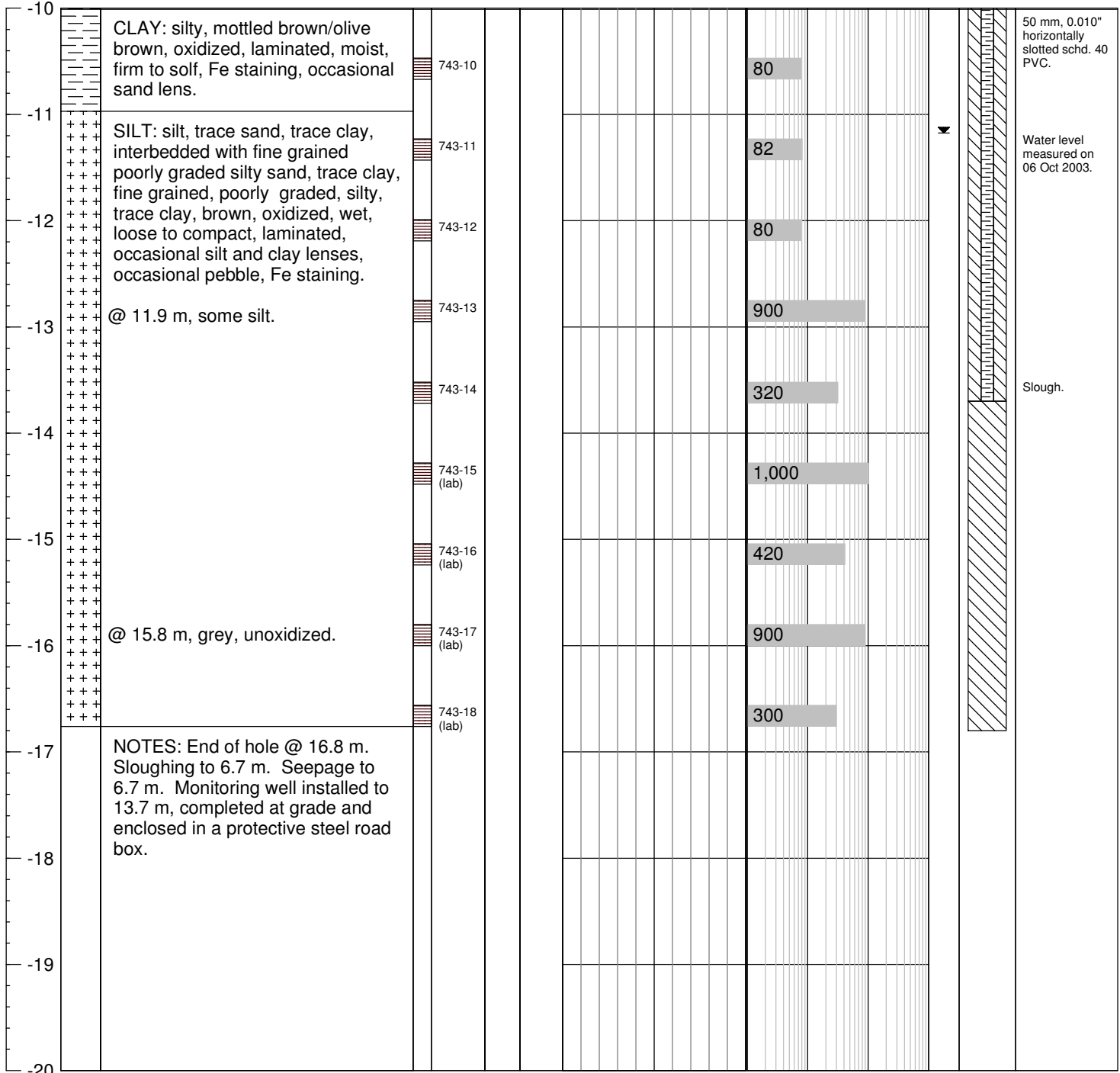




# BORE HOLE LOG

Client: Sears Canada Inc.	Northing: 5658516.708	Date Drilled: 29-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6953.310	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1088.978	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.:	Logged by: CRC/GAC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit								
							0	▲	50	●	100	◆	10	100	1000	10000	







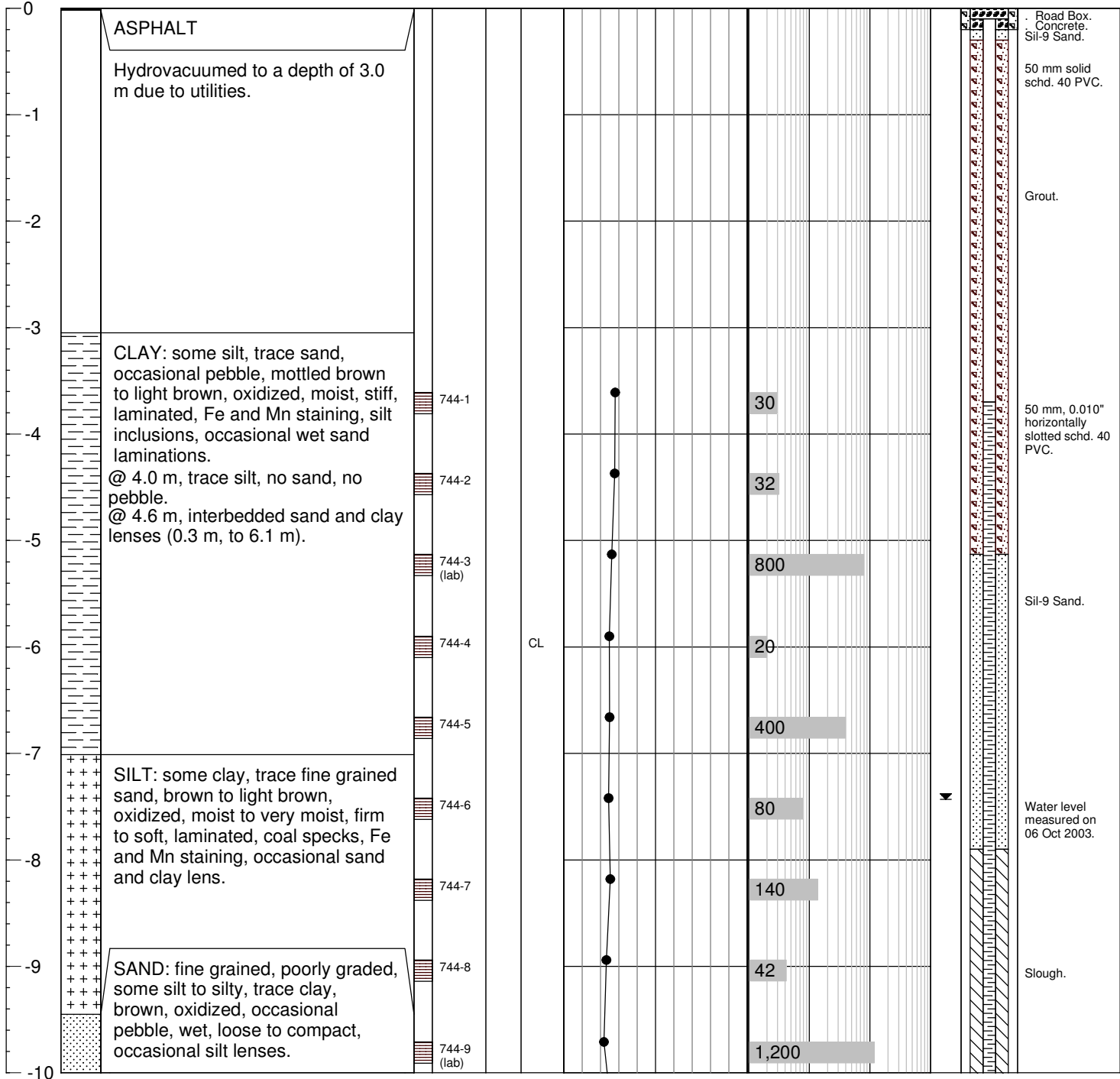
# BORE HOLE LOG

**Bore Hole: BH744**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658484.537	Date Drilled: 30-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6937.354	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1086.585	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1086.464	Logged by: CRC/GAC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
							0	▲	●	◆	100	10	100	1000	10000

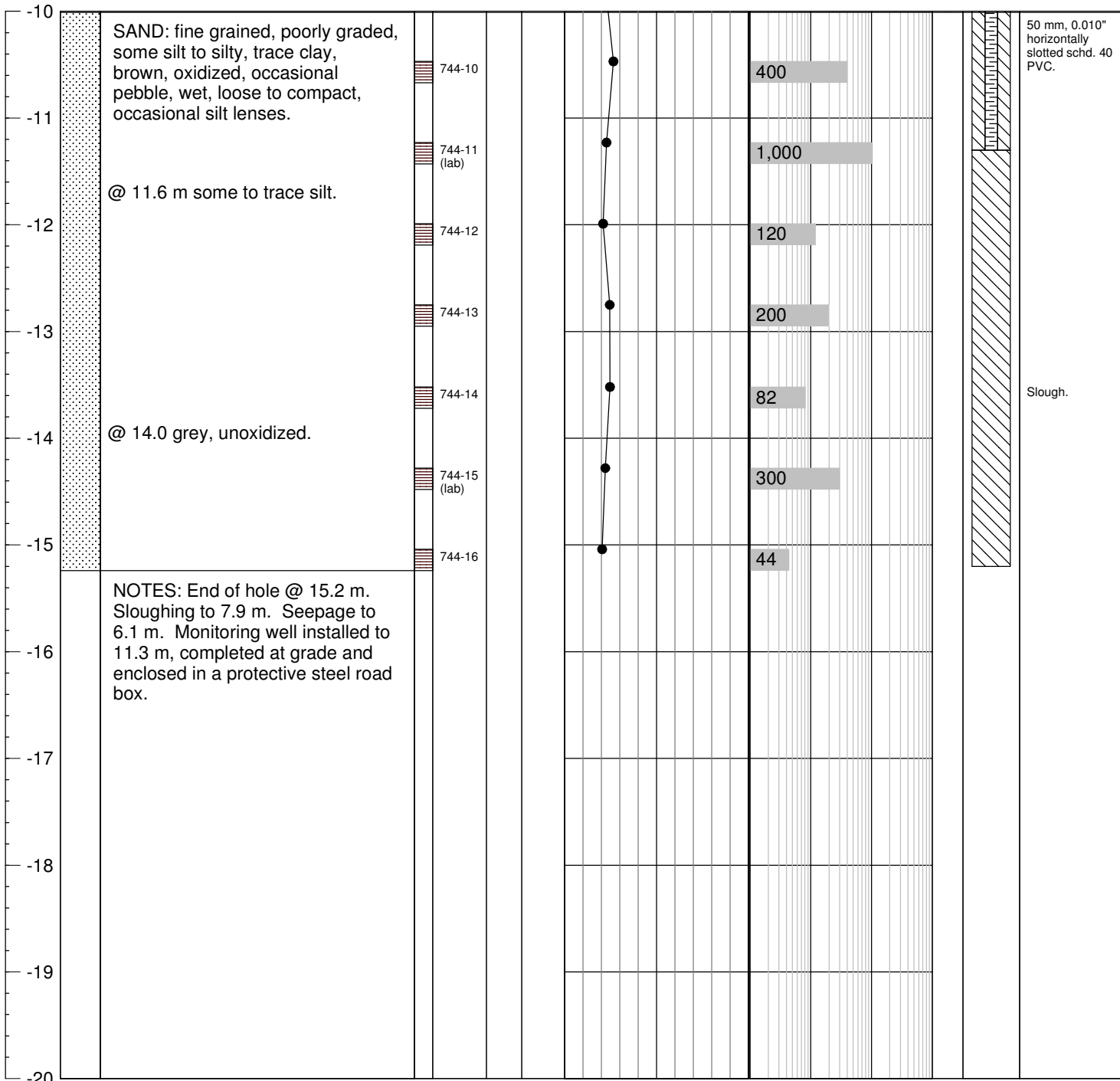


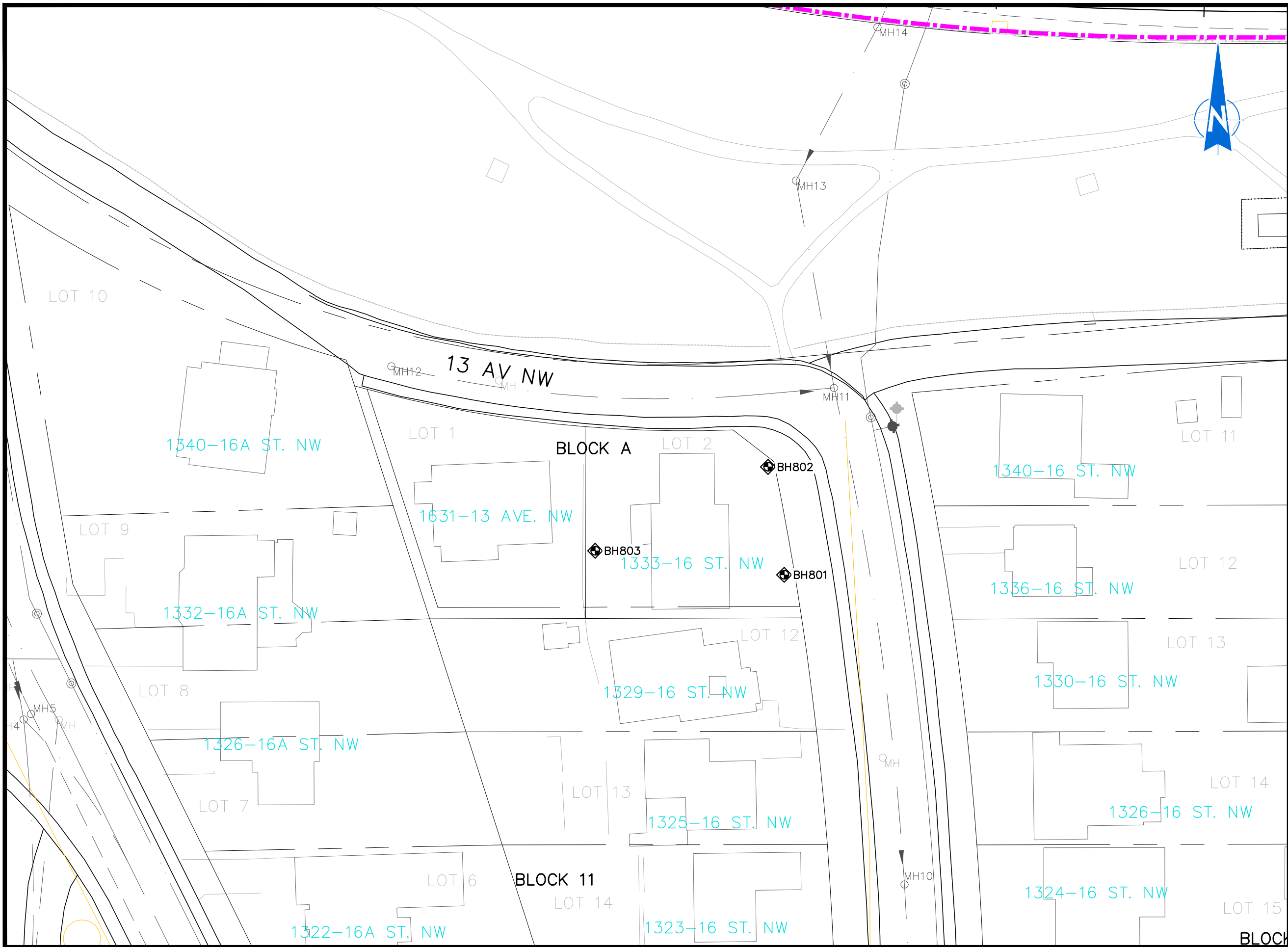


# BORE HOLE LOG

Client: Sears Canada Inc.	Northing: 5658484.537	Date Drilled: 30-Sep-03
Project: Offsite Environmental Site Investigation	Easting: -6937.354	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1086.585	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1086.464	Logged by: CRC/GAC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
							0	▲	●	◆	100	10	100	1000	10000





**LEGEND:**

- SITE BOUNDARY
- MONITORING WELL

**NOTES:**

1. DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES), SITE ASSESSMENT INFORMATION, AND TRONNES SURVEYS LTD SURVEY DONE JUNE 14,15 OF 2005. INC. DRAWINGS 149-5A6.DWG AND 149-5A6.DWG

DRAWING REVISIONS			
REV	DESCRIPTION	BY	DATE

**Clifton Associates Ltd.**  
 engineering science technology

**CLIENT**  
**SEARS Canada Inc.**

**PROJECT**  
 UPDATED SITE MANAGEMENT PLAN (2014)  
 HOUNSFIELD HEIGHTS - BRIAR HILL COMMUNITY  
 CALGARY, ALBERTA

**TITLE**  
 MONITORING WELL  
 LOCATION PLAN  
 BH800 SERIES

DESIGN	SCALE 1:500	DATE 2014-05-14
DWN. BY RD	PROJECT NO. CG2430	FIG. 11
CHECKED	FILE NAME CG2430SMP11	

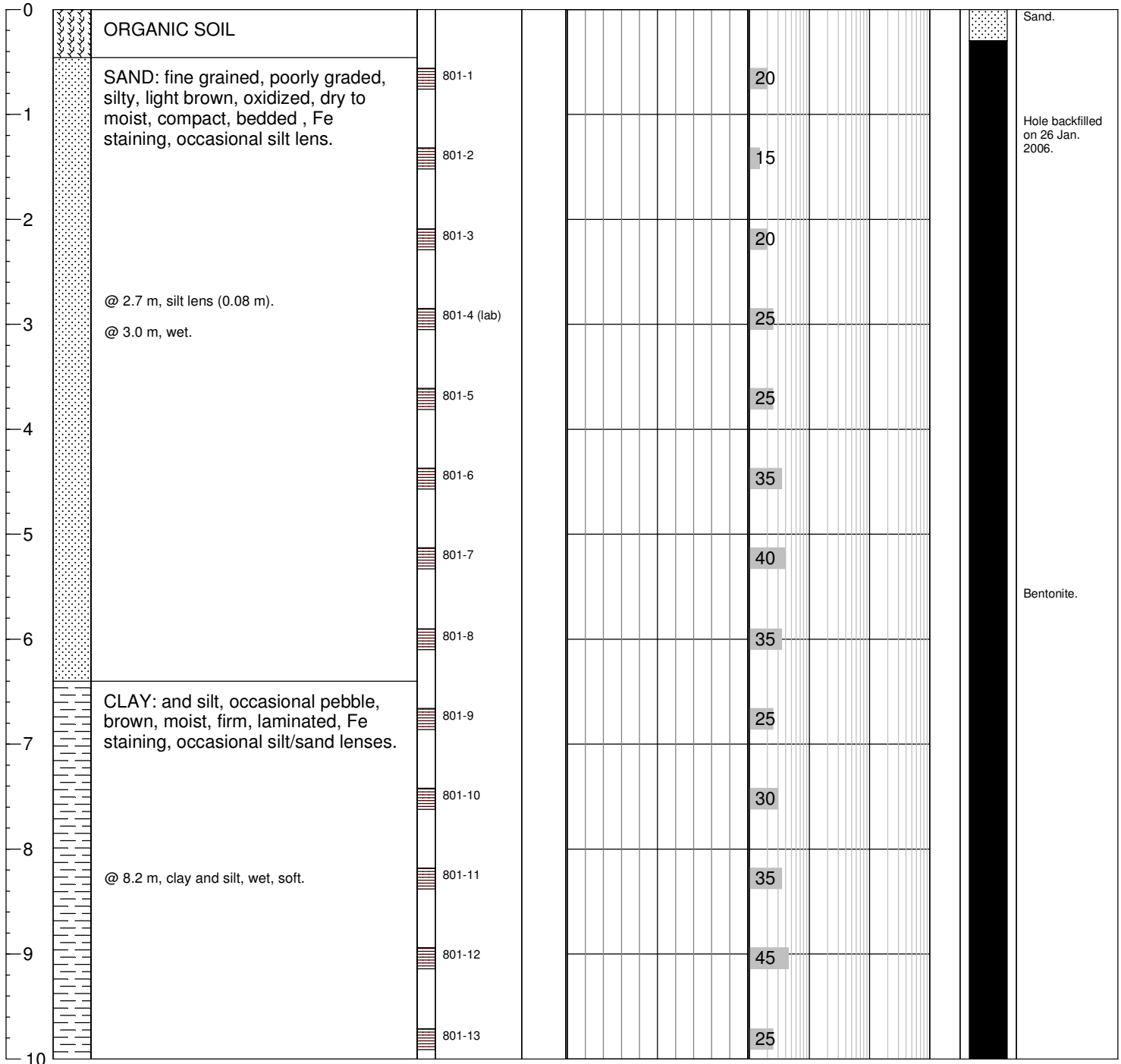
I:\CALGARY PROJECTS\CG2430\CG2430\CG2430SMP11.dwg, 05/20/2014, 12:38:43 PM

ENV-BH m CAL v03.lbf



Client: Sears Canada	Northing: 5658591.395	Date Drilled: 30-Sep-03
Project: Environmental Site Investigation	Easting: -6878.034	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1090.364	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.:	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
						▲	●	◆	10	100	1000	10000	

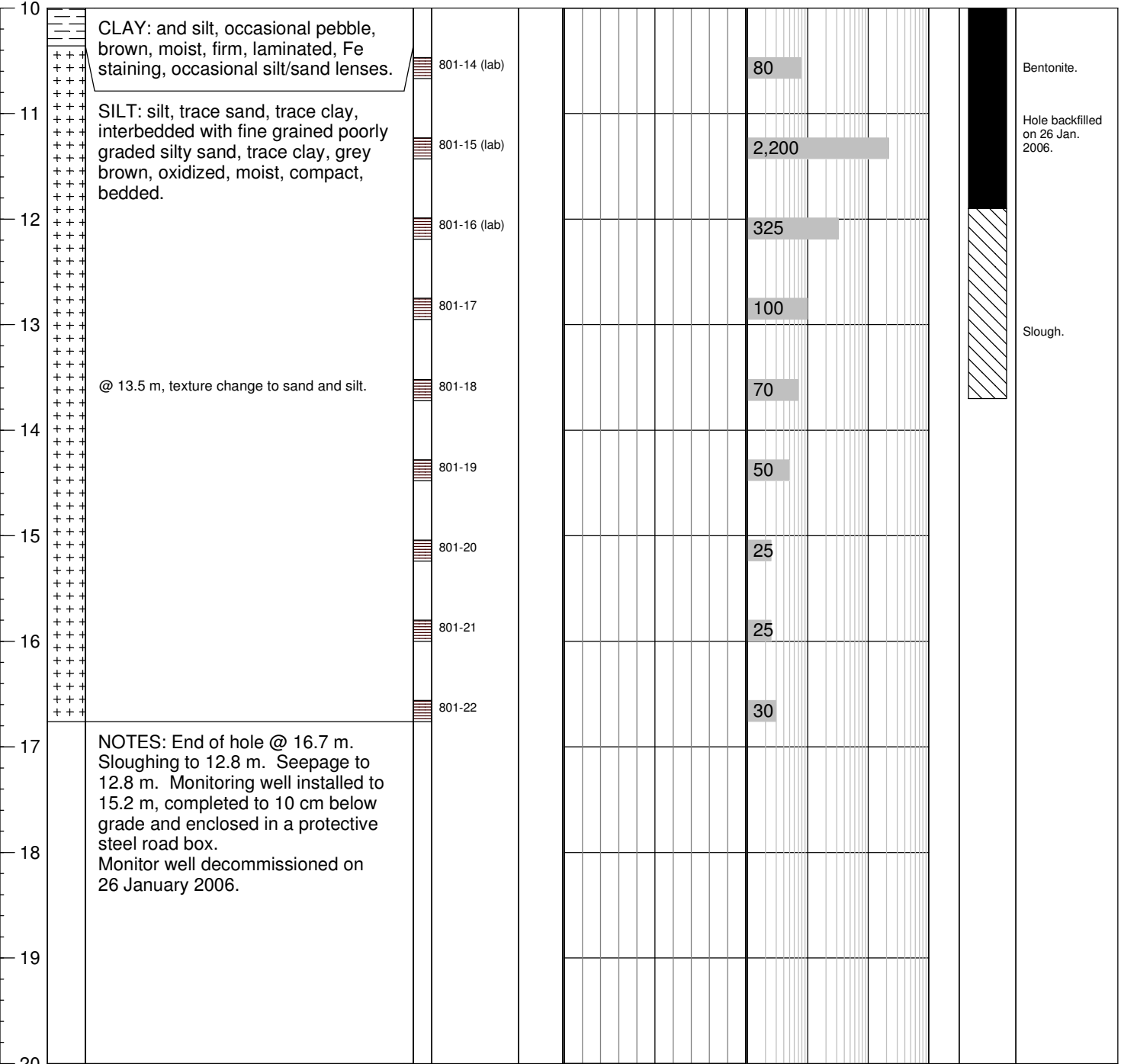


Env. BH m CAL v03.06f



Client: Sears Canada	Northing: 5658591.395	Date Drilled: 30-Sep-03
Project: Environmental Site Investigation	Easting: -6878.034	Drill: B-61
Location: Hounsfield Heights, Calgary	Ground Elev.: 1090.364	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.:	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit ▲	percent Natural Moisture ●	Liquid Limit ◆	10	100	1000	

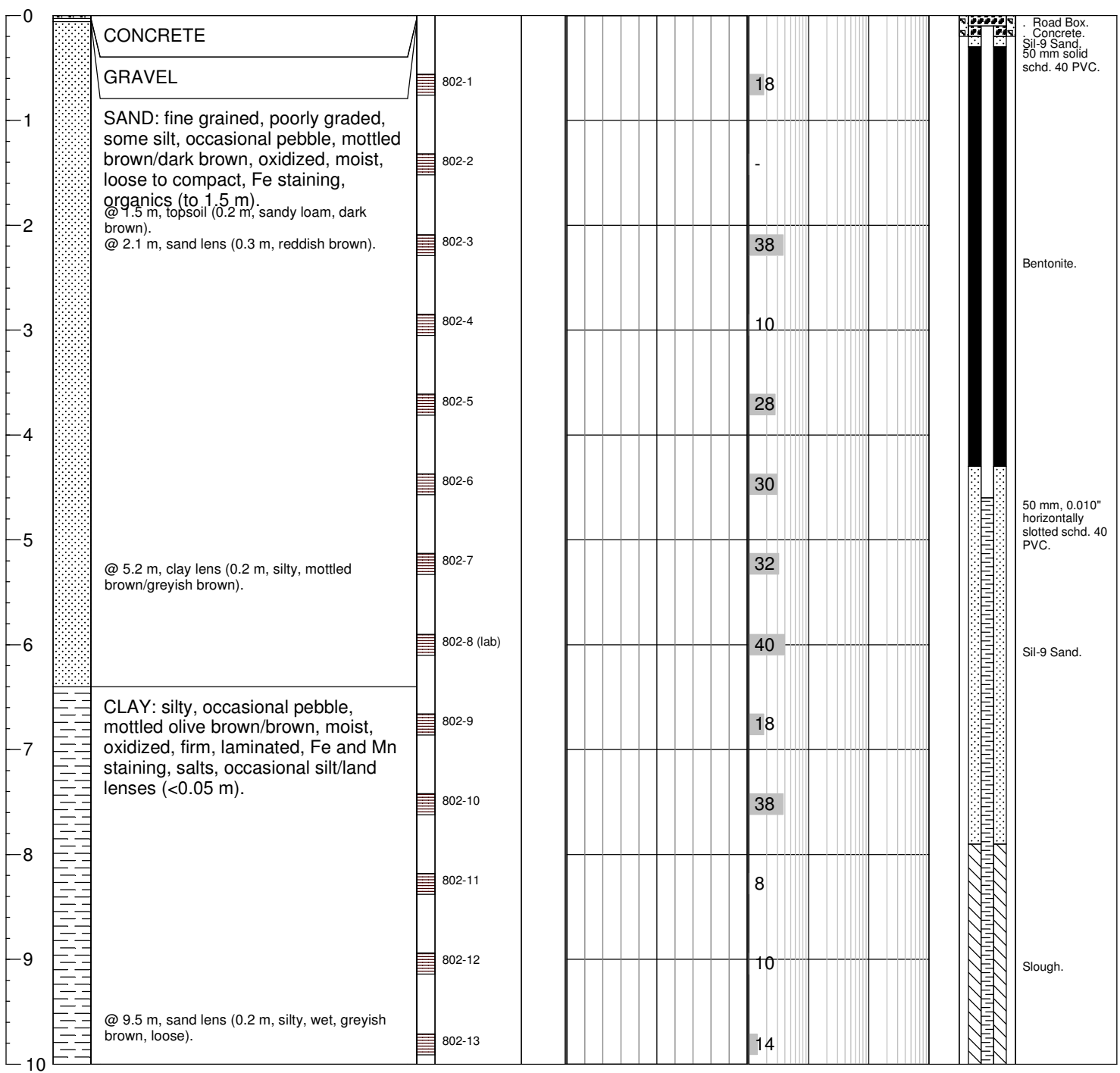


ENV.BH m CAL v03.lbf



Client: Sears Canada	Northing: 5658605.947	Date Drilled: 24-Sep-03
Project: Environmental Site Investigation	Easting: -6880.212	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1090.383	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.300	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
						▲	●	◆	10	100	1000	10000	

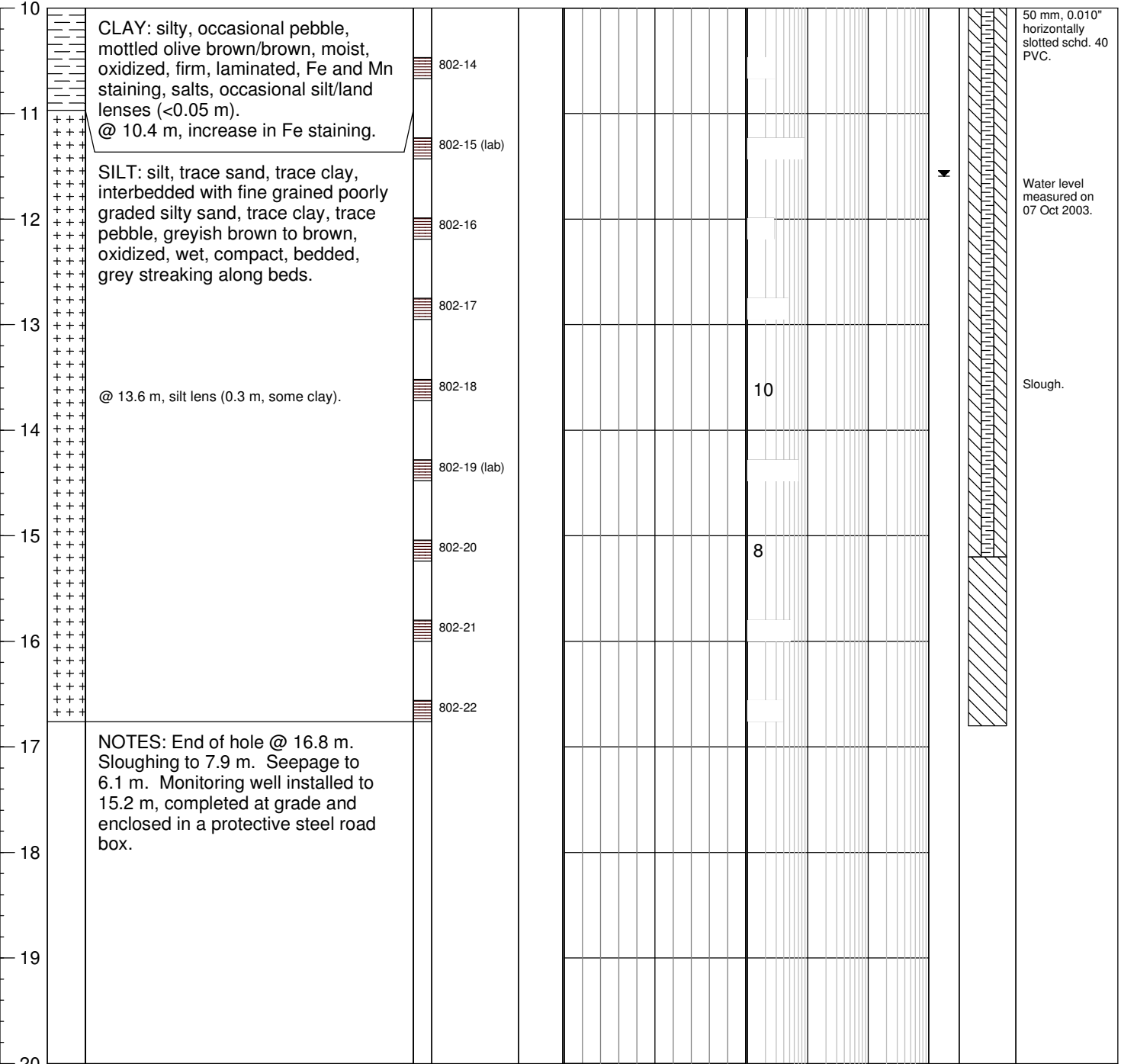


Env. BH m CAL v03.lbf



Client: Sears Canada	Northing: 5658605.947	Date Drilled: 24-Sep-03
Project: Environmental Site Investigation	Easting: -6880.212	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1090.383	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.300	Logged by: CRC

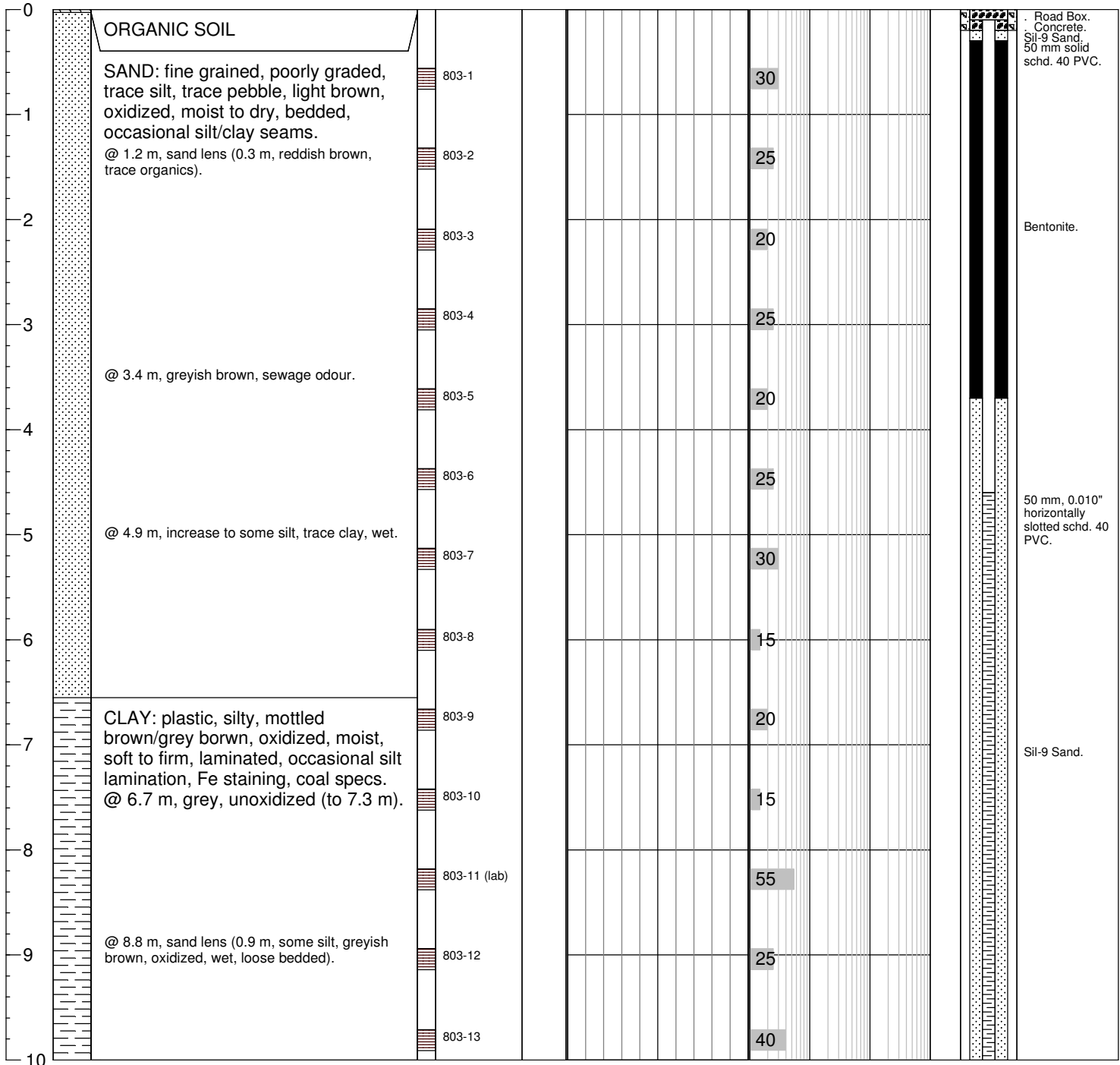
Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	10	100	1000	





Client: Sears Canada	Northing: 5658594.642	Date Drilled: 26-Sep-03
Project: Environmental Site Investigation	Easting: -6903.514	Drill: B-61
Location: Hounsfeld Heights, Calgary	Ground Elev.: 1090.964	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.871	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail	
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm				
						0	▲	●	◆	10	100	1000	10000	







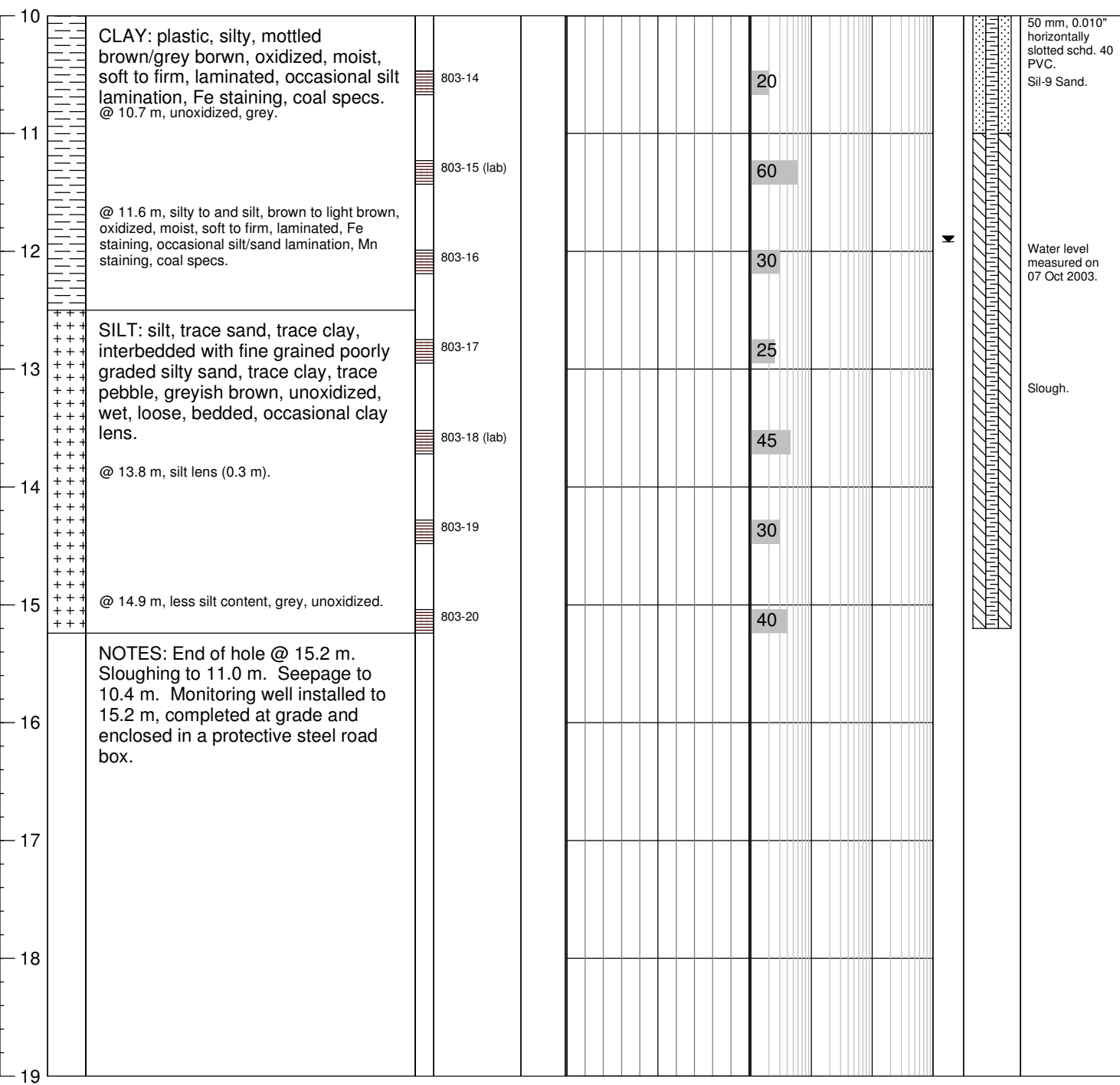
# BORE HOLE LOG

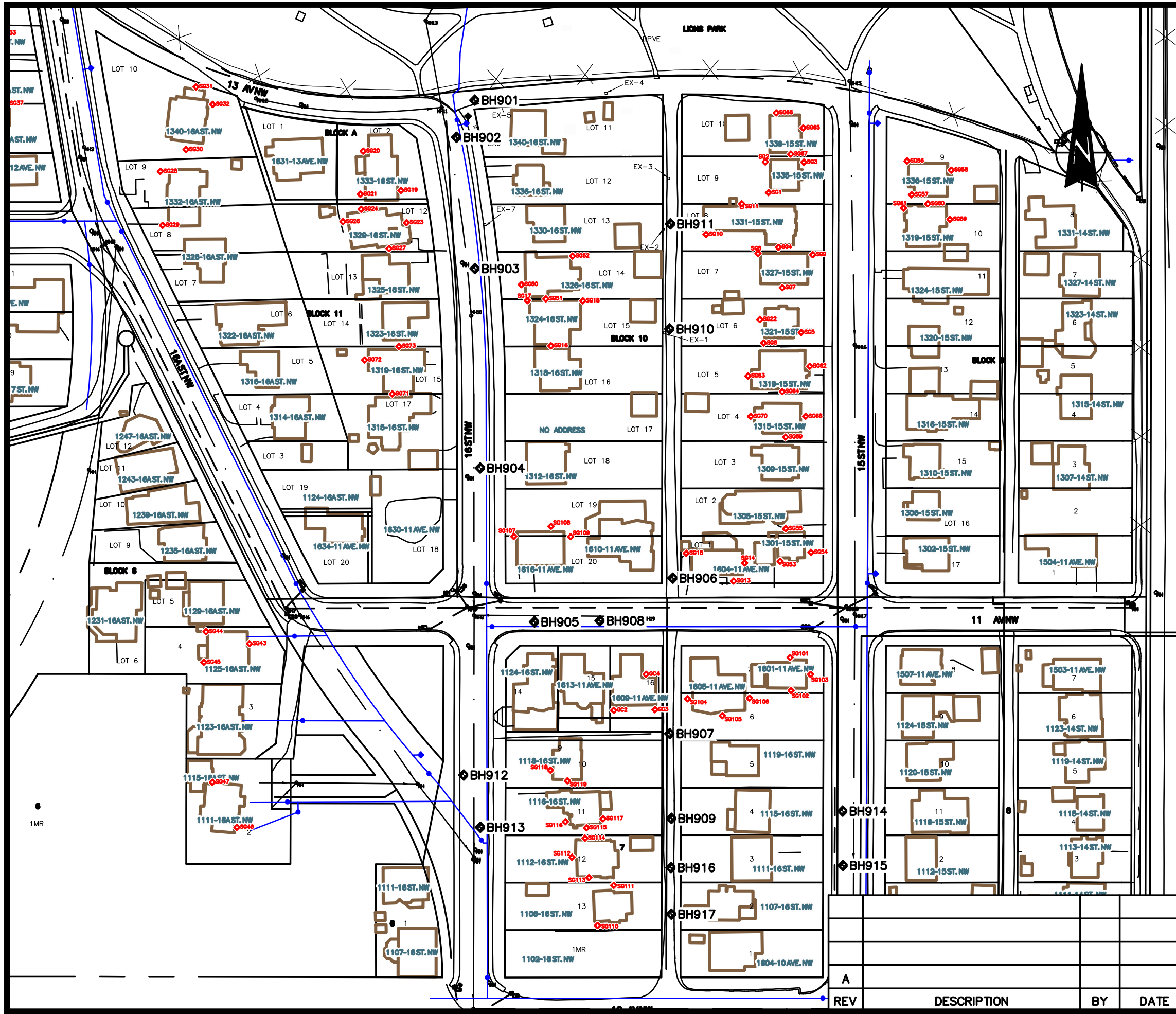
**Bore Hole: BH803**

**Page: 2 of 2**

<b>Client:</b> Sears Canada	<b>Northing:</b> 5658594.642	<b>Date Drilled:</b> 26-Sep-03
<b>Project:</b> Environmental Site Investigation	<b>Easting:</b> -6903.514	<b>Drill:</b> B-61
<b>Location:</b> Hounsfield Heights, Calgary	<b>Ground Elev.:</b> 1090.964	<b>Drilling Method:</b> Solid Stem Auger
<b>Project No.:</b> CG909	<b>Top Casing Elev.:</b> 1090.871	<b>Logged by:</b> CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	10	100	1000	





**LEGEND:**

- BOREHOLE LOCATION
- MONITORING WELL
- BOREHOLE BY OTHERS
- INVESTIGATION BOUNDARY
- LRT TRACKS
- FENCE LINE
- LEGAL LINE
- FACILITY/FEATURE
- BUILDING
- EXCAVATION LINER
- TREES

**UTILITIES & SYMBOLS**

- NATURAL GAS LINE
- SANITARY SEWER
- STORM SEWER
- WATER
- FIBRE OPTICS CABLE
- UNDERGROUND POWER
- TELEPHONE
- POWER POLE
- CATCH BASIN
- FIRE HYDRANT
- LIGHT STANDARD
- MANHOLE
- VALVE
- TRAFFIC ISLAND

**NOTES:**

- DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES), SITE ASSESSMENT INFORMATION, AND TRONNES SURVEYS LTD SURVEY DONE JUNE 14,15 OF 2005. ADDITIONAL REFERENCES FROM SEACOR ENVIRONMENTAL ENGINEERING INC., DRAWINGS 149-5A6.DWG AND 149-5A6.DWG
- TEMPORARY BENCHMARKS: ASCM 75838 AT COORDINATES N. 5658986.637 E. -6668.803 ELEVATION 1091.344m ASL. N. 5658680.491 E. -6627.858 ELEVATION 1090.078m ASL.



CLIENT  
**SEARS Canada Inc.**

PROJECT  
**SITE MONITORING REPORT  
 HOUNSFIELD HEIGHTS  
 CALGARY, ALBERTA**

TITLE

**MONITOR WELL LOCATION PLAN  
 BH900 SERIES**

DATE (dd/mm/yy)	24/04/13	APPD. BY	FILE NO.	CG909.6B4A
SCALE	1:1250	DWN. BY	RSD	DWG. NO.
				4

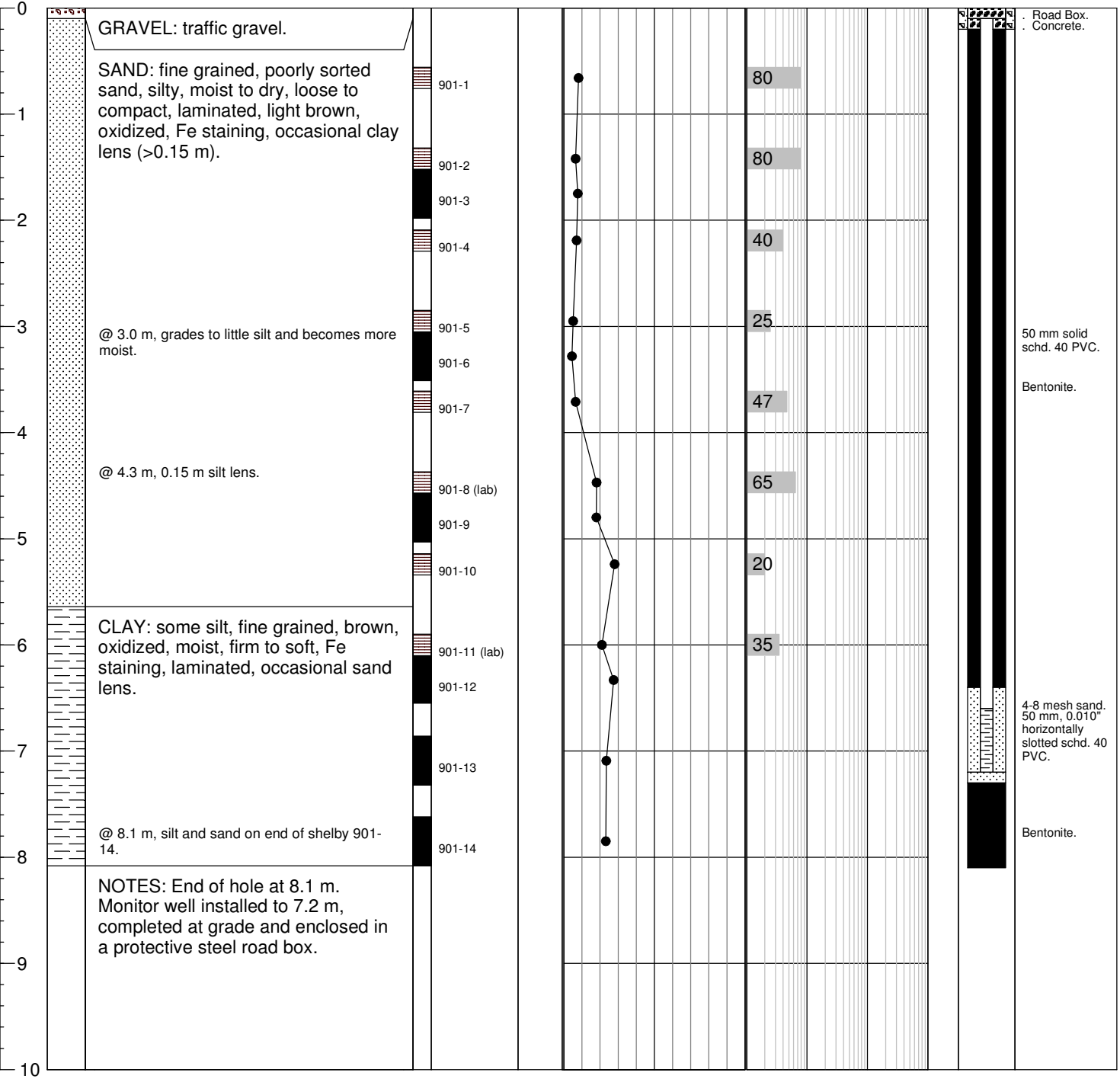
REV	DESCRIPTION	BY	DATE
A			

ENV.BH m CAL v03.lbf



Client: Sears Canada Inc.	Northing: 5658618.950	Date Drilled: 04 February 2004
Project: Environmental Site Investigation	Easting: -6860.643	Drill: B-57
Location: Hounsfield Heights, Calgary, AB	Ground Elev.: 1089.657	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.537	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail			
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm					
								0	50	100	10	100	1000	10000	

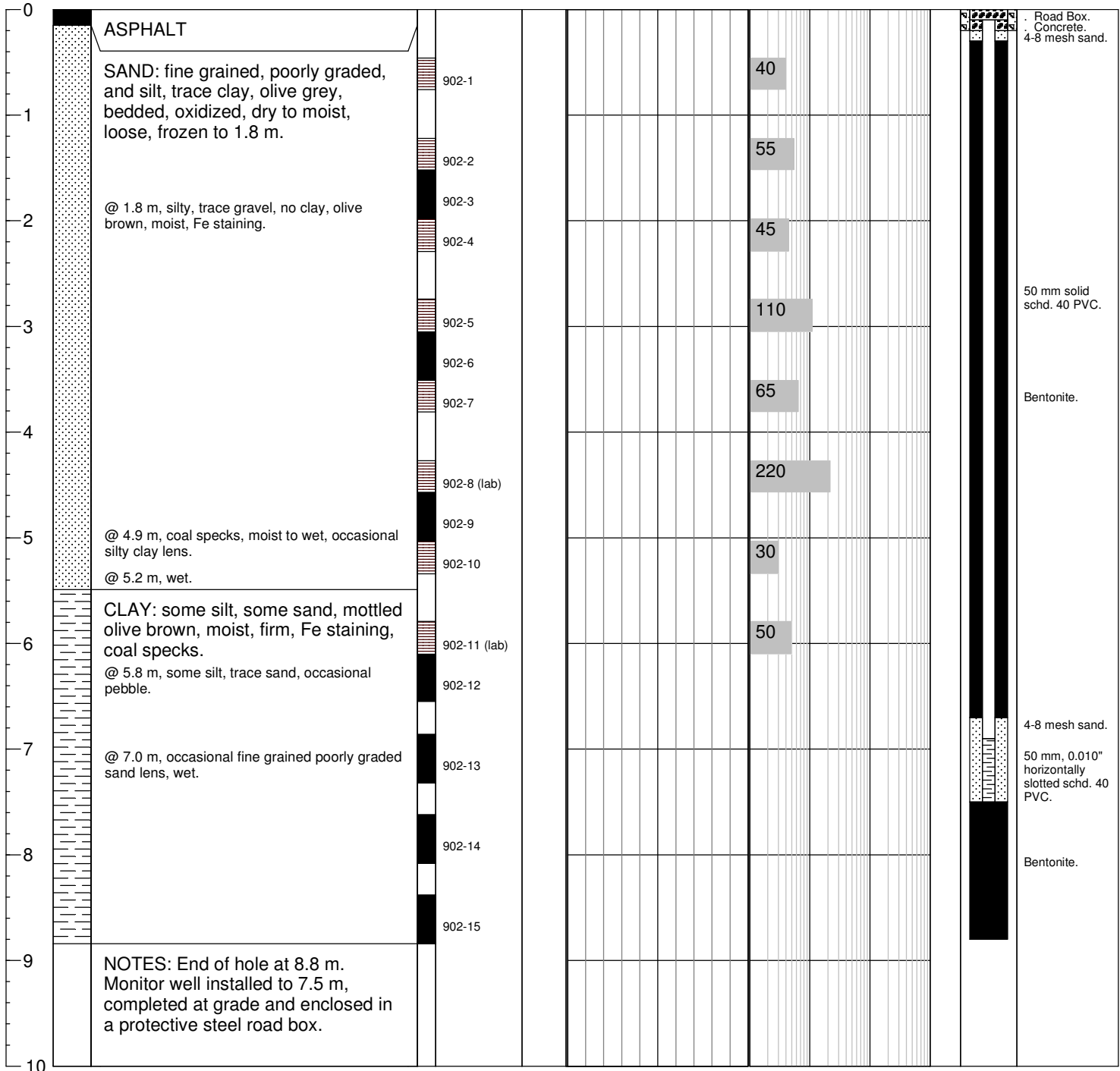


ENV-BH m CAL v03.lbf



Client: Sears Canada Inc.	Northing: 5658606.999	Date Drilled: 04 February 2004
Project: Environmental Site Investigation	Easting: -6866.512	Drill: B-59
Location: Hounsfield Heights, Calgary, AB	Ground Elev.: 1089.796	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.729	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm				
								0	100	10	100	1000	10000	

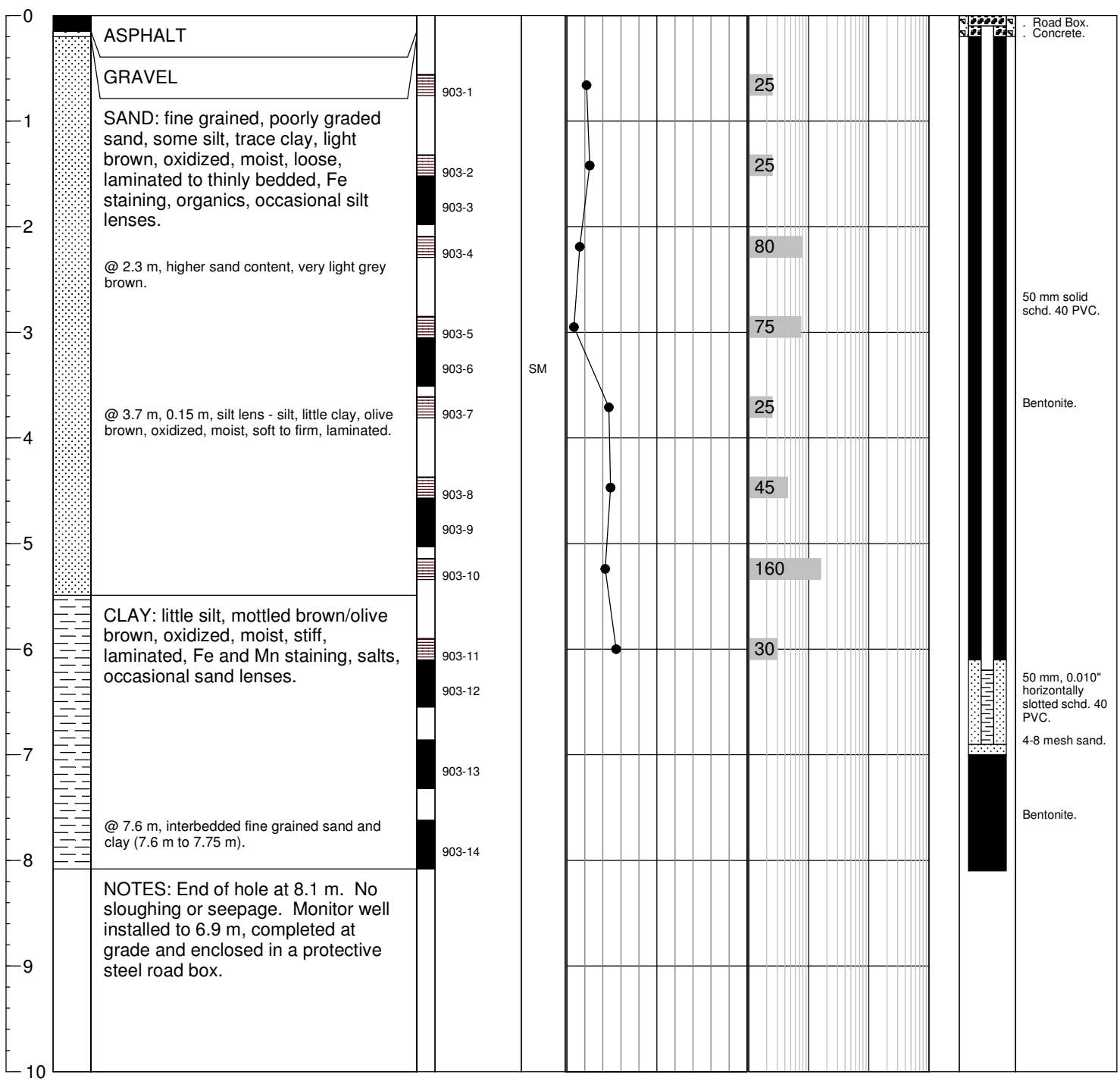


ENV.BH.m.CAL.v03.lbf



Client: Sears Canada Inc.	Northing: 5658564.809	Date Drilled: 04 February 2004
Project: Environmental Site Investigation	Easting: -6860.607	Drill: B-59
Location: Hounsfeld Heights, Calgary, AB	Ground Elev.: 1089.322	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.272	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	10	100	1000	



ENV.BH.m.CAL.v03.lbf



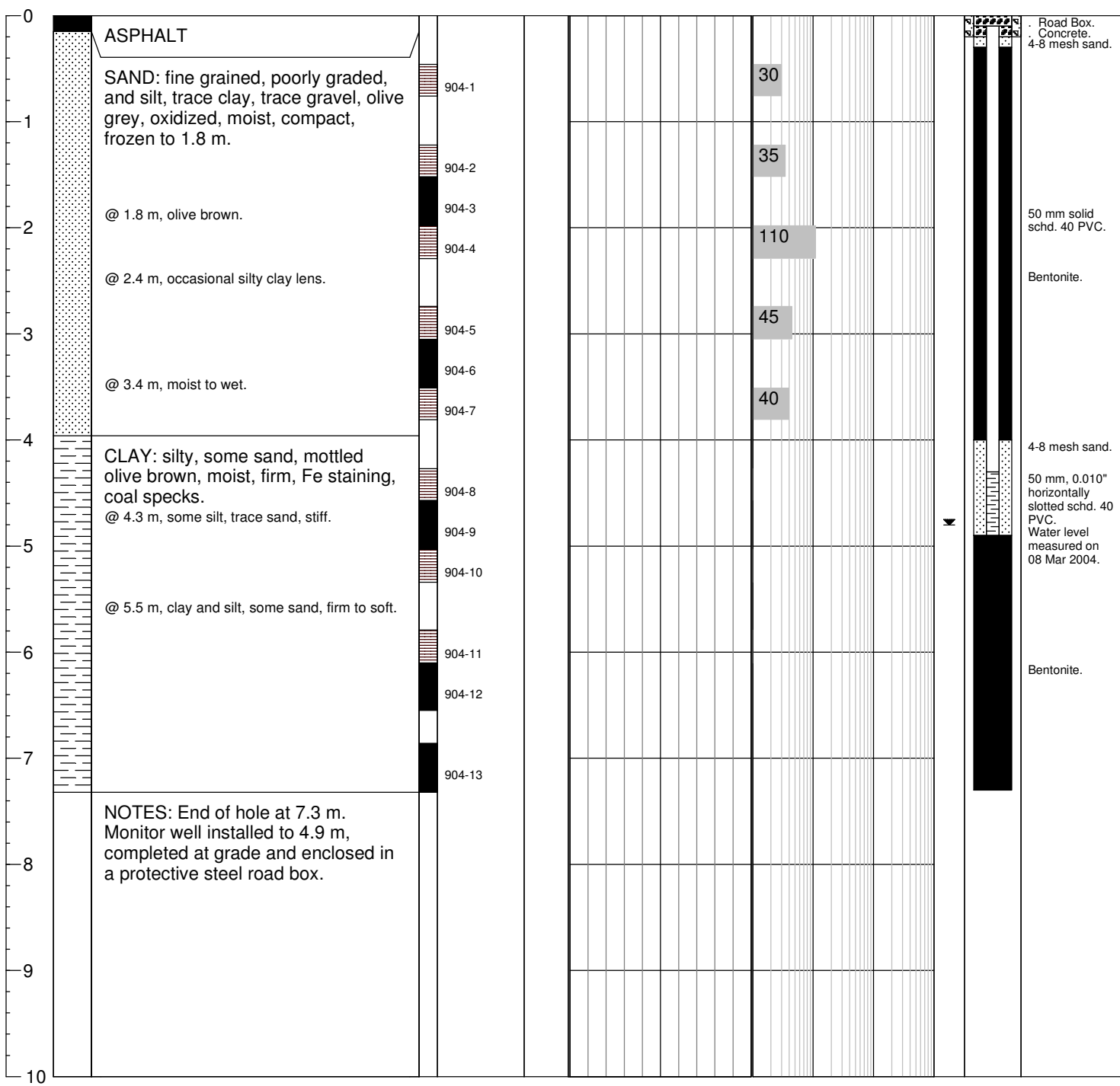
# BORE HOLE LOG

**Bore Hole: BH904**

**Page: 1 of 1**

Client: Sears Canada Inc.	Northing: 5658500.699	Date Drilled: 04 February 2004
Project: Environmental Site Investigation	Easting: -6858.892	Drill: B-59
Location: Hounsfeld Heights, Calgary, AB	Ground Elev.: 1086.315	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1086.213	Logged by: MH

Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm				





# BORE HOLE LOG

**Bore Hole: BH905**

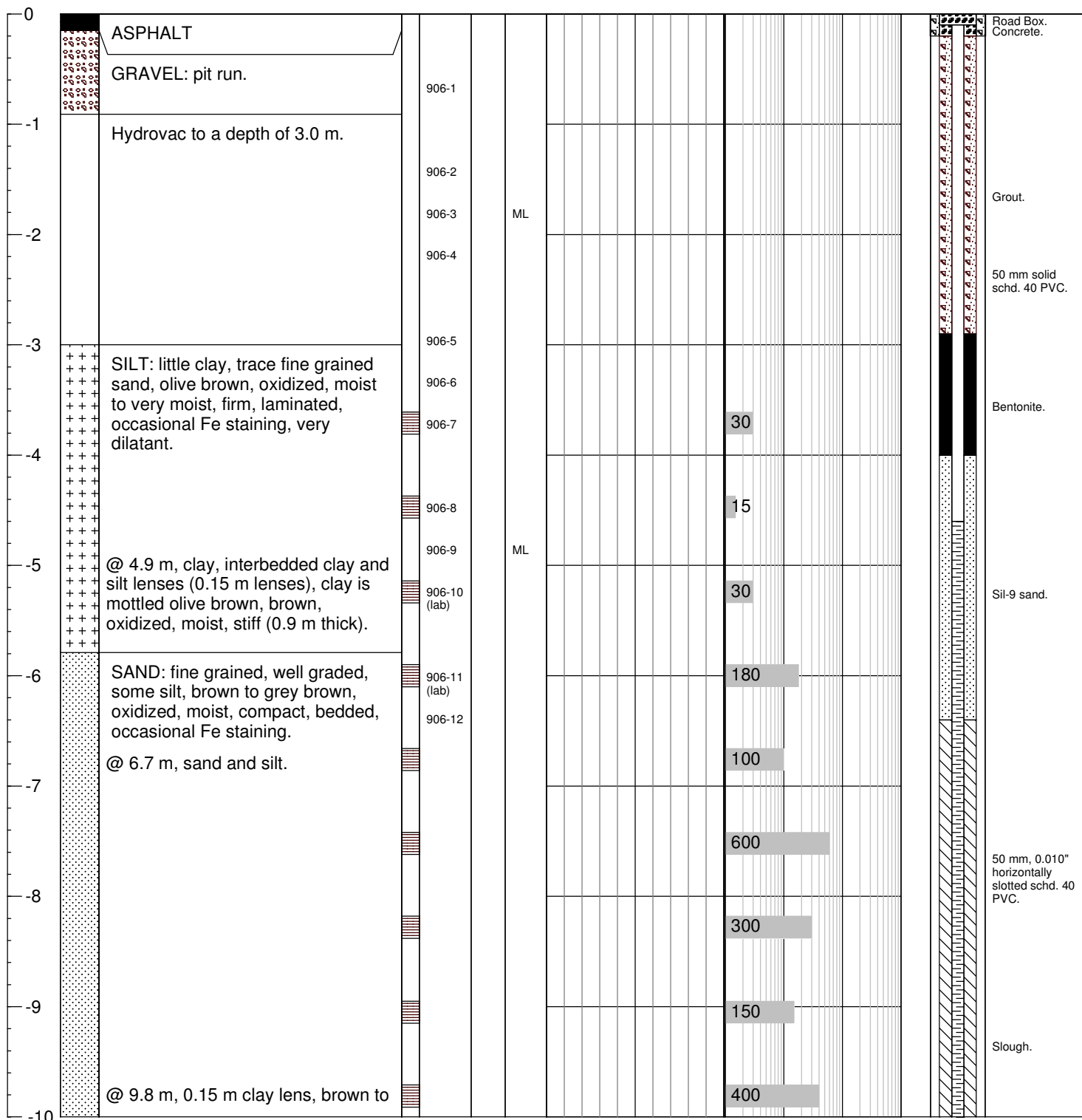
**Page: 1 of 2**

Client: Sears Canada Inc.  
Project: Environmental Site Investigation  
Location: Hounsfield Heights, Calgary, AB  
Project No.: CG909

Northing:  
Easting:  
Ground Elev.:  
Top Casing Elev.:

Date Drilled: 04 February 2004  
Drill: B-57  
Drilling Method: Solid Stem Auger  
Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	10	





# BORE HOLE LOG

**Bore Hole: BH905**

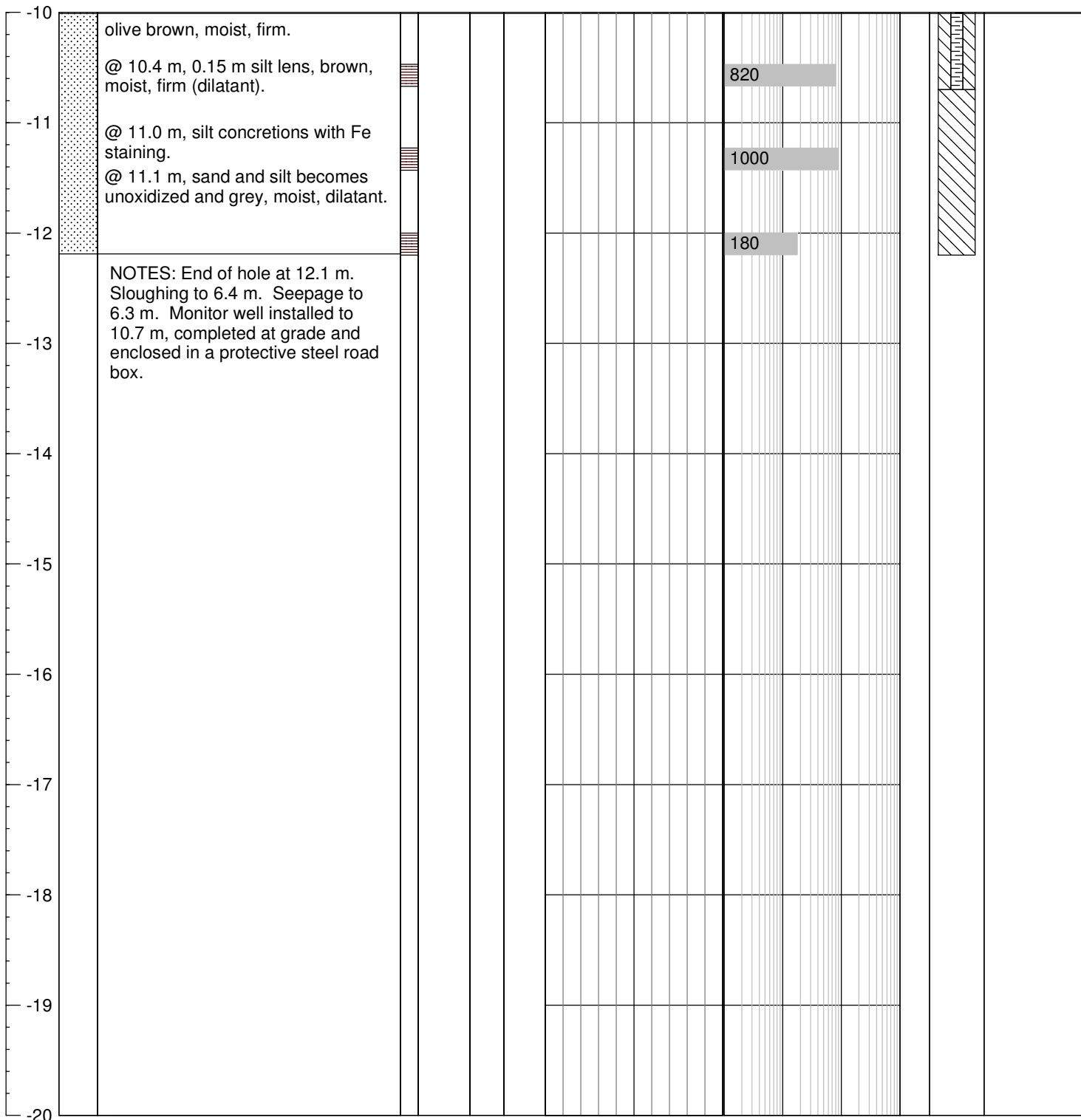
**Page: 2 of 2**

Client: Sears Canada Inc.  
Project: Environmental Site Investigation  
Location: Hounsfield Heights, Calgary, AB  
Project No.: CG909

Northing:  
Easting:  
Ground Elev.:  
Top Casing Elev.:

Date Drilled: 04 February 2004  
Drill: B-57  
Drilling Method: Solid Stem Auger  
Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit								
							0	▲	50	●	100	◆	10	100	1000	10000	



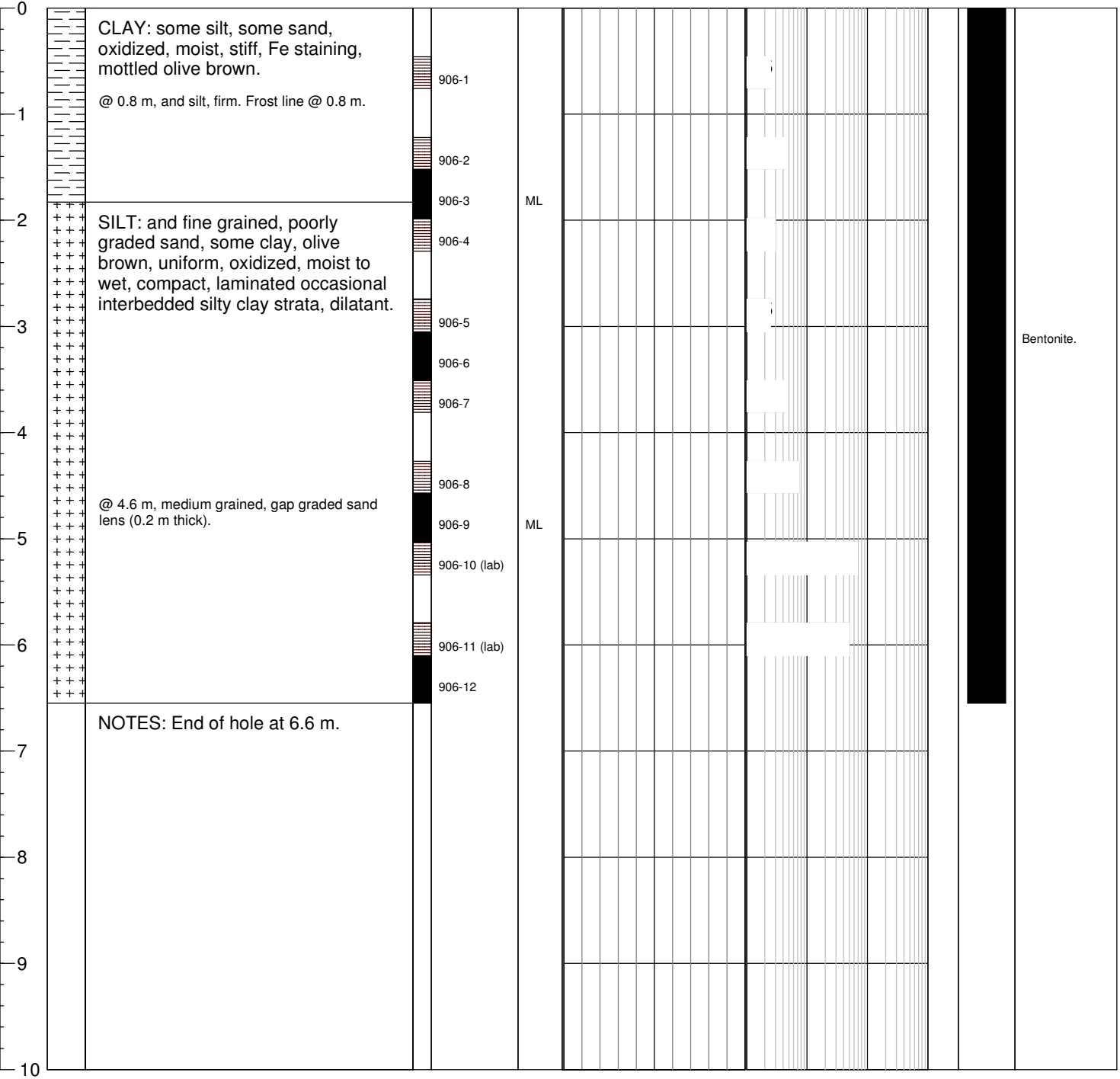


ENV.BH.m CAL v03.04f



Client: Sears Canada Inc.	Northing:	Date Drilled: 05 February 2004
Project: Environmental Site Investigation	Easting:	Drill: B-59
Location: Hounsfeld Heights, Calgary, AB	Ground Elev.:	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.:	Logged by: MH

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit ▲	percent Natural Moisture ●	Liquid Limit ◆	10	100	1000	

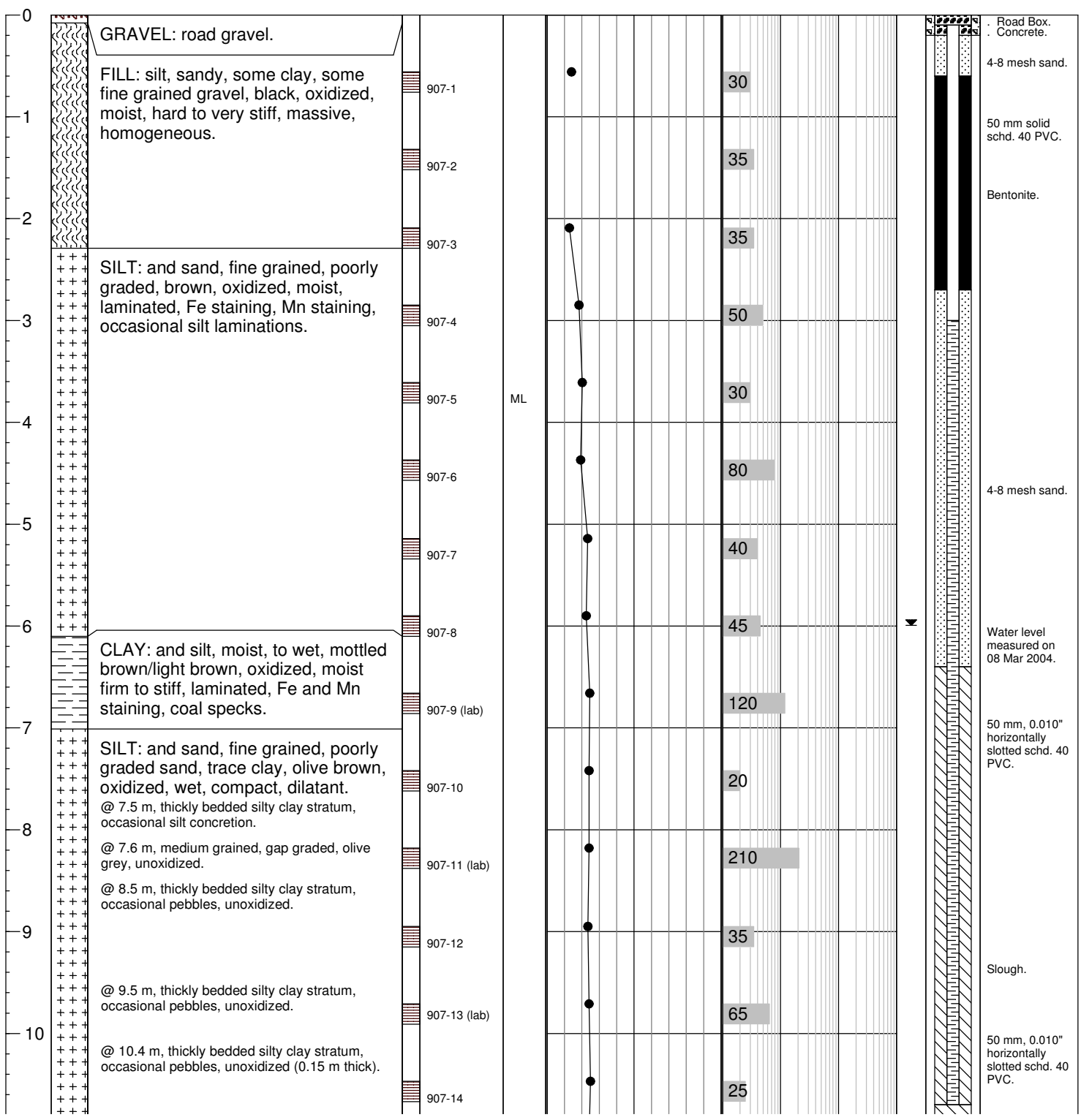


ENV.BH m CAL v03.lbf



Client: Sears Canada Inc.	Northing: 5658415.323	Date Drilled: 04 February 2004
Project: Environmental Site Investigation	Easting: -6797.980	Drill: B-57
Location: Hounsfeld Heights, Calgary, AB	Ground Elev.: 1079.266	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1079.190	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	10	100	1000	



ENV. BH m CAL v03.0d



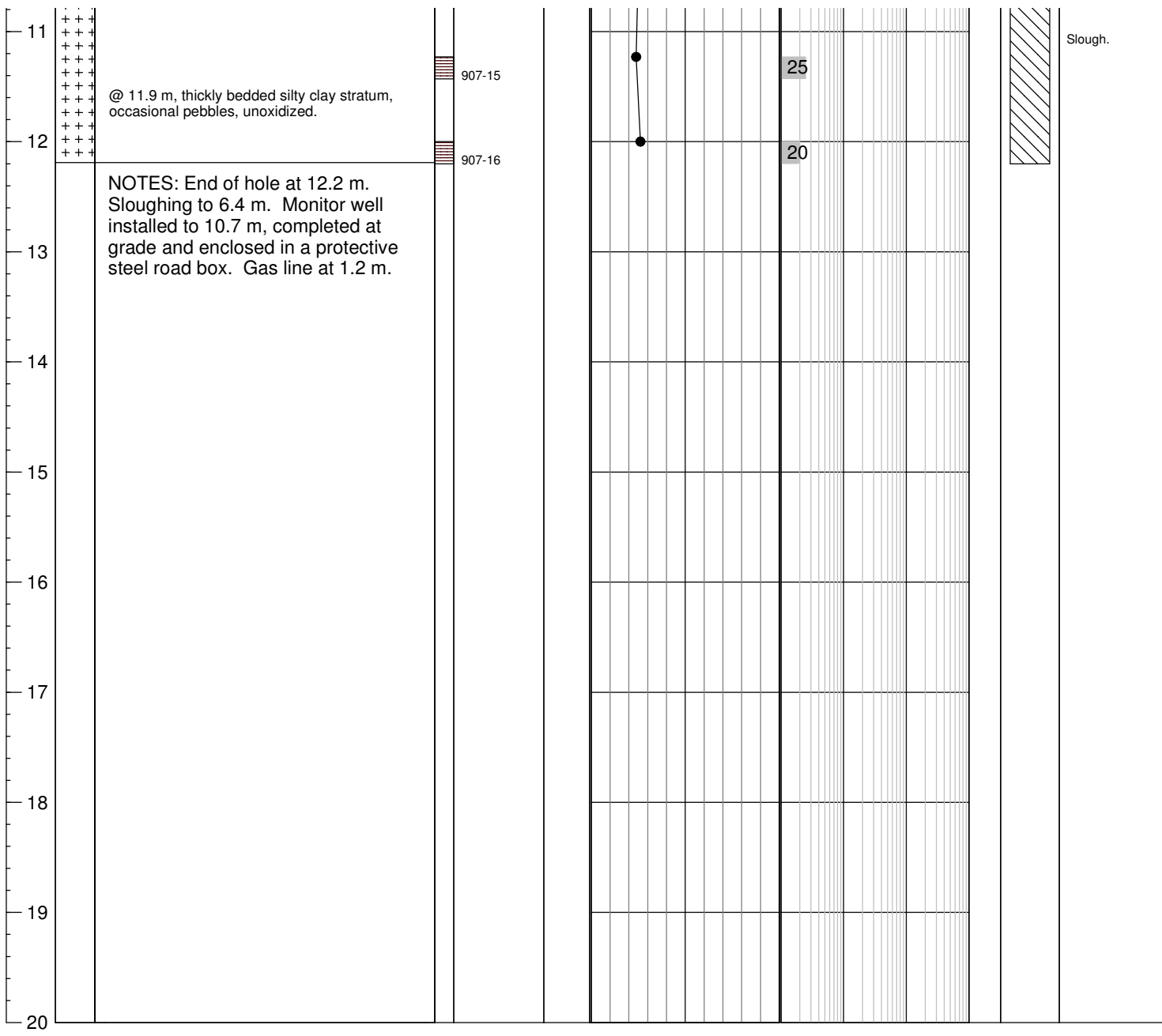
# BORE HOLE LOG

**Bore Hole: BH907**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658415.323	Date Drilled: 04 February 2004
Project: Environmental Site Investigation	Easting: -6797.980	Drill: B-57
Location: Hounsfeld Heights, Calgary, AB	Ground Elev.: 1079.266	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1079.190	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
						▲	●	◆	10	100	1000	10000	

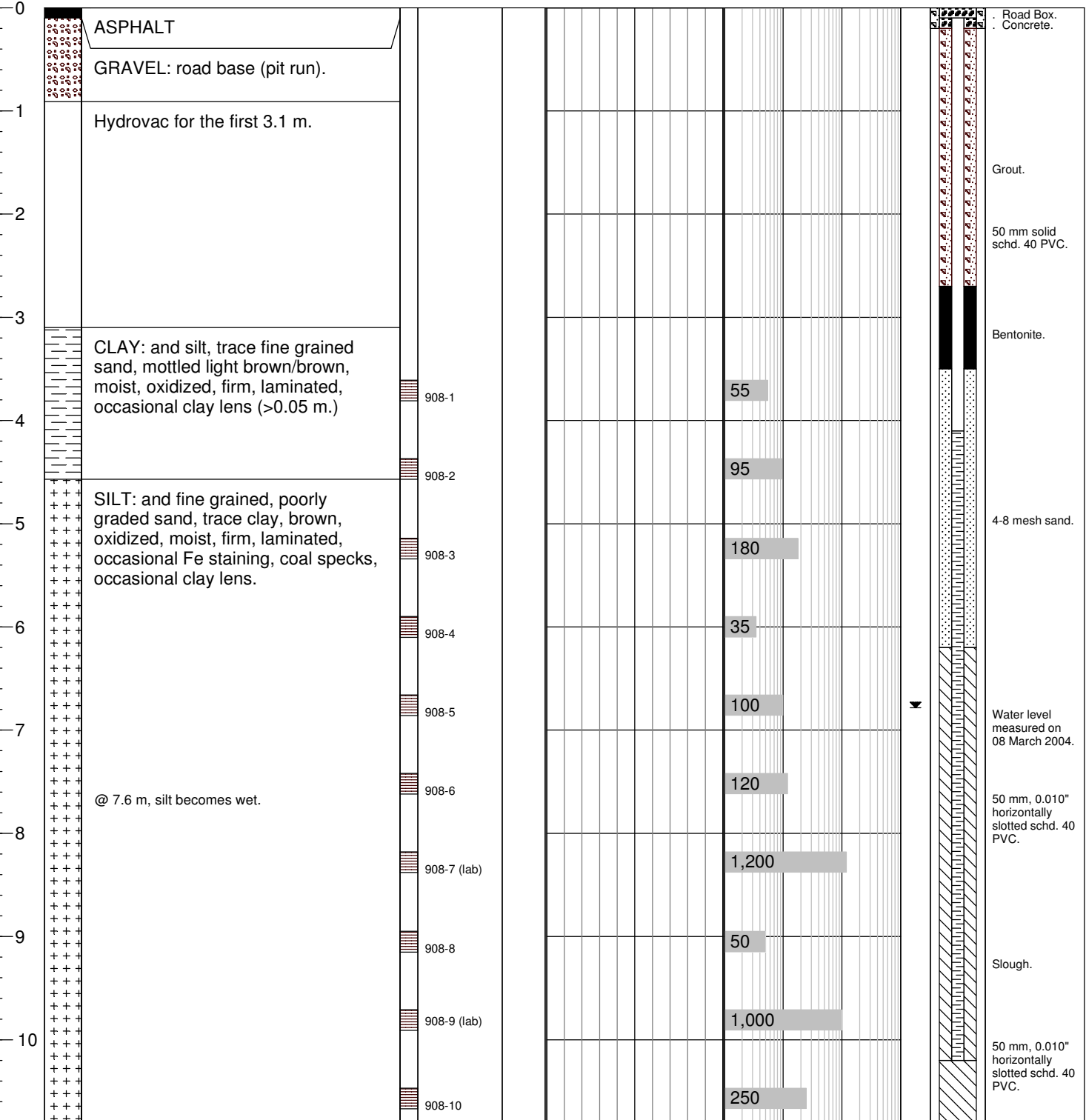


ENV.BH.m CAL v03.lbf



Client: Sears Canada Inc.	Northing: 5658451.616	Date Drilled: 04 February 2004
Project: Environmental Site Investigation	Easting: -6820.420	Drill: B-59
Location: Hounsfeld Heights, Calgary, AB	Ground Elev.: 1081.607	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1081.548	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	10	100	1000	



Env. BH m CAL v03.04f



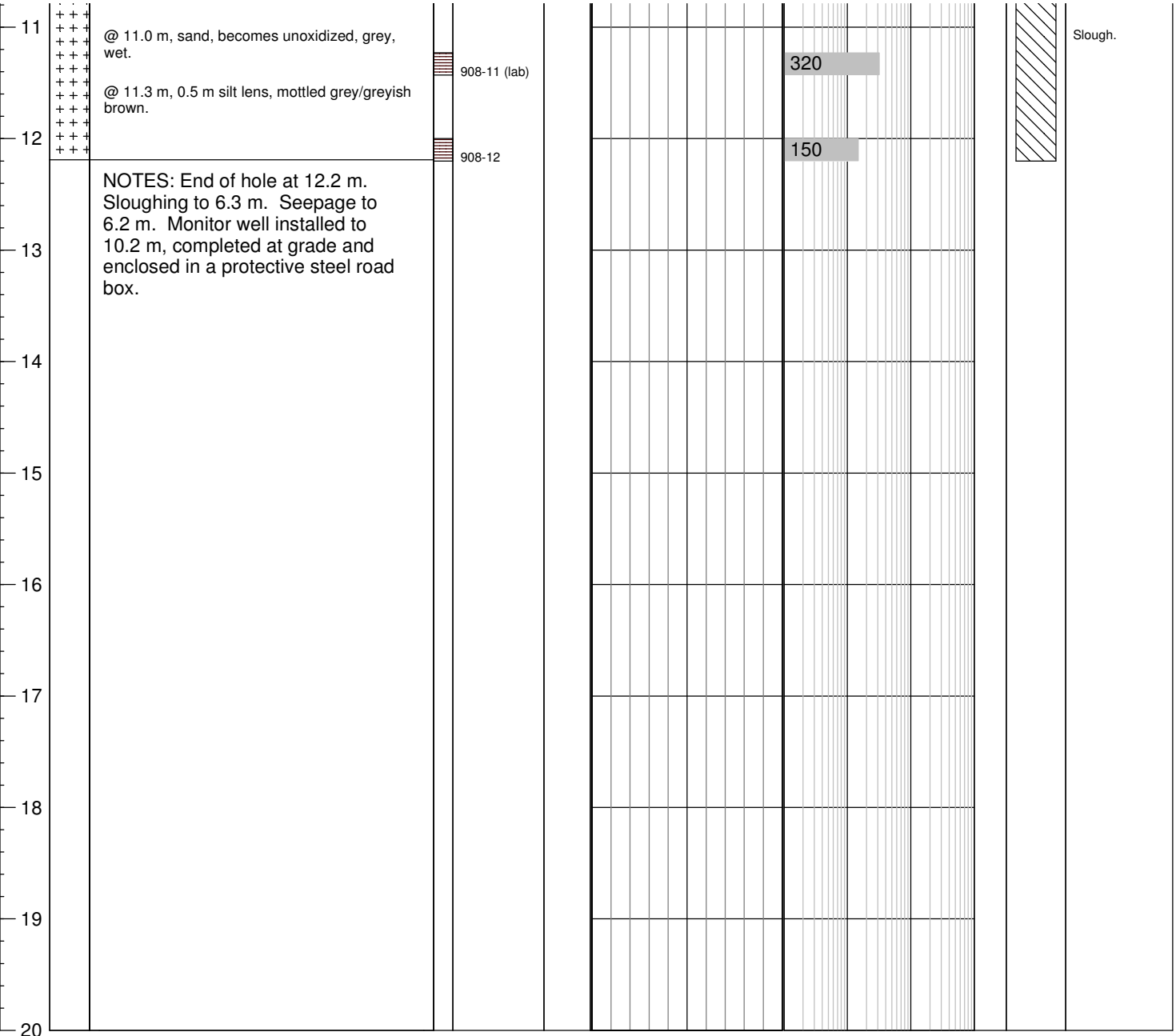
# BORE HOLE LOG

**Bore Hole: BH908**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658451.616	Date Drilled: 04 February 2004
Project: Environmental Site Investigation	Easting: -6820.420	Drill: B-59
Location: Hounsfield Heights, Calgary, AB	Ground Elev.: 1081.607	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1081.548	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
						▲	●	◆	10	100	1000	10000	

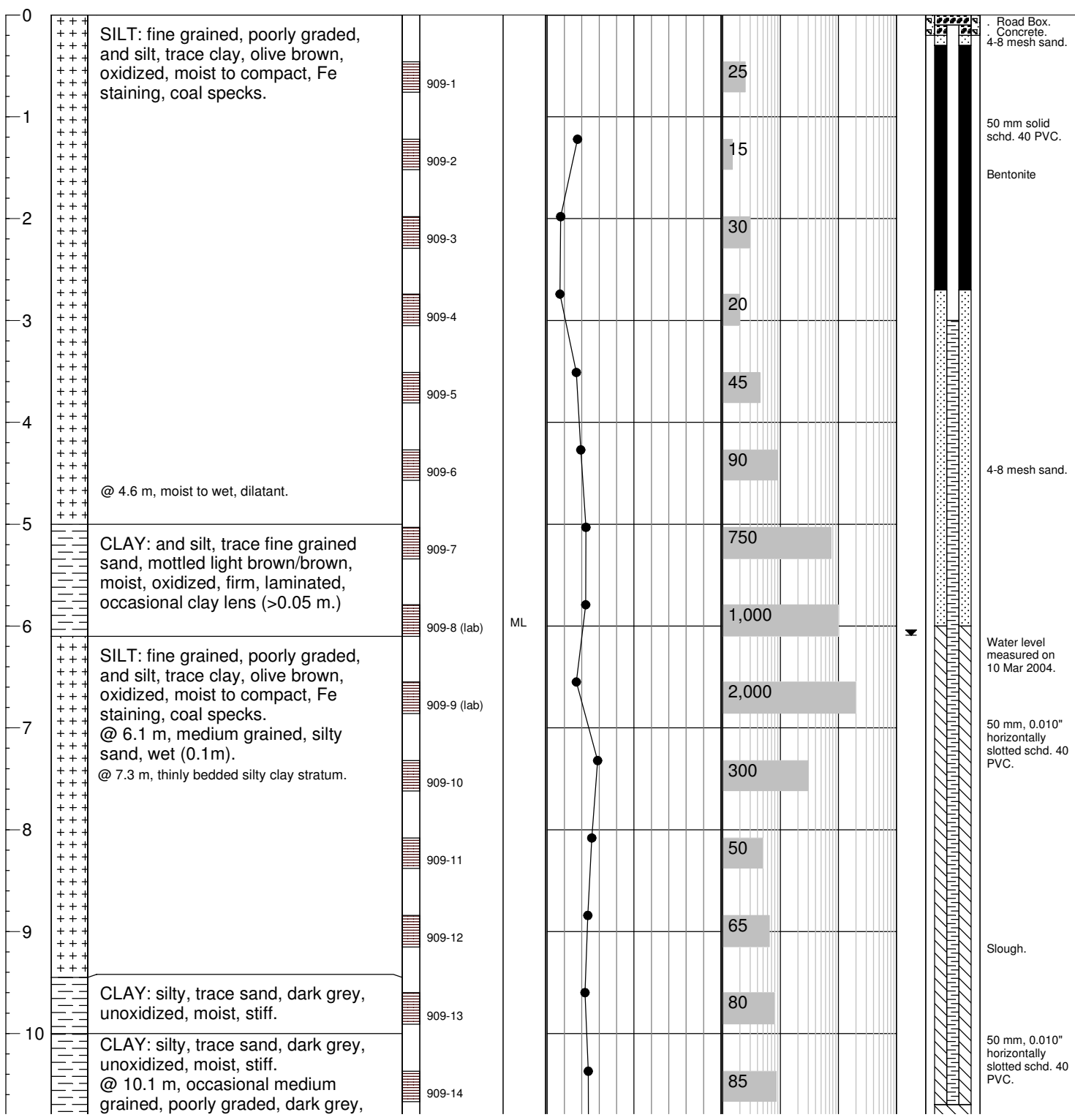


ENV.BH m CAL v03.lbf



Client: Sears Canada Inc.	Northing: 5658388.062	Date Drilled: 06 February 2004
Project: Environmental Site Investigation	Easting: -6797.432	Drill: B-59
Location: Hounsfield Heights, Calgary, AB	Ground Elev.: 1077.758	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1077.680	Logged by: MH

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit ▲	percent Natural Moisture ●	Liquid Limit ◆	10	100	1000	





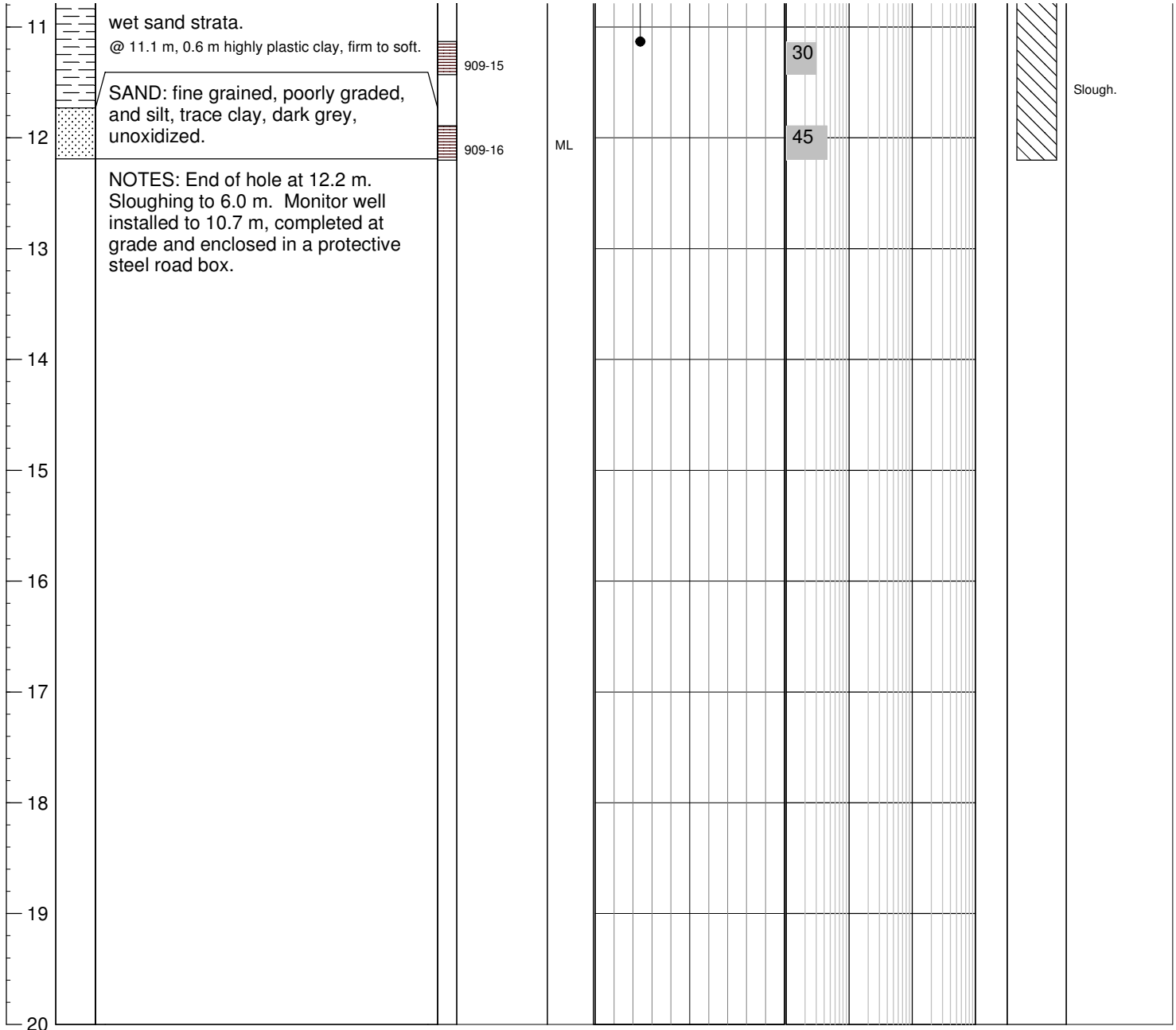
# BORE HOLE LOG

**Bore Hole: BH909**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658388.062	Date Drilled: 06 February 2004
Project: Environmental Site Investigation	Easting: -6797.432	Drill: B-59
Location: Hounsfeld Heights, Calgary, AB	Ground Elev.: 1077.758	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1077.680	Logged by: MH

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
						▲	●	◆	10	100	1000	10000	





# BORE HOLE LOG

**Bore Hole: BH910**

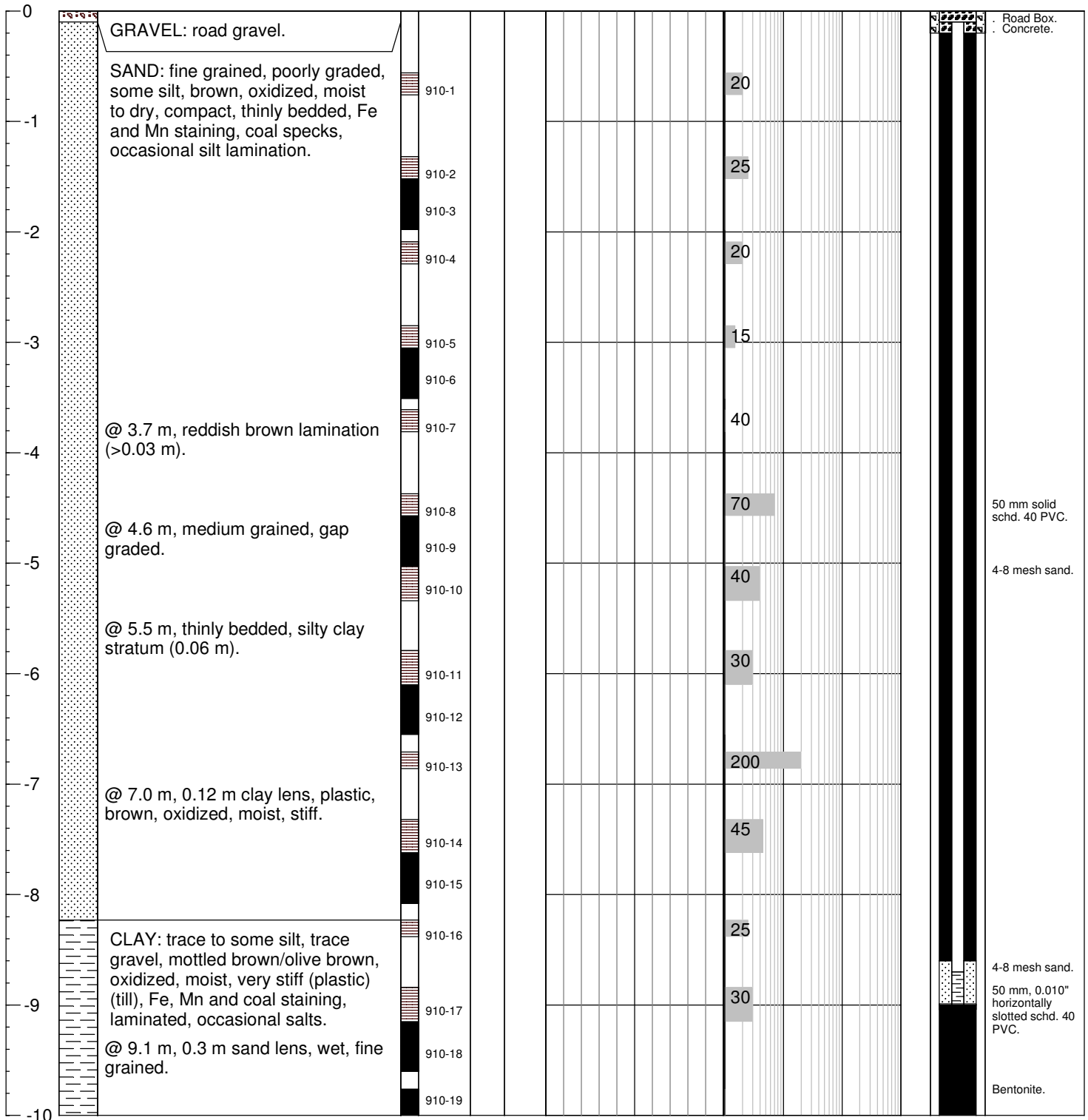
**Page: 1 of 2**

Client: Sears Canada Inc.  
Project: Environmental Site Investigation  
Location: Hounsfield Heights, Calgary, AB  
Project No.: CG909

Northing: 5658545.410  
Easting: -6797.996  
Ground Elev.: 1091.365  
Top Casing Elev.: 1091.271

Date Drilled: 04 February 2004  
Drill: B-59  
Drilling Method: Solid Stem Auger  
Logged by: MH

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit								
							0	▲	50	●	100	◆	10	100	1000	10000	





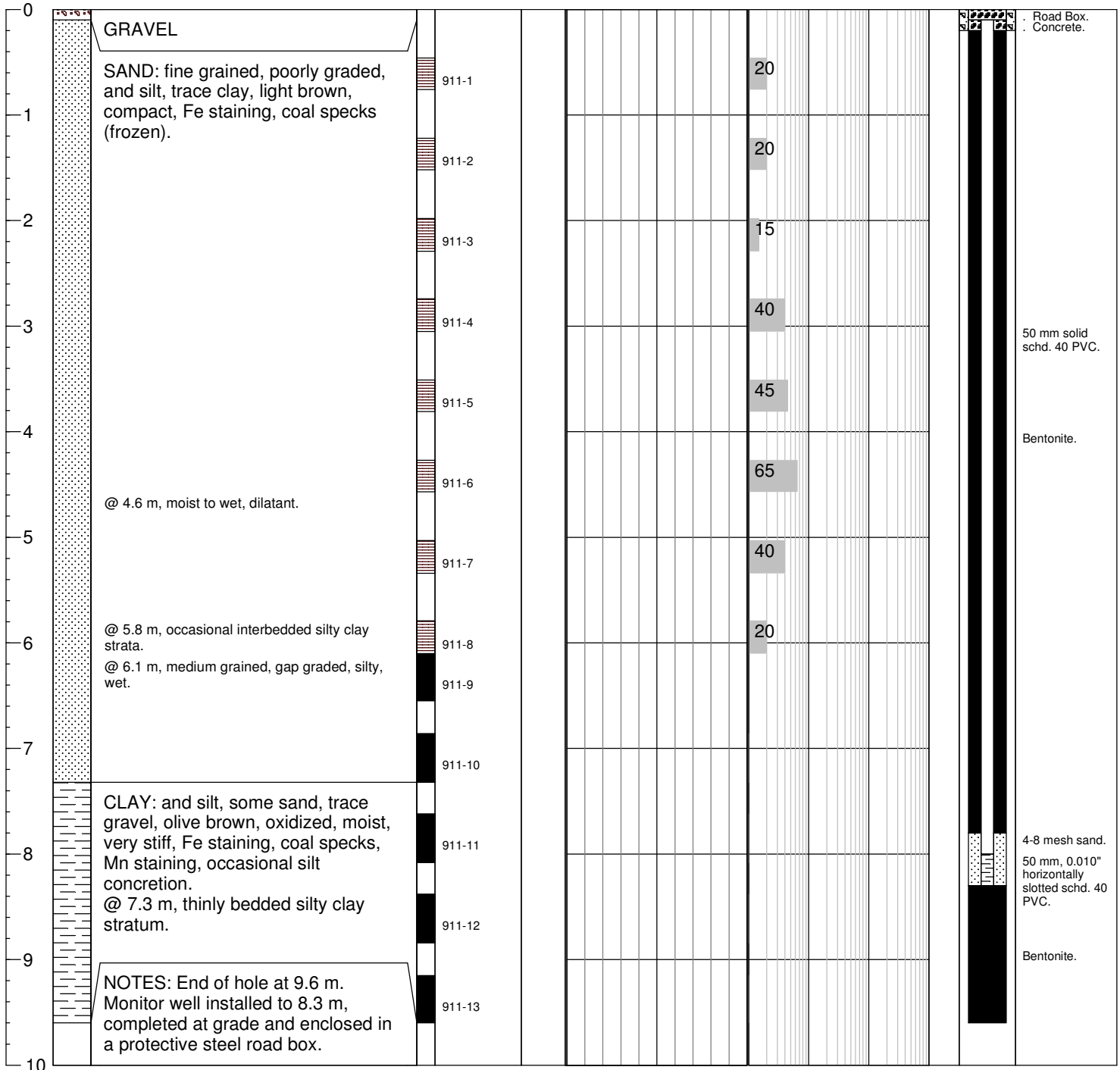


ENV.BH m CAL v03.lbf



Client: Sears Canada Inc.	Northing: 5658579.159	Date Drilled: 06 February 2004
Project: Environmental Site Investigation	Easting: -6797.793	Drill: B-59
Location: Hounsfeld Heights, Calgary, AB	Ground Elev.: 1090.810	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.684	Logged by: MH

Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail	
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
								0	10	100	1000	10000	





# BORE HOLE LOG

**Bore Hole: BH912**

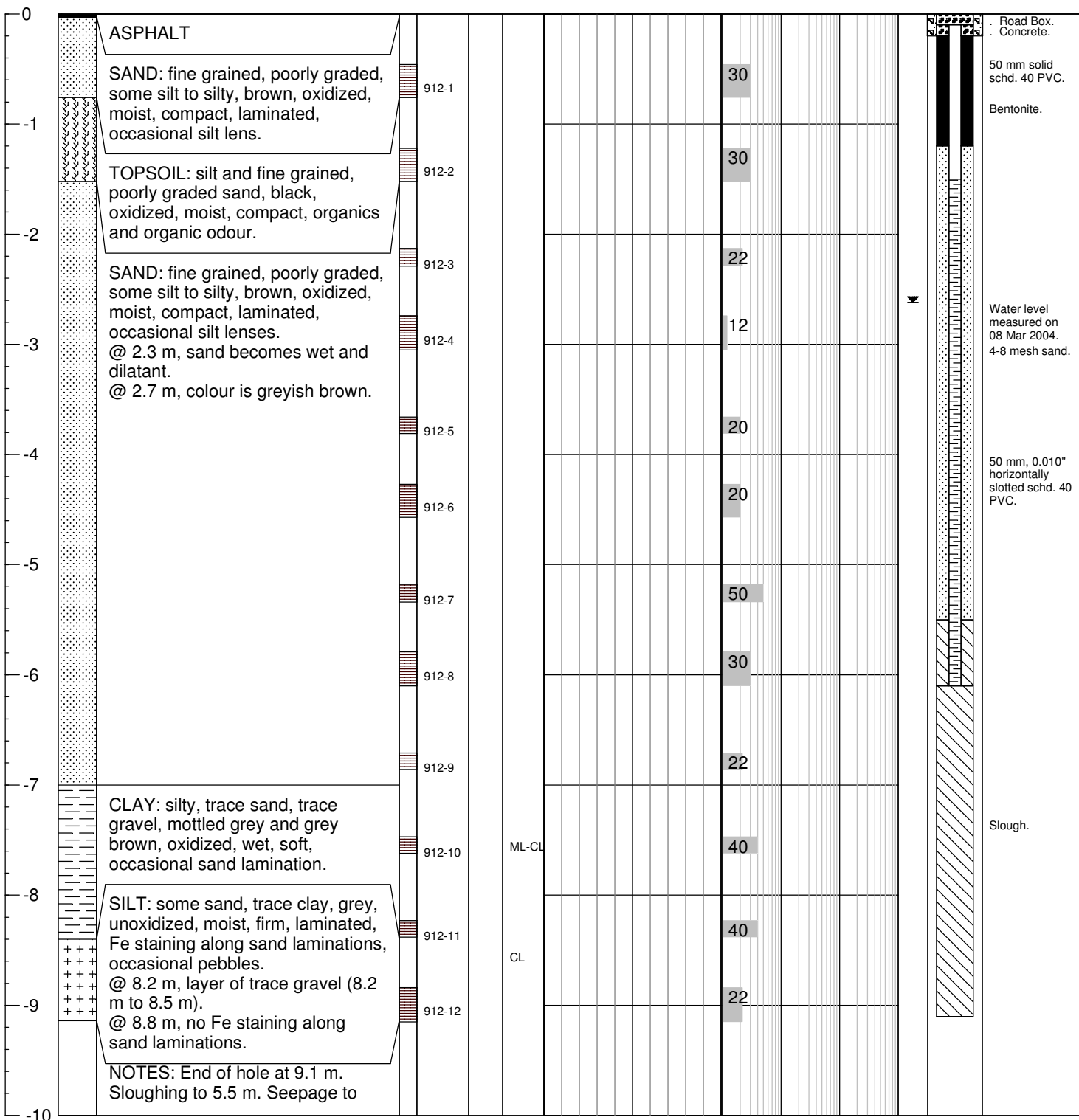
**Page: 1 of 2**

Client: Sears Canada Inc.  
Project: Environmental Site Investigation  
Location: Hounsfeld Heights, Calgary, AB  
Project No.: CG909

Northing: 56585401.999  
Easting: -6864.215  
Ground Elev.: 1075.234  
Top Casing Elev.: 1075.137

Date Drilled: 18 February 2004  
Drill: B-57  
Drilling Method: Solid Stem Auger  
Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	10		100	1000





# BORE HOLE LOG

**Bore Hole: BH912**

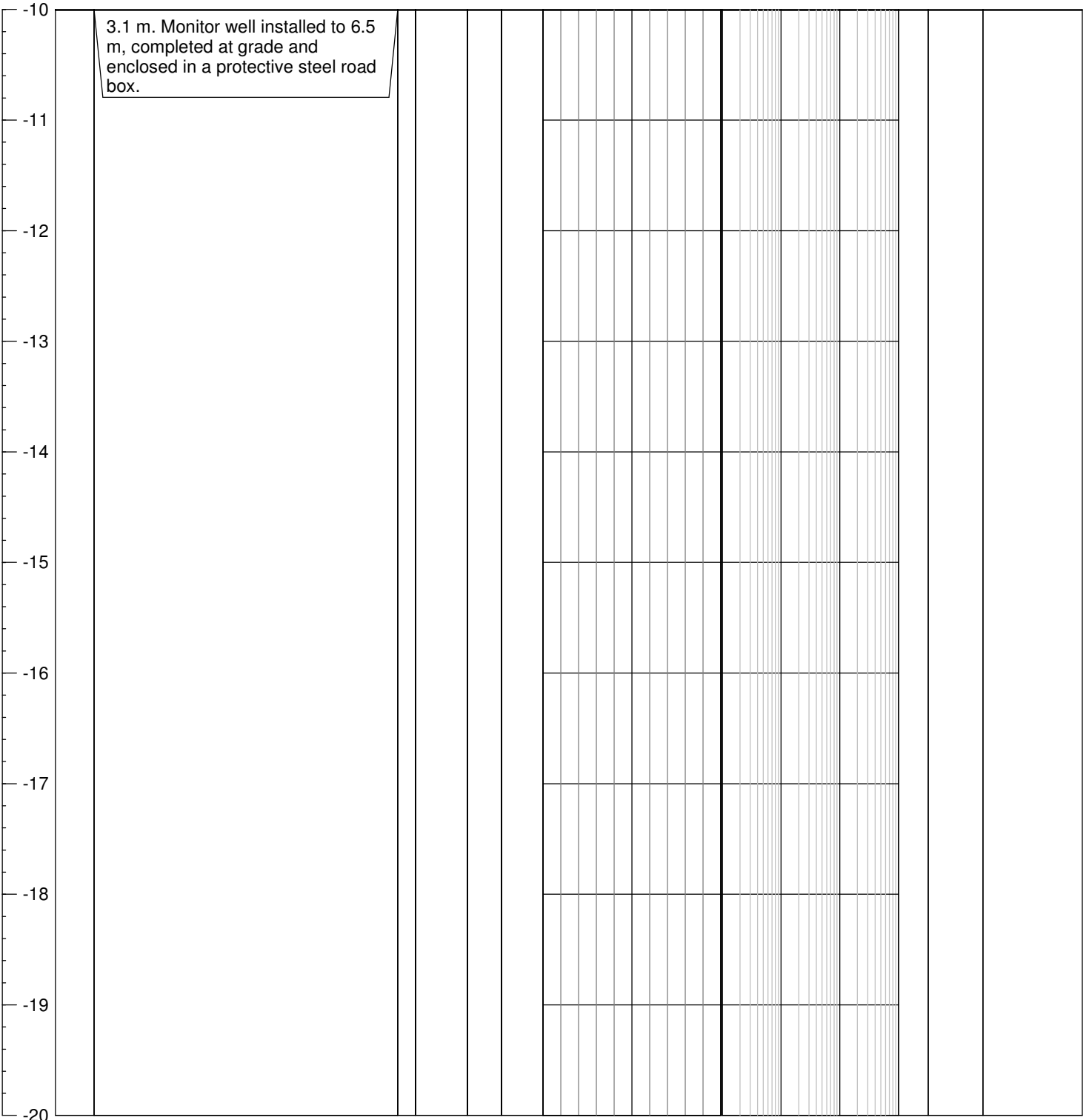
**Page: 2 of 2**

Client: Sears Canada Inc.  
Project: Environmental Site Investigation  
Location: Hounsfield Heights, Calgary, AB  
Project No.: CG909

Northing: 56585401.999  
Easting: -6864.215  
Ground Elev.: 1075.234  
Top Casing Elev.: 1075.137

Date Drilled: 18 February 2004  
Drill: B-57  
Drilling Method: Solid Stem Auger  
Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
							▲	●	◆						
							0	50	100	10	100	1000	10000		





# BORE HOLE LOG

**Bore Hole: BH913**

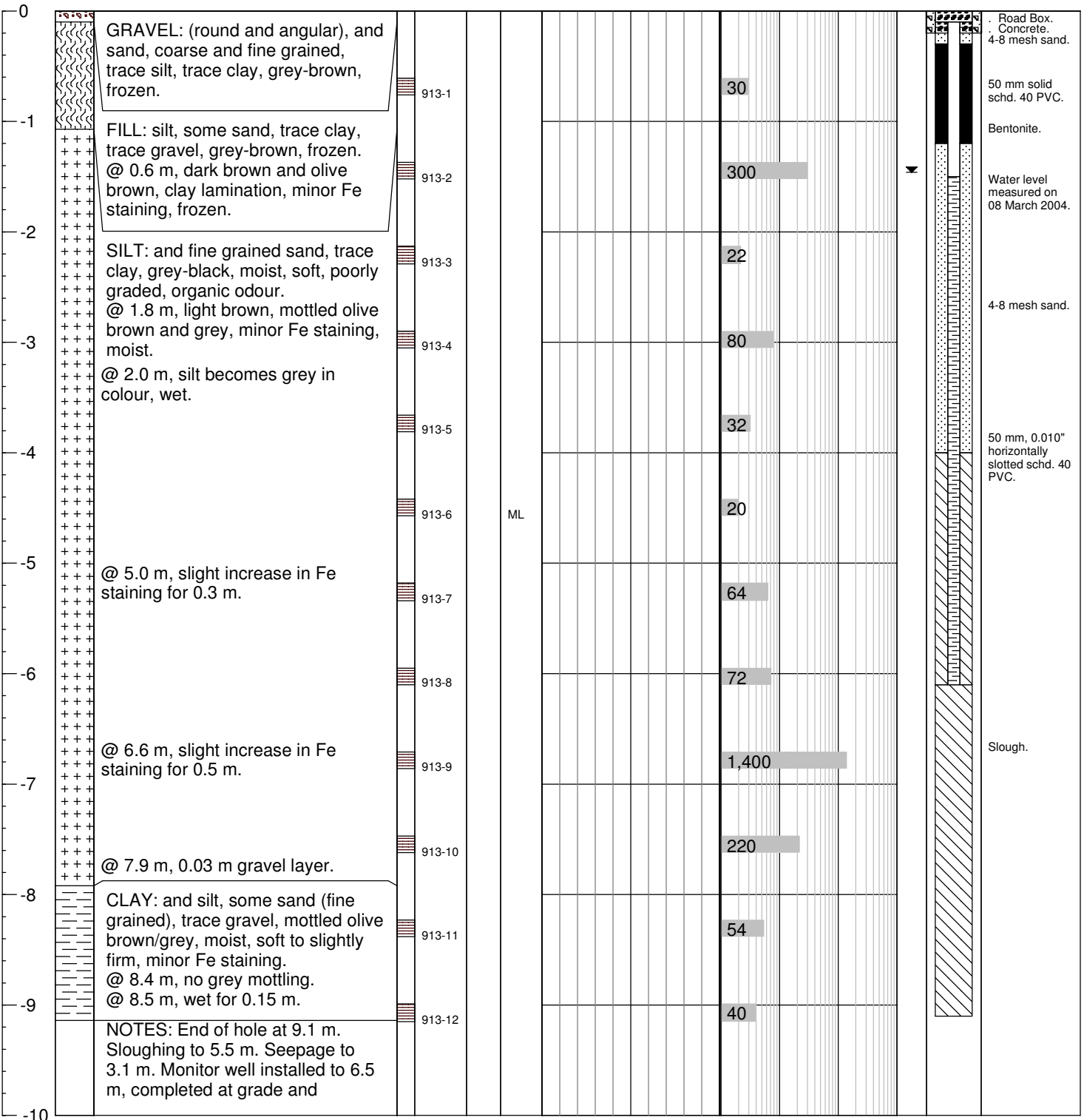
**Page: 1 of 2**

Client: Sears Canada Inc.  
Project: Environmental Site Investigation  
Location: Hounsfield Heights, Calgary, AB  
Project No.: CG909

Northing: 5658385.191  
Easting: -6858.851  
Ground Elev.: 1072.791  
Top Casing Elev.: 1072.697

Date Drilled: 18 February 2004  
Drill: B-57  
Drilling Method: Solid Stem Auger  
Logged by: BHP

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail		
			Type No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	10	100		1000	10000
0														





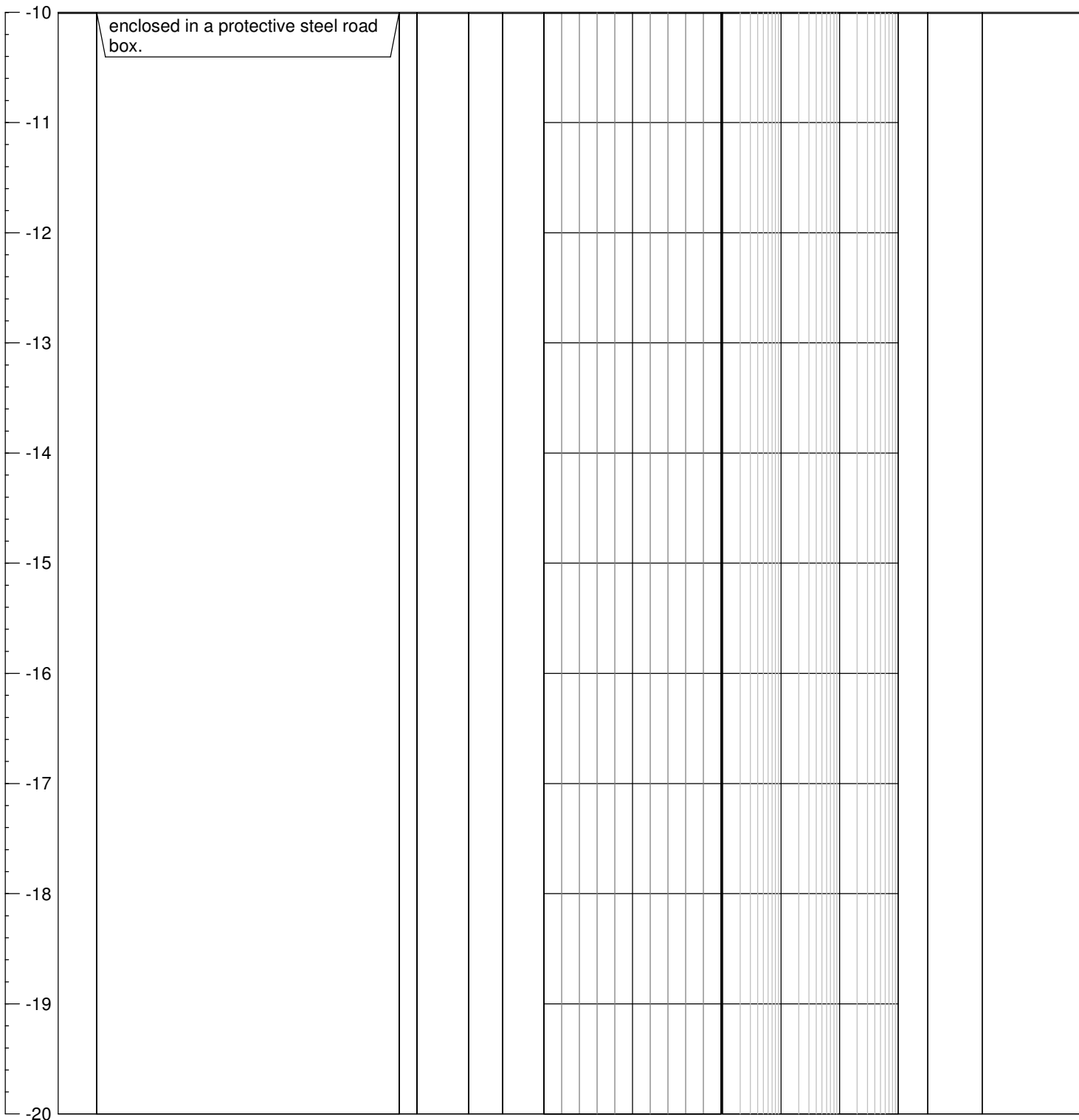
# BORE HOLE LOG

**Bore Hole: BH913**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658385.191	Date Drilled: 18 February 2004
Project: Environmental Site Investigation	Easting: -6858.851	Drill: B-57
Location: Hounsfield Heights, Calgary, AB	Ground Elev.: 1072.791	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1072.697	Logged by: BHP

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit ▲	percent Natural Moisture ●	Liquid Limit ◆						
						0	▲	●	◆	100	10	100	1000	10000	





# BORE HOLE LOG

**Bore Hole: BH914**

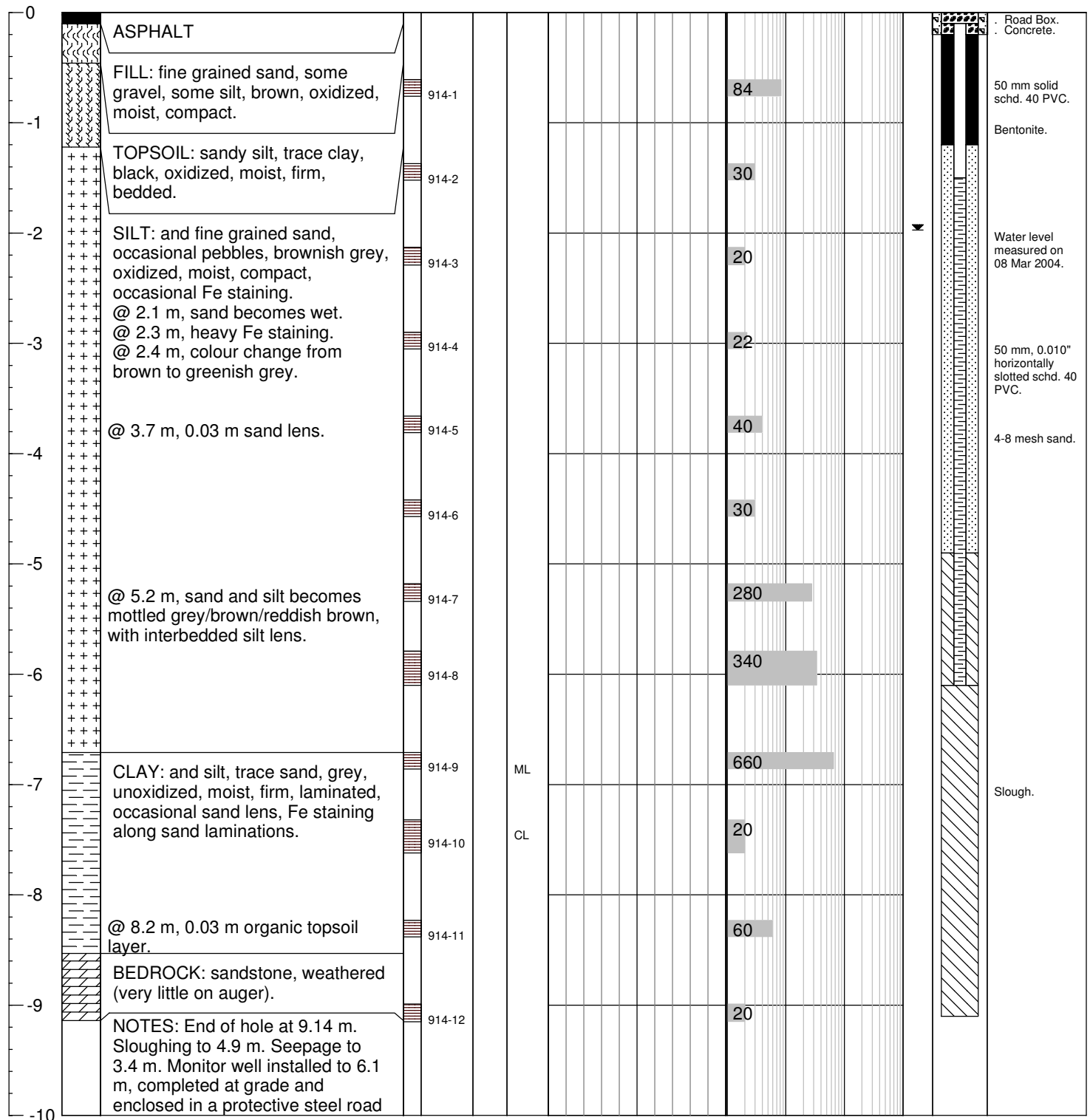
**Page: 1 of 2**

Client: Sears Canada Inc.  
Project: Environmental Site Investigation  
Location: Hounsfield Heights, Calgary, AB  
Project No.: CG909

Northing: 5658390.401  
Easting: -6742.372  
Ground Elev.: 1070.246  
Top Casing Elev.: 1070.179

Date Drilled: 18 February 2004  
Drill: B-57  
Drilling Method: Solid Stem Auger  
Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	10	





# BORE HOLE LOG

**Bore Hole: BH914**

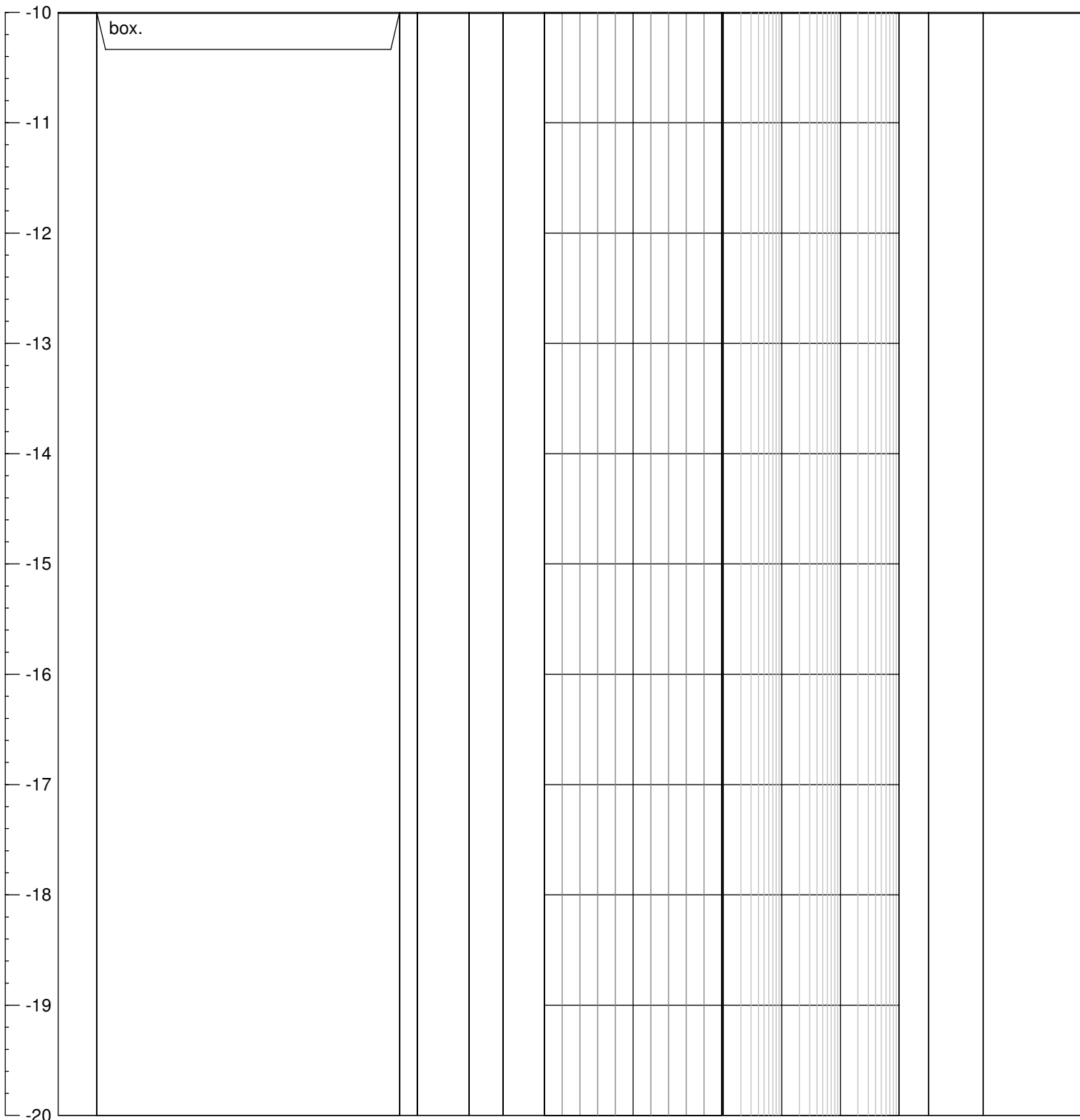
**Page: 2 of 2**

Client: Sears Canada Inc.  
Project: Environmental Site Investigation  
Location: Hounsfeld Heights, Calgary, AB  
Project No.: CG909

Northing: 5658390.401  
Easting: -6742.372  
Ground Elev.: 1070.246  
Top Casing Elev.: 1070.179

Date Drilled: 18 February 2004  
Drill: B-57  
Drilling Method: Solid Stem Auger  
Logged by: CRC

Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail	
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit							
							0	▲	●	◆	100	10	100	1000	10000	







# BORE HOLE LOG

**Bore Hole: BH915**

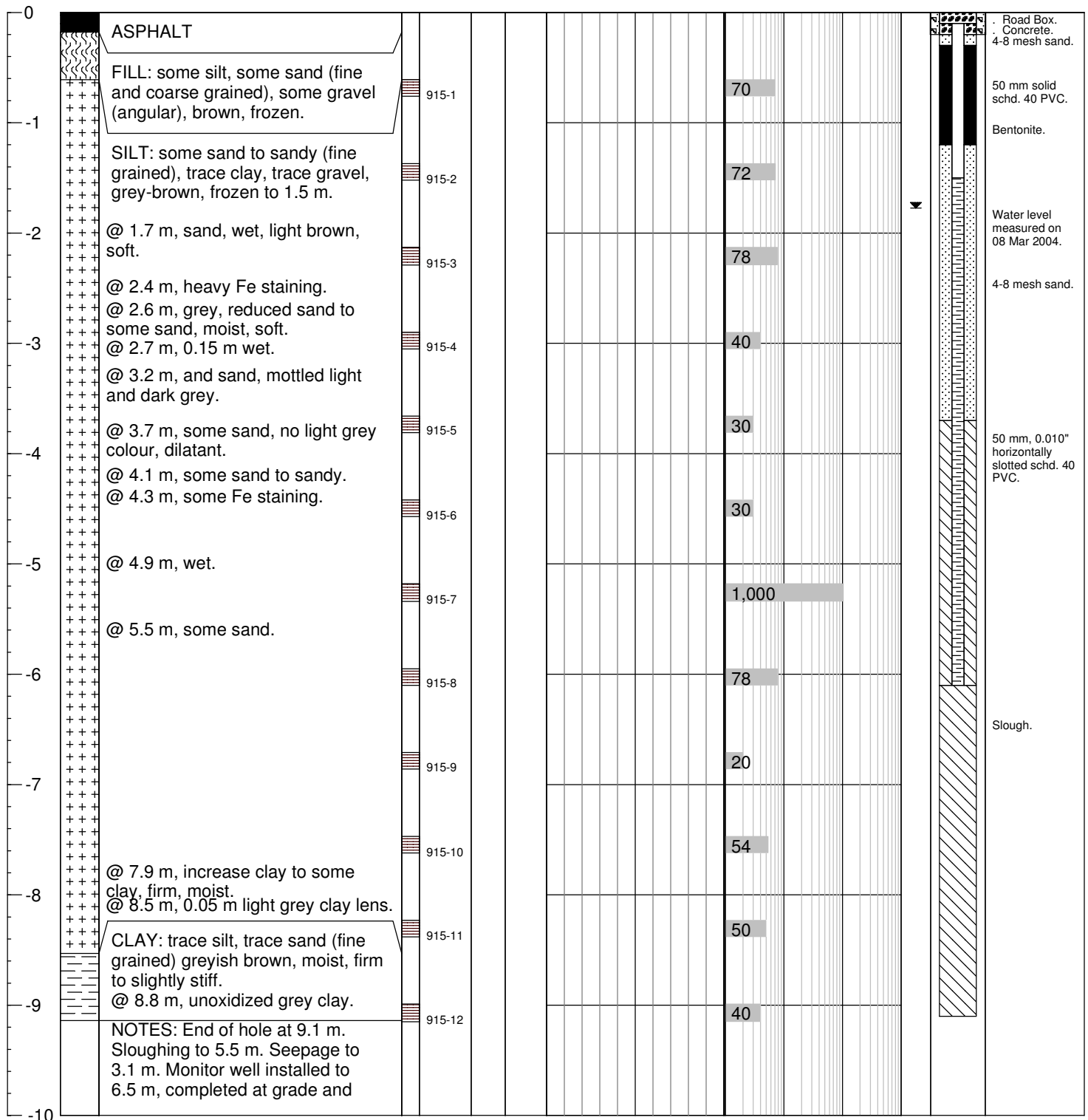
**Page: 1 of 2**

Client: Sears Canada Inc.  
Project: Environmental Site Investigation  
Location: Hounsfeld Heights, Calgary, AB  
Project No.: CG909

Northing: 5658372.921  
Easting: -6742.277  
Ground Elev.: 1068.332  
Top Casing Elev.: 1068.238

Date Drilled: 18 February 2004  
Drill: B-57  
Drilling Method: Solid Stem Auger  
Logged by: BHP

Elev (m) Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail	
			Type No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	10	100		1000
0													





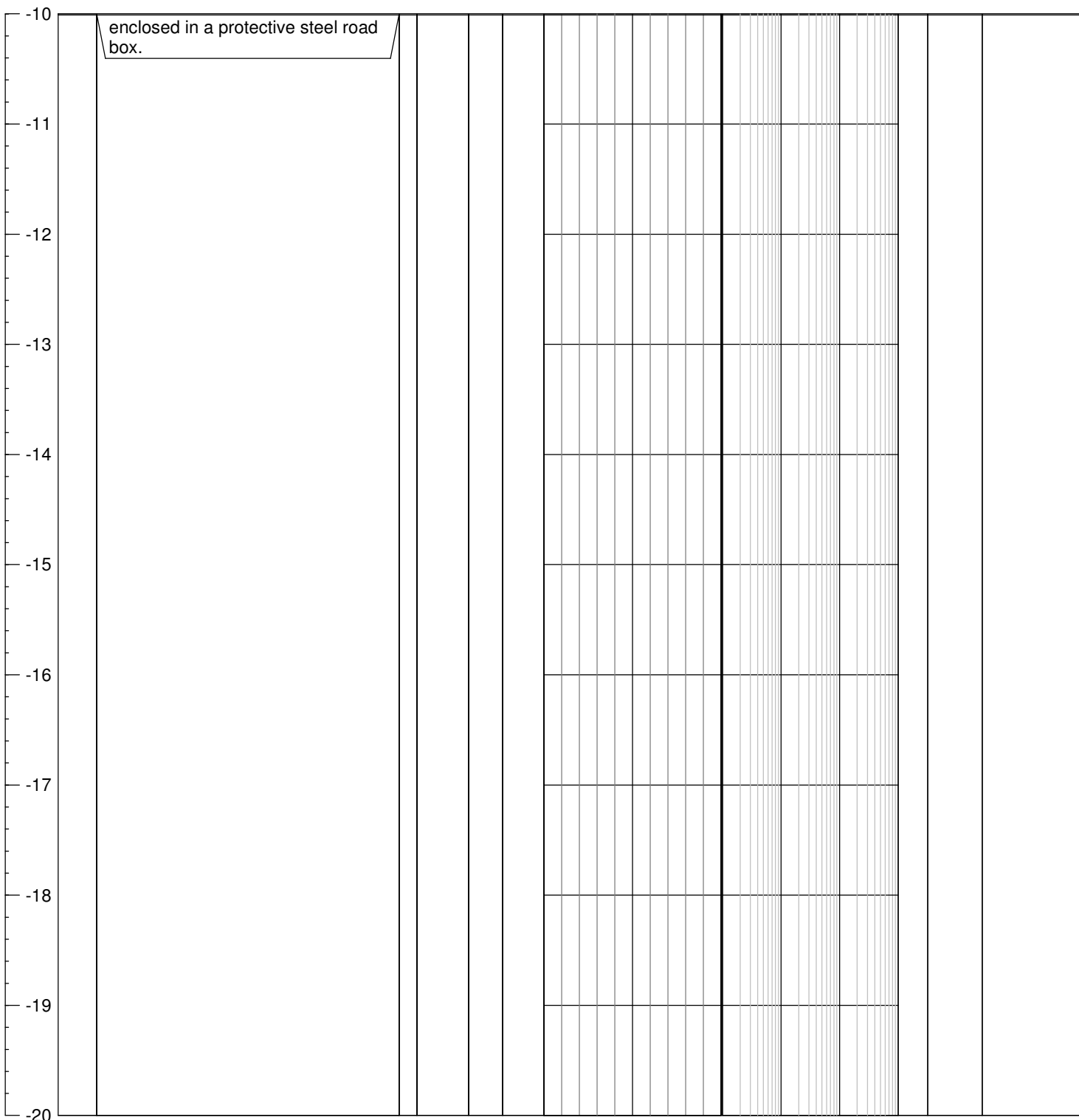
# BORE HOLE LOG

**Bore Hole: BH915**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658372.921	Date Drilled: 18 February 2004
Project: Environmental Site Investigation	Easting: -6742.277	Drill: B-57
Location: Hounsfield Heights, Calgary, AB	Ground Elev.: 1068.332	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1068.238	Logged by: BHP

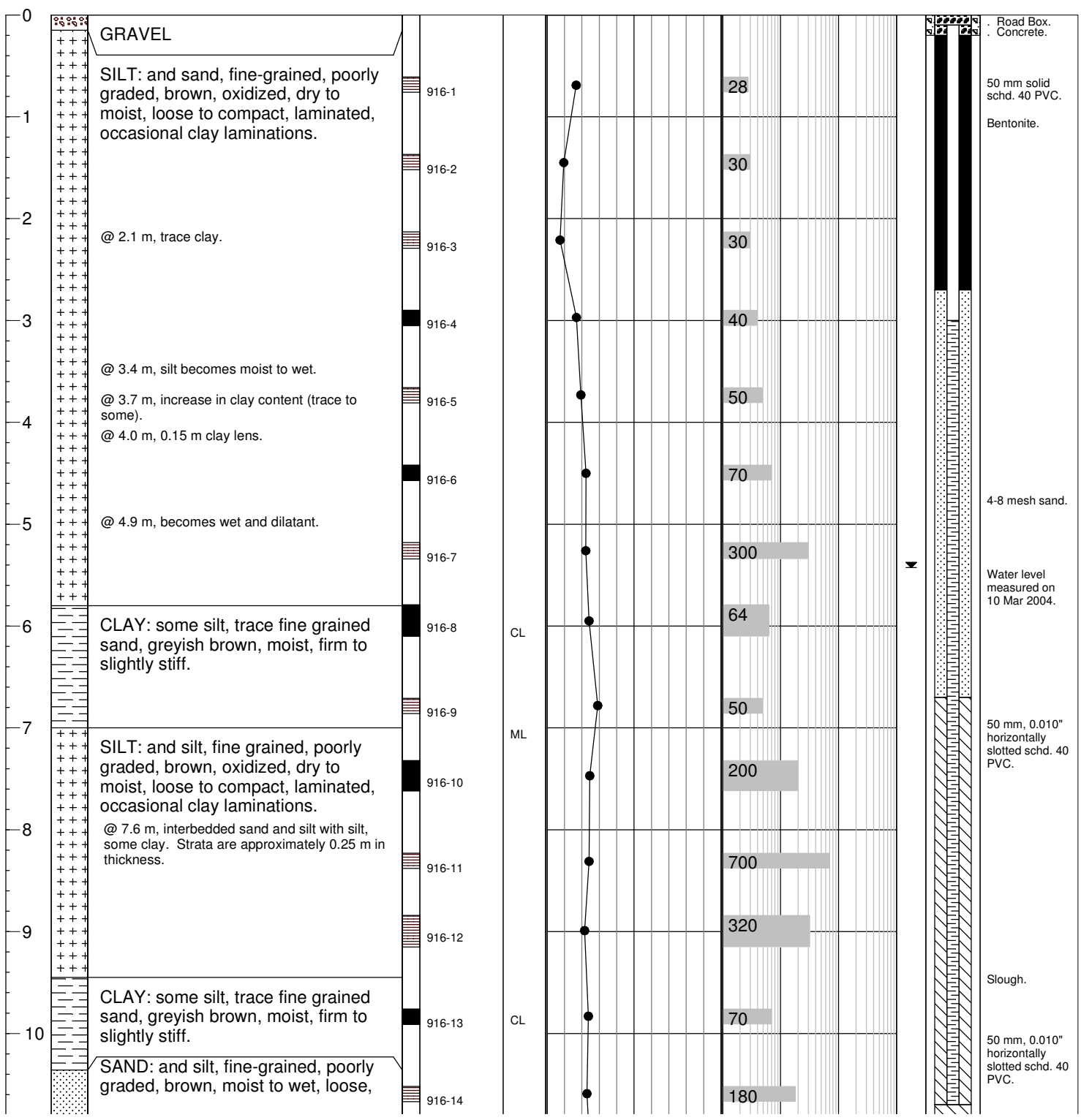
Elev (m) Depth (m)	Symbol	Soil Description	Sample				Moisture Content				Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit						
							▲	●	◆						
							0	50	100	10	100	1000	10000		





Client: Sears Canada Inc.	Northing: 5658372.240	Date Drilled: 19 February 2004
Project: Environmental Site Investigation	Easting: -6797.601	Drill: B-57
Location: Hounsfeld Heights, Calgary, AB	Ground Elev.: 1076.121	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1076.023	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	10	100	1000	





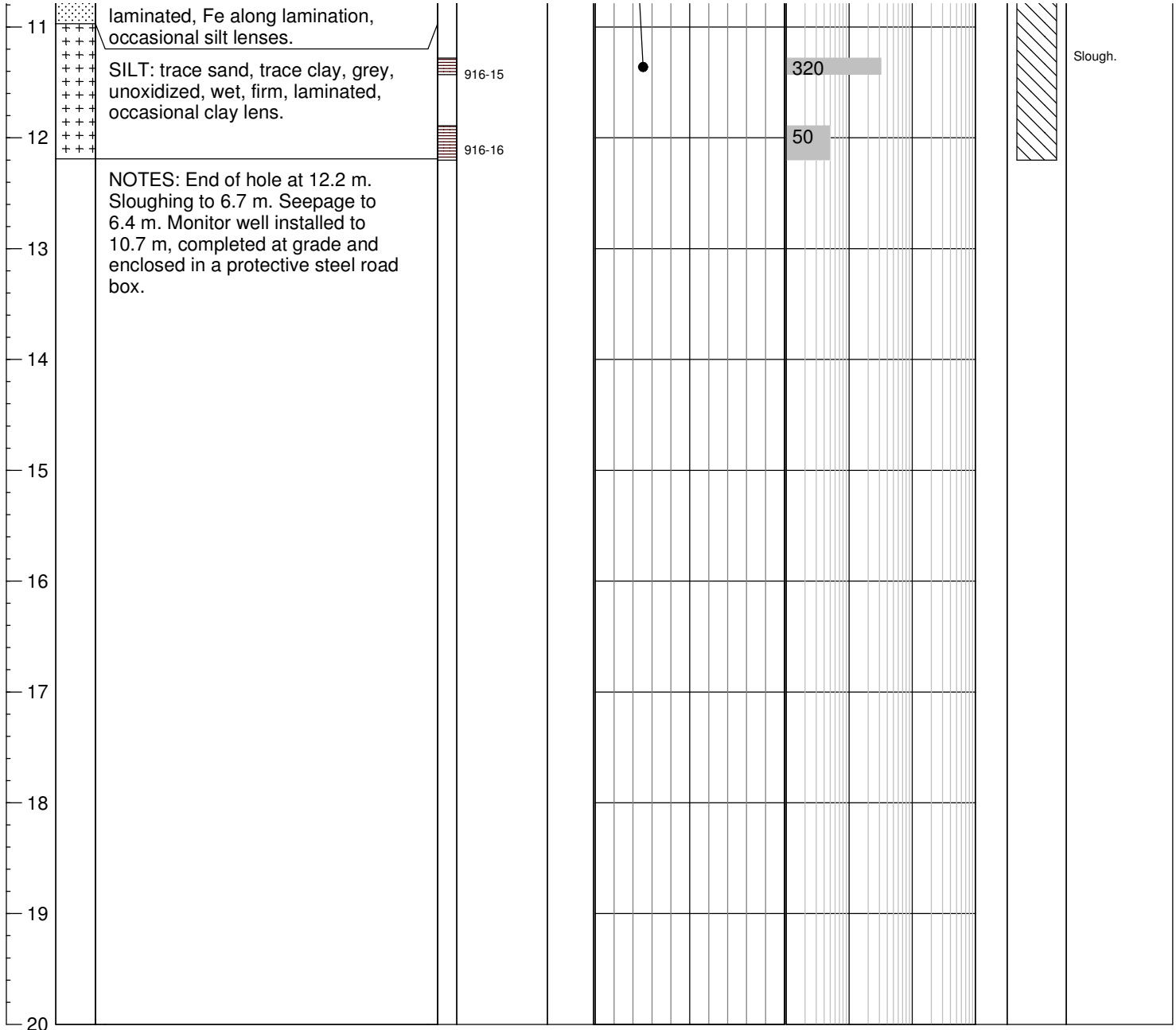
# BORE HOLE LOG

**Bore Hole: BH916**

**Page: 1 of 2**

Client: Sears Canada Inc.	Northing: 5658372.240	Date Drilled: 19 February 2004
Project: Environmental Site Investigation	Easting: -6797.601	Drill: B-57
Location: Hounsfield Heights, Calgary, AB	Ground Elev.: 1076.121	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1076.023	Logged by: CRC

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
						▲	●	◆	10	100	1000	10000	

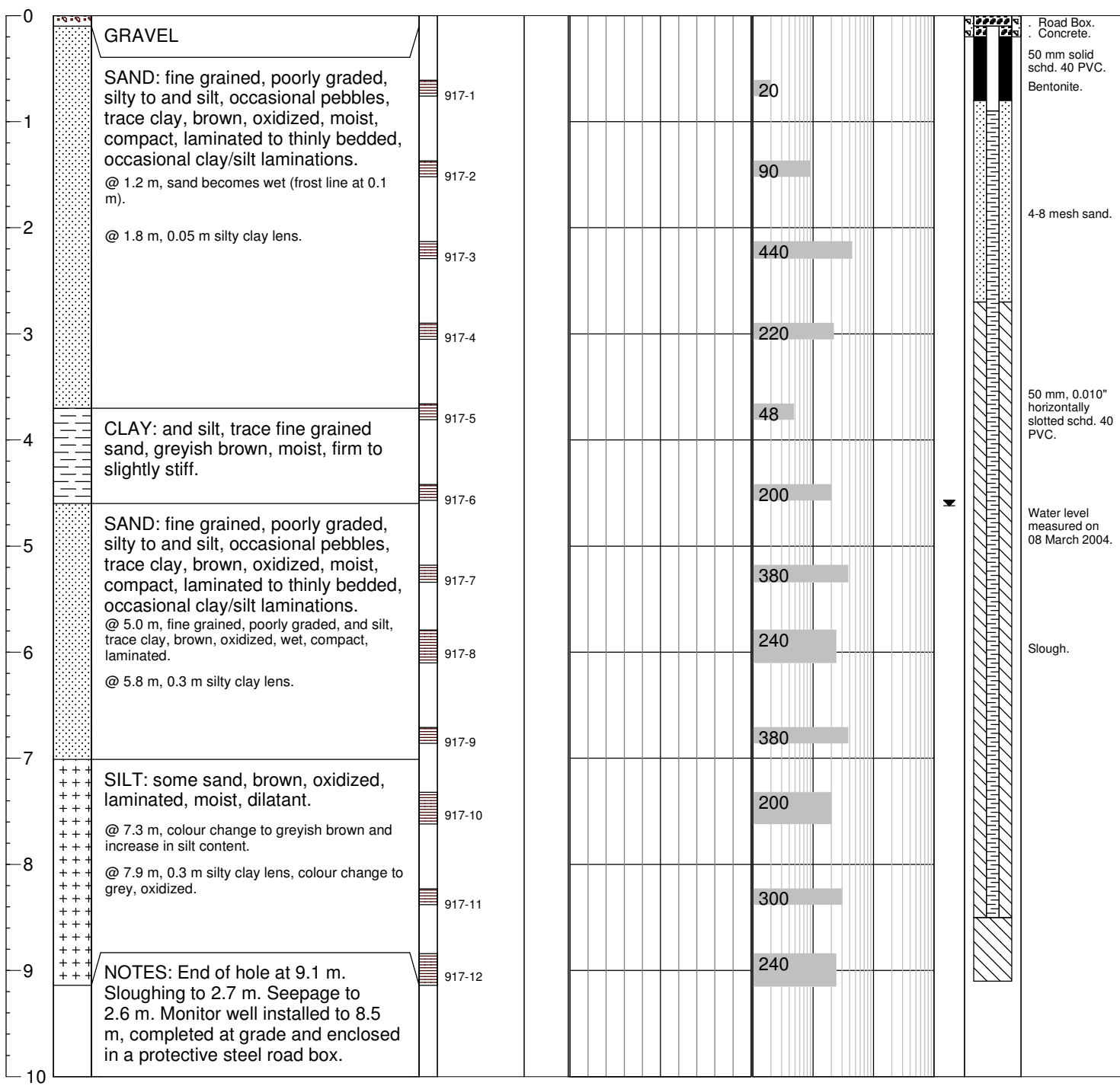


ENV.BH m CAL v03.lbf



<b>Client:</b> Sears Canada Inc.	<b>Northing:</b> 5658357.279	<b>Date Drilled:</b> 19 February 2004
<b>Project:</b> Environmental Site Investigation	<b>Easting:</b> -6797.466	<b>Drill:</b> B-57
<b>Location:</b> Hounsfeld Heights, Calgary, AB	<b>Ground Elev.:</b> 1073.793	<b>Drilling Method:</b> Solid Stem Auger
<b>Project No.:</b> CG909	<b>Top Casing Elev.:</b> 1073.739	<b>Logged by:</b> CRC/GC

Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail	
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
								0	10	100	1000	10000	





**LEGEND:**

- BOREHOLE LOCATION
- MONITORING WELL
- BOREHOLE BY OTHERS
- INVESTIGATION BOUNDARY
- LRT TRACKS
- FENCE LINE
- LEGAL LINE
- FACILITY/FEATURE
- BUILDING
- EXCAVATION LINER
- TREES

**UTILITIES & SYMBOLS**

- NATURAL GAS LINE
- SANITARY SEWER
- STORM SEWER
- WATER
- FIBRE OPTICS CABLE
- UNDERGROUND POWER
- TELEPHONE
- POWER POLE
- CATCH BASIN
- FIRE HYDRANT
- LIGHT STANDARD
- MANHOLE
- VALVE
- TRAFFIC ISLAND

**NOTES:**

- DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES), SITE ASSESSMENT INFORMATION, AND TRONNES SURVEYS LTD SURVEY DONE JUNE 14,15 OF 2005. ADDITIONAL REFERENCES FROM SEACOR ENVIRONMENTAL ENGINEERING INC., DRAWINGS 149-5A6.DWG AND 149-5A6.DWG
- TEMPORARY BENCHMARKS: ASCM 75838 AT COORDINATES N. 5658986.637 E. -6668.803 ELEVATION 1091.344m ASL. ASCM 57265 AT COORDINATES N. 5658680.491 E. -6627.858 ELEVATION 1090.078m ASL.



CLIENT  
**SEARS Canada Inc.**

PROJECT  
 SITE MONITORING REPORT  
 HOUNSFIELD HEIGHTS  
 CALGARY, ALBERTA

TITLE  
 MONITOR WELL LOCATION PLAN  
 BH1100 SERIES

DATE (dd/mm/yy)	24/04/13	APPD. BY	FILE NO.	CG909.6B5A
SCALE	1:1250	DWN. BY	RSD	DWG. NO.
				5

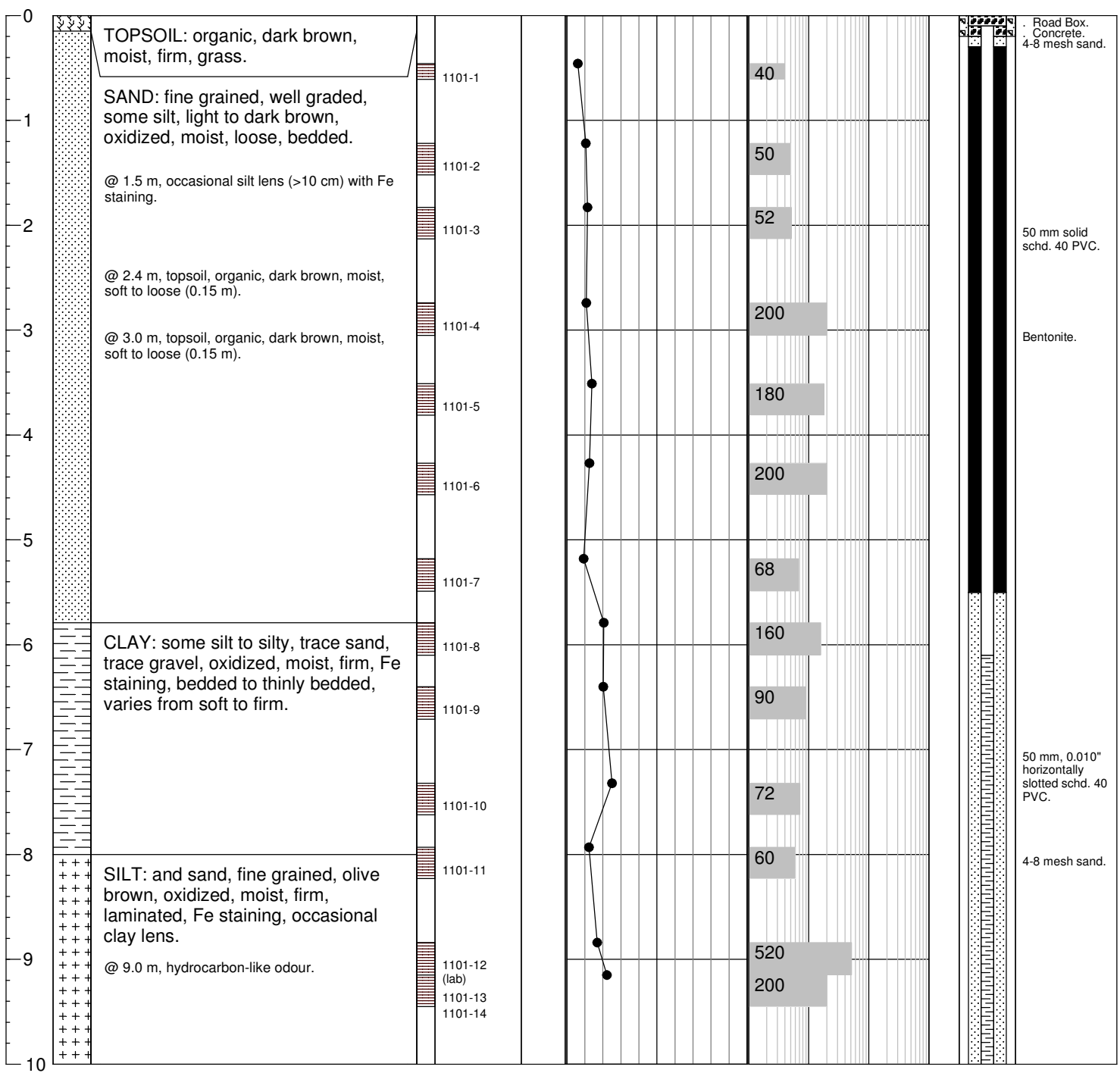
REV	DESCRIPTION	BY	DATE
A			

ENV.BH.m.CAL.v03.lbf



Client: Sears Canada Inc.	Northing: 5658648.885	Date Drilled: 27 February 2004
Project: Environmental Site Investigation	Easting: -6778.879	Drill: B-57
Location: Hounsfield Heights, Calgary, AB	Ground Elev.: 1089.642	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.574	Logged by: CB

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
						▲	●	◆	10	100	1000	10000	

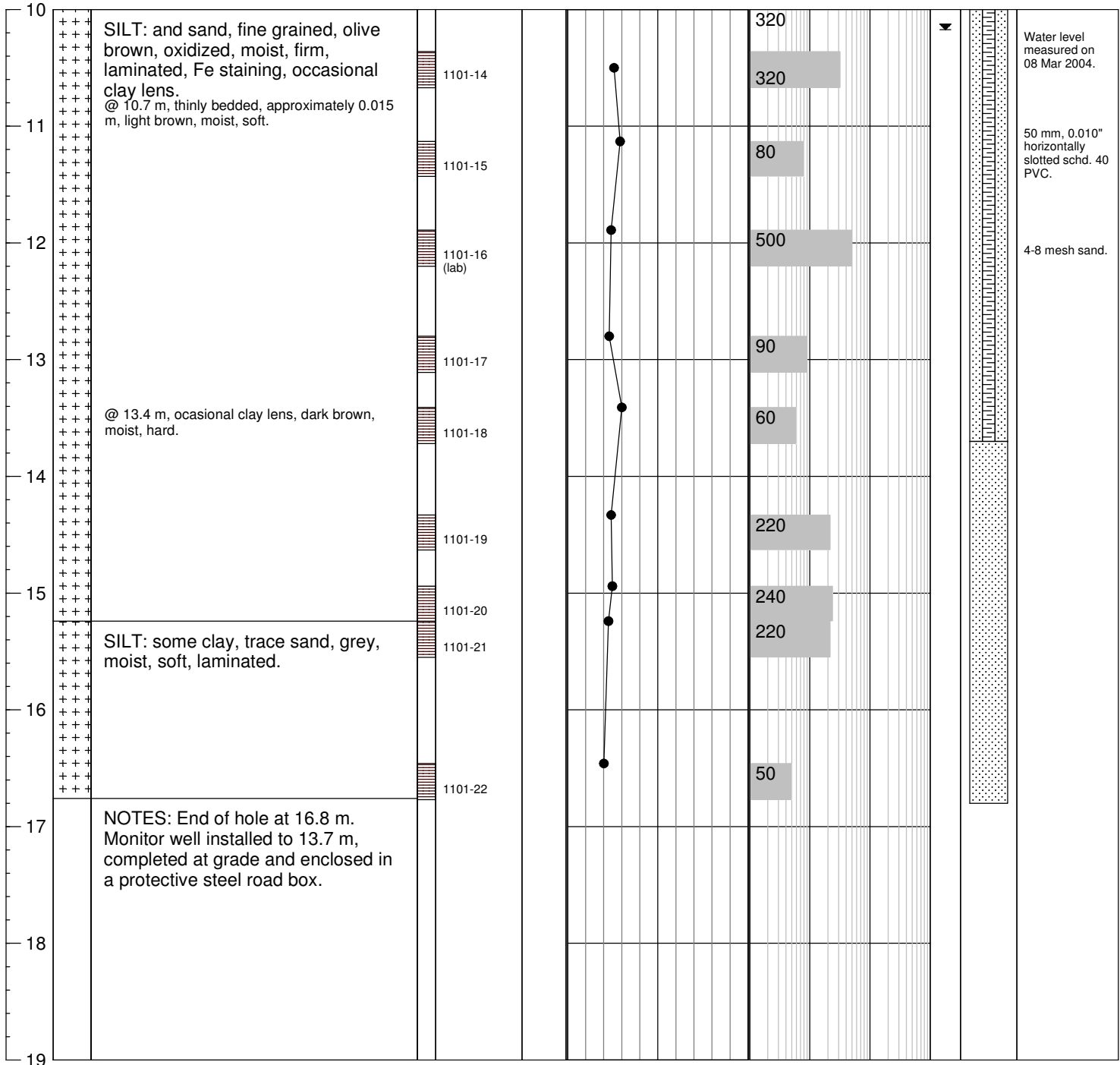


Env. BH m CAL v03.lbf



Client: Sears Canada Inc.	Northing: 5658648.885	Date Drilled: 27 February 2004
Project: Environmental Site Investigation	Easting: -6778.879	Drill: B-57
Location: Hounsfield Heights, Calgary, AB	Ground Elev.: 1089.642	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.574	Logged by: CB

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
						▲	●	◆	10	100	1000	10000	



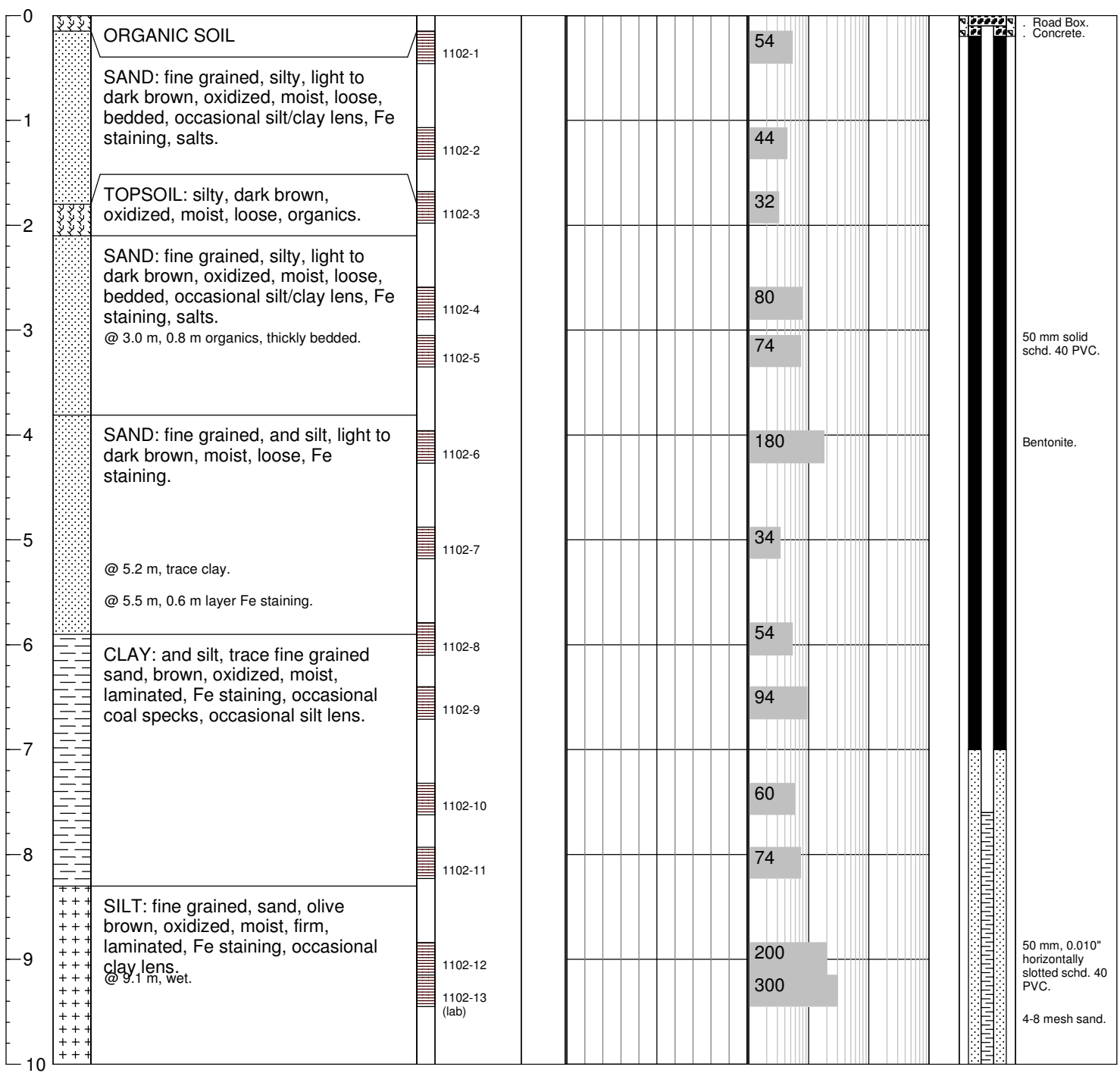


ENV.BH m CAL v03.lbf



Client: Sears Canada Inc.	Northing: 5658636.536	Date Drilled: 27 February 2004
Project: Environmental Site Investigation	Easting: -6786.224	Drill: B-57
Location: Hounsfeld Heights, Calgary, AB	Ground Elev.: 1089.249	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.183	Logged by: CB

Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail	
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
								0	10	100	1000	10000	

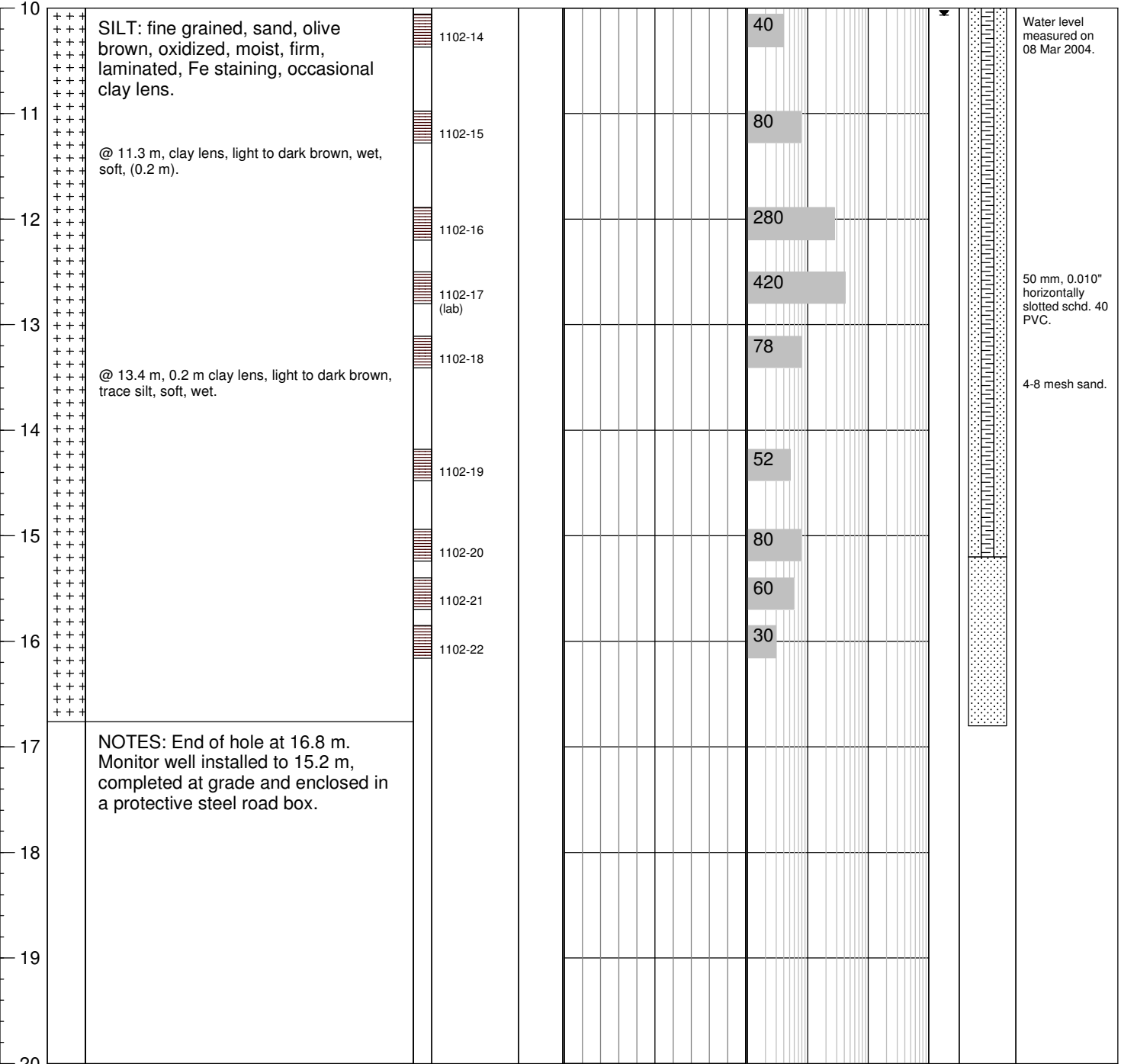


Env. BH m CAL v03.lbf



Client: Sears Canada Inc.	Northing: 5658636.536	Date Drilled: 27 February 2004
Project: Environmental Site Investigation	Easting: -6786.224	Drill: B-57
Location: Hounsfield Heights, Calgary, AB	Ground Elev.: 1089.249	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.183	Logged by: CB

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
						▲	●	◆	10	100	1000	10000	

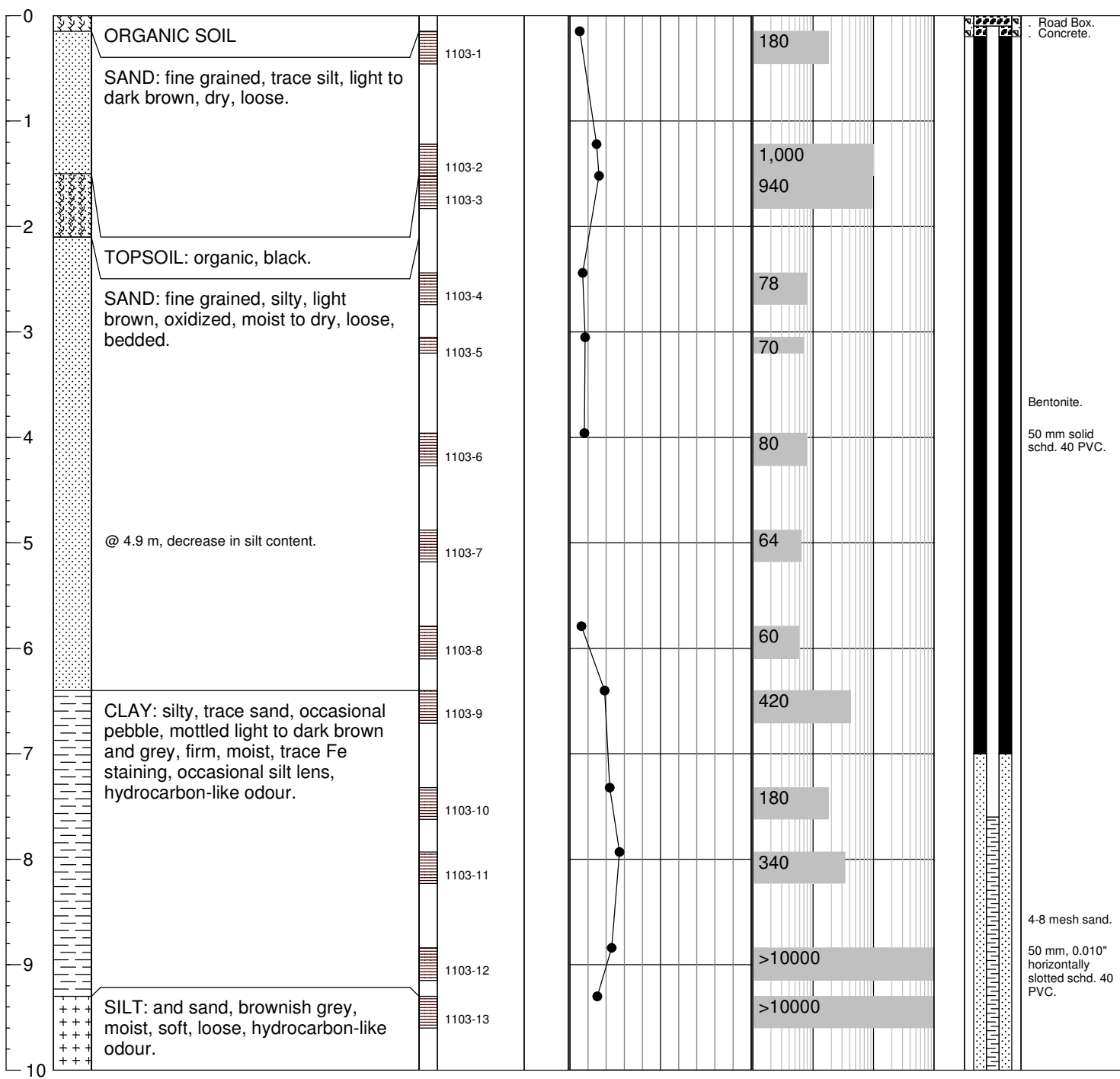


ENV.BH m CAL v03.lbf



Client: Sears Canada Inc.	Northing: 5658636.015	Date Drilled: 27 February 2004
Project: Environmental Site Investigation	Easting: -6825.230	Drill: B-57
Location: Hounsfield Heights, Calgary, AB	Ground Elev.: 1089.476	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.408	Logged by: CB

Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail	
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			

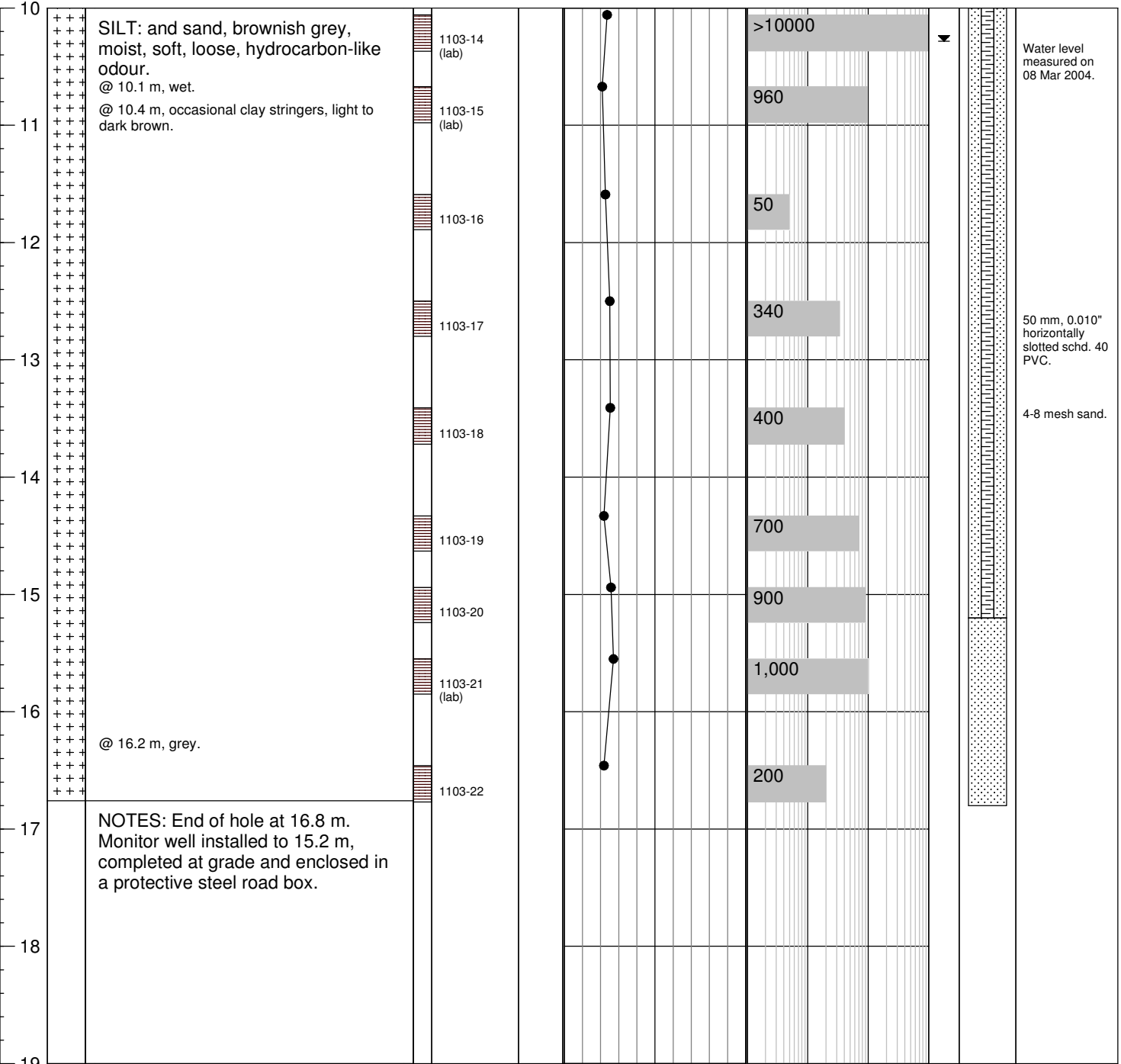


ENV.BH m CAL v03.lbf



Client: Sears Canada Inc.	Northing: 5658636.015	Date Drilled: 27 February 2004
Project: Environmental Site Investigation	Easting: -6825.230	Drill: B-57
Location: Hounsfeld Heights, Calgary, AB	Ground Elev.: 1089.476	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.408	Logged by: CB

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	10	100	1000	

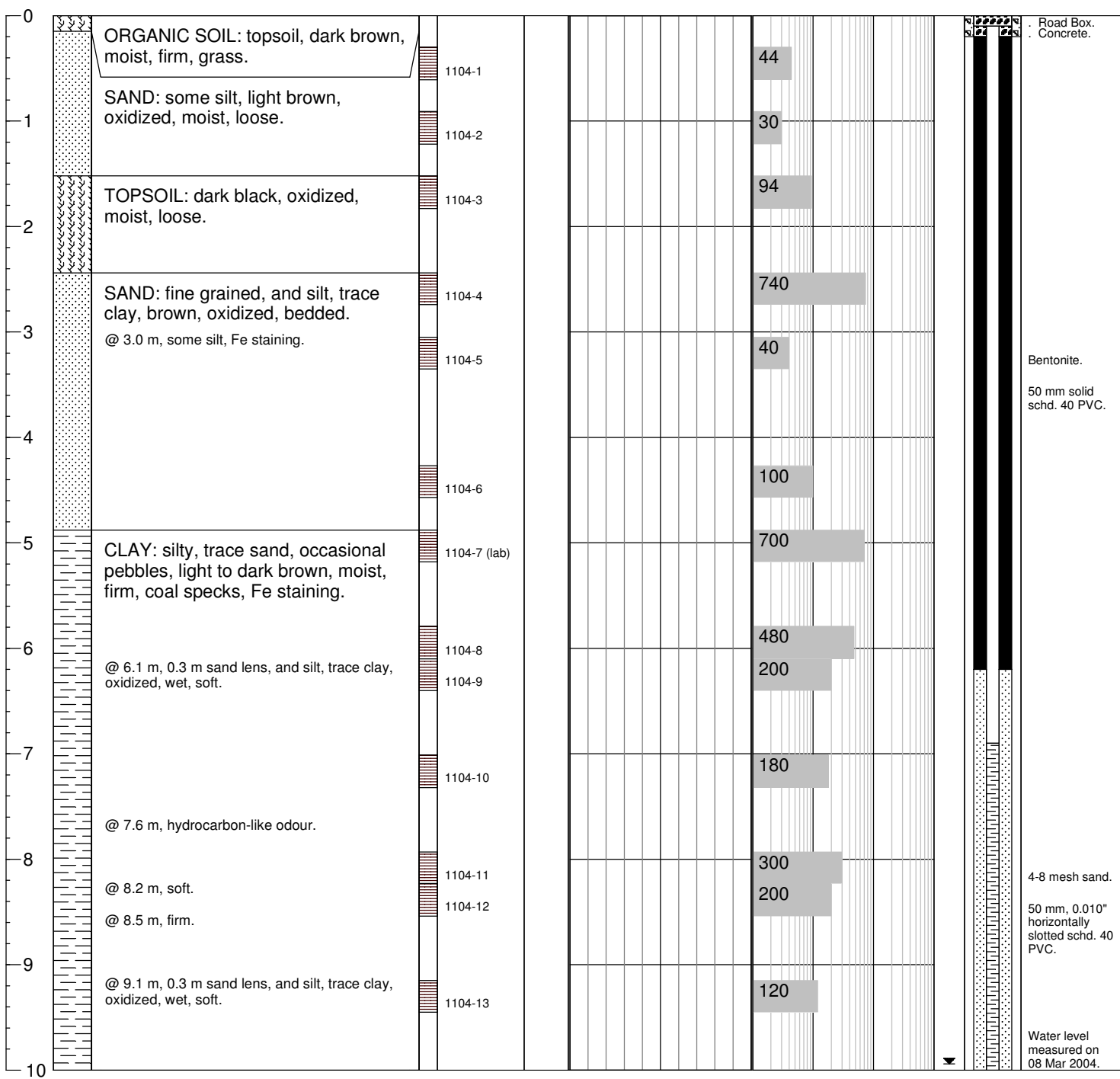


ENV: BH m CAL v03.lbf



Client: Sears Canada Inc.	Northing: 5658644.628	Date Drilled: 01 March 2004
Project: Environmental Site Investigation	Easting: -6859.737	Drill: B-57
Location: Hounsfeld Heights, Calgary, AB	Ground Elev.: 1090.113	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.042	Logged by: GC

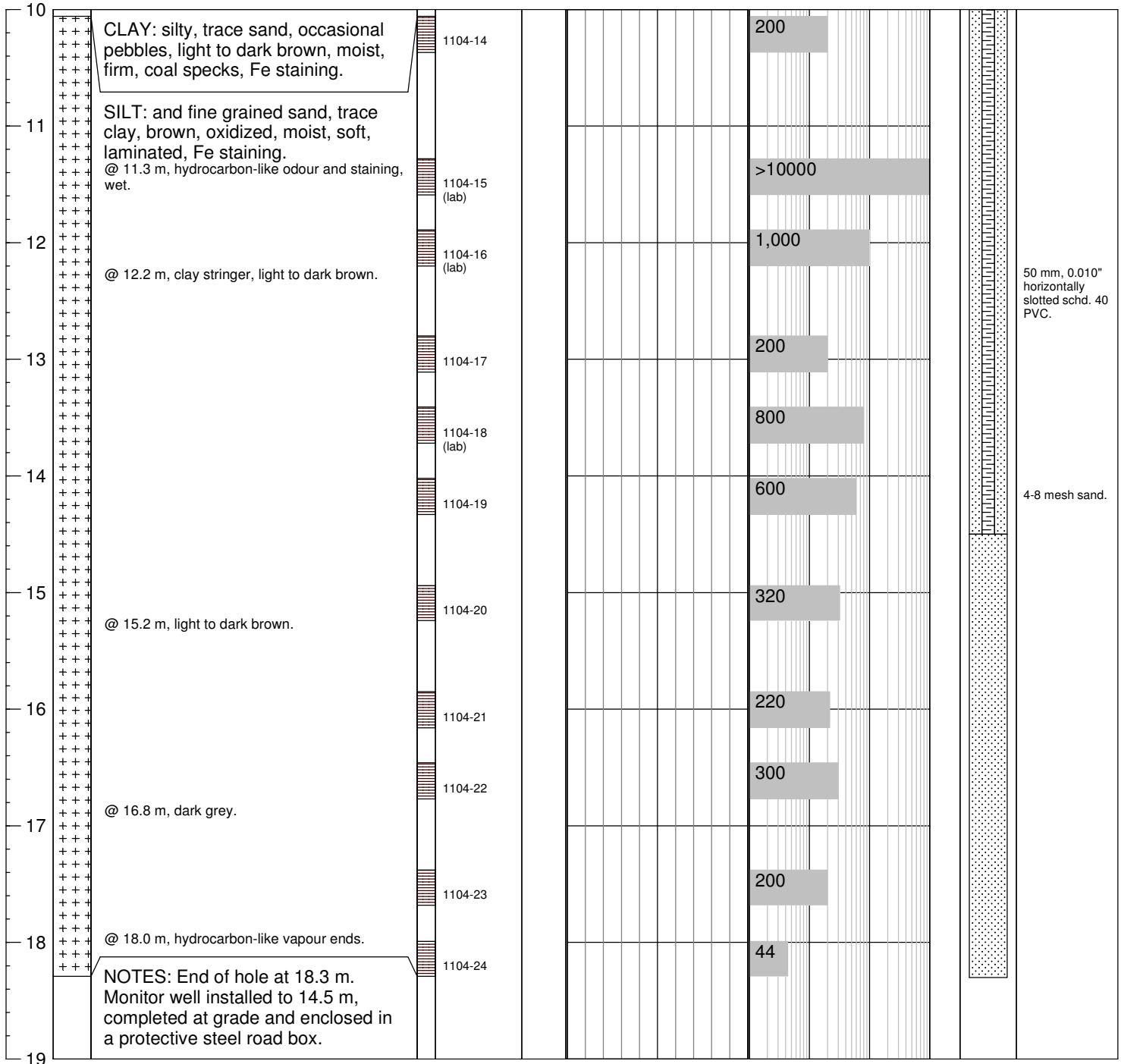
Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail	
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm				
						0	▲	●	◆	10	100	1000	10000	





Client: Sears Canada Inc.	Northing: 5658644.628	Date Drilled: 01 March 2004
Project: Environmental Site Investigation	Easting: -6859.737	Drill: B-57
Location: Hounsfeld Heights, Calgary, AB	Ground Elev.: 1090.113	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.042	Logged by: GC

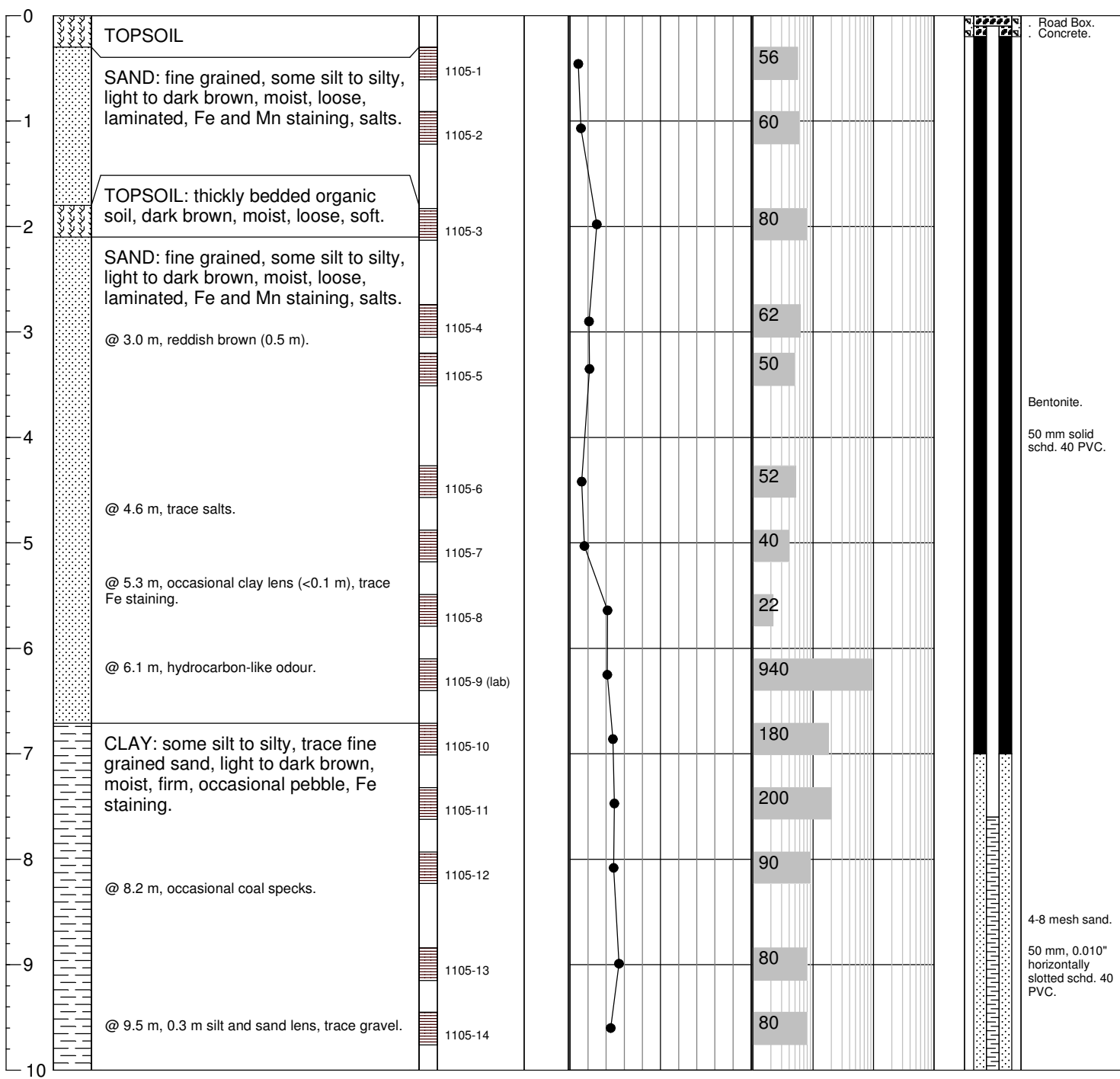
Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail		
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm				
								0	100	10	100	1000	10000	





Client: Sears Canada Inc.	Northing: 5658656.498	Date Drilled: 01 March 2004
Project: Environmental Site Investigation	Easting: -6887.179	Drill: B-57
Location: Hounsfield Heights, Calgary, AB	Ground Elev.: 1091.134	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1091.038	Logged by: CB

Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit ▲	percent Natural Moisture ●	Liquid Limit ◆	10	100	



ENV-BH m CAL v03.lbf



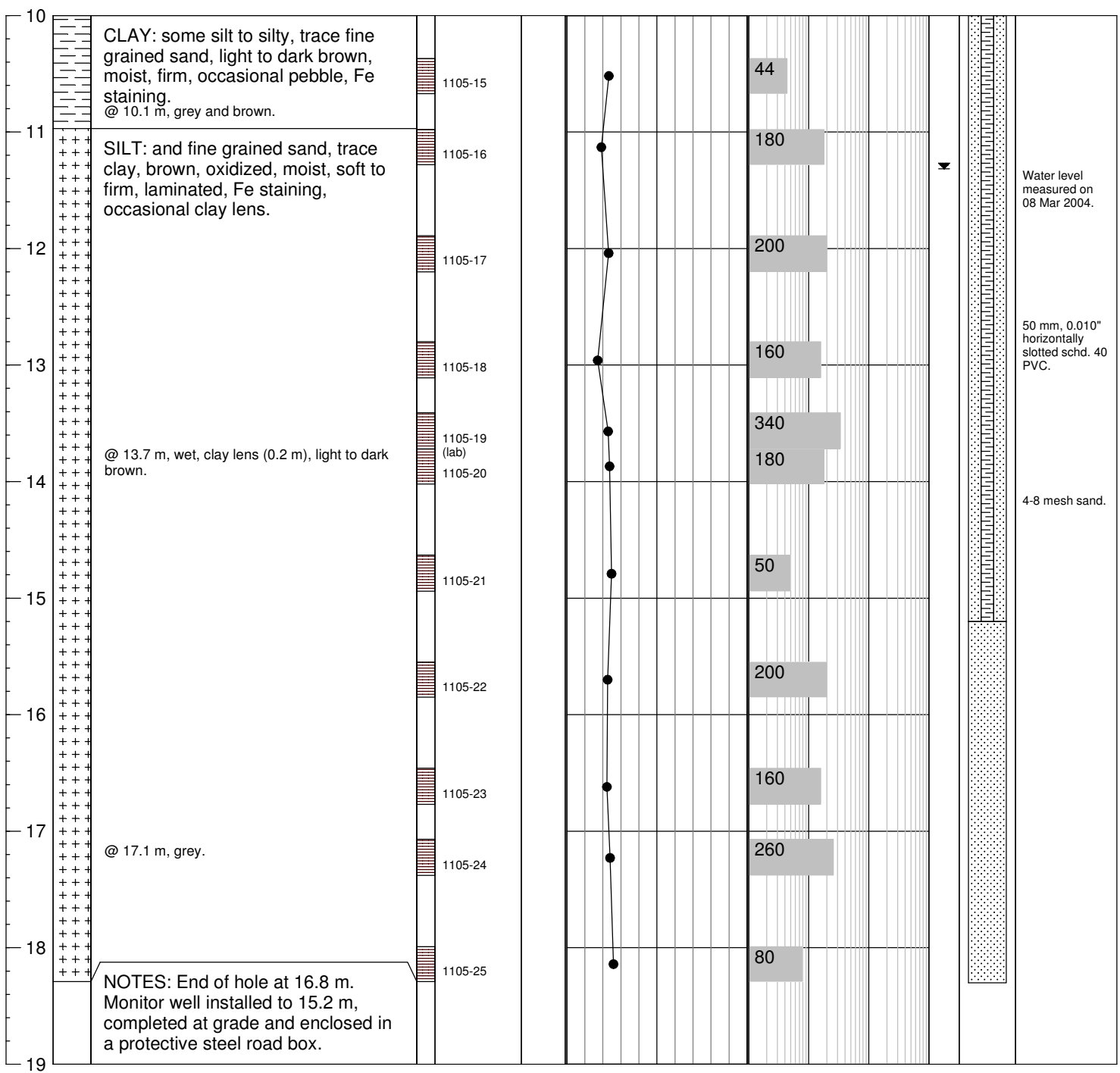
# BORE HOLE LOG

**Bore Hole: BH1105**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing: 5658656.498	Date Drilled: 01 March 2004
Project: Environmental Site Investigation	Easting: -6887.179	Drill: B-57
Location: Hounsfeld Heights, Calgary, AB	Ground Elev.: 1091.134	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1091.038	Logged by: CB

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail	
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm				
						0	▲	●	◆	10	100	1000	10000	



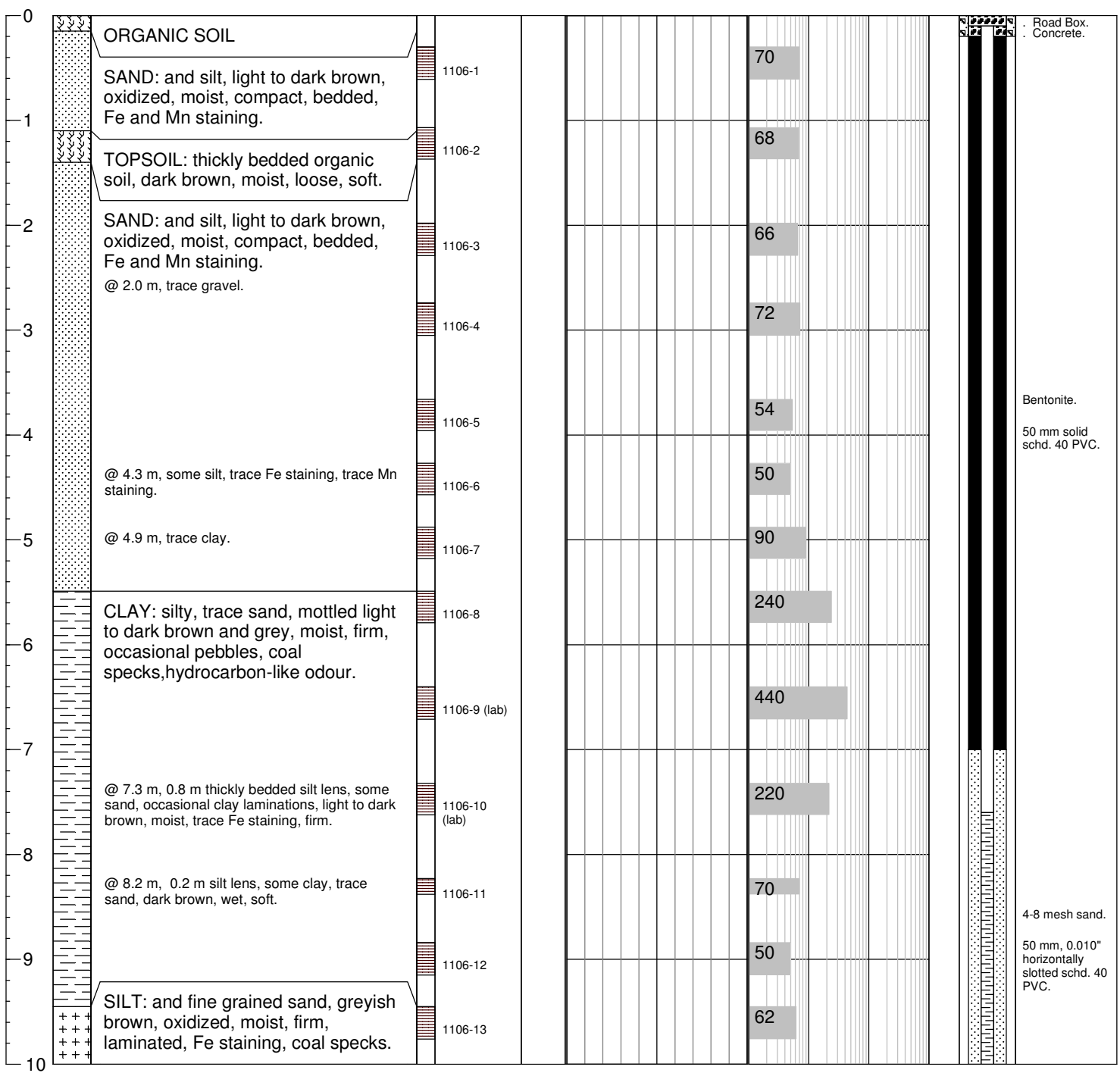


ENV.BH m CAL v03.lbf



Client: Sears Canada Inc.	Northing: 5658644.903	Date Drilled: 01 March 2004
Project: Environmental Site Investigation	Easting: -6892.653	Drill: B-57
Location: Hounsfeld Heights, Calgary, AB	Ground Elev.: 1090.854	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.788	Logged by: CB

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail	
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm				
						0	▲	●	◆	10	100	1000	10000	

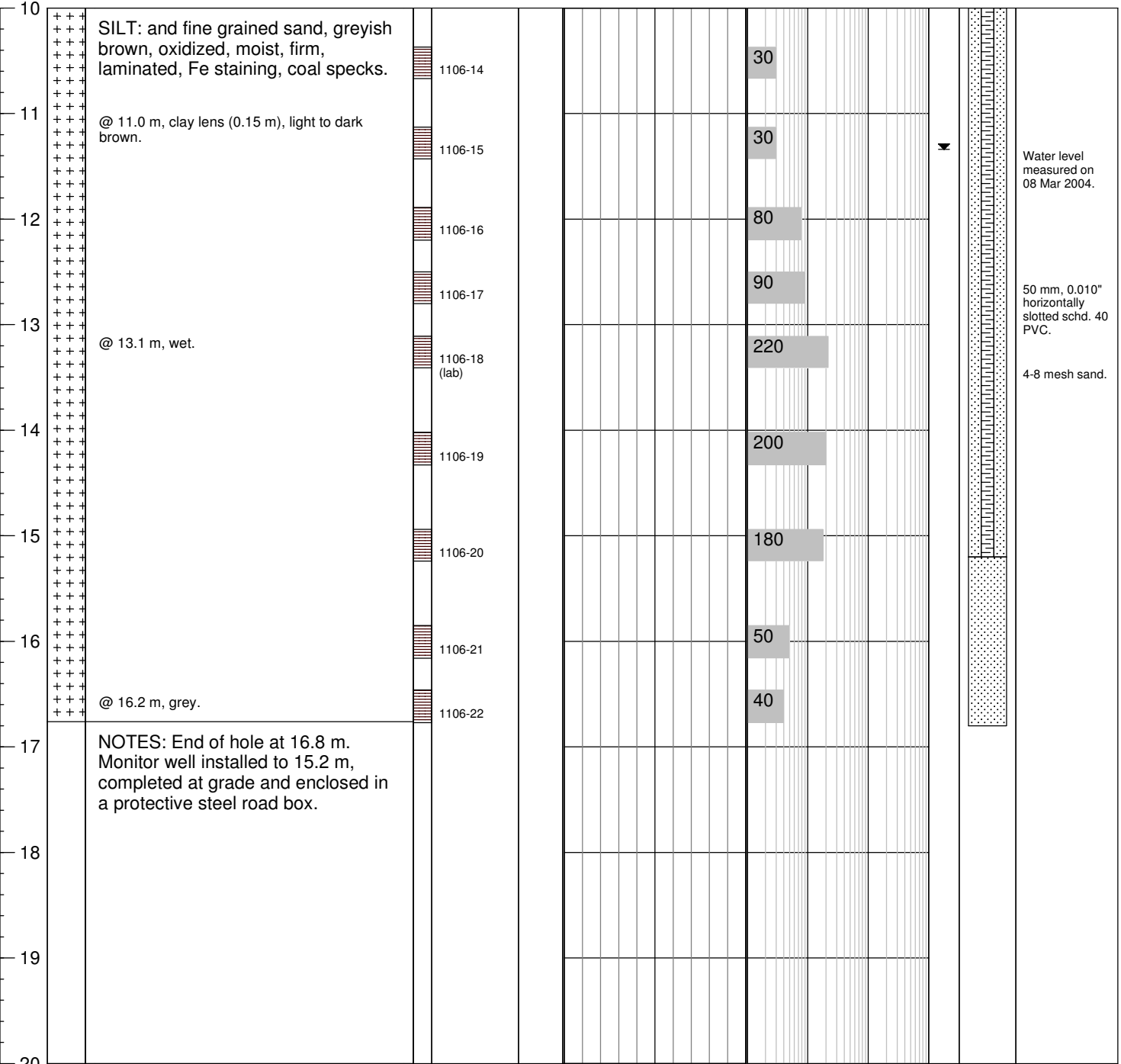


ENV.BH m CAL v03.lbf



Client: Sears Canada Inc.	Northing: 5658644.903	Date Drilled: 01 March 2004
Project: Environmental Site Investigation	Easting: -6892.653	Drill: B-57
Location: Hounsfield Heights, Calgary, AB	Ground Elev.: 1090.854	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.788	Logged by: CB

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
						▲	●	◆	10	100	1000	10000	

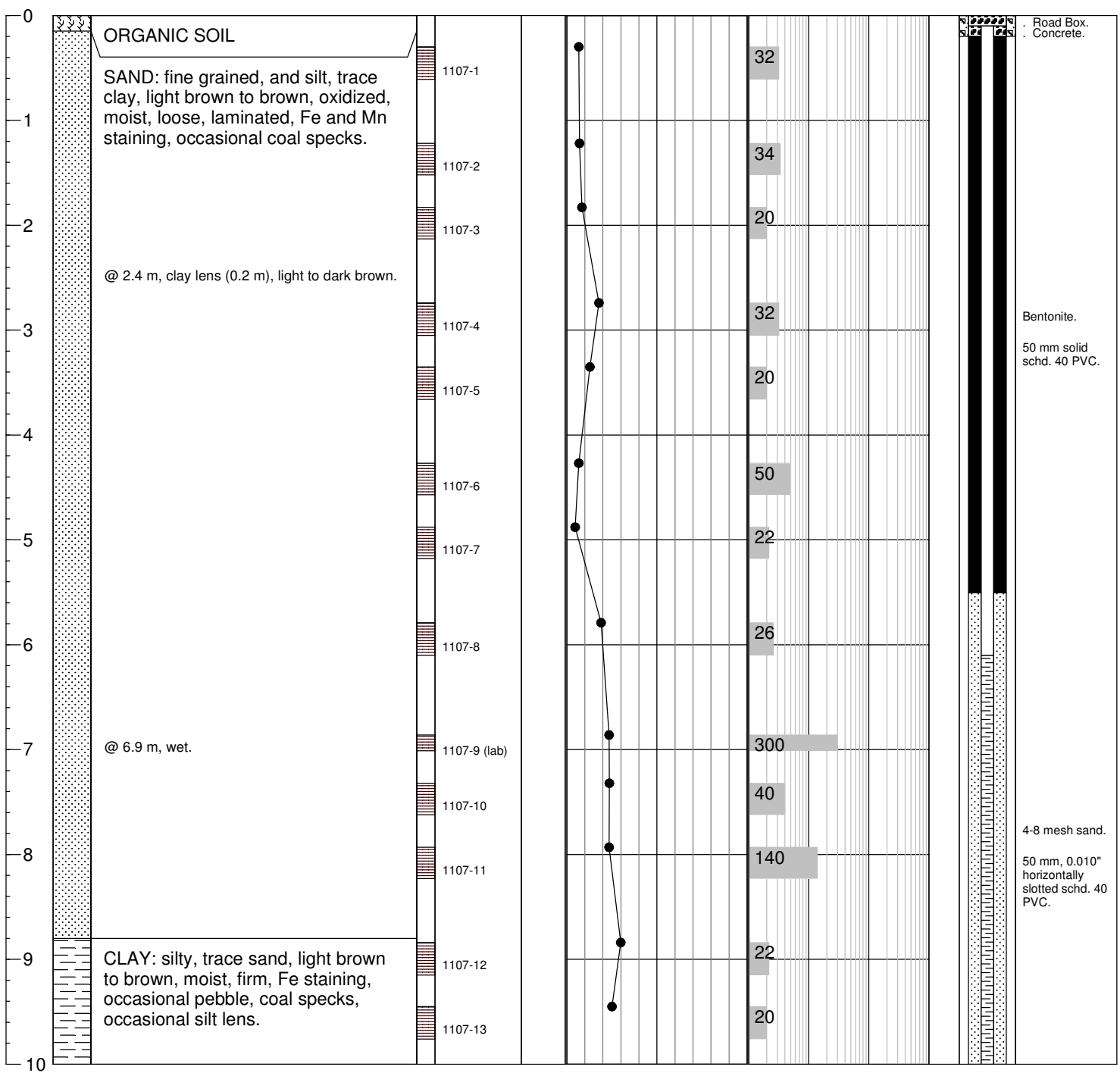


ENV.BH.m CAL v03.lbf



Client: Sears Canada Inc.	Northing: 5658647.284	Date Drilled: 02 March 2004
Project: Environmental Site Investigation	Easting: -6913.689	Drill: B-57
Location: Hounsfield Heights, Calgary, AB	Ground Elev.: 1092.069	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1092.008	Logged by: CB

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail	
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm				
						0	▲	●	◆	10	100	1000	10000	

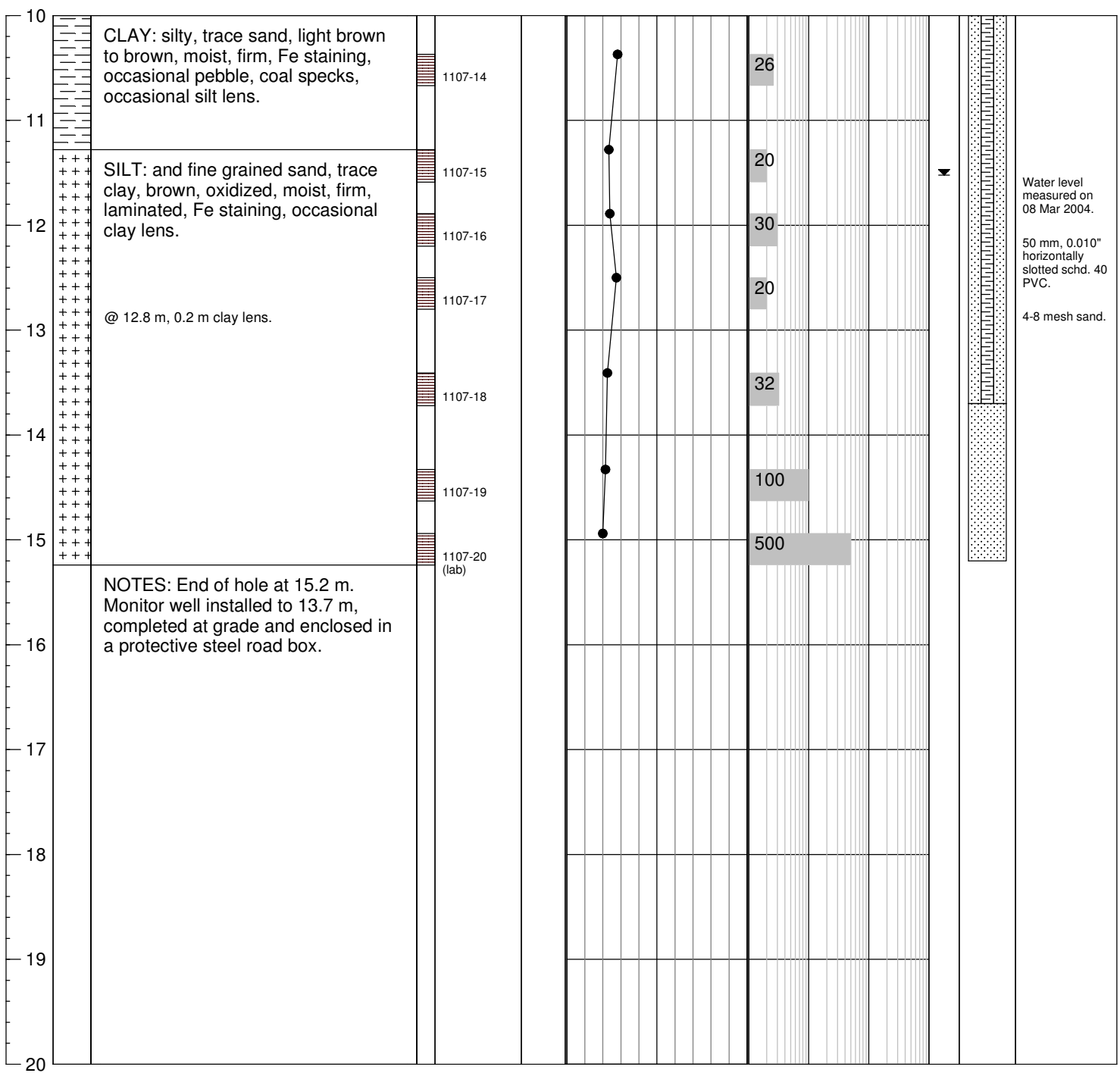




# BORE HOLE LOG

Client: Sears Canada Inc.	Northing: 5658647.284	Date Drilled: 02 March 2004
Project: Environmental Site Investigation	Easting: -6913.689	Drill: B-57
Location: Hounsfield Heights, Calgary, AB	Ground Elev.: 1092.069	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1092.008	Logged by: CB

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
						▲	●	◆	10	100	1000	10000	





**LEGEND:**

- BOREHOLE LOCATION
- MONITORING WELL
- BOREHOLE BY OTHERS
- INVESTIGATION BOUNDARY
- LRT TRACKS
- FENCE LINE
- LEGAL LINE
- FACILITY/FEATURE
- BUILDING
- EXCAVATION LINER
- TREES

**UTILITIES & SYMBOLS**

- NATURAL GAS LINE
- SANITARY SEWER
- STORM SEWER
- WATER
- FIBRE OPTICS CABLE
- UNDERGROUND POWER
- TELEPHONE
- POWER POLE
- CATCH BASIN
- FIRE HYDRANT
- LIGHT STANDARD
- MANHOLE
- VALVE
- TRAFFIC ISLAND

**NOTES:**

- DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES), SITE ASSESSMENT INFORMATION, AND TRONNES SURVEYS LTD SURVEY DONE JUNE 14,15 OF 2005. ADDITIONAL REFERENCES FROM SEACOR ENVIRONMENTAL ENGINEERING INC., DRAWINGS 149-5A6.DWG AND 149-5A6.DWG
- TEMPORARY BENCHMARKS: ASCM 75838 AT COORDINATES N. 5658986.637 E. -6668.803 ELEVATION 1091.344m ASL.  
 ASCM 57265 AT COORDINATES N. 5658680.491 E. -6627.858 ELEVATION 1090.078m ASL.



CLIENT  
**SEARS Canada Inc.**

PROJECT  
**SITE MONITORING REPORT  
 HOUNSFIELD HEIGHTS  
 CALGARY, ALBERTA**

TITLE  
**MONITOR WELL LOCATION PLAN  
 BH1300 SERIES**

DATE (dd/mm/yy)	24/04/13	APPD. BY	FILE NO.	CG909.6B6A
SCALE	1:1250	DWN. BY	RSD	DWG. NO.
				6

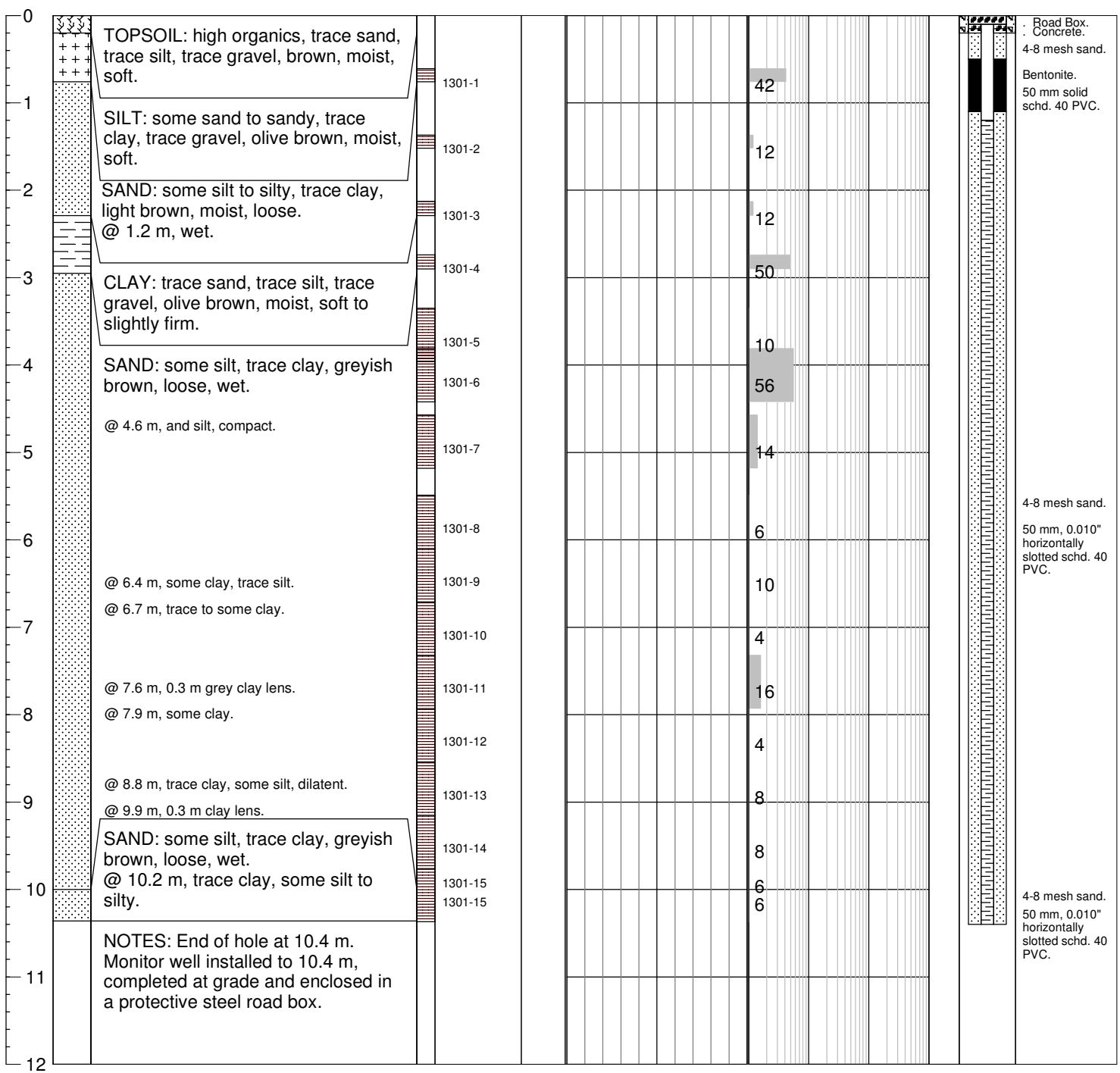
REV	DESCRIPTION	BY	DATE
A			

ENV-BH m CAL v03.lbf



<b>Client:</b> Sears Canada Inc.	<b>Northing:</b>	<b>Date Drilled:</b> 15 December 2004
<b>Project:</b> Environmental Site Investigation	<b>Easting:</b>	<b>Drill:</b> B-57
<b>Location:</b> Hounsfield Heights, Calgary, AB	<b>Ground Elev.:</b>	<b>Drilling Method:</b> Solid Stem Auger
<b>Project No.:</b> CG909	<b>Top Casing Elev.:</b>	<b>Logged by:</b> BHP/MJW

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	10	100	1000	



: Road Box.  
 : Concrete.  
 4-8 mesh sand.  
 Bentonite.  
 50 mm solid schd. 40 PVC.  
 4-8 mesh sand.  
 50 mm, 0.010" horizontally slotted schd. 40 PVC.  
 4-8 mesh sand.  
 50 mm, 0.010" horizontally slotted schd. 40 PVC.

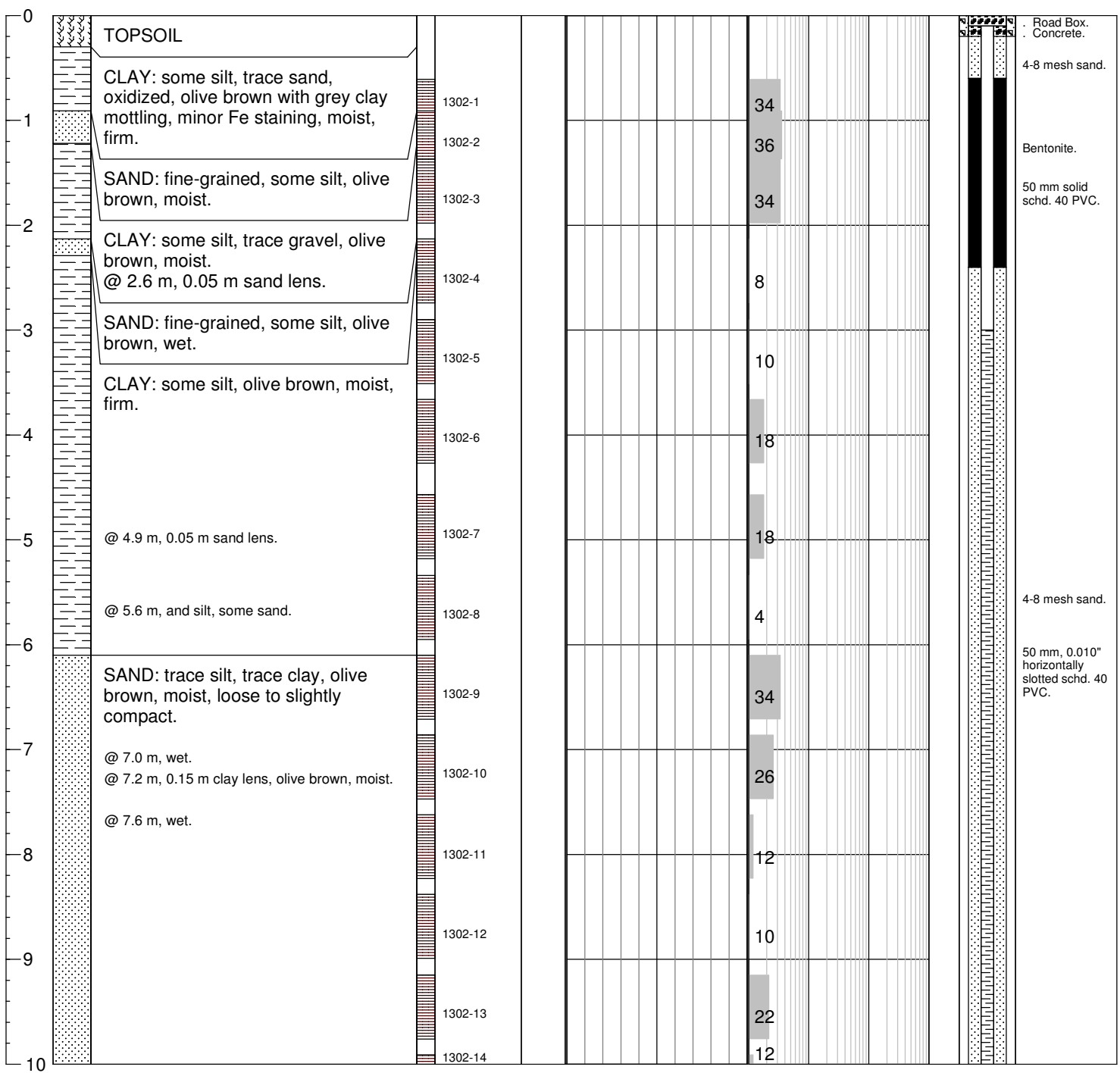
**NOTES:** End of hole at 10.4 m. Monitor well installed to 10.4 m, completed at grade and enclosed in a protective steel road box.

ENV.BH m CAL v03.lbf



<b>Client:</b> Sears Canada Inc.	<b>Northing:</b>	<b>Date Drilled:</b> 15 December 2004
<b>Project:</b> Environmental Site Investigation	<b>Easting:</b>	<b>Drill:</b> B-57
<b>Location:</b> Hounsfeld Heights, Calgary, AB	<b>Ground Elev.:</b>	<b>Drilling Method:</b> Solid Stem Auger
<b>Project No.:</b> CG909	<b>Top Casing Elev.:</b>	<b>Logged by:</b> BHP/MJW

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail	
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm				
						0	▲	●	◆	10	100	1000	10000	



Env. BH m CAL v03.06f



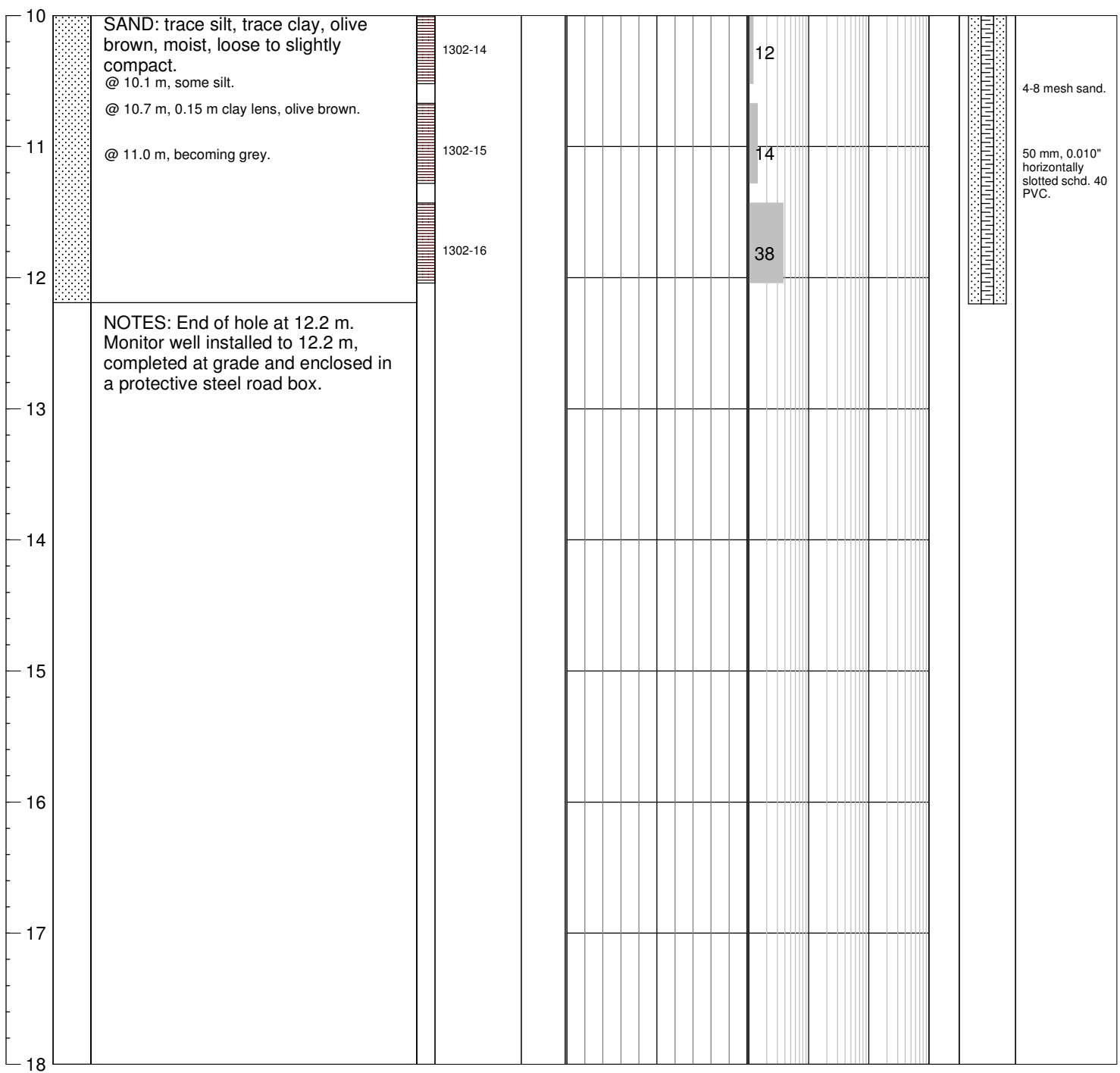
# BORE HOLE LOG

**Bore Hole: BH1302**

**Page: 2 of 2**

Client: Sears Canada Inc.	Northing:	Date Drilled: 15 December 2004
Project: Environmental Site Investigation	Easting:	Drill: B-57
Location: Hounsfield Heights, Calgary, AB	Ground Elev.:	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.:	Logged by: BHP/MJW

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
						▲	●	◆	10	100	1000	10000	





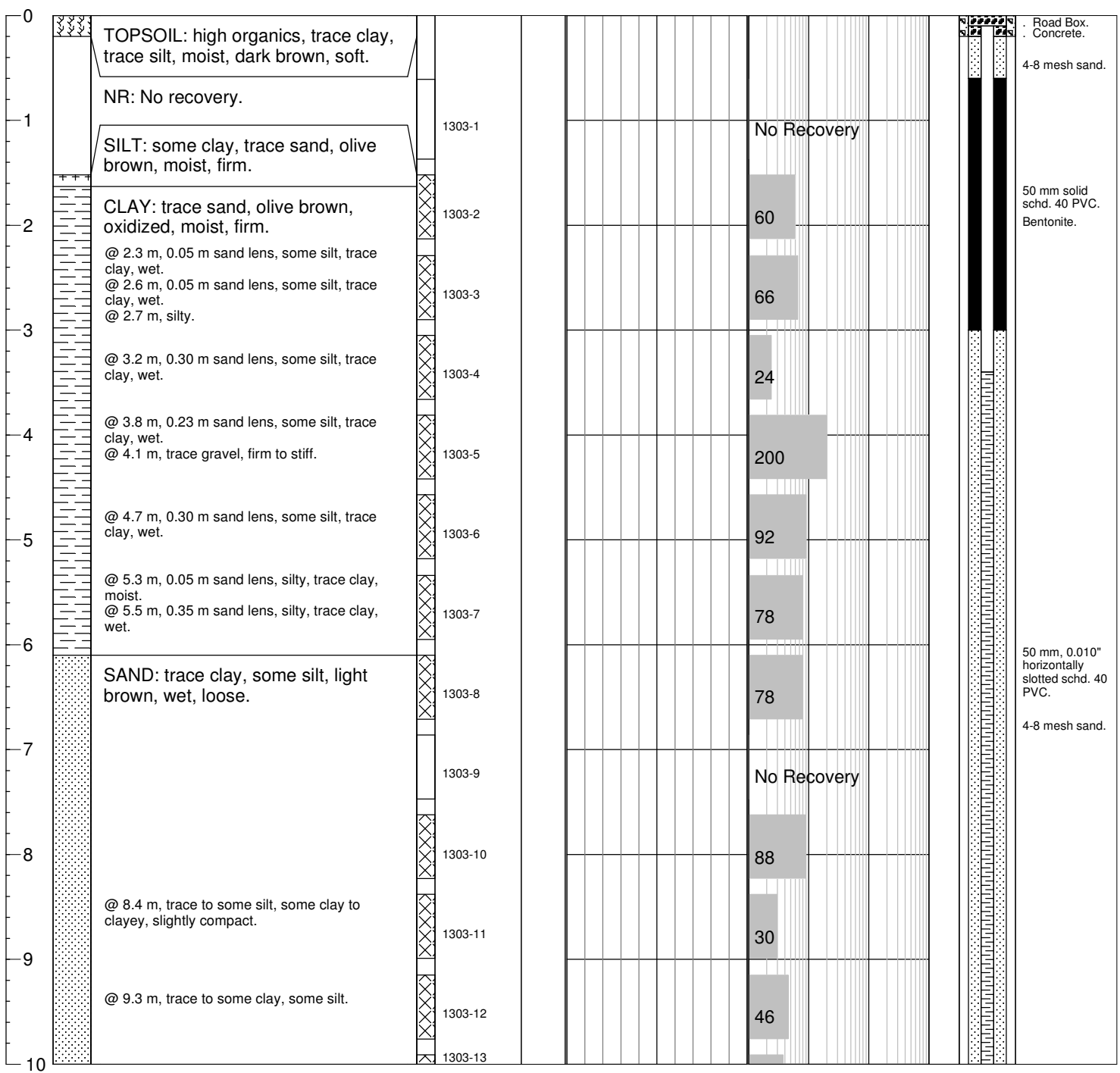


Client: Sears Canada Inc.  
Project: Environmental Site Investigation  
Location: Hounsfeld Heights, Calgary, AB  
Project No.: CG909

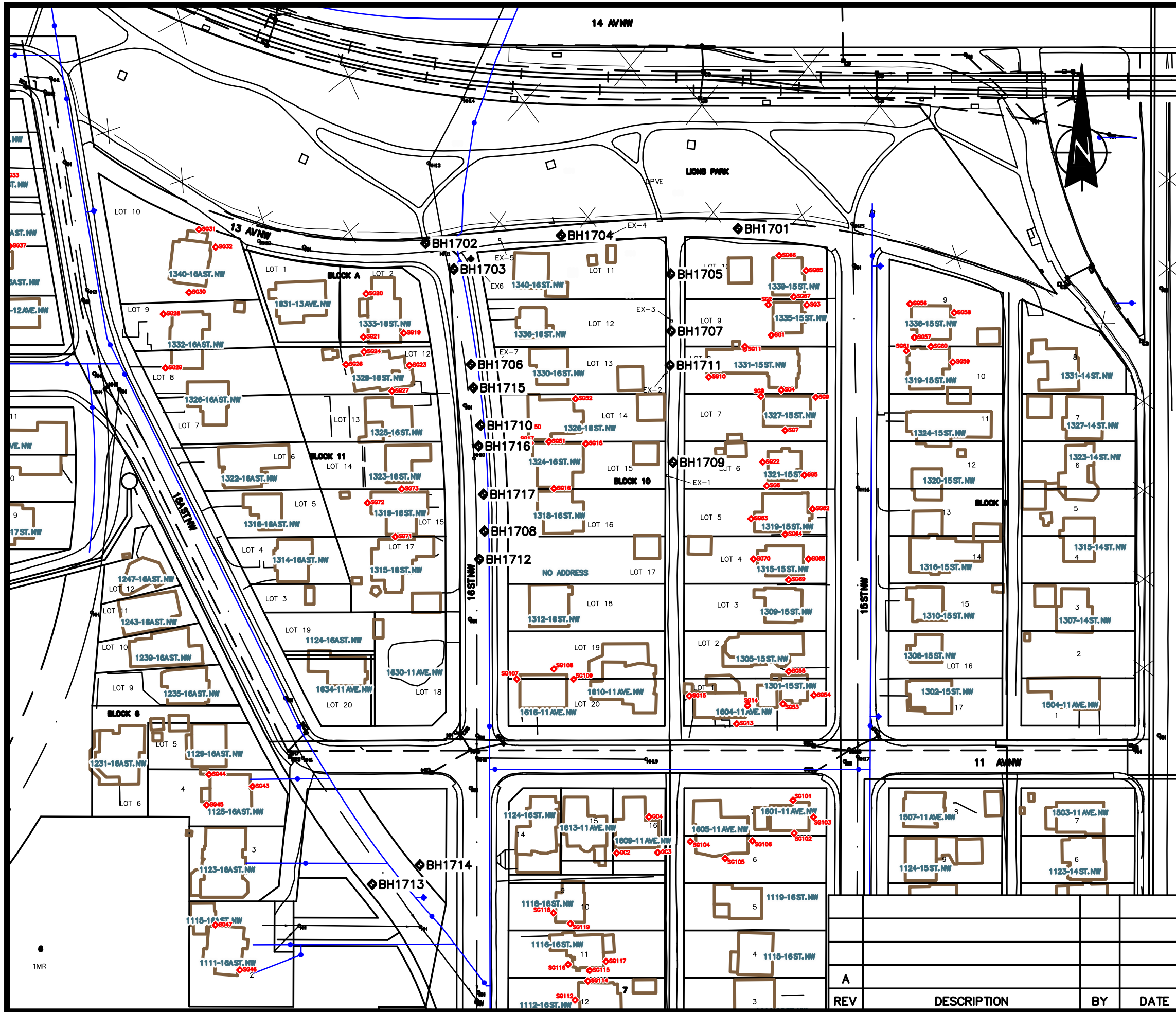
Northing:  
Easting:  
Ground Elev.:  
Top Casing Elev.:

Date Drilled: 16 December 2004  
Drill: B-57  
Drilling Method: Solid Stem Auger  
Logged by: BHP/MJW

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
						▲	●	◆	10	100	1000	10000	







**LEGEND:**

- BOREHOLE LOCATION
- MONITORING WELL
- BOREHOLE BY OTHERS
- INVESTIGATION BOUNDARY
- LRT TRACKS
- FENCE LINE
- LEGAL LINE
- FACILITY/FEATURE
- BUILDING
- EXCAVATION LINER
- TREES

**UTILITIES & SYMBOLS**

- NATURAL GAS LINE
- SANITARY SEWER
- STORM SEWER
- WATER
- FIBRE OPTICS CABLE
- UNDERGROUND POWER
- TELEPHONE
- POWER POLE
- CATCH BASIN
- FIRE HYDRANT
- LIGHT STANDARD
- MANHOLE
- VALVE
- TRAFFIC ISLAND

**NOTES:**

- DRAWING COMPILED FROM PLANIMETRIC FILES SUPPLIED BY THE CITY OF CALGARY (INCLUDING U/G UTILITIES), SITE ASSESSMENT INFORMATION, AND TRONNES SURVEYS LTD SURVEY DONE JUNE 14,15 OF 2005. ADDITIONAL REFERENCES FROM SEACOR ENVIRONMENTAL ENGINEERING INC., DRAWINGS 149-5A6.DWG AND 149-5A6.DWG
- TEMPORARY BENCHMARKS: ASCM 75838 AT COORDINATES N. 5658986.637 E. -6668.803 ELEVATION 1091.344m ASL. ASCM 57265 AT COORDINATES N. 5658860.491 E. -6627.858 ELEVATION 1090.078m ASL.



CLIENT  
**SEARS Canada Inc.**

PROJECT  
 SITE MONITORING REPORT  
 HOUNSFIELD HEIGHTS  
 CALGARY, ALBERTA

TITLE  
**MONITOR WELL LOCATION PLAN  
 BH1700 SERIES**

DATE (dd/mm/yy)	24/04/13	APPD. BY	FILE NO.	CG909.6B7A
SCALE	1:1250	DWN. BY	RSD	DWG. NO.
				7

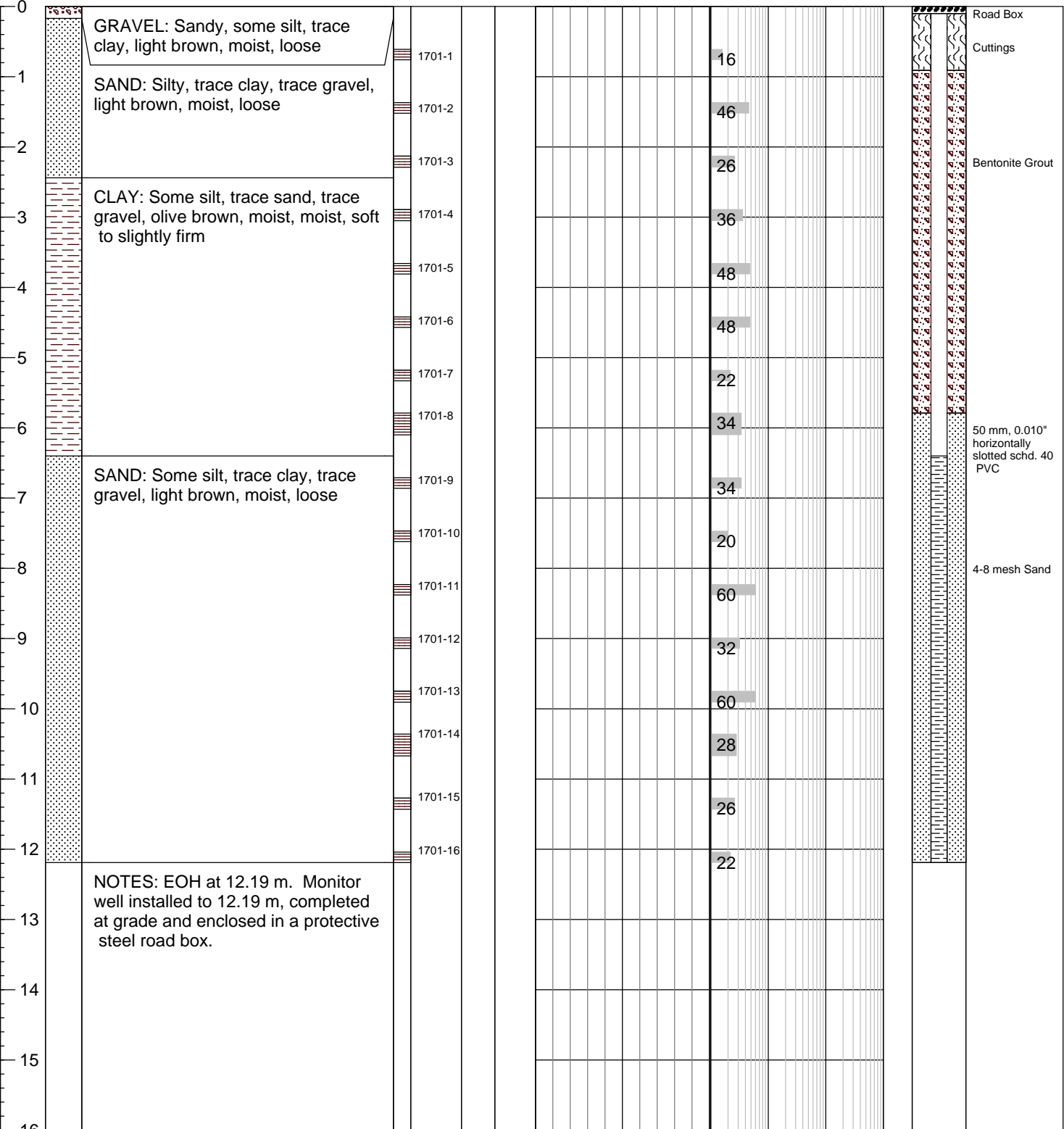
REV	DESCRIPTION	BY	DATE
A			

Env BH.m.CAL.v03.16f



<b>Client:</b> Sears Canada	<b>Northing:</b> 5658623.505	<b>Date Drilled:</b> 07 July 2008
<b>Project:</b> Monitor Well Decommissioning	<b>Easting:</b> -6777.010	<b>Drill:</b> B-61
<b>Location:</b> Hounsfield Heights NW, Calgary, AB	<b>Ground Elev.:</b> 1088.274	<b>Drilling Method:</b> Solid Stem Auger
<b>Project No.:</b> CG909	<b>Top Casing Elev.:</b> 1088.191	<b>Logged by:</b> BHP

Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail	
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
								0	10	100	1000	10000	

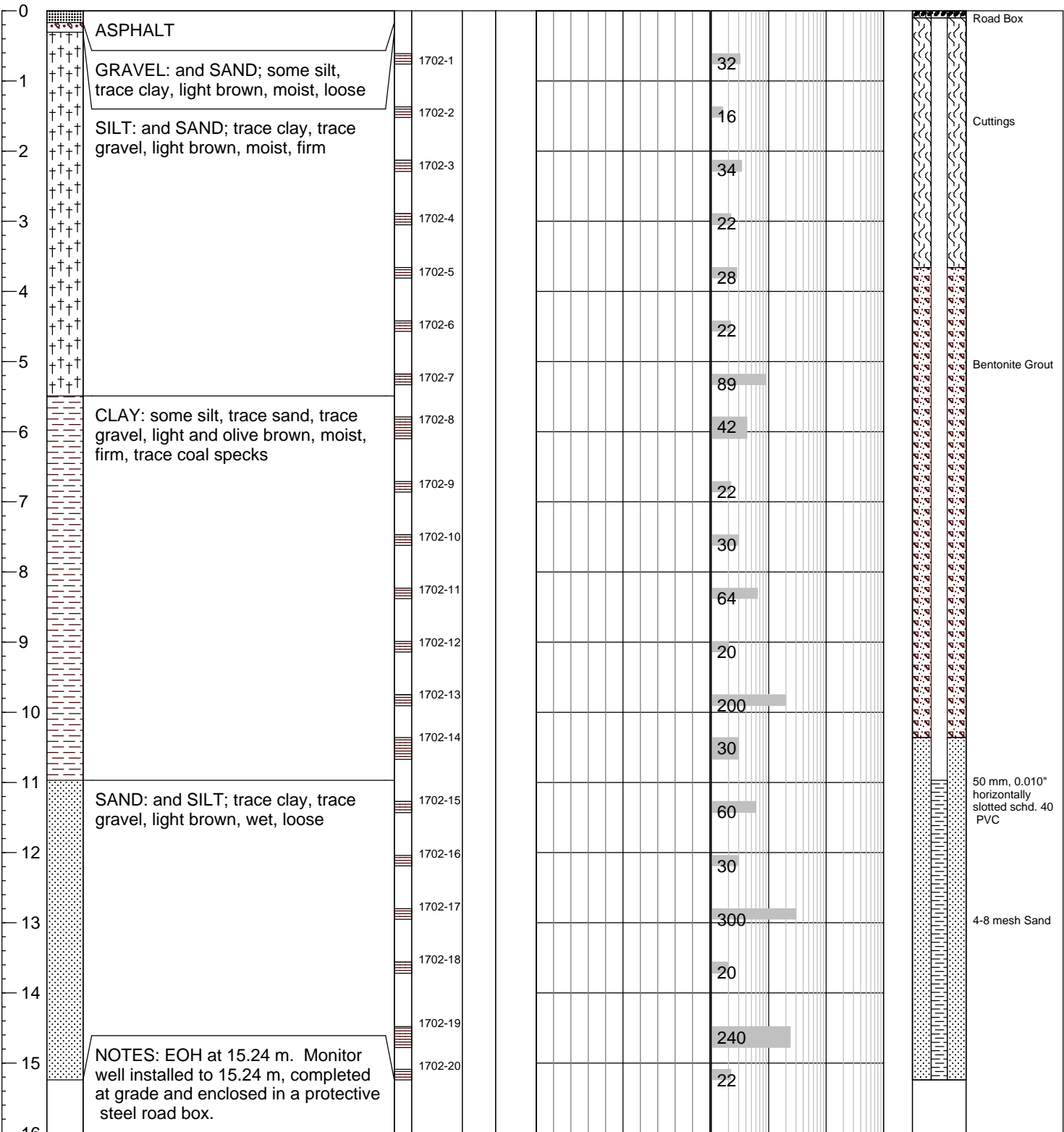


Env BHP.m.CAL.v03.16f



Client: Sears Canada	Northing: 5658621.462	Date Drilled: 08 July 2008
Project: Monitor Well Decommissioning	Easting: -6882.644	Drill: B-61
Location: Hounsfield Heights NW, Calgary, AB	Ground Elev.: 1090.078	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1090.039	Logged by: BHP

Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	SPT 'N'	USC	Plastic Limit △	percent Natural Moisture ●	Liquid Limit .	ppm	10	



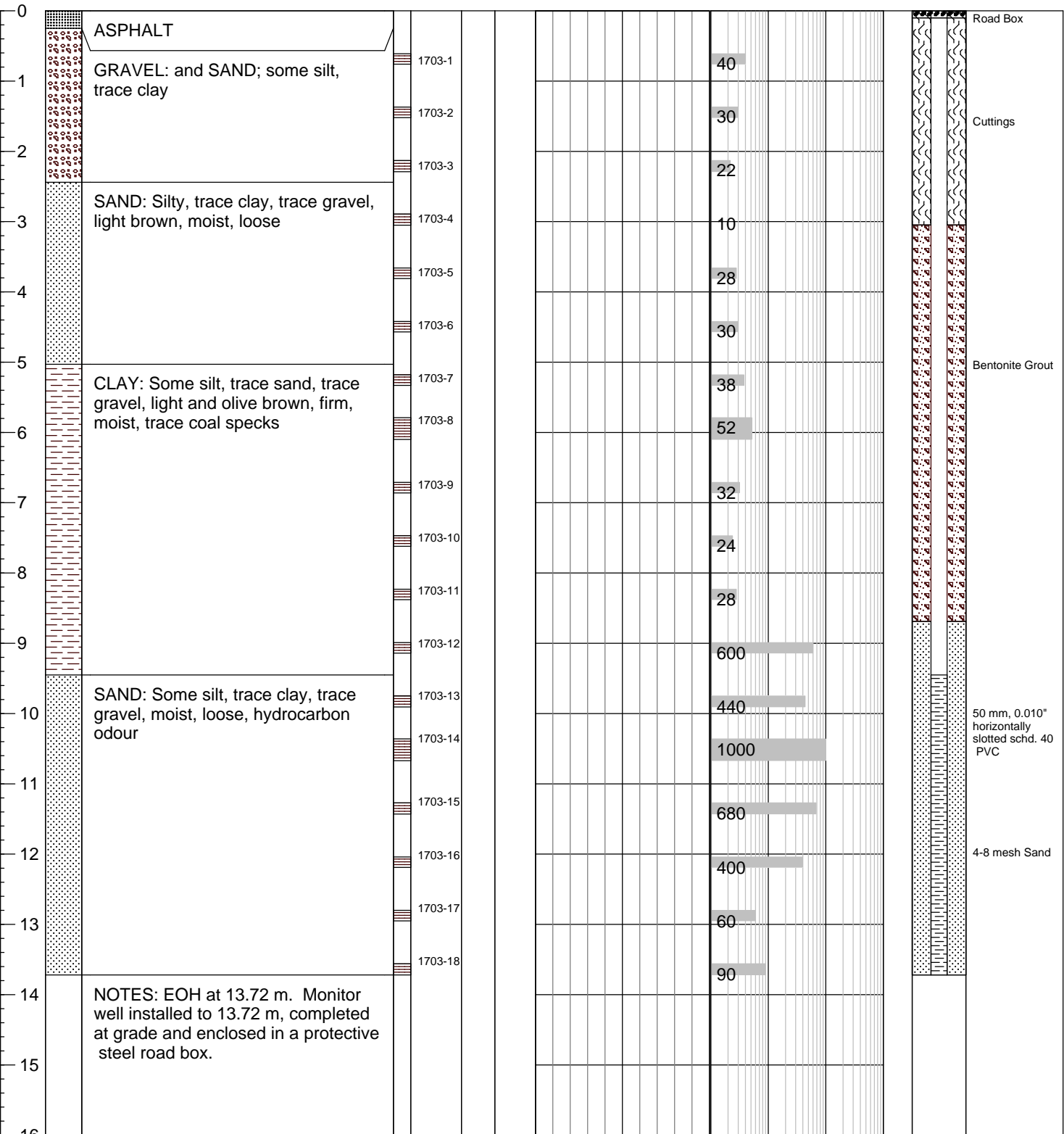
NOTES: EOH at 15.24 m. Monitor well installed to 15.24 m, completed at grade and enclosed in a protective steel road box.

Env BHP.m.CAL.v03.tbr



Client: Sears Canada	Northing: 5658613.124	Date Drilled: 08 July 2008
Project: Monitor Well Decommissioning	Easting: -6873.553	Drill: B-61
Location: Hounsfield Heights NW, Calgary, AB	Ground Elev.: 1089.771	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.689	Logged by: BHP

Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail	
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			



Env BH.m.CAL.v03.16f



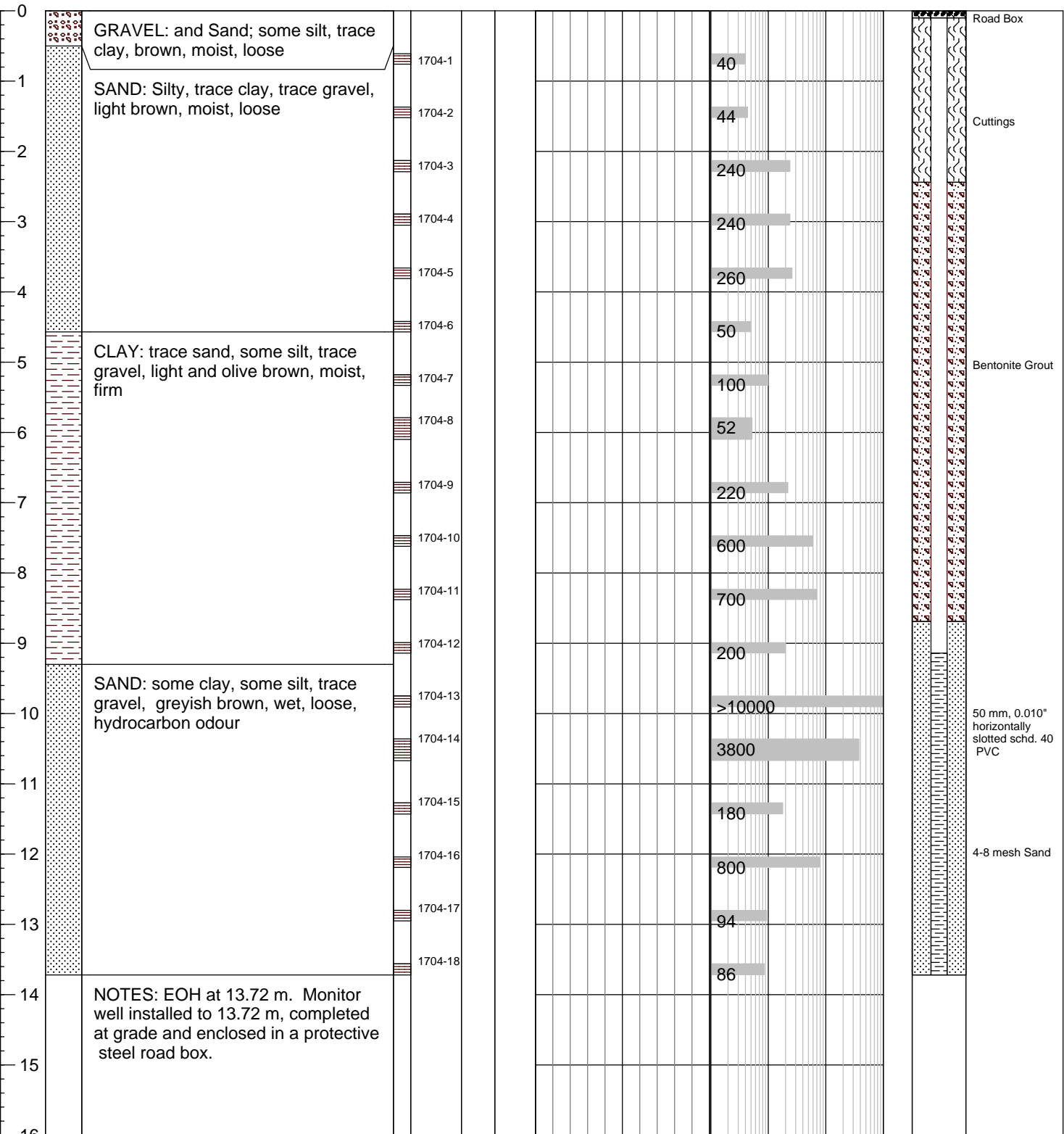
# BORE HOLE LOG

**Bore Hole: BH1704**

**Page: 1 of 1**

Client: Sears Canada	Northing: 5658623.856	Date Drilled: 08 July 2008
Project: Monitor Well Decommissioning	Easting: -6839.086	Drill: CME 55
Location: Hounsfield Heights NW, Calgary, AB	Ground Elev.: 1089.580	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.460	Logged by: BHP

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm	ppm	ppm	
						0	50	100	10	100	1000	10000	





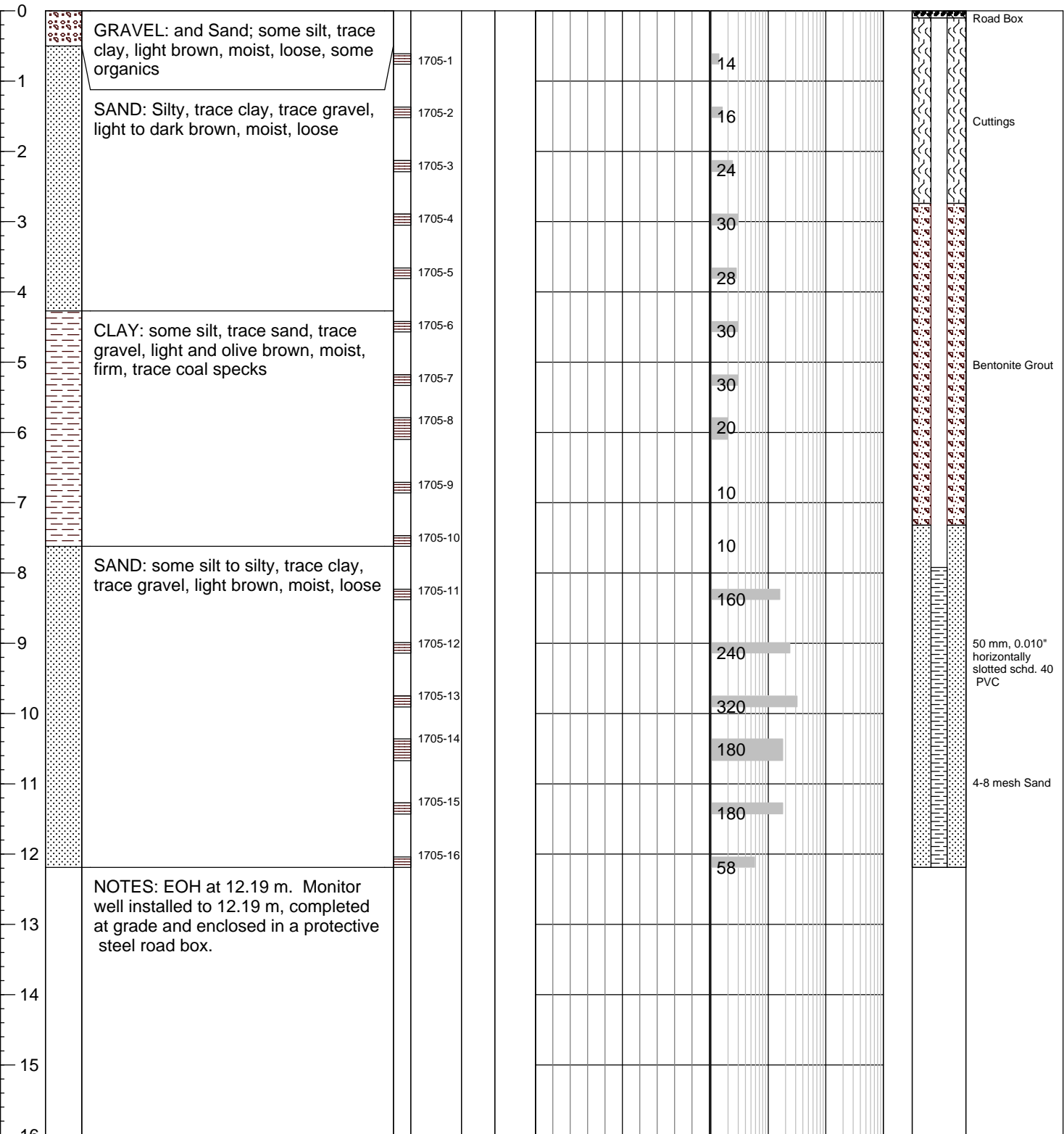
# BORE HOLE LOG

**Bore Hole: BH1705**

**Page: 1 of 1**

<b>Client:</b> Sears Canada	<b>Northing:</b> 5658611.595	<b>Date Drilled:</b> 08 July 2008
<b>Project:</b> Monitor Well Decommissioning	<b>Easting:</b> -6803.872	<b>Drill:</b> CME 55
<b>Location:</b> Hounsfield Heights NW, Calgary, AB	<b>Ground Elev.:</b> 1089.678	<b>Drilling Method:</b> Solid Stem Auger
<b>Project No.:</b> CG909	<b>Top Casing Elev.:</b> 1089.575	<b>Logged by:</b> BHP

Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content percent			Headspace Vapour ppm				Monitor Well Construction Detail
			Type	No.		SPT 'N'	Plastic Limit $\Delta$	Natural Moisture $\bullet$	Liquid Limit $\cdot$	10	100	1000	







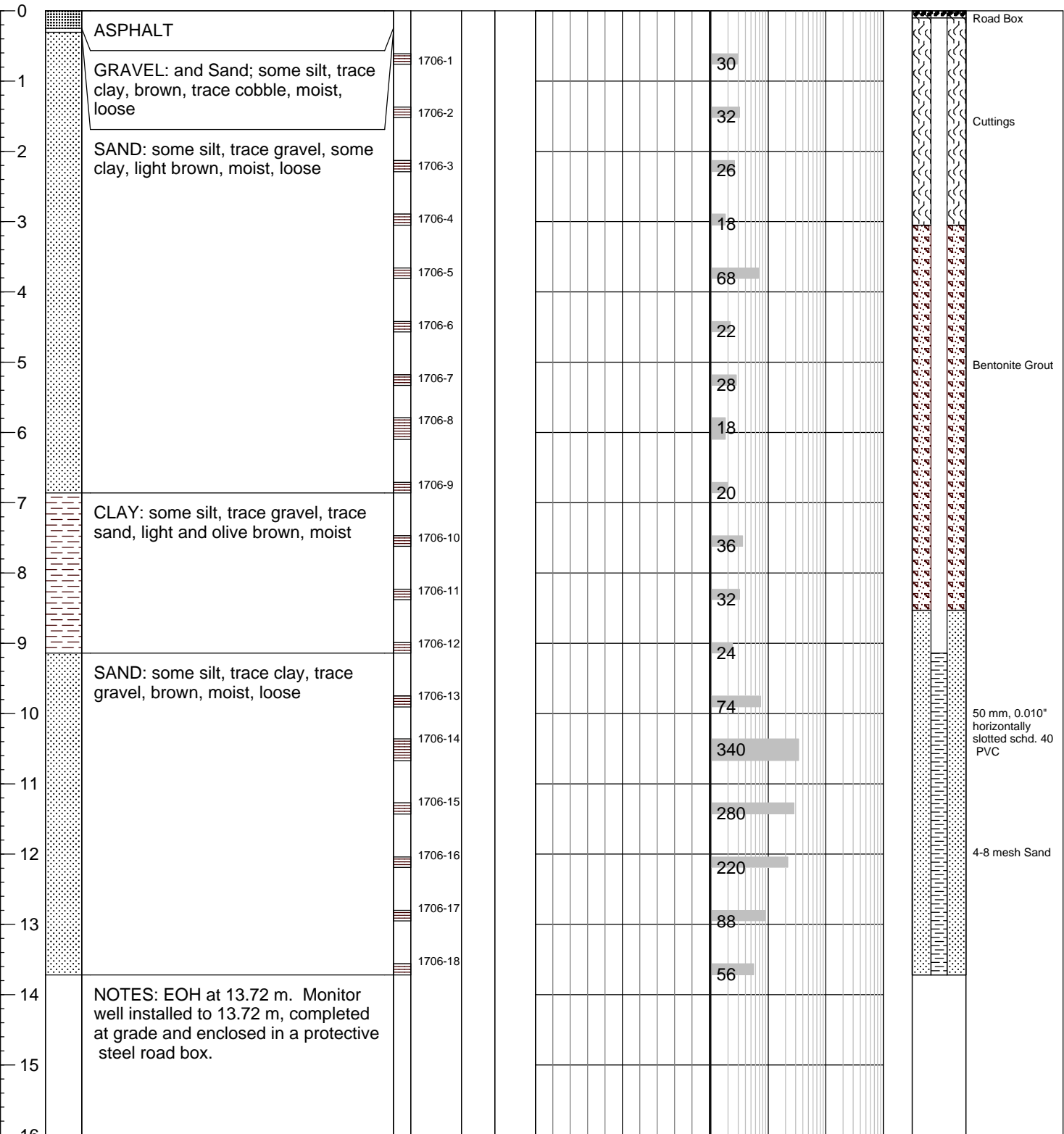
# BORE HOLE LOG

Bore Hole: **BH1706**

Page: 1 of 1

Client: Sears Canada	Northing: 5658582.510	Date Drilled: 09 July 2008
Project: Monitor Well Decommissioning	Easting: -6867.964	Drill: CME 55
Location: Hounsfield Heights NW, Calgary, AB	Ground Elev.: 1089.369	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1089.241	Logged by: BHP

Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	Moisture Content percent			Headspace Vapour ppm				Monitor Well Construction Detail
							Plastic Limit △	Natural Moisture ●	Liquid Limit .	10	100	1000	10000	

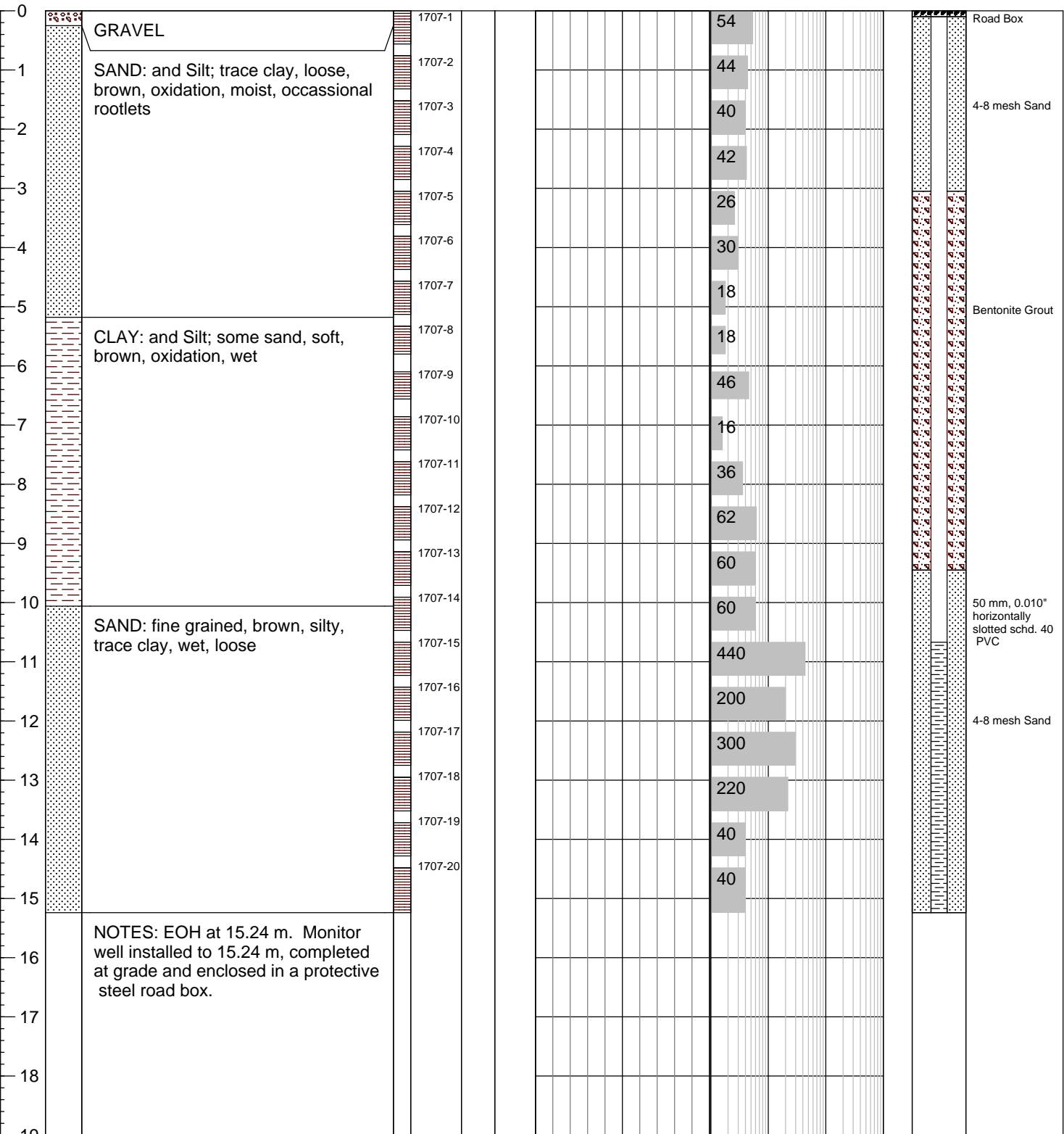




# BORE HOLE LOG

<b>Client:</b> Sears Canada	<b>Northing:</b> 5658593.133	<b>Date Drilled:</b> 09 July 2008
<b>Project:</b> Monitor Well Decommissioning	<b>Easting:</b> -6803.713	<b>Drill:</b> R-35
<b>Location:</b> Hounsfield Heights NW, Calgary, AB	<b>Ground Elev.:</b> 1090.816	<b>Drilling Method:</b> Solid Stem Auger
<b>Project No.:</b> CG909	<b>Top Casing Elev.:</b> 1090.780	<b>Logged by:</b> GC

Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail	
			Type	No.	SPT 'N'	USC	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
								0	10	100	1000	10000	

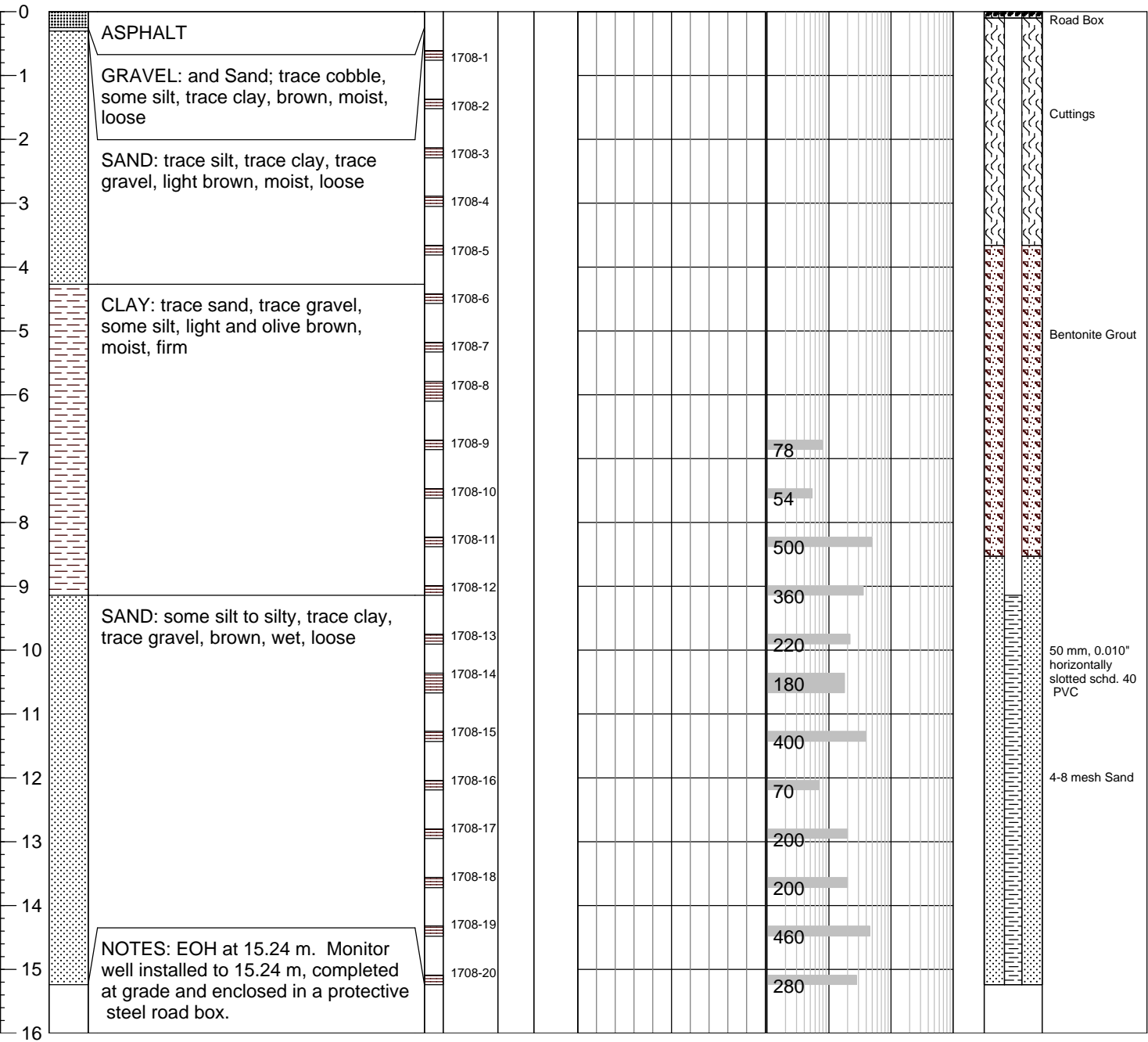


Env BHP.m.CAL.v03.10f



Client: Sears Canada	Northing: 5658528.864	Date Drilled: 09 July 2008
Project: Monitor Well Decommissioning	Easting: -6863.704	Drill: CME 55
Location: Hounsfield Heights NW, Calgary, AB	Ground Elev.: 1087.668	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1087.592	Logged by: BHP

Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	Plastic Limit	Natural Moisture	Liquid Limit	ppm				
					0	50	100	10	100	1000	10000	



Env BHP.m.CAL.v03.10f



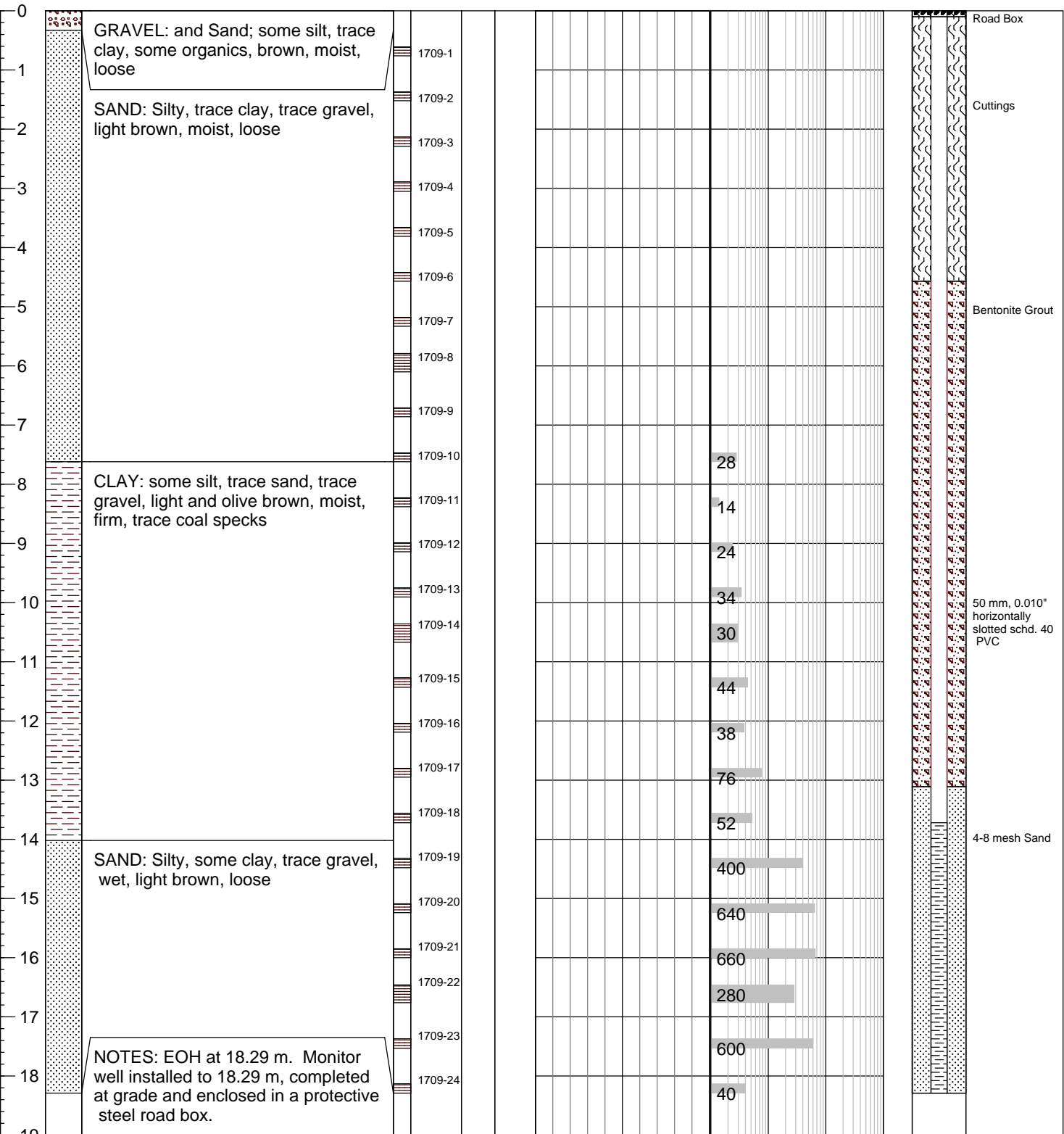
# BORE HOLE LOG

**Bore Hole: BH1709**

**Page: 1 of 1**

<b>Client:</b> Sears Canada	<b>Northing:</b> 5658551.168	<b>Date Drilled:</b> 09 July 2008
<b>Project:</b> Monitor Well Decommissioning	<b>Easting:</b> -6803.101	<b>Drill:</b> CME 55
<b>Location:</b> Hounsfield Heights NW, Calgary, AB	<b>Ground Elev.:</b> 1092.068	<b>Drilling Method:</b> Solid Stem Auger
<b>Project No.:</b> CG909	<b>Top Casing Elev.:</b> 1091.997	<b>Logged by:</b> BHP

Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	Moisture Content percent			Headspace Vapour ppm				Monitor Well Construction Detail
							Plastic Limit △	Natural Moisture ●	Liquid Limit .	10	100	1000	10000	





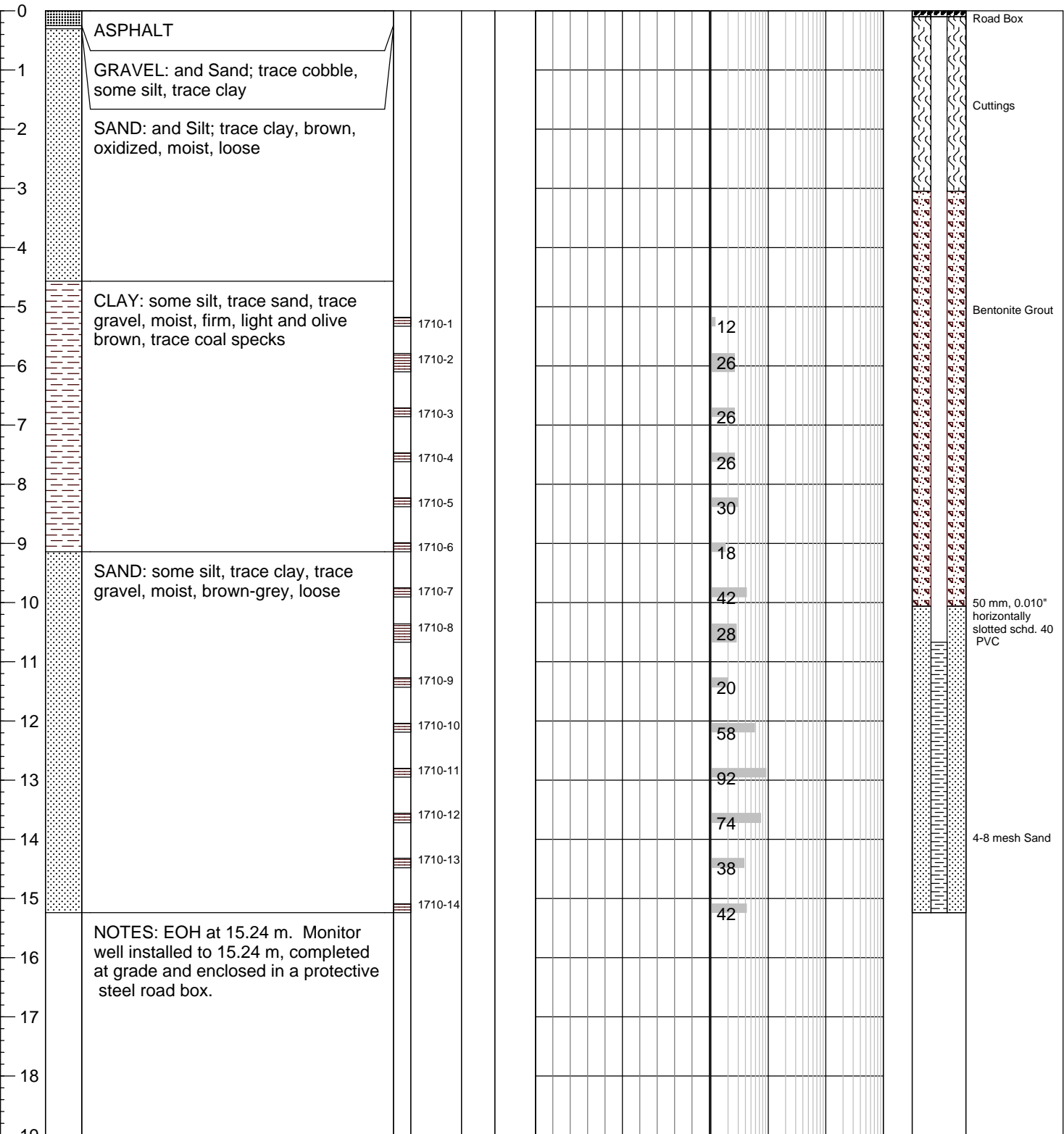
# BORE HOLE LOG

**Bore Hole: BH1710**

**Page: 1 of 1**

<b>Client:</b> Sears Canada	<b>Northing:</b> 5658562.869	<b>Date Drilled:</b> 09 July 2008
<b>Project:</b> Monitor Well Decommissioning	<b>Easting:</b> -6865.082	<b>Drill:</b> CME 55
<b>Location:</b> Hounsfield Heights NW, Calgary, AB	<b>Ground Elev.:</b> 1088.911	<b>Drilling Method:</b> Solid Stem Auger
<b>Project No.:</b> CG909	<b>Top Casing Elev.:</b> 1088.754	<b>Logged by:</b> BHP

Depth (m)	Symbol	Soil Description	Sample Type	Sample No.	SPT 'N'	USC	Moisture Content percent			Headspace Vapour ppm				Monitor Well Construction Detail
							Plastic Limit $\Delta$	Natural Moisture $\bullet$	Liquid Limit $\cdot$	10	100	1000	10000	





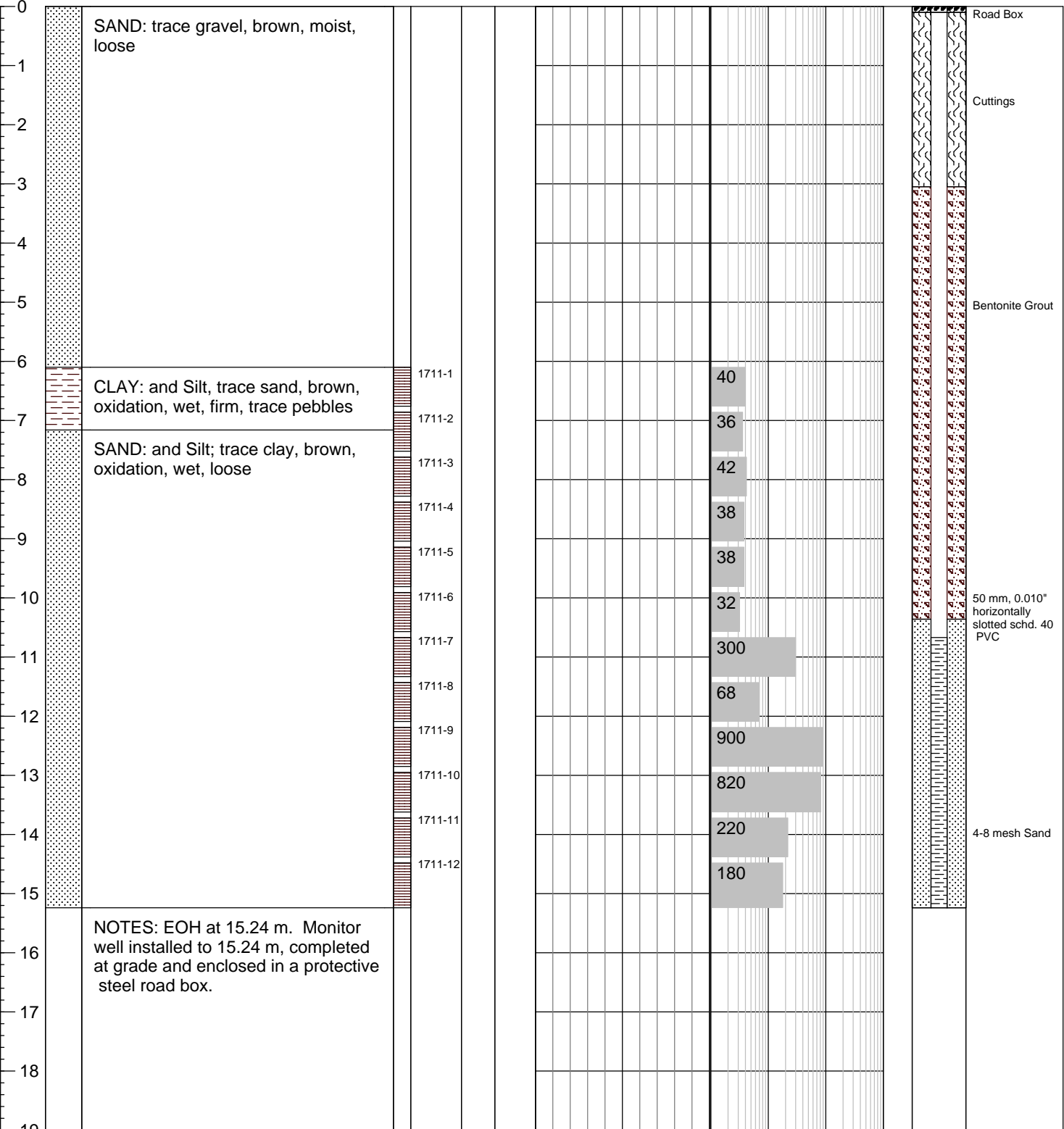
# BORE HOLE LOG

**Bore Hole: BH1711**

**Page: 1 of 1**

Client: Sears Canada	Northing: 5658582.280	Date Drilled: 09 July 2008
Project: Monitor Well Decommissioning	Easting: -6804.038	Drill: R-35
Location: Hounsfield Heights NW, Calgary, AB	Ground Elev.: 1091.659	Drilling Method: Solid Stem Auger
Project No.: CG909	Top Casing Elev.: 1091.620	Logged by: GC

Depth (m)	Symbol	Soil Description	Sample		Moisture Content			Headspace Vapour				Monitor Well Construction Detail
			Type	No.	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm				
					0	50	100	10	100	1000	10000	





# BORE HOLE LOG

Bore Hole: **BH1712**

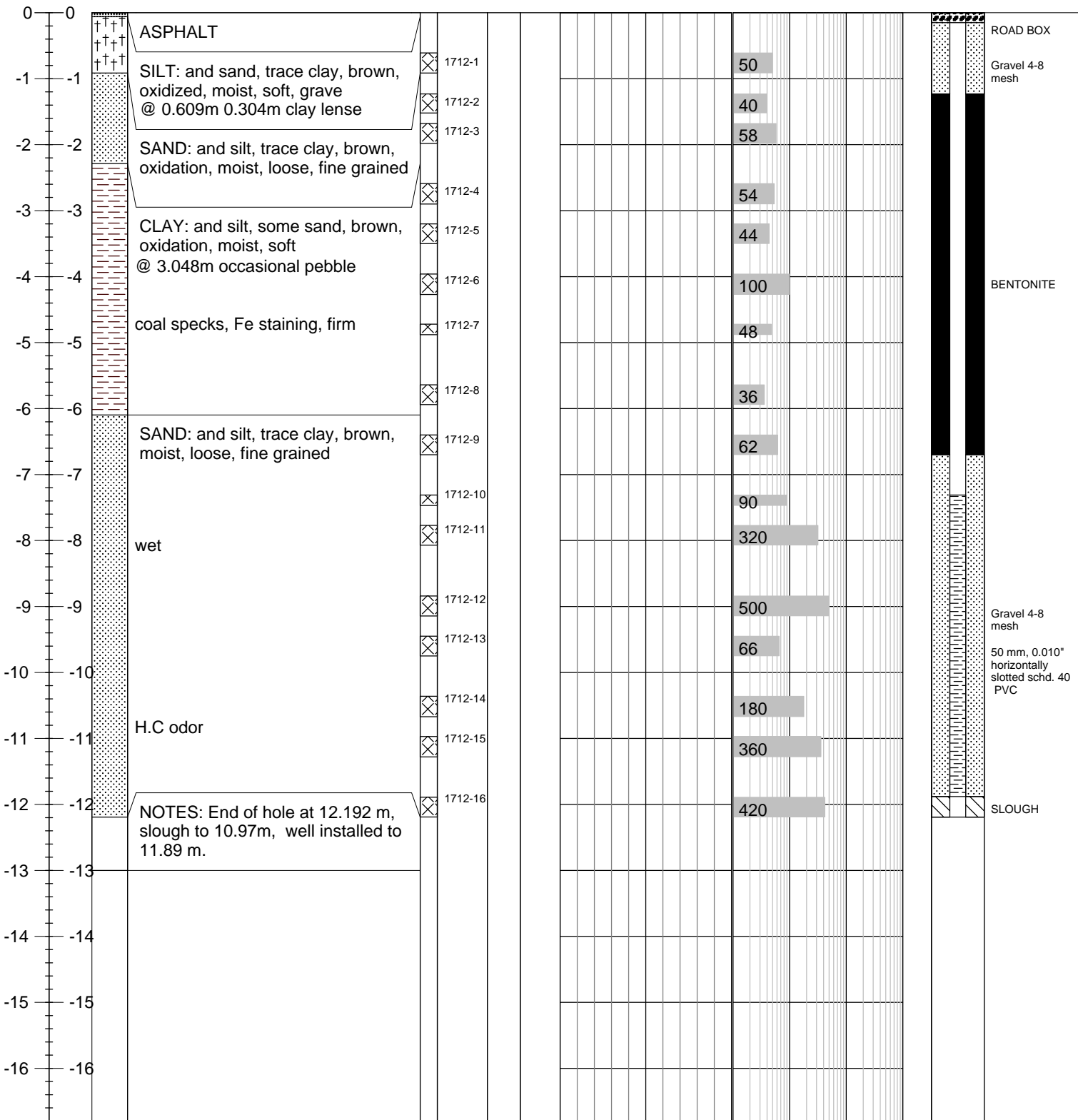
Page: 1 of 1

Client: Sears Canada Inc.  
Project: Monitoring Well Installation  
Location: Calgary, AB  
Project No.: CG909

Northing:  
Easting:  
Ground Elev.: n/a  
Top Casing Elev.: 1087.520

Date Drilled: 20 January 09  
Drill: B-57  
Drilling Method: 6" solid stem  
Logged by: GC

Elev (m)	Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
				Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
							0	50	100	10	100	1000	10000	



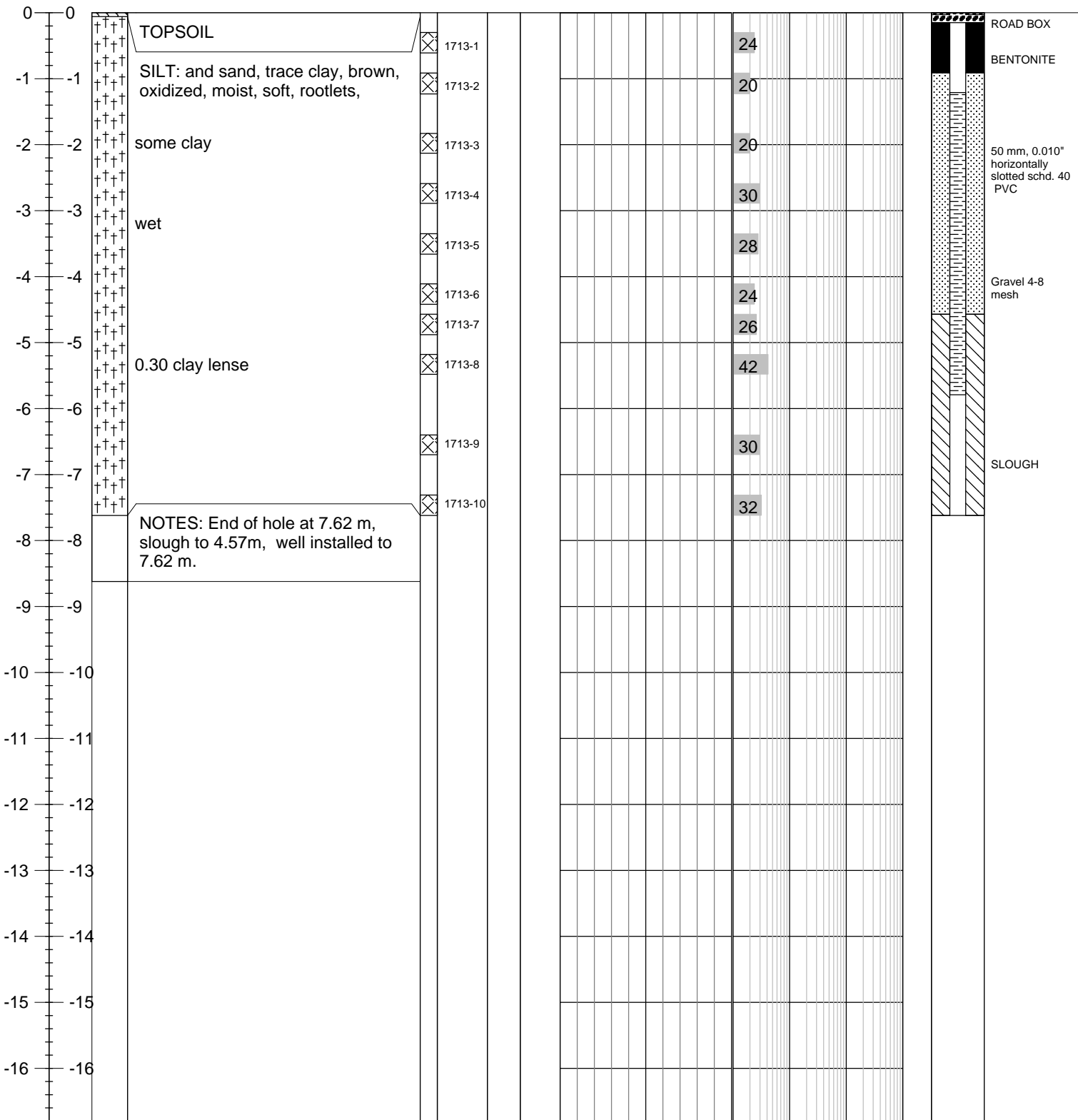


Client: Sears Canada Inc.  
Project: Monitoring Well Installation  
Location: Calgary, AB  
Project No.: CG909

Northing:  
Easting:  
Ground Elev.: n/a  
Top Casing Elev.: 1078.250

Date Drilled: 20 January 09  
Drill: B-57  
Drilling Method: 6" solid stem  
Logged by: GC

Elev (m)	Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
				Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
							0	50	100	10	100	1000	10000	







# BORE HOLE LOG

Bore Hole: **BH1714**

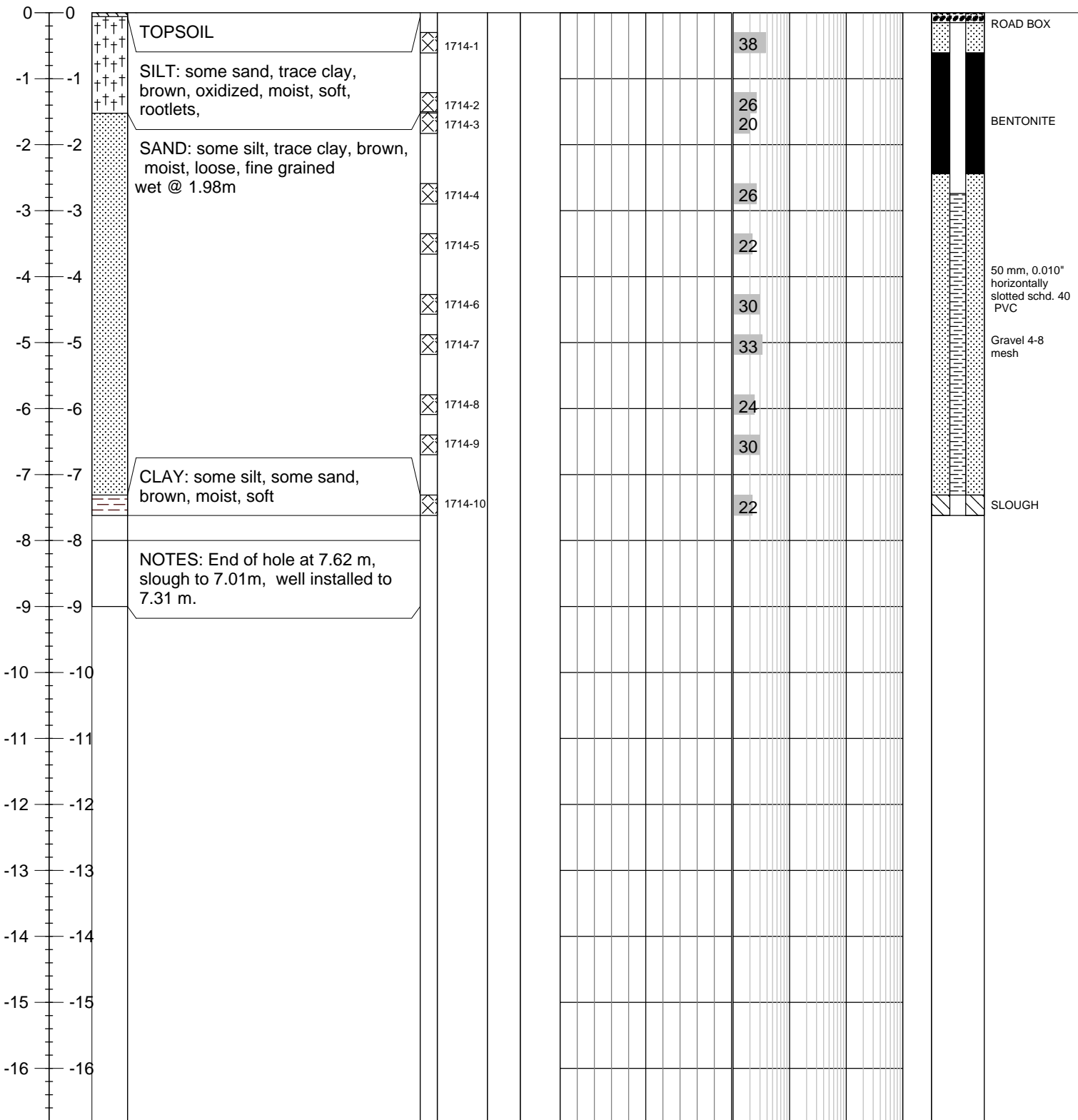
Page: 1 of 1

Client: Sears Canada Inc.  
Project: Monitoring Well Installation  
Location: Calgary, AB  
Project No.: CG909

Northing:  
Easting:  
Ground Elev.: n/a  
Top Casing Elev.: 1078.330

Date Drilled: 20 January 09  
Drill: B-57  
Drilling Method: 6" solid stem  
Logged by: GC

Elev (m)	Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
				Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
							0	50	100	10	100	1000	10000	



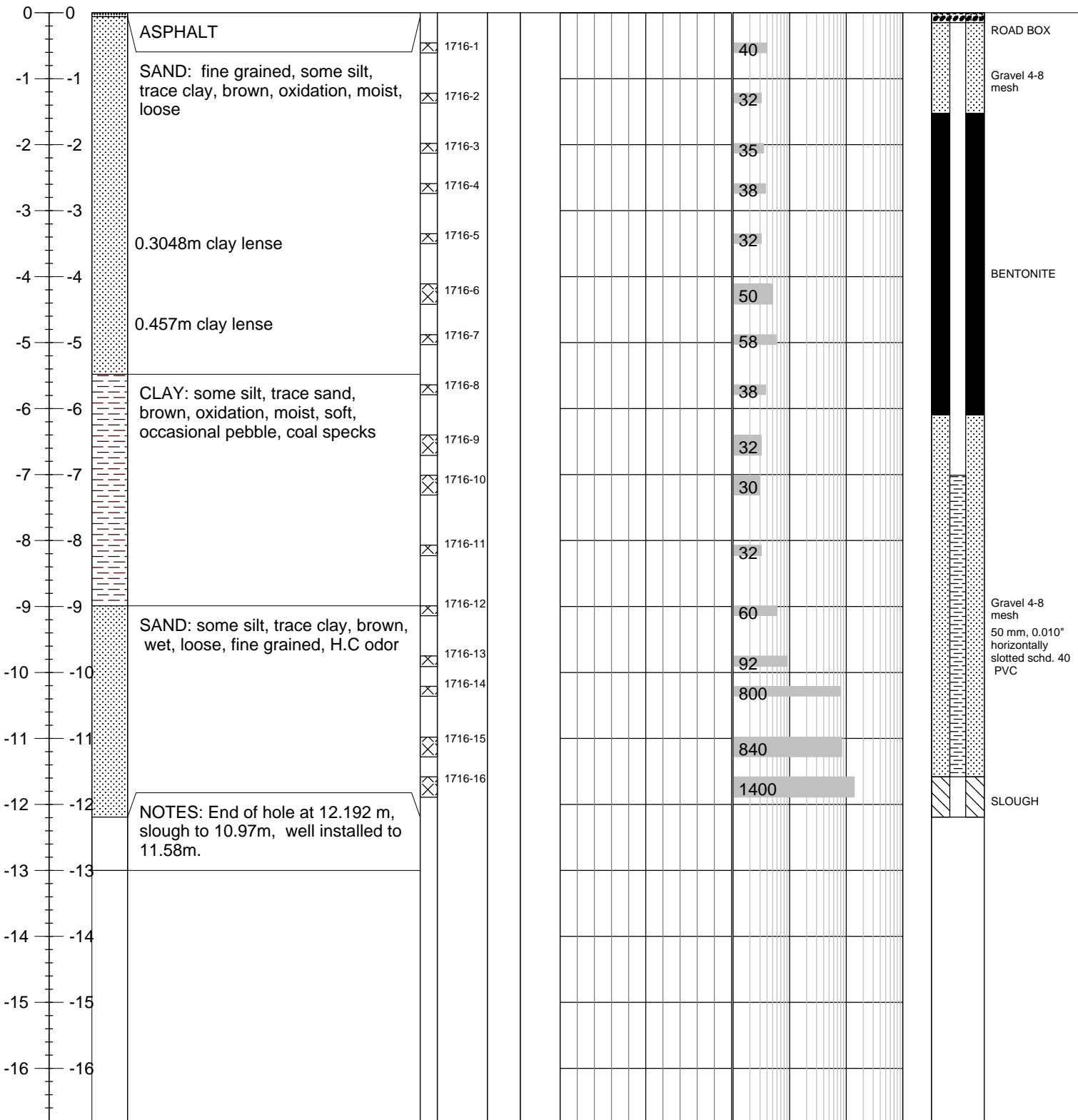


Client: Sears Canada Inc.  
Project: Monitoring Well Installation  
Location: Calgary, AB  
Project No.: CG909

Northing:  
Easting:  
Ground Elev.: n/a  
Top Casing Elev.: 1089.440

Date Drilled: 19 January 09  
Drill: B-57  
Drilling Method: 6" solid stem  
Logged by: GC

Elev (m)	Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
				Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
							0	50	100	10	100	1000	10000	





# BORE HOLE LOG

Bore Hole: **BH1716**

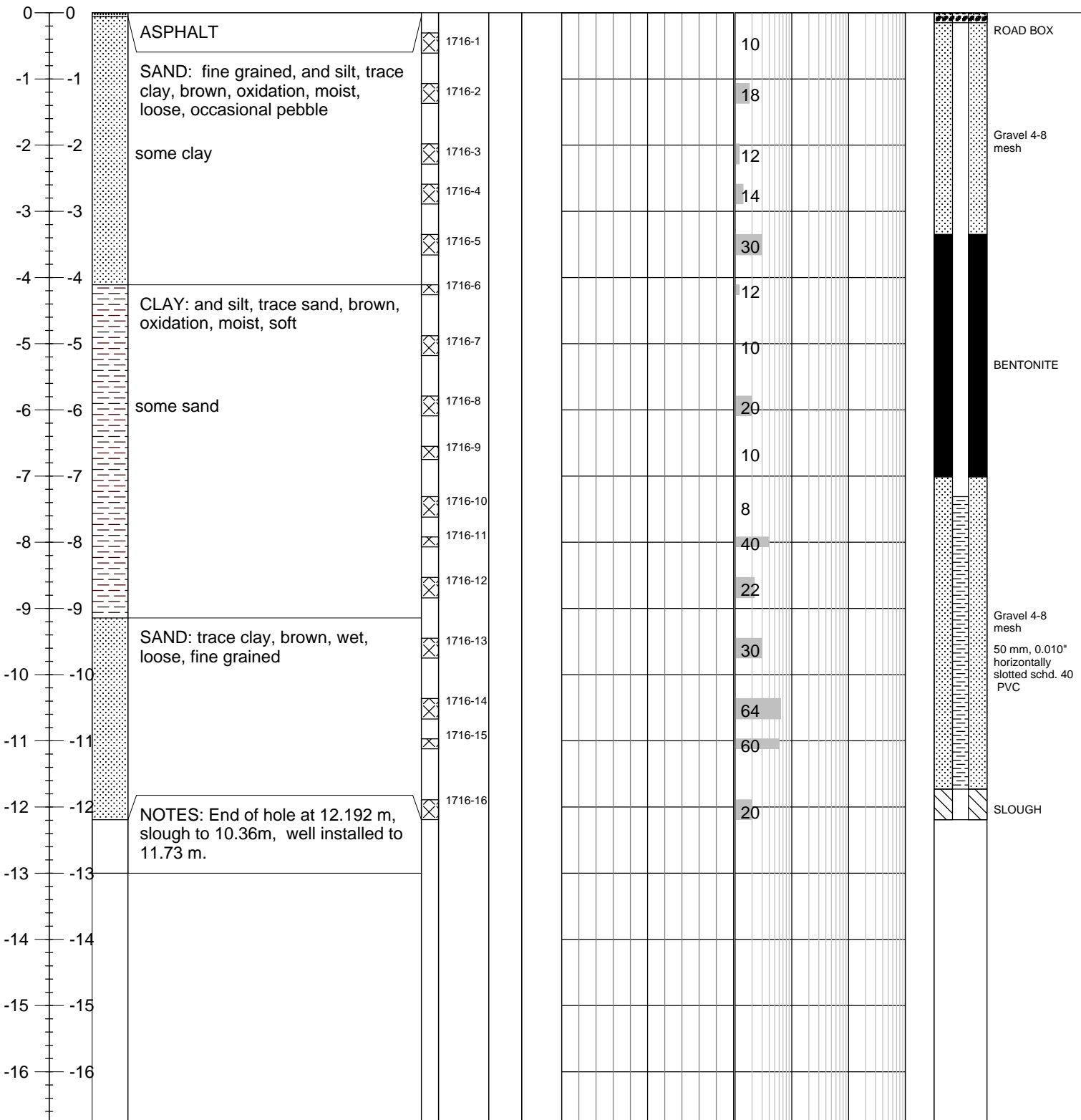
Page: 1 of 1

Client: Sears Canada Inc.  
Project: Monitoring Well Installation  
Location: Calgary, AB  
Project No.: CG909

Northing:  
Easting:  
Ground Elev.: n/a  
Top Casing Elev.: 1089.140

Date Drilled: 19 January 09  
Drill: B-57  
Drilling Method: 6" solid stem  
Logged by: GC

Elev (m)	Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
				Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
							0	50	100	10	100	1000	10000	





# BORE HOLE LOG

Bore Hole: **BH1717**

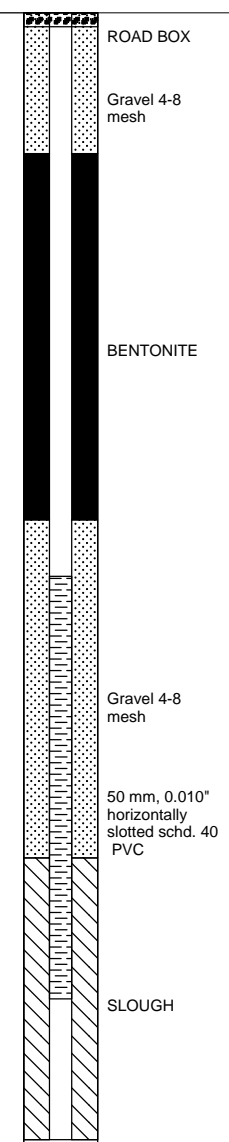
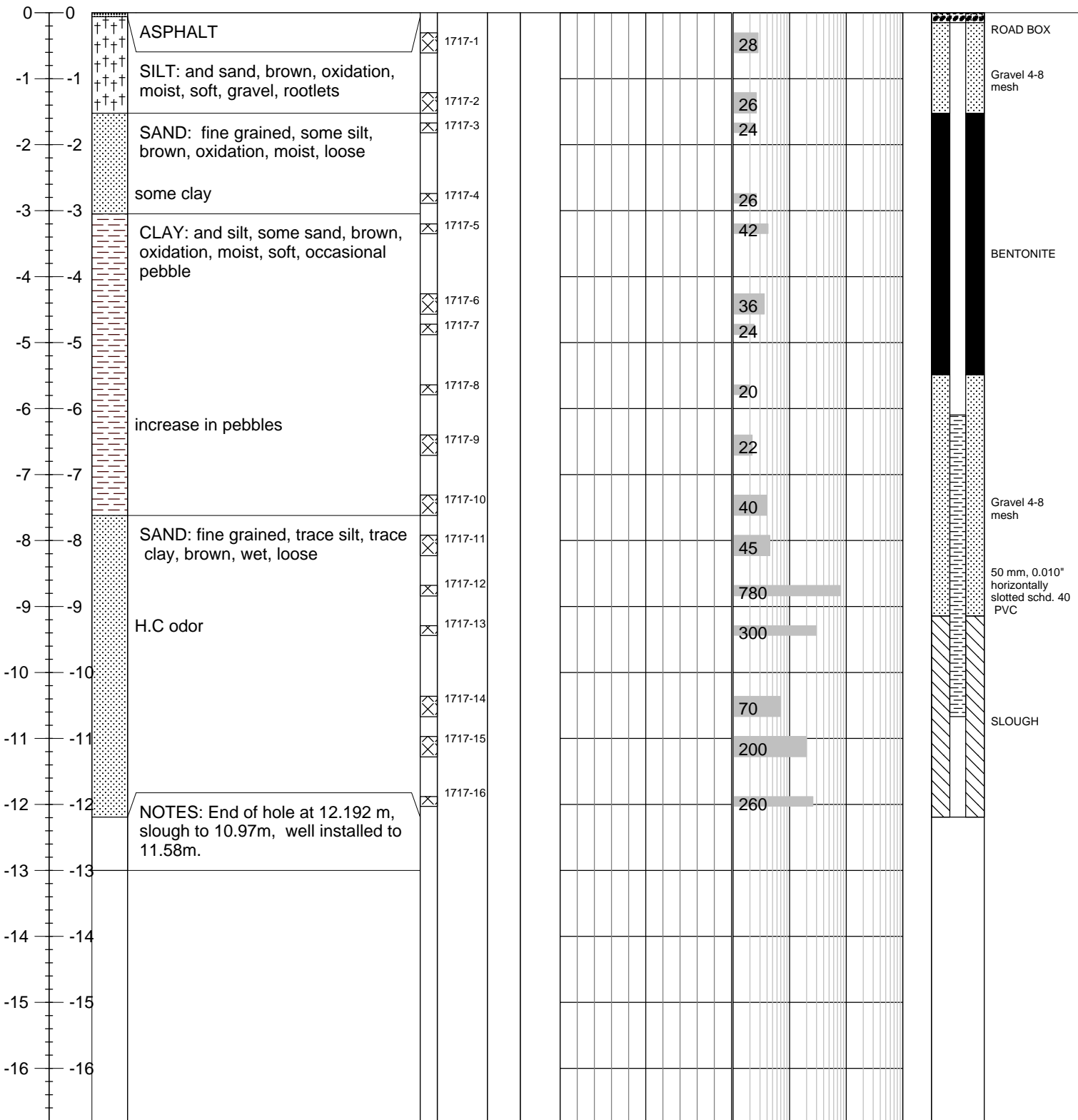
Page: 1 of 1

Client: Sears Canada Inc.  
Project: Monitoring Well Installation  
Location: Calgary, AB  
Project No.: CG909

Northing:  
Easting:  
Ground Elev.: n/a  
Top Casing Elev.: 1088.620

Date Drilled: 20 January 09  
Drill: B-57  
Drilling Method: 6" solid stem  
Logged by: GC

Elev (m)	Depth (m)	Symbol	Soil Description	Sample		USC	Moisture Content			Headspace Vapour				Monitor Well Construction Detail
				Type	No.		SPT 'N'	Plastic Limit	percent Natural Moisture	Liquid Limit	ppm			
							0	50	100	10	100	1000	10000	





**Clifton Associates Ltd.**  
engineering science technology

## Appendix C



July 20, 2012

File No.: 00141934

Mr. Greg Paliouras  
Associate VP Construction, Energy and Maintenance  
Sears Canada Inc.  
Dept 702CE, Suite 700  
290 Yonge Street  
Toronto, Ontario M5B 2C3

Dear Mr. Paliouras:

**Subject: Sears North Hill - Hounsfield Heights Briar Hill Remediation and Monitoring  
NW Calgary, Alberta**

Environment and Sustainable Resource Development (ESRD) has reviewed the following Clifton Associates Ltd. reports regarding remediation and monitoring activities in the area including Hounsfield Heights Briar Hill community and City of Calgary property:

*Pre-Commissioning Monitoring Report.* January 17, 2011.

*First Quarter Site Monitoring Report.* July 11, 2011.

*Status Update of Activities Site Management Plan.* July 18, 2011.

*Second Quarter Site Monitoring Report.* October 5, 2011.

*Third Quarter Site Monitoring Report.* March 2012.

ESRD met with Clifton Associates (Clifton) on June 20, 2012; and with Clifton, Alberta Health Services, and representatives from the Hounsfield Heights Briar Hill community association (HHBHCA) on June 28, 2012. The following comments are based on our review of the above captioned reports and the discussions at the June 20th and 28th meetings.

ESRD principles of contaminated sites management require that sources be removed or controlled as soon as practicable. There is a concern that source material may remain on the Sears site to the north and that it could continue to affect the Hounsfield Heights Briar Hill community located downgradient. ESRD requests the Sears provide information on whether areas remain on the Sears site that may need further assessment. We acknowledge that Sears undertook significant remedial activities on an area of the Sears North Hill property. Confirmation is needed for other areas to ensure source removal has been completed to the extent possible.

A dual phase vapour extraction system (DPVES) was commissioned in February 2011 to remove liquid phase petroleum hydrocarbons (LPHC) from the northern area of 13 Avenue between 16 and 15 Streets NW in the Hounsfield Heights Briar Hill community. The extent of LPHC plume appears to have reduced in the area where the DPVES has been operating although LPHC remain in the area of BH1703. Removal of LPHC needs to continue and we understand that the DPVES may be adjusted to focus on the area where LPHC remain.

Results from the groundwater monitoring and sampling program show that the dissolved phase plume is expanding to the south/southwest. Groundwater analytical results from selected monitoring wells located south of 11 Avenue NW exceeded the Alberta Tier 1 groundwater

remediation guidelines. In particular, Benzene exceeded the vapour inhalation guideline for residential land use in fine grained soil at monitoring well BH1303 in 2011.

Site conditions and the requirements under the Alberta Tier 1 and Tier 2 guidelines have changed since the acceptance of the May 31, 2006 Site Management Plan, therefore ESRD requires that the following actions be undertaken by Sears Canada Inc. (Sears) including:

- Fully delineate the dissolved plume south of 11<sup>th</sup> Avenue;
- Sample the groundwater adjacent to where it discharges to the surface in the south portion of zone 3 and evaluate it for risk to ecological receptors. There would be no risk from petroleum hydrocarbons to humans having direct contact with the surface water from these seepages;
- Delineate the soil gas/vapour plume in Zones 1, 2 and 3;
- Assess potential risks from ingress of petroleum hydrocarbon vapours to indoor air in areas where the guidelines are exceeded for the vapour inhalation pathway, and in areas where it has been determined that elevated soil gas/vapours are present;
- Establish a soil gas monitoring program on properties that may be at risk from vapour ingress to indoor air. Compare current needs with those previously identified in the Clifton April 5, 2007 response to Alberta Environment regarding the soil vapour monitoring;
- Implement additional remediation techniques to deal with the expanding dissolved phase plume. As discussed, this could include enhanced bioremediation. Monitored natural attenuation is not appropriate while LPHC are being removed and when the dissolved plume is not stable. Multiple remediation approaches are needed to address the petroleum hydrocarbon impacts;
- Review the groundwater monitoring and sampling program to ensure adequate coverage based on current conditions and trends; and,
- Apply the Tier 1 guidelines to monitoring well locations along 11<sup>th</sup> Avenue NW and include these wells in the groundwater monitoring and sampling program.

At the June 28 meeting, all parties agreed that there could be improvements in communication between Sears and community representatives: as activities are to be implemented at the site; for interpretation of the technical information by enhancing the presentation of information to improve the communication of the results; and, for evaluation of remediation progress. Therefore ESRD requires that Sears establish a communication protocol and schedule that will meet the needs of all parties.

A time line for remediation needs to be established which could identify key milestones along the time line and evaluate progress. We understand that these would be estimates and that plans change over time, but it is important to manage the site activities within a timeframe for reaching the remediation objectives.

As part of the ongoing management of risks at the site while remediation is undertaken, ESRD requests a commitment letter from Sears to undertake remediation and management of the site

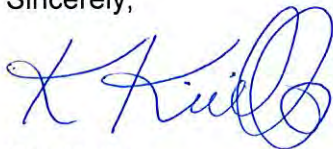
over the long term. This is a standard requirement of the Department when risk management is undertaken.

Sears shall incorporate all of the above into a new Site Management Plan for the Hounsfield Heights Briar Hill area going forward. Parts of the original Site Management Plan from 2006 are outdated, and the July 18, 2011 Status Update of Activities Site Management Plan does not address the changes at the site and the need for additional assessment, monitoring and remediation activities. ESRD suggests that the SMP for the Hounsfield Heights Briar Hill area be a separate document from the SMP for the North Hill shopping area as separate approaches are needed for each area.

ESRD requests that Sears submit a new Site Management Plan to our office by December 2012 which shall contain a plan to address all of the points identified in this letter. Without delay, Sears should proceed with further assessment work at the site in conjunction with developing the new Site Management Plan.

Please contact me at 403-297-8270 if you wish to discuss the contents of this letter further.

Sincerely,



Kim Kirillo  
Contaminated Sites Coordinator

cc: Stephen d'Abadie, Clifton Associates  
Emmanuel Malterre, Sears Gas Plume Committee  
David Crowe, Alberta Health Services