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NORTHEAST CAPITAL INDUSTRIAL ASSOCATION

2010 Groundwater Quality Monitoring

Beverly Channel Monitoring Wells

E00100101

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WorleyParsons Canada Ltd.
Infrastructure & Environment Division
Suite 705, 10240 - 124 Street
Edmonton, AB T5N 3W6 CANADA
Phone: +1 780 496 9055
Facsimile: +1 780 496 9575
www.worleyparsons.com

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1. INTRODUCTION

1.1 General

The Northeast Capital Industrial Association (NCIA) Beverly Channel Study Area is located within Sturgeon and Strathcona Counties and is comprised of Townships 54, 55, and 56, Ranges 21 and 22, W4M (Figure 1). Groundwater quality monitoring within the Study Area has been conducted since 2005 (Stantec Consulting Ltd. 2006a, 2006b, 2007, and 2009). The objective of the groundwater monitoring program is to monitor groundwater quality in the Beverly Channel in order to compile baseline groundwater data for use in the development of a long-term monitoring strategy and response plan. The monitoring well network in the Study Area consists of 13 wells placed into the Beverly Channel within the NCIA study area.

1.2 Previous Work

Previous work conducted within the Study Area was described by Stantec Consulting Ltd. (Stantec; 2006a, 2006b, 2007, and 2009) and is summarized as follows:

- Depth to the groundwater surface has historically ranged from approximately 14 to 34 m below ground surface (bgs). Annual groundwater level fluctuation has generally been 1 m or less.
- The lateral groundwater flow gradient within the Beverly Channel has historically ranged from 0.0005 to 0.005. Groundwater flow velocity has been estimated to range from 16 to 160 m/year.
- Historically, total dissolved solids (TDS), iron and manganese have exceeded the applied guidelines at several locations within the Study Area.
- Sodium concentrations have historically exceeded the applied guideline at MW-07 and MW-09.
- Chloride concentrations at MW-04 have been elevated in previous sampling events. Potential causes of this elevated chloride have not been investigated.

1.3 Scope of Work

The main objective of the 2010 program was to conduct annual groundwater quality monitoring. One sampling event was conducted in the spring which included the following tasks:

- Field measurement of depth to groundwater at all wells;
- Field measurement of electrical conductivity (EC), pH, and temperature for groundwater;
- Sampling of groundwater for laboratory analysis; and
- Preparing a report summarizing the program methodology and results, and providing an analysis of the groundwater data.

2. PHYSICAL SETTING

2.1 Topography and Drainage

The Study Area encompasses residential, agricultural and industrial areas. While local topography varies at each well location, the ground generally slopes toward the North Saskatchewan River, which is located in the northern portion of the study area. Surface drainage is expected to be generally toward the North Saskatchewan River or Astotin Creek, which ultimately discharges to the North Saskatchewan River.

2.2 Regional Geology and Hydrogeology

A detailed description of the geology and hydrogeology of the region is provided in Stantec (2006a). A brief summary is provided below.

Regional bedrock geology comprises Late Cretaceous-aged, non-marine, grey thick-bedded sandstone; grey and green mudstone; grey, clayey siltstone; coal beds; and rare intermittent ironstone beds of the Belly River Formation or marine, dark grey blocky shale and silty shale; greenish glauconitic and grey clayey sandstone; thin concretionary ironstone and bentonitic beds of the Bearpaw Formation (Stein 1976). The Bearpaw Formation has been eroded over most of the Project Area, but seems to be present in the southwest of the Project Area. The Bearpaw Formation is generally considered an aquitard. The Horseshoe Canyon Formation is present outside of the Study Area toward the southwest.

Quaternary deposits consisting of pre-glacial, glacial, lacustrine and aeolian deposited sediments overlie the bedrock. The Beverly Channel is a major pre-glacial valley in the area that consists of buried sand and gravel deposits. The channel is roughly coincident with the present-day North Saskatchewan River Valley. Deposited in fast-flowing braided streams the sand and gravels of the Beverly Channel form an important regional aquifer in the area.

Clay till is present above the Beverly Channel sand and gravels and clay overlies the clay till. The clay and clay till units provide an effective protective barrier for the Beverly Channel over much of the region. A saturated surficial sand unit may overlie the clay unit in some areas.

Aquifers can be found in the Belly River Formation, the Beverly Channel, and sand lenses in the till and surficial sand and gravel deposits (Stein 1976). Aquifers within the Belly River Formation exhibit total dissolved solids (TDS) ranging from 1000 to more than 6000 mg/L (Stein 1976). Areas of high TDS are typically associated with high chloride and/or high sulphate content (Stein 1976).

The Beverly Channel is hydraulically connected to the North Saskatchewan River (Stein 1976). Mineralization in the Beverly Channel generally ranges from less than 500 to 3000 mg/L TDS. Iron concentrations within the Channel can exceed 15 mg/L and iron staining and bacteria are common (Stein 1976).

2.3 Groundwater Use

The Alberta Water Well Information Database indicates that there are 1091 water well records within the Study Area (Appendix 1). The majority of the wells were listed for domestic usage. Where depths were available, the wells were installed between approximately 2 and 1900 m bgs. The existence and location of these water wells has not been field verified.

Groundwater analytical data is available for 258 of the 1091 water well records. Of the 258 records it can be deduced with reasonable confidence that eight wells have been completed within the Beverly Channel and six wells have been completed in the upper bedrock. Table A summarizes mean concentrations calculated from available water well records.

Several water wells were identified as being within the Beverly Channel in Shell Canada Limited's (Shell) Environmental Impact Assessment for the Scotford Upgrader Expansion (Shell 2005). Water well chemistry data was unavailable for most of the water wells.

Table A Concentrations of Water Well Records for Select Parameters

Parameter	Beverly Channel		Upper Bedrock	
	Range	Mean	Range	Mean
pH (mg/L)	7.3 - 8.5	8.1	7.8 - 8.7	8.0
Chloride (mg/L)	1 - 38	13.5	2 - 901	197
Sulphate (mg/L)	40 – 726	316	5 - 741	193
Iron (mg/L)	0.02 - 4.84	1.24	0.08 - 1.48	0.36
Total Dissolved Solids (mg/L)	362 - 1732	975	331 - 2021	1059
Sodium (mg/L)	54 - 417	200	8 - 825	274

Notable differences between the aquifers include chloride, sulphate, and iron concentrations. Within the Beverly Channel chloride concentrations are lower while sulphate and iron are typically higher than in the upper bedrock.

3. FIELD PROGRAM

3.1 Monitoring Network

The monitoring well network consists of 13 existing wells, which have been installed at 13 different locations within the Study Area (Figure 2). Borehole logs of the 13 wells have been compiled by Stantec (2005) and are provided in Appendix 2.

3.2 Groundwater Sampling

Groundwater sampling was conducted according to the WorleyParsons groundwater sampling protocols. The following procedures were followed during sampling of all monitoring wells.

- Prior to sampling, the static groundwater level was measured with an electrical tape. The tape was cleaned by rinsing with distilled water after each reading.
- Wells were purged of standing water using a Grundfos submersible pump. The temperature, pH, and EC of the water were monitored during purging. The wells were purged until these parameters stabilize. A minimum of three well volumes was purged from all monitoring wells.
- After purging and field measurements, groundwater samples were collected using the Grundfos pump. Samples were collected in pre-cleaned bottles and vials provided by ALS Laboratory Group (ALS) in Edmonton, Alberta. Samples for dissolved metals, dissolved ammonia and dissolved organic carbon (DOC) analyses were field-filtered. Preservatives were added to select samples as directed by the laboratory.
- Groundwater samples were placed in coolers with ice for shipment to ALS.
- Quality assurance/quality control (QA/QC) for the field sampling program consisted of collecting one duplicate sample and one field blank. Both samples were analyzed for major ions/routine potability; benzene, toluene, ethylbenzene, and xylenes, and petroleum hydrocarbon fraction 1 and 2; and dissolved metals.
- Standard chain-of-custody (COC) protocols were followed.

Measurements of water quality indicator parameters were conducted during the field sampling program. These measurements comprised the following:

- **Temperature and pH:** WTW 3150i pH meter, calibrated using pH 4 and pH 7 buffer solutions.
- **Electrical Conductivity:** WTW 3150i conductivity meter with a Tetracon 325 probe calibrated with standard KCl solution (1,413 µS/m at 25°C).

Quality assurance/quality control procedures included:

- thorough rinsing with distilled water of all equipment entering a well (e.g. water level probe);

- a field blank for analyzed for major ions/routine potability; benzene, toluene, ethylbenzene, and xylenes, and petroleum hydrocarbon fraction 1 and 2; and dissolved metals;
- a blind duplicate for analysis of major ions/routine potability; benzene, toluene, ethylbenzene, and xylenes, and petroleum hydrocarbon fraction 1 and 2; and dissolved metals;
- storing of samples in ice chests cooled to approximately 4°C;
- documentation of sample handling, transport, and delivery to the laboratory using appropriate chain-of-custody procedures and documentation.

Groundwater samples were collected on April 29 and May 7 and 8, 2010. All groundwater samples were analyzed by ALS Laboratory Group (ALS), an accredited laboratory in accordance with the quality assurance/quality control (QA/QC) requirements of the Canadian Council of Ministers of the Environment (1993a and 1993b).

The analytical schedule for each monitoring well is summarized in Table B. Groundwater samples from all monitoring wells were analyzed for the following:

- major ions/routine potability parameters, including alkalinity, bicarbonate, carbonate, calcium, chloride, EC, hydroxide, iron, magnesium, manganese, nitrate-plus-nitrite-as-nitrogen, pH, potassium, sodium, sulphate, TDS, and total hardness;
- petroleum hydrocarbons (PHC), including benzene, toluene, ethylbenzene, xylenes (BTEX), PHC fraction (F)1, and F2; and
- dissolved metals, including aluminum, antimony, arsenic, barium, beryllium, boron, cadmium, chromium, cobalt, copper, lead, mercury, molybdenum, nickel, selenium, silver, thallium, titanium, uranium, vanadium, zinc.

Table B 2010 Analytical Schedule

Station	Major Ions/Routine Potability	Petroleum Hydrocarbons	Dissolved Metals
MW-01	✓	✓	✓
MW-02	✓	✓	✓
MW-03	✓	✓	✓
MW-04	✓	✓	✓
MW-05	✓	✓	✓
MW-06	✓	✓	✓
MW-07	✓	✓	✓
MW-08	✓	✓	✓

Station	Major Ions/Routine Potability	Petroleum Hydrocarbons	Dissolved Metals
MW-09	✓	✓	✓
MW-10	✓	✓	✓
MW-11	✓	✓	✓
MW-12	✓	✓	✓
MW-13	✓	✓	✓
Field Duplicate	✓	✓	✓
Field Blank	✓	✓	✓

3.3 Assessment Criteria

Laboratory analytical results were compared to the following guidelines, where applicable:

- Alberta Health 2008: Guidelines for Canadian Drinking Water Quality

3.4 Data Analysis

Upon completion of the field program, groundwater field measurements and analytical data were tabulated. Tables included summary of historical parameters and minimum, maximum, and mean concentrations for each well. Select parameters were then graphed and utilized for statistical and graphical analysis as described below.

3.4.1 Statistical and Graphical Analysis

A Mann-Kendall test is a non-parametric test of a trend in a data set (Helsel and Hirsch 1992). The test evaluates whether parameter concentrations are rising or falling. Mann-Kendall analysis can be performed only on data sets with more than four sampling points. Sen's Method is used to assess the rate of change (increase or decrease) in a trending data set (Gilbert 1987). Mann-Kendall and Sen's Method analysis were applied to pH, chloride, sulphate, iron, manganese, TDS, and sodium data.

Following completion of the statistical calculations, the data were evaluated and trends were considered potentially significant if:

- The data set contained six or more data points;
- The Mann-Kendall probability was greater than 0.95; and
- Sen's normalized slope (in % change per year) was 10% or greater (either positive or negative).

Trends apparent from visual inspection of the graphical control charts, but not indicated statistically, were also noted.

4. 2010 RESULTS

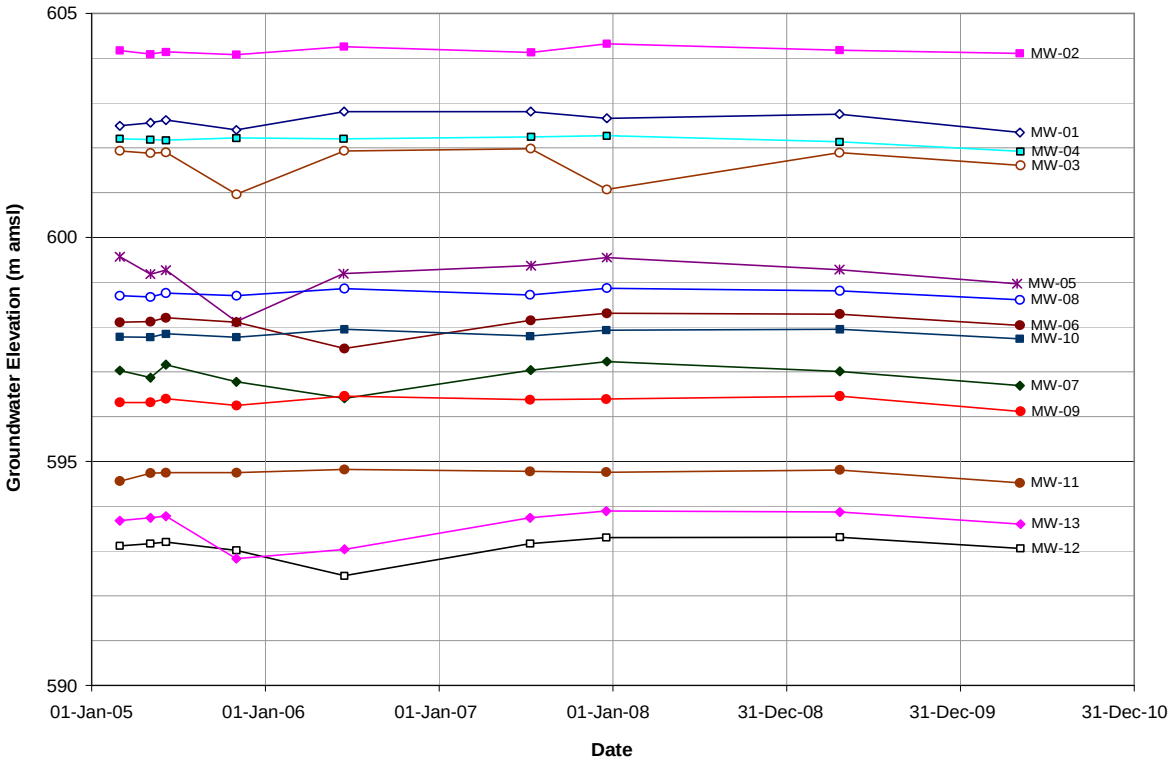
4.1 Groundwater Flow

4.1.1 Groundwater Elevations

Groundwater hydrographs are provided in Appendix 3 and summarized in Figure 4.1. Groundwater surface elevations within the Beverly Channel ranged from 593.06 (MW-12) to 604.11 (MW-02) m above sea level (asl) in 2010 (Table 1).

Groundwater elevations have shown a general decline since December 2008. In general, the decline is more pronounced at monitoring wells closer to the river. Table C provides the decline in groundwater levels from spring 2009 to spring 2010. The decline was between 0.2 m and 0.4 m for all monitoring wells except MW-02 where the decline was 0.07 m.

Figure 4.1 Historical groundwater surface elevation in Beverly Channel monitoring wells



The data used to create the above figure are consistent with data provided by Stantec and available on the NCIA website. These data were further confirmed with Stantec (King, 2010; personal communication).

Table C Decline in Groundwater Levels from Spring 2009 to Spring 2010

Station	Spring 2009 (m asl)	Spring 2010 (m asl)	Difference (m)
MW-01	602.75	602.34	0.41
MW-02	604.18	604.11	0.07
MW-03	601.89	601.61	0.28
MW-04	602.13	601.92	0.21
MW-05	599.28	598.97	0.31
MW-06	598.29	598.04	0.25
MW-07	597.01	596.69	0.32
MW-08	598.81	598.61	0.20
MW-09	596.46	596.12	0.34
MW-10	597.95	597.74	0.21
MW-11	594.81	594.52	0.29
MW-12	593.31	593.06	0.25
MW-13	593.87	593.60	0.27

4.1.2 Horizontal Groundwater Flow

Groundwater flow in the Beverly Channel was generally to the north, toward the North Saskatchewan River (Figure 3). The average lateral hydraulic gradient across the Beverly Channel was approximately 0.0011 m/m. Based on a geometric mean hydraulic conductivity of 2.3×10^{-4} m/s, an average hydraulic gradient of 0.0011, and an assumed effective porosity of 0.25, the linear groundwater flow velocity was about 32 m/year.

Groundwater contours were derived utilizing North Saskatchewan River elevations as reported in the Phase II report (Stantec 2005).There may be some bias in the interpreted contours near the river because the river levels were not measured at the same time as the groundwater levels in the Beverly Channel.

4.2 Field-Measured Parameters

Results of the field parameters are presented in Table 2. Groundwater temperatures ranged from 4.8 to 8.2°C; EC values ranged from 749 to 2,640 µS/cm; and pH ranged from 6.91 to 7.53.

4.3 Groundwater Quality

Groundwater analytical data are presented in Tables 3, 4 and 5. Original laboratory analytical data are included in Appendix 4. Hydrochemical control charts and Mann-Kendall analysis are provided in Appendix 5. Statistical tables for each monitoring well including parameter minimum, maximum, mean, and count are included in Appendix 6.

4.3.1 Select Inorganic Data

Select inorganic parameter data are presented in Table 3. Results from the May 2010 sampling event are summarized as follows:

- Dissolved sulphate exceeded the applied guideline at MW-06 and MW-07.
- Iron concentrations exceeded the applied guideline at all sampling locations except MW-04.
- Manganese concentrations exceeded the applied guideline at all sampling locations.
- TDS concentrations were in excess of the applied guideline at all sampling locations except MW-01 and MW-13.
- Sodium concentrations exceed the applied guideline at MW-07 and MW-09.

4.3.2 Petroleum Hydrocarbon Parameters

Petroleum hydrocarbon parameter data are presented in Table 4. Petroleum hydrocarbons were not detected at any of the sampling locations.

4.3.3 Dissolved Metals Parameters

Dissolved metals parameter data are presented in Table 5 and results from the 2010 sampling event are summarized below:

- Arsenic was detected in concentrations below the applied guidelines at all sampling locations.

4.3.4 Trends and Statistical Analysis

Hydrochemical control charts and Mann-Kendall/Sen's slope analysis are presented in Appendix 6. Results are summarized as follows.

- Chloride levels at MW-05 have statistically increased.
- The iron concentration at MW-09 has statistically increased.

4.4 QA/QC Results Summary

Zeiner (1994) states that the relative percent difference (RPD) between sample and duplicate results should be less than 20 percent. The field duplicate (MW-09) indicated negligible difference between the sample and duplicate results (Table 3, 4, and 5).

Standard Methods (2005) indicates an ion balance of ±10% as a typically acceptable criterion for water with an anion sum between 30 and 800 meq/L. Values outside the commonly acceptable limits may arise for a number of reasons (e.g. analytical interference, unknown constituents, or reporting errors). None of the samples analyzed in 2010 exhibited reported ion balance values in excess of 10% (Table 3).

A field blank was collected and analyzed for major ions/routine potability, petroleum hydrocarbons, and dissolved metals. All parameters were below their MDLs in the field blank, indicating that cross-contamination did not occur during sampling.

The laboratory blank, replicate and control samples for groundwater analyses were within the acceptable limits.

5. DISCUSSION ON KEY GROUNDWATER QUALITY INDICATORS

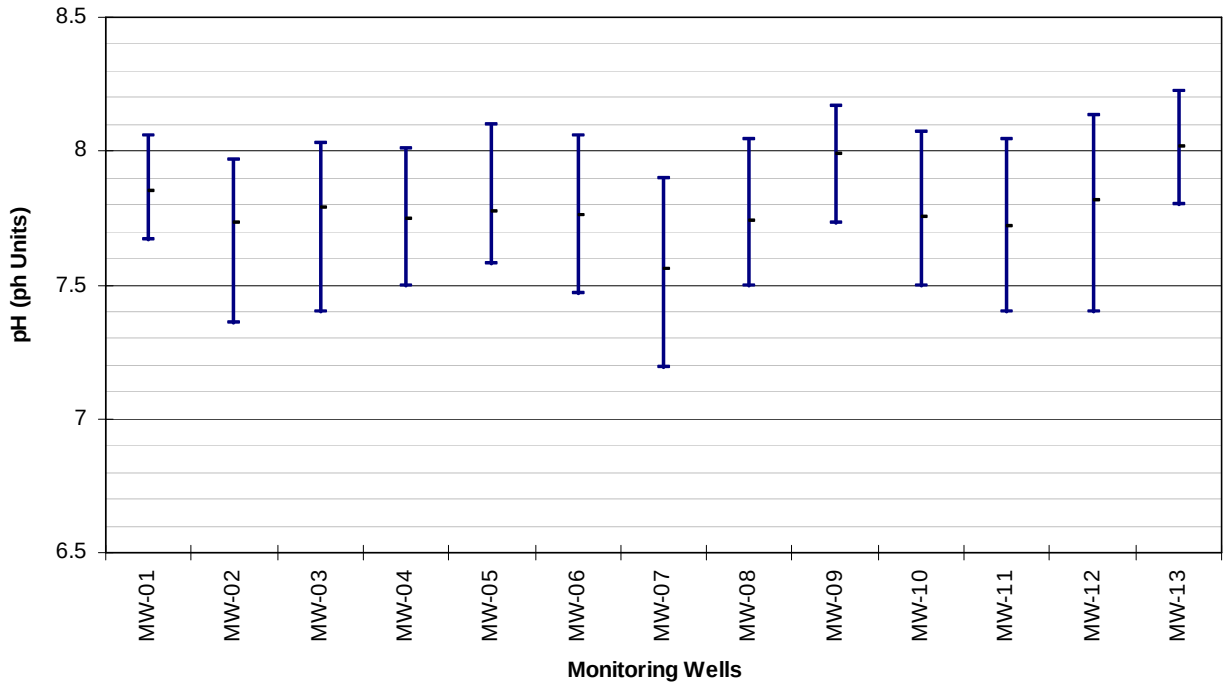
5.1 pH

Hem (1992) indicated that most groundwater in the United States have pH values ranging from about 6.0 to about 8.5, while river water in areas not influenced by pollution reportedly have a pH that ranges between 6.5 and 8.5.

The Canadian Drinking Water Guideline (CDWG) suggests an acceptable pH range of 6.5 to 8.5 for drinking water (Health Canada 2008). As there are no specific health effects noted on which to base limits for the pH of drinking water, this guideline is an aesthetic objective (AO) rather than a maximum acceptable concentration (MAC). At a pH below 6.5, corrosion effects may become significant in the drinking water supply and distribution system, and at a pH above 8.5, incrustations and scaling may become an issue (Health Canada 1979a).

In the Beverly Channel, since the groundwater sampling began in 2005, groundwater pH values are within 7.2 and 8.2 (Figure 5.1), within the range of natural values, and within the aesthetic objectives for drinking water. Figure 5.1 shows the range and mean of observed values.

Figure 5.1 Range of pH in Beverly Channel monitoring wells



5.2 Chloride

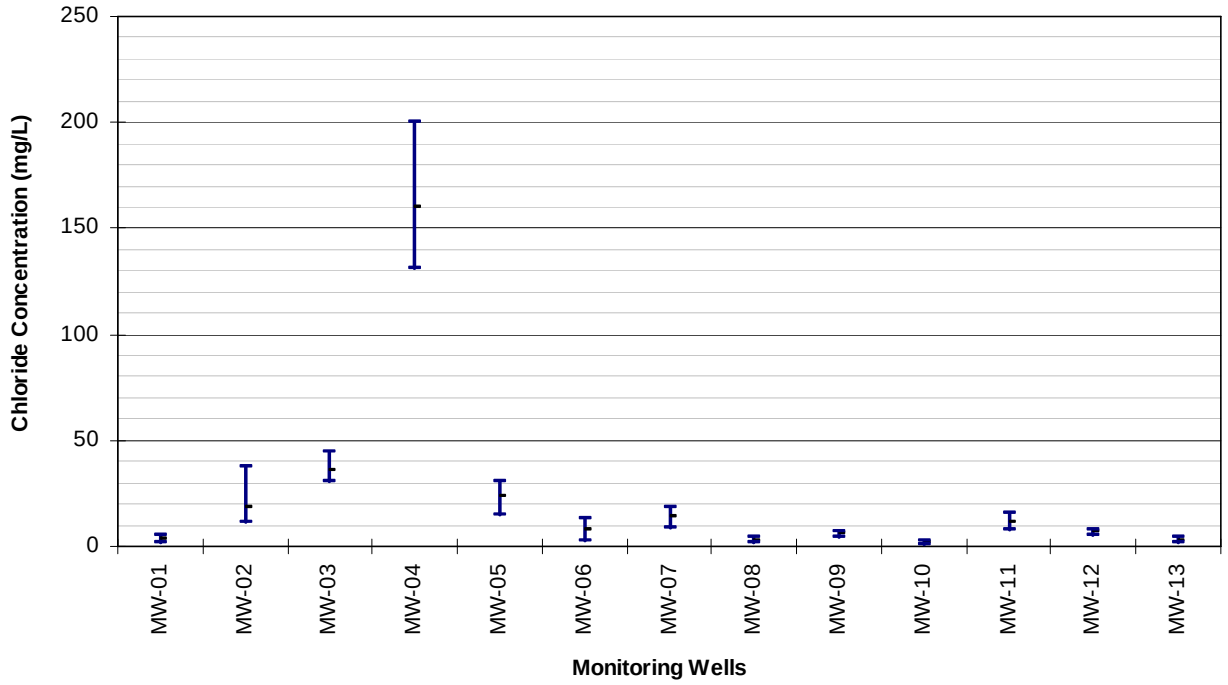
Chloride is an inorganic, non-reactive compound that occurs widely in nature. When introduced into groundwater, chloride is highly mobile and difficult to remove due to its high solubility (Health Canada 1979b). With high mobility, high solubility, and its wide usage in anthropogenic activities, chloride is generally utilized as a tracer, or indicator, of groundwater contamination. Chloride concentrations in groundwater are typically less than 50 mg/L in Sturgeon and Strathcona Counties (HCL 2001a and 2001b) but can be naturally elevated in regional groundwater discharge areas.

Typical anthropogenic uses of chloride include control of ice and snow, effluents from chemical industries, oil well operations, sewage, irrigation drainage, and refuse leachates. Naturally occurring salt deposits also occur throughout Canada (Health Canada 1979b).

Health Canada (2008) suggests an AO guideline of less than or equal to 250 mg/L for chloride to minimize undesirable tastes in beverages. At higher concentrations chloride may cause corrosion in distribution systems as well (Health Canada 1979b).

Chloride concentrations in the Beverly Channel were typically less than 50 mg/L and in several cases less than 10 mg/L (Figure 5.2). Elevated chloride concentrations between 137 mg/L and 200 mg/L were observed at MW-04 and are discussed in section 5.8. At MW-05, chloride concentration has increased, however, the concentrations remains within the range of naturally occurring groundwater.

Figure 5.2 Range of chloride concentration in Beverly Channel monitoring wells



5.3 Sulphate

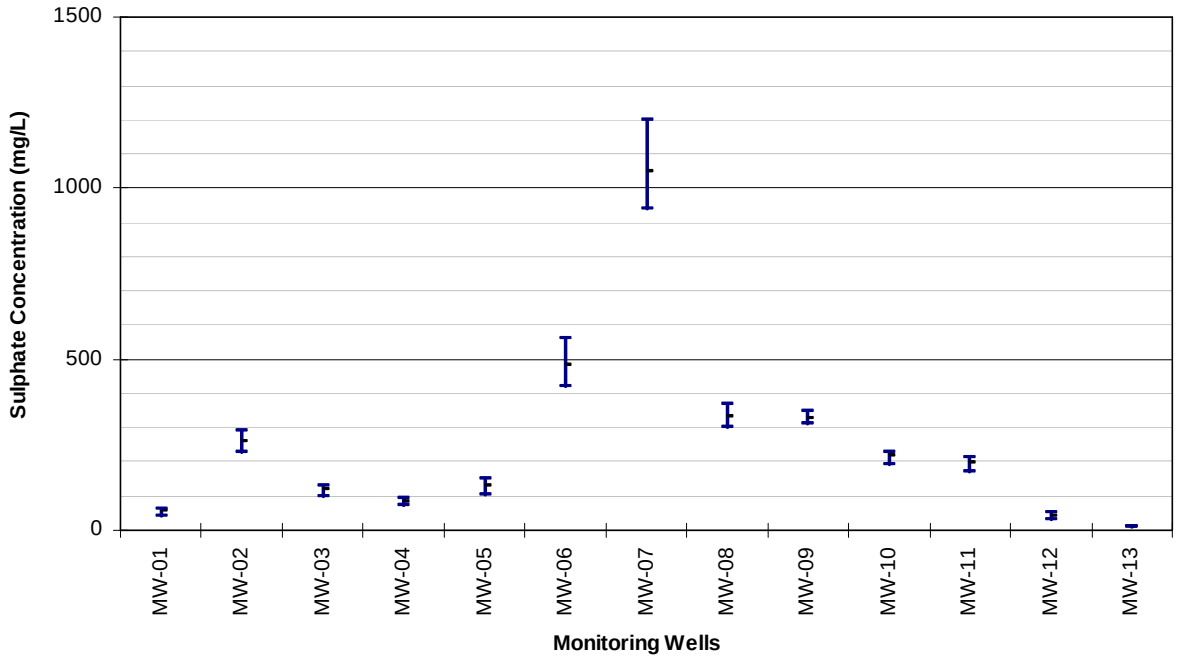
Natural sources of sulphur in its oxidized state are certain igneous rock minerals and evaporite sediment (e.g. gypsum). Other natural sources of sulphur occur from volcanic activity, and geothermal water (Hem 1992). Anthropogenic sources of sulphate are mainly introduced by the combustion of fuels and the smelting of ores (Hem 1992). Industrial uses of sulphur, usually in the form of sulphuric acid, include production of fertilizer, manufacturing of chemicals, dyes, glass, paper, soaps, textiles, fungicides, insecticides, astringents and emetics (review by Health Canada 1987).

The GCDW for sulphate suggested by Health Canada (2008) is less than or equal to 500 mg/L. This value is an AO based on taste considerations, although there is the possibility of adverse physiological effects at higher concentrations. The lethal dose in humans, in the form of potassium or zinc sulphate, is 45g, making it one of the least toxic anions (Health Canada 1987).

In the Industrial Heartland area, background sulphate concentrations are generally less than 100 mg/L in the surficial sand deposits, range from 100 mg/L to over 1,000 mg/L in shallow bedrock, and range from less than 1,000 mg/L to over 4,000 mg/L in till and clay deposits (BA Energy, 2004; Komex, 2006; PCOSI, 2006; Shell 2005, 2007; TOTAL, 2007).

In the Beverly Channel, sulphate concentrations are generally less than 500 mg/L (Figure 5.3). One monitoring well (MW-07) has sulphate concentrations in the range of 950 mg/L to 1,200 mg/L, which is similar to concentrations observed in shallow bedrock.

Figure 5.3 Range of sulphate concentrations in Beverly Channel monitoring wells



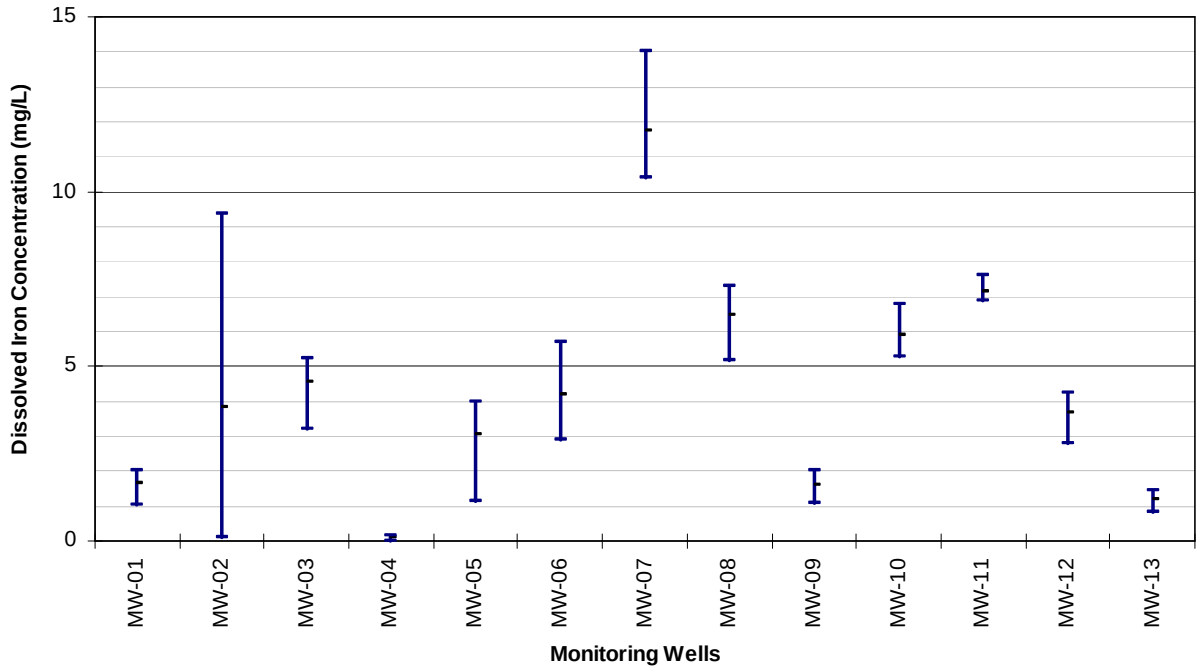
5.4 Dissolved Iron

A number of igneous rock minerals have a relatively high iron content which can act as a source of iron in groundwater. When iron is released in to water, it is generally reprecipitated nearby as sedimentary species involving sulphide, carbonate, oxide or oxyhydroxide (Hem 1992). The availability of iron to aqueous solutions is strongly affected by environmental conditions, particularly the oxidation/reduction capacity and pH. Iron is also present in organic wastes, and in plant debris in soils (Hem 1992), which can then be released into groundwater via biodegradation processes. In aerated waters, the concentration of iron in waters is seldom high (Health Canada 1978b)

The AO suggested by Health Canada (2008) for iron in drinking water is less than or equal to 0.3 mg/L. This objective is aimed to minimize objectionable taste and appearance, as well as inefficiency in the distribution system which can result from the precipitation of insoluble hydroxides and the development of slime produced by iron oxidizing bacteria. The reported lethal dose for an adult male is between 14 and 17.5 g (National Academy of Sciences, 1980; in Health Canada 2008).

Within the Beverly Channel elevated iron concentrations are generally expected. Stein (1976) indicates that iron concentrations in excess of 15 mg/L are not uncommon. HCL (2001a) report iron concentrations in excess of 7 mg/L for a Beverly Channel water supply well for the Village of Bruderheim. All iron concentrations in the Beverly Channel monitoring wells were higher than the drinking water guideline, with the exception of MW-04 (Figure 5.4).

Figure 5.4 Range of dissolved iron concentrations in Beverly Channel monitoring wells



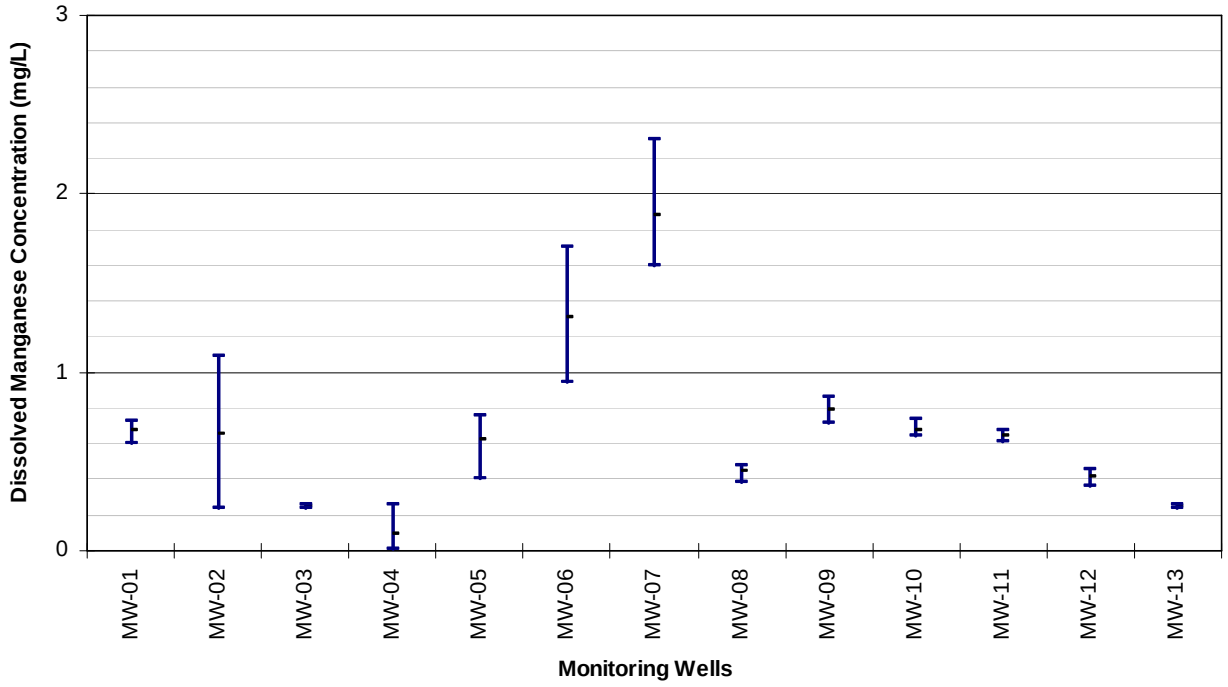
5.5 Dissolved Manganese

Manganese is most often present as a dioxide, carbonate or silicate mineral (Health Canada 1979b), and many igneous and metamorphic minerals contain manganese as a minor constituent (Hem 1992). As was the case for iron, the presence of dissolved manganese in water is dependent on both redox and pH conditions, although it is somewhat more stable toward oxidation than ferrous iron (Hem 1992).

Health Canada (2008) suggests an AO guideline of less than or equal to 0.05 mg/L to minimize staining and undesirable tastes in beverages, as well as the accumulation of microbial growths in distribution systems (black precipitates; Health Canada 1979b). Higher concentrations of manganese are expected to be more prevalent in groundwater than surface water as a result of the higher likelihood of reducing conditions in the subsurface (Health Canada 1979b).

The manganese concentrations in the Beverly Channel (Figure 5.5) are within the combined range of surface water/groundwater from data compiled by Hem (1992). Generally, manganese concentrations may be expected to be higher in the Beverly Channel than in shallower geological units as there is a higher likelihood of reducing conditions with depth. Lowest concentrations of manganese were observed at monitoring well MW-04.

Figure 5.5 Range of dissolved manganese concentrations in Beverly Channel monitoring wells



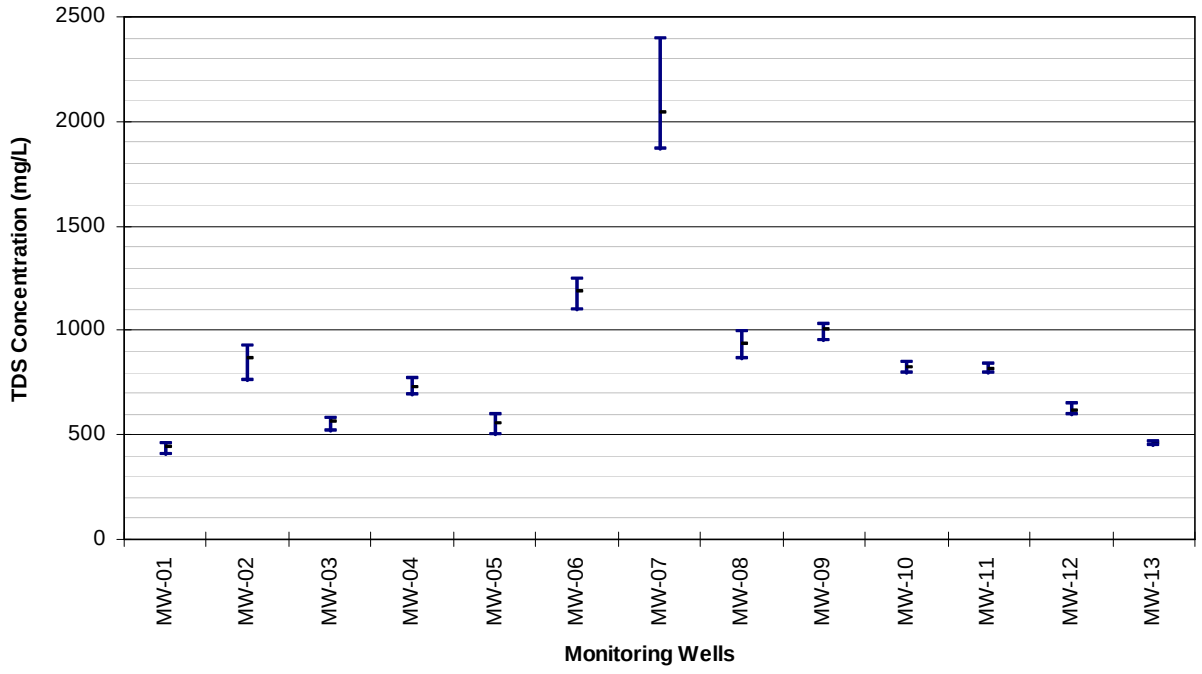
5.6 Total Dissolved Solids

Total dissolved solids (TDS) are dissolved constituents which comprise inorganic salts, primarily the major cations and anions used for groundwater characterization, as well as nitrate when introduced by agricultural use, and small amounts of organic matter (Health Canada 1978a). Potential sources of TDS include natural mineral sources, sewage, urban and agricultural runoff and industrial water (Health Canada 1978a). Concentrations of TDS resulting from mineral dissolution vary with the solubility of the minerals present.

Health Canada (2008) suggests an AO of less than or equal to 500 mg/L for TDS to minimize hardness, unpalatability, mineral deposition and corrosion (Health Canada 1978a). Recent data on health affects associated with the ingestion of TDS in drinking water is limited, and the data that are available are unclear; however, some individual components of TDS can affect human health (Health Canada 1978; as updated 1991). Components of TDS which are known to affect human health have been provided individual guidelines by Health Canada (2008).

Mineralization in the Beverly Channel ranged from 400 to 2,400 mg/L (Figure 5.6), with the majority of the monitoring wells showing TDS of less than 1,000 mg/L. This is generally in agreement with TDS values in excess of 1,000 mg/L reported by HCL (2001) for the Beverly Channel. The higher TDS concentration at MW-07 may be related to local groundwater discharge from bedrock. TDS in bedrock is generally within the range of 1,000 to 2,000 mg/L (Stein, 1976), but may exceed 3,000 mg/L (HCL, 2001).

Figure 5.6 Range of TDS concentrations in Beverly Channel monitoring wells



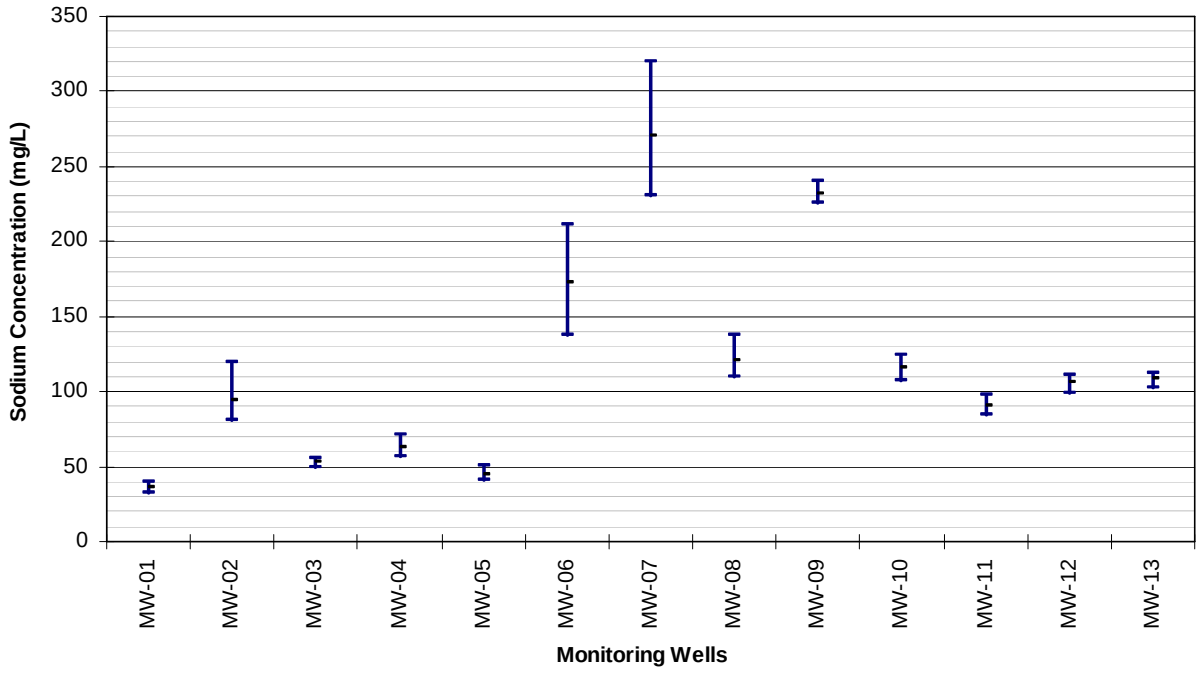
5.7 Sodium

Sodium is sometimes present in feldspar minerals, which can be released into water through weathering, or may be present as readily soluble salts such as those left behind in the uplift of land surface or decline of sea level (Hem 1992). Anthropogenic sources of sodium include the use of salt for de-icing, brine disposal or leakage from oil wells, and water reuse for irrigation purposes (Hem 1992). Other potential anthropogenic sources include sewage and industrial effluents, and the use of sodium compounds for corrosion control and water-softening processes (Health Canada 1979d).

Health Canada (2008) suggests an AO of less than or equal to 200 mg/L for sodium. Because the body has very effective mechanisms to control sodium levels, sodium is not acutely toxic in the normal range of environmental or dietary concentrations (Health Canada 1979d). However, there is a relation in the human body between fluid volume and sodium retention, and changes in sodium intake may result in disturbances such as changes in hypertension, congestive cardiac failure, renal disease, cirrhosis, toxaemia of pregnancy, and Meniere's disease (Health Canada 1979d).

Within the Beverly Channel, sodium concentrations ranged from approximately 30 to 320 mg/L (Figure 5.7). The upper range of sodium concentrations observed at MW-06, MW-07, and MW-09 is outside the range expected for normal groundwater in Canada (with a typical upper range of 130 mg/L), but are well within the range of concentrations of natural waters observed in North America. They might reflect discharge of groundwater from bedrock.

Figure 5.7 Range of sodium concentrations in Beverly Channel monitoring wells



5.8 Monitoring Well MW-04

Chloride concentrations in MW-04 are in the range of 137 to 200 mg/L at MW-04, higher than chloride concentrations at the other Beverly Channel monitoring wells, where they ranged from less than 10 to about 45 mg/L (see Figure 5.2).

The higher chloride concentrations at MW-04 are currently thought to be natural and related to bedrock water quality, based on the following:

- MW-04 is located in an agricultural field, immediately north of the City of Fort Saskatchewan residential area.
- The borehole was drilled 4.3 m into the bedrock (shale) and backfilled with slough (sand and gravel)
- Above the bedrock there is a sand and gravel unit (3.6 m), a sand unit (1.3 m), and rafted shale (1.2 m)
- MW-04 was completed at the top of the bedrock. The open interval is open to the sand and gravel, the sand, and the rafted shale. The monitoring well is also open to the bedrock because of the slough that fills the borehole in the bedrock.
- Chloride concentrations in water wells completed in bedrock exceed 250 mg/L at a number of locations (TOTAL, 2007; HCL, 2001). HCL (2001) further indicates that chloride values of greater than 250 mg/L are mainly in the vicinity of the Buried Beverly Valley.
- The shale may be a remnant of the Bearpaw Formation, which is of marine origin and would be a source of chloride. HCL (2001) reports chloride concentration of 221 mg/L in a water test hole completed in the Bearpaw Formation and indicates that “there are areas throughout the [Strathcona] County where the chloride concentrations exceed 250 mg/L.”
- Iron concentrations are the lowest of all the NCIA monitoring wells and are lower than the drinking water guideline. Low iron concentrations are consistent with groundwater from bedrock aquifers, which generally have low concentrations of dissolved iron (HCL, 2001).

Based on the borehole being open 4.3 m into bedrock and on the presence of 1.2 m rafted shale within the monitoring well completion interval, MW-04 is likely showing groundwater quality influenced by the water quality in the bedrock.

6. SUMMARY AND RECOMMENDATIONS

Annual groundwater quality monitoring was completed for the Northeast Capital Industrial Association in May 2010. Results are summarized as follows:

- Lateral groundwater flow was generally to the north at approximately 32 m/year.
- Chloride concentrations were generally below 50 mg/L and within ranges established by previous monitoring. Elevated chloride has been noted at MW-04. Statistically increasing chloride concentrations were observed at MW-05.
- Iron, manganese, total dissolved solids, and sodium appear to be naturally elevated within the Study Area. Statistically increasing iron was noted at MW-09, however the concentration remains well within naturally occurring ranges (Stein 1976).
- The cause of the elevated sulphate at two monitoring locations (MW-06 and MW-07) is unknown. Elevated concentrations may result from saltwater intrusion, mineral dissolution, and domestic or industrial waste. Due to the absence of industry in the immediate area it is likely that the elevated sulphate is naturally occurring.
- The elevated chloride concentration observed at MW-04 is likely showing effects of bedrock groundwater quality.

Groundwater data to date has shown that indicator parameter concentrations are generally within natural ranges for groundwater within Sturgeon and Strathcona county. Statistically significant trends were observed for chloride at MW-05 and dissolved iron at MW-09.

Recommendations are as follows:

- Consideration should be given to obtaining more representative water levels in the river to assist with interpretation of groundwater contours in the Beverly Channel.

A recommended analytical schedule is presented in Table D below.

Table D Recommended Analytical Schedule

Station	Major Ions/Routine Potability	Petroleum Hydrocarbons	Dissolved Metals
MW-01	✓	✓	✓
MW-02	✓	✓	✓
MW-03	✓	✓	✓
MW-04	✓	✓	✓

Table D Recommended Analytical Schedule

Station	Major Ions/Routine Potability	Petroleum Hydrocarbons	Dissolved Metals
MW-05	✓	✓	✓
MW-06	✓	✓	✓
MW-07	✓	✓	✓
MW-08	✓	✓	✓
MW-09	✓	✓	✓
MW-10	✓	✓	✓
MW-11	✓	✓	✓
MW-12	✓	✓	✓
MW-13	✓	✓	✓
Field Duplicate	✓	✓	✓
Field Blank	✓	✓	✓

7. CLOSURE

We trust that this report satisfies your current requirements and provides suitable documentation for your records. If you have any questions or require further details, please contact the undersigned at any time.

Report Prepared by
WorleyParsons

Ken Sommerstad, B.Sc., Geol.I.T.
Environmental Geologist

Trevor Butterfield, M.Sc.
Staff Groundwater Scientist

Senior Review by

PROFESSIONAL ENGINEER ALBERTA
JOÃO A. KÜPPER
13 AUG 10

João Küpper, Ph.D., P. Eng.
Principal Hydrogeologist

PERMIT TO PRACTICE
WORLEYPARSONS CANADA LTD.
Signature
Date 13 AUG 2010
PERMIT NUMBER: P 2306
The Association of Professional Engineers, Geologists and Geophysicists of Alberta

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Tables

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Table 1

Piezometer Installation Details, Datum/Groundwater Surface Elevations, and Hydraulic Conductivities

PROJECT NO.: E00100101

Monitoring Station	Ground Elevation (m asl)	Datum Elevation (Top of PVC) (m asl)	Stickup (PVC) (m)	Total Depth of Piezometer (m bgs)	Depth Interval of Screen (m bgs)	Date Measured (d-m-y)	Depth To Groundwater (m btoc)	Depth To Groundwater (m bgs)	Groundwater Surface Elevation (m asl)	Hydraulic Conductivity (m/s)	Lithology
MW-01	**617.52**	618.04	0.52	19.80	14.30 - 19.80	7-Mar-05	15.55	15.03	602.49	6.8E-05	Sand and Gravel
						4-May-05	15.48	14.96	602.56		
						6-Jun-05	15.42	14.90	602.62		
						17-Nov-05	15.64	15.12	602.40		
						15-Jun-06	15.23	14.71	602.81		
						12-Jul-07	15.23	14.71	602.81		
						19-Dec-07	15.38	14.86	602.66		
						21-Apr-09	15.29	14.77	602.75		
						5-May-10	15.70	15.18	602.34		
MW-02	**630.71**	631.31	0.60	33.80	26.20 - 33.80	7-Mar-05	27.14	26.54	604.17	1.8E-04	Sand and Gravel
						4-May-05	27.22	26.62	604.09		
						6-Jun-05	27.17	26.57	604.14		
						17-Nov-05	27.23	26.63	604.08		
						15-Jun-06	27.05	26.45	604.26		
						13-Jul-07	27.18	26.58	604.13		
						19-Dec-07	26.99	26.39	604.32		
						21-Apr-09	27.13	26.53	604.18		
						5-May-10	27.20	26.60	604.11		
MW-03	**623.79**	624.43	0.64	29.60	23.50 - 29.60	8-Mar-05	22.50	21.86	601.93	2.2E-04	Sand and Gravel
						4-May-05	22.55	21.91	601.88		
						6-Jun-05	22.53	21.89	601.90		
						17-Nov-05	23.47	22.83	600.96		
						15-Jun-06	22.50	21.86	601.93		
						12-Jul-07	22.45	21.81	601.98		
						19-Dec-07	23.36	22.72	601.07		
						21-Apr-09	22.54	21.90	601.89		
						6-May-10	22.82	22.18	601.61		
MW-04	**620.25**	620.79	0.54	26.20	19.50 - 26.20	8-Mar-05	18.59	18.05	602.20	1.6E-04	Sand and Gravel
						4-May-05	18.61	18.07	602.18		
						6-Jun-05	18.62	18.08	602.17		
						17-Nov-05	18.57	18.03	602.22		
						14-Jun-06	18.59	18.05	602.20		
						13-Jul-07	18.55	18.01	602.24		
						19-Dec-07	18.52	17.98	602.27		
						21-Apr-09	18.66	18.12	602.13		
						6-May-10	18.87	18.33	601.92		
MW-05	**624.28**	624.89	0.61	31.40	23.20 - 31.40	8-Mar-05	25.32	24.71	599.57	1.8E-04	Gravel
						4-May-05	25.71	25.10	599.18		
						6-Jun-05	25.62	25.01	599.27		
						17-Nov-05	26.77	26.16	598.12		
						14-Jun-06	25.70	25.09	599.19		
						13-Jul-07	25.52	24.91	599.37		
						19-Dec-07	25.34	24.73	599.55		
						21-Apr-09	25.61	25.00	599.28		
						29-Apr-10	25.92	25.31	598.97		

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Table 1

Piezometer Installation Details, Datum/Groundwater Surface Elevations, and Hydraulic Conductivities

PROJECT NO.: E00100101

Monitoring Station	Ground Elevation (m asl)	Datum Elevation (Top of PVC) (m asl)	Stickup (PVC) (m)	Total Depth of Piezometer (m bgs)	Depth Interval of Screen (m bgs)	Date Measured (d-m-y)	Depth To Groundwater (m btoc)	Depth To Groundwater (m bgs)	Groundwater Surface Elevation (m asl)	Hydraulic Conductivity (m/s)	Lithology
MW-06	**629.61**	630.28	0.67	39.00	32.90 - 39.00	8-Mar-05	32.17	31.50	598.11	1.5E-04	Sand and Gravel
						4-May-05	32.16	31.49	598.12		
						6-Jun-05	32.07	31.40	598.21		
						17-Nov-05	32.17	31.50	598.11		
						16-Jun-06	32.76	32.09	597.52		
						12-Jul-07	32.13	31.46	598.15		
						19-Dec-07	31.97	31.30	598.31		
						22-Apr-09	31.99	31.32	598.29		
						5-May-10	32.24	31.57	598.04		
MW-07	**630.41**	631.01	0.60	43.90	36.30 - 43.90	9-Mar-05	33.98	33.38	597.03	8.9E-04	Sand and Gravel
						4-May-05	34.14	33.54	596.87		
						6-Jun-05	33.85	33.25	597.16		
						17-Nov-05	34.23	33.63	596.78		
						16-Jun-06	34.60	34.00	596.41		
						12-Jul-07	33.97	33.37	597.04		
						19-Dec-07	33.78	33.18	597.23		
						22-Apr-09	34.00	33.40	597.01		
						5-May-10	34.32	33.72	596.69		
MW-08	**625.87**	626.44	0.57	33.50	28.70 - 33.50	9-Mar-05	27.74	27.17	598.70	9.5E-04	Gravel
						4-May-05	27.77	27.20	598.67		
						6-Jun-05	27.68	27.11	598.76		
						15-Nov-05	27.74	27.17	598.70		
						16-Jun-06	27.58	27.01	598.86		
						11-Jul-07	27.72	27.15	598.72		
						19-Dec-07	27.57	27.00	598.87		
						22-Apr-09	27.63	27.06	598.81		
						5-May-10	27.83	27.26	598.61		
MW-09	**624.06**	624.73	0.67	36.60	30.50 - 36.60	9-Mar-05	28.41	27.74	596.32	4.1E-04	Gravel, Sand and Gravel
						4-May-05	28.41	27.74	596.32		
						6-Jun-05	28.33	27.66	596.40		
						17-Nov-05	28.48	27.81	596.25		
						16-Jun-06	28.27	27.60	596.46		
						11-Jul-07	28.35	27.68	596.38		
						18-Dec-07	28.34	27.67	596.39		
						22-Apr-09	28.27	27.60	596.46		
						6-May-10	28.61	27.94	596.12		
MW-10	**624.06**	624.67	0.61	41.80	31.40 - 41.80	9-Mar-05	26.89	26.28	597.78	2.6E-04	Gravel, Sand and Gravel
						4-May-05	26.90	26.29	597.77		
						6-Jun-05	26.82	26.21	597.85		
						16-Nov-05	26.90	26.29	597.77		
						16-Jun-06	26.72	26.11	597.95		
						11-Jul-07	26.87	26.26	597.80		
						18-Dec-07	26.74	26.13	597.93		
						22-Apr-09	26.72	26.11	597.95		
						5-May-10	26.93	26.32	597.74		

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Table 1

Piezometer Installation Details, Datum/Groundwater Surface Elevations, and Hydraulic Conductivities

PROJECT NO.: E00100101

Monitoring Station	Ground Elevation (m asl)	Datum Elevation (Top of PVC) (m asl)	Stickup (PVC) (m)	Total Depth of Piezometer (m bgs)	Depth Interval of Screen (m bgs)	Date Measured (d-m-y)	Depth To Groundwater (m btoc)	Depth To Groundwater (m bgs)	Groundwater Surface Elevation (m asl)	Hydraulic Conductivity (m/s)	Lithology
MW-11	**624.49**	625.16	0.67	44.20	35.10 - 44.20	10-Mar-05	30.60	29.93	594.56	1.5E-04	Sand and Gravel
						4-May-05	30.42	29.75	594.74		
						6-Jun-05	30.41	29.74	594.75		
						16-Nov-05	30.41	29.74	594.75		
						16-Jun-06	30.34	29.67	594.82		
						11-Jul-07	30.38	29.71	594.78		
						18-Dec-07	30.40	29.73	594.76		
						22-Apr-09	30.35	29.68	594.81		
						5-May-10	30.64	29.97	594.52		
MW-12	**625.46**	626.07	0.61	38.10	33.50 - 38.10	10-Mar-05	32.95	32.34	593.12	1.4E-04	Sand, Sand and Gravel
						4-May-05	32.90	32.29	593.17		
						6-Jun-05	32.87	32.26	593.20		
						16-Nov-05	33.05	32.44	593.02		
						16-Jun-06	33.62	33.01	592.45		
						11-Jul-07	32.90	32.29	593.17		
						18-Dec-07	32.77	32.16	593.30		
						22-Apr-09	32.76	32.15	593.31		
						6-May-10	33.01	32.40	593.06		
MW-13	**625.65**	626.28	0.63	40.50	36.00 - 40.50	10-Mar-05	32.60	31.97	593.68	N/M	Gravel
						4-May-05	32.54	31.91	593.74		
						6-Jun-05	32.50	31.87	593.78		
						16-Nov-05	33.45	32.82	592.83		
						16-Jun-06	33.24	32.61	593.04		
						11-Jul-07	32.54	31.91	593.74		
						18-Dec-07	32.39	31.76	593.89		
						22-Apr-09	32.41	31.78	593.87		
						6-May-10	32.68	32.05	593.60		
									33.05	32.44	---

NOTES:

1. ***Data may be entered to the nearest mm, but are reported above to the nearest cm. Apparent rounding errors may occasionally occur in calculated fields (e.g., Groundwater Surface Elevation).***
2. ***N/M - Denotes not measured.***
3. ***N/A - Denotes not available.***
4. ***m asl - Denotes metres above sea level.***
5. ***m bgs - Denotes metres below ground surface.***
6. ***m btoc - Denotes metres below top of PVC casing.***
7. ***Data obtained prior to 2010 were collected by Stantec Consulting Ltd.***

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Table 2

Water Quality: Field-Measured Parameters

PROJECT NO.: E00100101

Monitoring Station	Date (d-m-y)	Temperature (°C)	Electrical Conductivity (at 25°C) (µS/cm)	pH (units)
MW-01	5-May-10	5.6	749	6.95
MW-02	5-May-10	4.8	1,306	7.04
MW-03	6-May-10	6.6	974	7.14
MW-04	6-May-10	8.2	1,213	7.14
MW-05	29-Apr-10	7.6	985	7.08
MW-06	6-May-10	5.7	1,773	7.21
MW-07	5-May-10	7.2	2,640	6.91
MW-08	5-May-10	5.4	1,359	7.09
MW-09	6-May-10	6.8	1,538	7.35
MW-10	5-May-10	6.6	1,287	7.11
MW-11	5-May-10	7.2	1,303	7.06
MW-12	6-May-10	5.1	1,032	7.32
MW-13	6-May-10	7.0	776	7.53

NOTES:

1. ***Electrical conductivity values standardized to 25°C (within the limitations of the equipment).***
2. ***--- Denotes parameter not measured.***

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Table 3

Select Indicator Data for Groundwater Samples

PROJECT NO.: E00100101

		PHYSICAL				INDICATORS					CATIONS, ANIONS & ION BALANCE									ORGANIC	NITROGEN PARAMETERS			PHENOLS	PHOSPHATE
Monitoring Station	Date (d-m-y)	EC (µS/cm)	pH (units)	Tot Hard as $CaCO_3$ (mg/L)	Tot Alk as $CaCO_3$ (mg/L)	Chloride:D (mg/L)	Sulphate:D (mg/L)	Iron:D (mg/L)	Manganese:D (mg/L)	TDS (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Ion Balance % (%)	DOC (mg/L)	NO_2 as N (mg/L)	NO_3 as N (mg/L)	NO_2+NO_3 as N (mg/L)	Phenols (mg/L)	Ortho Phosphate (mg/L)
Canadian Drinking Water AO Guidelines (Health Canada, 2008)		---	6 - 8.5	---	---	250	500	0.3	0.05	500	---	---	---	200	---	---	---	---	---	---	---	---	---		---
Canadian Drinking Water MAC Guidelines (Health Canada, 2008)		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1.5	---	---	1	10	10	---	---
MW-01	07-Mar-05	762	7.7	338	364	4	57.4	1.02 [1]	0.605 [1]	442	94.6	24.8	3.1	40	444	<5	<5	0.19	100	3	<0.05	<0.1	<0.1	<0.001	<0.01
	17-Nov-05	760	7.9	347	370	4	61.1	1.67 [1]	0.662 [1]	447	94.8	26.9	2.3	36	451	<5	<5	0.13	97.6	3	<0.05	<0.1	<0.1	<0.001	<0.001
	15-Jun-06	748	8	361	367	4	56.8	1.81 [1]	0.7 [1]	448	99.7	27.3	2.9	37	448	<5	<5	0.14	103	3	<0.05	<0.1	<0.1	<0.001	<0.0001
	12-Jul-07	718	7.8	345	365	3	54.6	1.84 [1]	0.664 [1]	433	95.1	26.1	2.3	33	445	<5	<5	0.13	98.6	3	<0.05	<0.1	<0.1	<0.001	0.005
	19-Dec-07	770	7.8	310	390	2	60	<0.06	0.67 [1]	442	87	23	2.2	34	470	<1	<1	0.2	0.87	2	<0.06	<0.2	<0.2	0.002	0.02
	21-Apr-09	770	7.67	310	370	5	44	<0.06	0.66 [1]	410	84	24	2.4	36	450	<0.5	<0.5	0.14	93	2.3	<0.003	0.003	0.003	0.003	0.003
	05-May-10	762	8.06	363	371	3.46	62	2.02 [1]	0.73 [1]	456	98.6	28.4	---	38.1	453	<5.0	<5.0	0.15	102	3	<0.050	<0.050	<0.071	<0.0010	<0.010
MW-02	07-Mar-05	1,210	7.7	424	422	13	227	0.275	0.236 [1]	759 [1]	113	34.5	6.8	111	514	<5	<5	0.21	101	8	<0.05	0.1	0.1	<0.001	<0.01
	17-Nov-05	1,400	7.9	523	471	38	270	0.085	0.671 [1]	894 [1]	125	51.3	7.2	120	575	<5	<5	0.11	98.4	6	<0.05	<0.1	<0.1	<0.001	<0.001
	15-Jun-06	1,420	7.9	633	516	23	274	3.19 [1]	1.09 [1]	925 [1]	162	55.4	5.5	95	629	<5	<5	0.09	102	5	<0.05	<0.1	<0.1	<0.001	<0.001
	13-Jul-07	1,360	7.9	609	516	12	263	8.72 [1]	0.841 [1]	880 [1]	154	54.4	4.3	83	630	<5	<5	0.09	98.7	6	<0.05	<0.1	<0.1	0.002	0.002
	19-Dec-07	1,400	7.4	530	540	13	290	<0.06	0.7 [1]	895 [1]	140	46	4.5	83	660	<1	<1	0.1	0.84	5	<0.06	<0.2	<0.2	0.002	0.08
	21-Apr-09	1,400	7.36	500	500	18	230	1.5 [1]	0.53 [1]	810 [1]	130	44	4.4	81	610	<0.5	<0.5	0.08	89	4.1	<0.003	0.005	0.005	0.002	<0.003
	05-May-10	1,290	7.97	589	489	11.6	268	9.35 [1]	0.505 [1]	866 [1]	147	54	---	87.2	597	<5.0	<5.0	0.094	100	5.4	<0.050	<0.050	<0.071	<0.0010	<0.010
MW-03	07-Mar-05	937	7.4	413	362	31	113	3.19 [1]	0.264 [1]	563 [1]	106	36.1	3.5	56	442	<5	<5	0.14	103	5	<0.05	<0.1	<0.1	<0.001	<0.01
	17-Nov-05	949	7.8	410	365	35	122	4.47 [1]	0.239 [1]	573 [1]	104	36.4	3	54	445	<5	<5	0.1	98.1	4	<0.05	<0.1	<0.1	<0.001	<0.001
	15-Jun-06	943	8	423	360	35	116	4.85 [1]	0.258 [1]	568 [1]	109	36.6	3	52	439	<5	<5	0.1	102	3	<0.05	<0.1	<0.1	<0.001	<0.001
	12-Jul-07	930	8	425	361	36	122	4.89 [1]	0.249 [1]	578 [1]	108	37.7	3	55	440	<5	<5	0.11	102	3	<0.05	<0.1	<0.1	<0.001	0.005
	19-Dec-07	960	7.7	370	380	35	130	<0.06	0.25 [1]	571 [1]	98	32	2.7	49	460	<1	<1	0.1	0.87	3	<0.06	<0.2	<0.2	0.002	0.04
	21-Apr-09	950	7.57	360	350	35	98	<0.06	0.24 [1]	520 [1]	92	32	2.8	51	430	<0.5	<0.5	0.11	95	2.5	<0.003	0.009	0.009	0.003	0.003
	06-May-10	967	8.03	411	357	44.3	124	5.23 [1]	0.253 [1]	579 [1]	104	36.8	---	52.3	435	<5.0	<5.0	0.117	96.4	5.3	<0.050	<0.050	<0.071	<0.0010	<0.010
MW-04	08-Mar-05	1,200	7.5	510	375	137	81.4	0.173	0.152 [1]	694 [1]	142	37.7	9.9	57	458	<5	<5	0.15	98.5	1	<0.05	0.8	0.8	<0.001	<0.01
	17-Nov-05	1,280	7.8	532	368	157	87	0.104	0.053 [1]	726 [1]	147	40	9.5	59	449	<5	<5	0.12	98.2	5	<0.05	1.2	1.2	<0.001	<0.001
(Duplicate)	17-Nov-05	1,290	7.9	533	371	157	89	0.105	0.053 [1]	731 [1]	147	40.4	9.7	60	452	<5	<5	0.12	98.1	4	<0.05	1.2	1.2	<0.001	<0.001
	14-Jun-06	1,280	7.7	543	373	155	86.2	0.005	0.13 [1]	724 [1]	147	42.7	10.2	57	455	<5	<5	0.13	99.4	4	<0.05	0.5	0.5	<0.001	<0.001
	13-Jul-07	1,360	7.9	564	368	190	84.5	<0.005	0.009	774 [1]	154	43.6	10.4	68	449	<5	<5	0.14	99.9	3	<0.05	0.5	0.5	<0.001	<0.001
	19-Dec-07	1,400	7.7	500	380	200	82	<0.06	0.016	763 [1]	140	35	10	71	460	<1	<1	0.1	0.9	3	<0.06	0.6	0.6	0.002	0.04
	21-Apr-09	1,200	7.62	500	370	150	74	<0.06	0.03	690 [1]	140	37	9.4	63	450	<0.5	<0.5	0.14	99	2.8	<0.003	0.4	0.4	<0.002	<0.003
	06-May-10	1,220	8.01	561	385	131	92.1	0.078	0.258 [1]	724 [1]	152	44	---	63.4	470	<5.0	<5.0	0.129	107	3	<0.050	0.09	0.09	<0.0010	<0.010
MW-05	08-Mar-05	831	7.6	353	330	15	105	1.14 [1]	0.402 [1]	499	96.2	27.5	6.1	51	403	<5	<5	0.18	103	5	<0.05	<0.1	<0.1	<0.001	<0.01
	17-Nov-05	881	7.9	370	346	21	115	3.31 [1]	0.531 [1]	522 [1]	98.6	30.1	6.9	43	422	<5	<5	0.11	95.4	4	<0.05	<0.1	<0.1	<0.001	<0.001
	14-Jun-06	902	7.7	405	345	22	124	3.48 [1]	0.583 [1]	545 [1]	107	33.5	7.6	44	421	<5	<5	0.11	101	4	<0.05	<0.1	<0.1	<0.001	<0.001
	13-Jul-07	931	8.1	416	349	25	135	4 [1]	0.682 [1]	563 [1]	110	34.3	7.3	42	426	<5	<5	0.11	98.5	4	<0.05	<0.1	<0.1	0.002	0.004
	19-Dec-07	930	7.6	380	360	22	150	<0.06	0.66 [1]	566 [1]	100	30	7.4	41	440	<1	<1	0.1	0.88	3	<0.06	<0.2	<0.2	<0.001	0.05
	21-Apr-09	960	7.58	430	350	30	130	<0.06	0.72 [1]	570 [1]	120	34	7.6	43	420	<0.5	<0.5	0.12	100	2.5	<0.003	0.007	0.007	0.003	<0.003
	29-Apr-10	969	7.95	451	351	30.6	144	3.39 [1]	0.758 [1]	596 [1]	120	36.7	---	46.1	428	<5.0	<5.0	0.107	103	3.3	<0.050	<0.050	<0.071	<0.0010	<0.010
MW-06	08-Mar-05	1,580	7.5	670	459	4	451	2.92 [1]	1.32 [1]	1,100 [1]	171	58.9	6.1	138	560	<5	<5	0.18	105	5	<0.05	<0.1	<0.1	<0.001	<0.01
	17-Nov-05	1,780	8	584	526	13	471	2.96 [1]	0.943 [1]	1,220 [1]	148	52	5	211 [1]	641	<5	<5	0.15	101	8	<0.05	<0.1	<0.1	<0.001	<0.001
	16-Jun-06	1,700	7.7	657	519	10	482	3.58 [1]	1.01 [1]	1,220 [1]	168	57.7	5.5	190	633	<5	<5	0.14	104	7	<0.05	<0.1	<0.1	<0.001	0.001
	12-Jul-07	1,760	7.9	620	522	10	478	4.5 [1]	1.28 [1]	1,200 [1]	157	55.3	4.8	182	637	<5	<5	0.17	99.4	7	<0.05	<0.1	<0.1	<0.001	0.04
	19-Dec-07	1,700	7.7	620	510	3	560 [1]	<0.06	1.5 [1]	1,230 [1]	160	54	5	140	630	<1	<1	0.2	0.85	6	<0.06	<0.2	<0.2	0.002	0.17
	22-Apr-09	1,700	7.47	710	490	6	420	5.7 [1]	1.7 [1]	1,100 [1]	180	62	5.5	150	590	<0.5	<0.5	0.14	110	5.1	<0.003	0.004	0.004	0.003	0.028
	06-May-10	1,770	8.06	625	513	8.45	520 [1]	5.38 [1]	1.39 [1]	1,250 [1]	156	57.1	---	194	626	<5.0	<5.0	0.173	98.8	6.7	<0.050	<0.050	<0.071	<0.0010	<0.010
MW-07	09-Mar-05	2,680	7.5	1,130	544	13	1,130 [1]	10.4 [1]	1.88 [1]	2,150 [1]	287	100	6.6	287 [1]	664	<5	<5	0.11	102	5	<0.05	0.1	0.1	<0.001	<0.001
	17-Nov-05	2,670	7.7	1,060	546	16	1,010 [1]	10.9 [1]	1.83 [1]	1,990 [1]	270	94.8	5.5	268 [1]	666	<5	<5	0.08	102	6	<0.05	<0.1	<0.1	<0.001	<0.001
	16-Jun-06	2,530	7.5	1,110	542	15	1,010 [1]	<0.005	1.86 [1]	2,010 [1]	284	96.4	6.2	269 [1]	661	<5	<5	0.07	105	6	<0.05	0.1	0.1	<0.001	<0.001
	12-Jul-07	2,290	7.6	1,010	526	12	940 [1]	10.9 [1]	1.78 [1]	1,870 [1]	257	89.8	4.6	248 [1]	641	<5	<5	0.09	103	6	<0.05	<0.1	<0.1	<0.001	0.01
	19-Dec-07	2,500	7.5	850	540	9	1,000 [1]	<0.06	1.6 [1]	1,890 [1]	220	72	5.1	230 [1]	660	<1	<1	0.1	0.84	6	<0.06	<0.2	<0.2	0.002	0.02
	22-Apr-09	3,000	7.19	1,300	600	18	1,200 [1]	14 [1]	2.3 [1]	2,400 [1]	330	110	6.6	320 [1]	730	<0.5	<0.5	0.08	110	6.6	<0.003	0.004	0.004	0.003	0.008
	05-May-10	2,600	7.9	1,040	538	13.2	1,040 [1]	12.5 [1]	1.9 [1]	2,010 [1]	262	93.5	---	274 [1]	657	<5.0	<5.0	0.135	100	5.8	<0.050	<0.050	<0.071	<0.0010	<0.010
MW-08	09-Mar-05	1,470	7.7	552	486	3	369	5.66 [1]	0.474 [1]	999 [1]	147	45	6	137	593	<5	<5	0.13	98.8	5	<0.05	0.1	0.1	<0.001	<0.001
	15-Nov-05	1,310	7.5	486	450	4	300	5.16 [1]	0.384 [1]	862 [1]	133	37.4	5.2	112	549	<5	<5	0.11	95.9	6	<0.05	<0.1	<0.1	<0.001	<0.001
	16-Jun-06	1,240	7.7	584	487	3	341	6.97 [1]	0.481 [1]	980 [1]	161	44.2	6.1	132	594	<5	<5	0.09	104	6	<0.05	<0.1	<0.1	<0.001	<0.001
	11-Jul-07	1,390	7.9	551	478	2	316	7.29 [1]	0.454 [1]	918 [1]	150	42.9	5	115	583	<5	<5	0.08	100	7	<0.05	<0.1	<0.1	<0.001	0.003
	19-Dec-07	1,400	7.7	480	520	2	370	<0.06	0.44 [1]	977 [1]	130	36	5.4	120	630	<1	<1	0.1	0.84	5	<0.06	<0.2	<0.2	0.001	0.05
	21-Apr-09	1,400	7.62	530	450	3	300	<0.06	0.45 [1]	880 [1]	150	40	5.6	110	560	<0.5	<0.5	0.11	100	5.3	<0.003	0.007	0.007	0.002	0.016
	05-May-10	1,360	8.04	542	458	1.43	333	7.22 [1]	0.47 [1]	927 [1]	146	43.2	---	122	558	<5.0	<5.0	0.13	101	5.3	<0.050	<0.050	<0.071	<0.0010	<0.010
MW-09	09-Mar-05	1,520	7.9	286	513	5	313	1.11 [1]	0.714 [1]	954 [1]	71.6	26	4.2	226 [1]	626	<5	<5	0.29	93.2	5	<0.05	0.1	0.1	<0.001	<0.001
(Duplicate)	09-Mar-05	1,520	7.9	312	515	5	340	1.07 [1]	0.705 [1]	1,010 [1]	79.1	27.9	4.7	243 [1]	628	<5	<5	0.29	97.4	5	<0.05	0.1	0.1	<0.001	<0.001
	17-Nov-05	1,550	8.1	344	524	7	312	1.4 [1]	0.752 [1]	984 [1]	92.6	27.3	3.9	227 [1]	640	<5	<5	0.22	98	6	<0.05	<0.1	<0.1	<0.001	<0.001
	16-Jun-06	1,520	7.9	359	528	7	316	1.44 [1]	0.797 [1]	1,000 [1]	98.1	27.7	3.9	231 [1]	644	<5	<5	0.23	99.9	8	<0.05	<0.1	<0.1	<0.001	<0.001
	11-Jul-07	1,530	8.1	351	538	6	322	1.74 [1]	0.785 [1]	1,010 [1]	94.9	27.6	3.3	231 [1]	656	<5	<5	0.21	97.9	7	<0.05	<0.1	<0.1	<0.001	0.002
	18-Dec-07	1,500	8	300	550	4	350	<0.06	0.77 [1]	1,020 [1]	83	22	3.5	230 [1]	670	<1	<1	0.2	0.86	9	<0.06	<0.2	<0.2	0.002	0.04
	22-Apr-09	1,500	7.73	350	520	6	330	1.9 [1]	0.86 [1]	1,000 [1]	97	27	4.1	240 [1]	630	<0.5	<0.5	0.22	100	5.5	<0.003	0.005	0.005	0.003	0.028
	06-May-10	1,540	8.17	347	524	5.57	342	2.04 [1]	0.828 [1]	1,030 [1]	93.1	27.8	---	240 [1]	639	<5.0	<5.0	0.251	98.4	5.6	<0.050	<0.050	<0.071	<0.0010	<0.010
(Duplicate)	06-May-10	1,540	8.17	346	526	5.63	345	2.03 [1]	0.832 [1]	1,040 [1]	93.1	27.6	---	246 [1]	641	<5.0	<5.0	0.243	99.2	5.5	<0.050	<0.050	<0.071	<0.0010	<0.010

WorleyParsons
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Table 3

Select Indicator Data for Groundwater Samples

PROJECT NO.: E00100101		PHYSICAL				INDICATORS					CATIONS, ANIONS & ION BALANCE									ORGANIC	NITROGEN PARAMETERS			PHENOLS	PHOSPHATE
Monitoring Station	Date (d-m-y)	EC (µS/cm)	pH (units)	Tot Hard as $CaCO_3$ (mg/L)	Tot Alk as $CaCO_3$ (mg/L)	Chloride:D (mg/L)	Sulphate:D (mg/L)	Iron:D (mg/L)	Manganese:D (mg/L)	TDS (mg/L)	Calcium:D (mg/L)	Magnesium:D (mg/L)	Potassium:D (mg/L)	Sodium:D (mg/L)	Bicarbonate (mg/L)	Carbonate (mg/L)	Hydroxide (mg/L)	Fluoride:D (mg/L)	Ion Balance % (%)	DOC (mg/L)	NO_2 as N (mg/L)	NO_3 as N (mg/L)	NO_2+NO_3 as N (mg/L)	Phenols (mg/L)	Ortho Phosphate (mg/L)
Canadian Drinking Water AO Guidelines (Health Canada, 2008)		---	6 - 8.5	---	---	250	500	0.3	0.05	500	---	---	---	200	---	---	---	---	---	---	---	---	---		---
Canadian Drinking Water MAC Guidelines (Health Canada, 2008)		---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1.5	---	---	1	10	10	---	---
MW-10	09-Mar-05	1,270	7.7	476	514	<1	221	5.29 [1]	0.639 [1]	819 [1]	131	36.1	5.3	117	628	<5	<5	0.18	99.7	5	<0.05	0.1	0.1	<0.001	<0.001
	16-Nov-05	1,260	7.5	467	520	3	222	5.49 [1]	0.642 [1]	814 [1]	129	35.2	5	108	634	<5	<5	0.12	93.8	6	<0.05	<0.1	<0.1	<0.001	<0.001
	16-Jun-06	1,120	7.7	503	525	2	212	5.89 [1]	0.67 [1]	831 [1]	139	37.8	5.6	119	641	<5	<5	0.13	103	6	<0.05	<0.1	<0.1	<0.001	<0.001
	11-Jul-07	1,270	8	482	533	2	208	5.93 [1]	0.656 [1]	814 [1]	132	36.9	4.7	110	651	<5	<5	0.12	97.2	5	<0.05	<0.1	<0.1	<0.001	0.002
	18-Dec-07	1,300	7.8	410	540	<1	230	<0.06	0.64 [1]	822 [1]	120	29	4.8	110	660	<1	<1	0.2	0.84	5	<0.06	<0.2	<0.2	0.002	<0.02
	22-Apr-09	1,300	7.51	490	510	2	190	5.9 [1]	0.71 [1]	800 [1]	140	36	5.6	120	620	<0.5	<0.5	0.14	110	4.7	<0.003	0.005	0.005	0.002	0.003
	05-May-10	1,270	8.07	508	519	0.73	227	6.8 [1]	0.735 [1]	847 [1]	139	39.1	---	124	633	<5.0	<5.0	0.169	104	5.1	<0.050	<0.050	<0.071	<0.0010	<0.010
MW-11	10-Mar-05	1,270	7.7	563	526	8	196	6.89 [1]	0.668 [1]	813 [1]	150	45.8	4.9	92	642	<5	<5	0.14	104	15	<0.05	0.1	0.1	<0.001	<0.001
	16-Nov-05	1,270	7.4	525	536	16	199	6.95 [1]	0.628 [1]	809 [1]	140	42.5	4.5	85	654	<5	<5	0.09	93.4	7	<0.05	<0.1	<0.1	<0.001	<0.001
	16-Jun-06	1,100	7.7	570	551	11	194	7.23 [1]	0.659 [1]	831 [1]	153	45.7	4.8	92	672	<5	<5	0.09	101	7	<0.05	<0.1	<0.1	<0.001	<0.001
	11-Jul-07	1,280	8	544	542	8	193	7.15 [1]	0.632 [1]	806 [1]	143	45.3	3.9	88	662	<5	<5	0.09	98.6	8	<0.05	<0.1	<0.1	<0.001	0.002
	18-Dec-07	1,300	7.7	480	560	10	210	<0.06	0.61 [1]	810 [1]	130	38	4.3	87	680	<1	<1	0.1	0.87	6	<0.06	<0.2	<0.2	0.002	0.05
	22-Apr-09	1,300	7.51	560	530	10	170	7 [1]	0.67 [1]	800 [1]	150	45	4.9	91	640	<0.5	<0.5	0.11	110	5.5	<0.003	0.003	0.003	0.004	0.022
	05-May-10	1,290	8.04	549	533	15.2	212	7.61 [1]	0.663 [1]	840 [1]	144	45.9	---	98.1	650	<5.0	<5.0	0.132	99.1	6	<0.050	<0.050	<0.071	<0.0010	<0.010
MW-12	10-Mar-05	1,000	7.9	354	521	6	45.9	2.78 [1]	0.365 [1]	600 [1]	95.7	27.9	5	106	636	<5	<5	0.13	102	6	<0.05	0.1	0.1	<0.001	<0.001
	16-Nov-05	1,020	7.4	354	584	8	52.5	3.37 [1]	0.402 [1]	651 [1]	94.9	28.5	5.2	111	712	<5	<5	0.07	92.7	7	<0.05	<0.1	<0.1	<0.001	<0.001
	16-Jun-06	904	7.8	370	549	7	44.2	3.76 [1]	0.436 [1]	621 [1]	100	29.1	5.1	106	669	<5	<5	0.07	100	7	<0.05	<0.1	<0.1	<0.001	<0.001
	11-Jul-07	1,020	8	358	550	7	42.4	3.77 [1]	0.422 [1]	609 [1]	95.4	29.2	4.2	101	670	<5	<5	0.08	97.4	7	<0.05	<0.1	<0.1	<0.001	0.002
	18-Dec-07	1,000	7.8	300	570	5	43	<0.06	0.4 [1]	601 [1]	82	23	4.3	99	700	<1	<1	<0.1	0.84	7	<0.06	<0.2	<0.2	0.002	<0.02
	22-Apr-09	1,000	7.66	360	540	8	32	4.1 [1]	0.45 [1]	610 [1]	98	29	4.9	110	650	<0.5	<0.5	0.09	110	6.4	<0.003	0.005	0.005	0.003	0.013
	06-May-10	1,030	8.13	365	547	7.05	46.8	4.24 [1]	0.456 [1]	623 [1]	96.4	30.2	---	109	667	<5.0	<5.0	0.114	100	10.5	<0.050	<0.050	<0.071	<0.0010	<0.010
MW-13	10-Mar-05	784	8.1	202	435	2	10.6	0.818 [1]	0.263 [1]	460	53.7	16.5	4.2	112	531	<5	<5	0.2	100	4	<0.05	0.1	0.1	<0.001	<0.001
	16-Nov-05	782	7.8	195	440	4	12.5	1.08 [1]	0.243 [1]	454	51.2	16.2	3.4	103	537	<5	<5	0.14	92.2	5	<0.05	<0.1	<0.1	<0.001	<0.001
	16-Jun-06	715	8	209	443	4	10.1	1.19 [1]	0.256 [1]	470	55.6	17.1	3.9	112	715	541	<5	0.14	99.4	5	<0.05	0.2	0.2	<0.001	<0.001
	11-Jul-07	782	8.2	202	444	2	9.1	1.26 [1]	0.252 [1]	456	53	16.9	3.5	105	541	<5	<5	0.13	96.3	5	<0.05	<0.1	<0.1	0.001	0.002
	18-Dec-07	790	8	170	460	2	9	<0.06	0.25 [1]	457	45	14	3.5	110	560	<1	<1	0.2	0.87	5	<0.06	<0.2	<0.2	<0.001	<0.02
	22-Apr-09	770	7.81	200	430	3	9	1.3 [1]	0.26 [1]	460	54	17	3.9	110	520	<0.5	<0.5	0.15	100	4.5	<0.003	0.005	0.005	0.003	0.014
	06-May-10	776	8.22	192	435	2.15	9.54	1.45 [1]	0.249 [1]	453	50	16.4	---	110	530	<5.0	<5.0	0.16	97.5	4.1	<0.050	<0.050	<0.071	<0.0010	<0.010
FIELD BLANK	05-May-10	1.07	6.06	<1.0	<5.0	<0.50	<0.50	<0.020	<0.0050	<1.0	<0.50	<0.10	---	<0.50	<5.0	<5.0	<5.0	<0.050	Low TDS	<1.0	<0.050	<0.050	<0.071	<0.0010	<0.010
Relative Percent Difference (RPD) Report																									
MW-04	17-Nov-05	1,280	7.8	532	368	157	87	0.104	0.053 [1]	726 [1]	147	40	9.5	59	449	<5	<5	0.12	98.2	5	<0.05	1.2	1.2	<0.001	<0.001
(Duplicate)	17-Nov-05	1,290	7.9	533	371	157	89	0.105	0.053 [1]	731 [1]	147	40.4	9.7	60	452	<5	<5	0.12	98.1	4	<0.05	1.2	1.2	<0.001	<0.001
RPD(%)		**0.78%**	**1.27%**	**0.19%**	**0.81%**	**0.00%**	**2.27%**	**0.96%**	**0.00%**	**0.69%**	**0.00%**	**1.00%**	**2.08%**	**1.68%**	**0.67%**	---	---	**0.00%**	**0.10%**	**22.22%**	---	**0.00%**	**0.00%**	---	---
MW-09	09-Mar-05	1,520	7.9	286	513	5	313	1.11 [1]	0.714 [1]	954 [1]	71.6	26	4.2	226 [1]	626	<5	<5	0.29	93.2	5	<0.05	0.1	0.1	<0.001	<0.001
(Duplicate)	09-Mar-05	1,520	7.9	312	515	5	340	1.07 [1]	0.705 [1]	1,010 [1]	79.1	27.9	4.7	243 [1]	628	<5	<5	0.29	97.4	5	<0.05	0.1	0.1	<0.001	<0.001
RPD(%)		**0.00%**	**0.00%**	**8.70%**	**0.39%**	**0.00%**	**8.27%**	**3.67%**	**1.27%**	**5.70%**	**9.95%**	**7.05%**	**11.24%**	**7.25%**	**0.32%**	---	---	**0.00%**	**4.41%**	**0.00%**	---	**0.00%**	**0.00%**	---	---
MW-09	06-May-10	1,540	8.17	347	524	5.57	342	2.04 [1]	0.828 [1]	1,030 [1]	93.1	27.8	---	240 [1]	639	<5.0	<5.0	0.251	98.4	5.6	<0.050	<0.050	<0.071	<0.0010	<0.010
(Duplicate)	06-May-10	1,540	8.17	346	526	5.63	345	2.03 [1]	0.832 [1]	1,040 [1]	93.1	27.6	---	246 [1]	641	<5.0	<5.0	0.243	99.2	5.5	<0.050	<0.050	<0.071	<0.0010	<0.010
RPD(%)		**0.00%**	**0.00%**	**0.29%**	**0.38%**	**1.07%**	**0.87%**	**0.49%**	**0.48%**	**0.97%**	**0.00%**	**0.72%**	---	**2.47%**	**0.31%**	---	---	**3.24%**	**0.81%**	**1.80%**	---	---	---	---	---

NOTES:

1. *--- in guideline(s) row denotes no criteria, and in data row(s) indicates parameter not analyzed.*
2. *Highlighting indicates parameters above applied guideline/criteria.*
3. *Superscript [1] denotes values exceeding Canadian Drinking Water AO Guidelines (Health Canada, 2008)*
   (Health Canada, 2008. Guidelines for Canadian Drinking Water Quality. Summary Table. Prepared by the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment. May 2008.).
4. *Superscript [2] denotes values exceeding Canadian Drinking Water MAC Guidelines (Health Canada, 2008)*
   (Health Canada, 2008. Guidelines for Canadian Drinking Water Quality. Summary Table. Prepared by the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment. May 2008.).

Health Canada, 2008. Guidelines for Canadian Drinking Water Quality. Summary Table. Prepared by the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment. May 2008.

NO_2 as N

The CDWQ guideline for NO_2 (10 mg/L) was converted to NO_2 as N (1 mg/L).

NO_3 as N

The CDWQ guideline for NO_3 (45 mg/L) was converted to NO_3 as N (10 mg/L).

NO_2+NO_3 as N

The CDWQ guideline for NO_2+NO_3 (45 mg/L) was converted to NO_2+NO_3 as N (10 mg/L).

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Table 4

Petroleum Hydrocarbon Data for Groundwater Samples

PROJECT NO.: E00100101

Monitoring Station	Date (d-m-y)	BTEX				SELECT HYDROCARBONS		
		Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes-Total (mg/L)	PHC F1 (C_6-C_{10}) (mg/L)	PHC F1 (C_6-C_{10})-BTEX (mg/L)	PHC F2 ($C_{>10}$-C_{16}) (mg/L)
Canadian Drinking Water AO Guidelines (Health Canada, 2008)		---	0.024	0.0024	0.3	---	---	---
Canadian Drinking Water MAC Guidelines (Health Canada, 2008)		0.005	---	---	---	---	---	---
MW-01	07-Mar-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	17-Nov-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	15-Jun-06	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	12-Jul-07	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	19-Dec-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	21-Apr-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	05-May-10	<0.00050	<0.00075	<0.00050	<0.001	<0.10	<0.10	<0.25
MW-02	07-Mar-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	17-Nov-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	15-Jun-06	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	13-Jul-07	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	19-Dec-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	21-Apr-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	05-May-10	<0.00050	<0.00075	<0.00050	<0.001	<0.10	<0.10	<0.25
MW-03	07-Mar-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	17-Nov-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	15-Jun-06	<0.0005	0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	12-Jul-07	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	19-Dec-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	21-Apr-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	06-May-10	<0.00050	<0.00075	<0.00050	<0.001	<0.10	<0.10	<0.25
MW-04	08-Mar-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	17-Nov-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
(Duplicate)	17-Nov-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	14-Jun-06	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	13-Jul-07	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	19-Dec-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	21-Apr-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	06-May-10	<0.00050	<0.00075	<0.00050	<0.001	<0.10	<0.10	<0.25
MW-05	08-Mar-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	17-Nov-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	14-Jun-06	<0.0005	0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	13-Jul-07	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	19-Dec-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	21-Apr-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	29-Apr-10	<0.00050	<0.00075	<0.00050	<0.001	<0.10	<0.10	<0.25
MW-06	08-Mar-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	17-Nov-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	16-Jun-06	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	12-Jul-07	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	19-Dec-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	22-Apr-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	06-May-10	<0.00050	<0.00075	<0.00050	<0.001	<0.10	<0.10	<0.25
MW-07	09-Mar-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	17-Nov-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	16-Jun-06	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	12-Jul-07	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	19-Dec-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	22-Apr-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	05-May-10	<0.00050	<0.00075	<0.00050	<0.001	<0.10	<0.10	<0.25
MW-08	09-Mar-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	15-Nov-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	16-Jun-06	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	11-Jul-07	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	19-Dec-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	21-Apr-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	05-May-10	<0.00050	<0.00075	<0.00050	<0.001	<0.10	<0.10	<0.25
MW-09	09-Mar-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
(Duplicate)	09-Mar-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	17-Nov-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	16-Jun-06	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	11-Jul-07	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	18-Dec-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	22-Apr-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	0.3
	06-May-10	<0.00050	<0.00075	<0.00050	<0.001	<0.10	<0.10	<0.25

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Table 4

Petroleum Hydrocarbon Data for Groundwater Samples

PROJECT NO.: E00100101		BTEX				SELECT HYDROCARBONS		
Monitoring Station	Date (d-m-y)	Benzene (mg/L)	Toluene (mg/L)	Ethylbenzene (mg/L)	Xylenes-Total (mg/L)	PHC F1 (C_6-C_{10}) (mg/L)	PHC F1 (C_6-C_{10})-BTEX (mg/L)	PHC F2 ($C_{>10}$-C_{16}) (mg/L)
Canadian Drinking Water AO Guidelines (Health Canada, 2008)		---	0.024	0.0024	0.3	---	---	---
Canadian Drinking Water MAC Guidelines (Health Canada, 2008)		0.005	---	---	---	---	---	---
(Duplicate)	06-May-10	<0.00050	<0.00075	<0.00050	<0.001	<0.10	<0.10	<0.25
MW-10	09-Mar-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	16-Nov-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	16-Jun-06	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	11-Jul-07	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	18-Dec-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	22-Apr-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	05-May-10	<0.00050	<0.00075	<0.00050	<0.001	<0.10	<0.10	<0.25
MW-11	10-Mar-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	16-Nov-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	16-Jun-06	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	11-Jul-07	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	18-Dec-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	22-Apr-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	05-May-10	<0.00050	<0.00075	<0.00050	<0.001	<0.10	<0.10	<0.25
MW-12	10-Mar-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	16-Nov-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	16-Jun-06	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	11-Jul-07	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	18-Dec-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	22-Apr-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	06-May-10	<0.00050	<0.00075	<0.00050	<0.001	<0.10	<0.10	<0.25
MW-13	10-Mar-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	16-Nov-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	16-Jun-06	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	11-Jul-07	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
	18-Dec-07	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	22-Apr-09	<0.0004	<0.0004	<0.0004	<0.0008	<0.1	<0.1	<0.1
	06-May-10	<0.00050	<0.00075	<0.00050	<0.001	<0.10	<0.10	<0.25
FIELD BLANK	05-May-10	<0.00050	<0.00075	<0.00050	<0.001	<0.10	<0.10	<0.25
Relative Percent Difference (RPD) Report								
MW-04	17-Nov-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
(Duplicate)	17-Nov-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
RPD(%)		---	---	---	---	---	---	---
MW-09	09-Mar-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
(Duplicate)	09-Mar-05	<0.0005	<0.0005	<0.0005	<0.0005	<0.1	<0.1	<0.05
RPD(%)		---	---	---	---	---	---	---
MW-09	06-May-10	<0.00050	<0.00075	<0.00050	<0.001	<0.10	<0.10	<0.25
(Duplicate)	06-May-10	<0.00050	<0.00075	<0.00050	<0.001	<0.10	<0.10	<0.25
RPD(%)		---	---	---	---	---	---	---

NOTES:

1. *--- in guideline row(s) denotes no criteria for that parameter.*
2. *Highlighting indicates parameters above applied guideline/criteria.*
3. *Superscript [1] denotes values exceeding Canadian Drinking Water AO Guidelines (Health Canada, 2008) (Health Canada, 2008. Guidelines for Canadian Drinking Water Quality. Summary Table. Prepared by the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment. May 2008.).*
4. *Superscript [2] denotes values exceeding Canadian Drinking Water MAC Guidelines (Health Canada, 2008) (Health Canada, 2008. Guidelines for Canadian Drinking Water Quality. Summary Table. Prepared by the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment. May 2008.).*

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Table 5

Dissolved Metal Data for Groundwater Samples

PROJECT NO.: E00100101

Monitoring Station	Date (d-m-y)	Aluminum:D (mg/L)	Antimony:D (mg/L)	Arsenic:D (mg/L)	Barium:D (mg/L)	Beryllium:D (mg/L)	Bismuth:D (mg/L)	Boron:D (mg/L)	Cadmium:D (mg/L)	Chromium:D (mg/L)	Cobalt:D (mg/L)	Copper:D (mg/L)	Lead:D (mg/L)	Mercury:D (mg/L)	Molybdenum:D (mg/L)	Nickel:D (mg/L)	Selenium:D (mg/L)	Silver:D (mg/L)	Strontium:D (mg/L)	Thallium:D (mg/L)	Tin:D (mg/L)	Titanium:D (mg/L)	Uranium:D (mg/L)	Vanadium:D (mg/L)	Zinc:D (mg/L)
Canadian Drinking Water AO Guidelines (Health Canada, 2008)		**0.1**	---	---	---	---	---	---	---	---	---	**1**	---	---	---	---	---	---	---	---	---	---	---	---	---	**5**
Canadian Drinking Water MAC Guidelines (Health Canada, 2008)		---	**0.006**	**0.01**	**1**	---	---	**5**	**0.005**	**0.05**	---	---	**0.01**	**0.001**	---	---	---	---	---	---	---	---	**0.02**	---	---
MW-01	07-Mar-05	0.02	0.0008	0.0008	0.199	<0.0005	<0.00005	0.053	<0.0001	0.0009	0.0017	<0.0006	0.0004	<0.0001	0.0007	0.0004	<0.0004	<0.0002	0.579	<0.0005	<0.0002	0.0013	0.0026	0.0003	0.004
	17-Nov-05	0.01	0.0005	0.0009	0.143	<0.0005	<0.0001	0.046	<0.0001	<0.0004	0.0015	0.0007	<0.0001	<0.0001	0.0013	0.0012	<0.0004	<0.0002	0.551	<0.0001	<0.0002	0.0012	0.0023	0.0001	<0.002
	15-Jun-06	<0.01	0.0006	0.0009	0.134	<0.0005	<0.00005	0.045	<0.0001	0.0027	0.0008	<0.0006	<0.0001	<0.0001	0.0004	<0.0001	<0.0004	<0.0002	0.554	<0.00005	<0.0002	0.001	0.0022	<0.0001	0.005
	12-Jul-07	<0.01	0.0004	0.0009	0.127	<0.0005	<0.00005	0.054	<0.0001	0.0011	0.0009	<0.0006	<0.0001	<0.0001	0.0009	0.003	0.0005	<0.0002	0.558	<0.00005	<0.0002	0.0008	0.0022	<0.0001	<0.002
	19-Dec-07	<0.001	<0.0002	<0.001	0.11	<0.001	---	0.05	<0.0002	<0.001	0.0009	<0.0002	<0.0002	<0.00005	0.0008	0.0027	<0.001	<0.0001	0.53	<0.0002	<0.001	0.001	0.0024	<0.001	<0.003
	21-Apr-09	<0.001	<0.0002	0.0008	---	<0.001	---	---	<0.000005	<0.001	0.0008	0.0005	<0.0002	0.000001	0.0004	0.0009	<0.0002	<0.0001	---	<0.0002	<0.001	<0.001	0.0021	<0.001	<0.003
	05-May-10	<0.0050	<0.00040	0.00095	0.132	<0.00050	---	0.053	<0.00010	<0.0050	0.00088	<0.0010	<0.00010	<0.00010	0.00046	0.0025	<0.00040	<0.00010	---	<0.000050	---	0.00081	0.00209	<0.00010	<0.0020
MW-02	07-Mar-05	0.02	0.001	0.0025	0.204	<0.0005	<0.00005	0.12	<0.0001	0.0013	0.0008	0.0015	0.0004	0.0001	0.0046	<0.0001	0.0008	<0.0002	1.03	<0.0005	<0.0002	0.0012	0.0032	0.0017	0.004
	17-Nov-05	0.03	0.0006	0.0014	0.152	<0.0005	<0.0001	0.189	<0.0001	<0.0004	0.0031	0.0021	<0.0001	<0.0001	0.0148	0.0644	0.0006	<0.0002	1.54	0.00006	<0.0002	0.0015	0.0053	0.0005	<0.002
	15-Jun-06	<0.01	0.0007	0.0024	0.107	<0.0005	0.00005	0.152	<0.0001	0.004	0.0031	0.0011	<0.0001	<0.0001	0.0009	0.0012	0.0005	<0.0002	1.46	<0.00005	<0.0002	0.0012	0.0023	<0.0001	0.1012
	13-Jul-07	<0.01	0.0005	0.0036	0.0749	<0.0005	<0.00005	0.136	<0.0001	<0.0004	0.0032	0.0007	<0.0001	<0.0001	0.0008	0.0055	<0.0004	<0.0002	1.46	<0.00005	<0.0002	0.0011	0.0019	<0.0001	<0.002
	19-Dec-07	<0.001	<0.0002	0.003	0.04	<0.001	---	0.13	<0.0002	0.004	0.0026	0.0005	0.0003	<0.00005	0.0006	0.0046	<0.001	<0.0001	1.3	<0.0002	<0.001	0.002	0.0014	0.002	<0.003
	21-Apr-09	<0.001	<0.0002	0.0038	---	<0.001	---	---	<0.000005	<0.001	0.0017	0.0002	<0.0002	0.000001	0.0005	0.0019	<0.0002	<0.0001	---	<0.0002	<0.001	<0.001	0.0014	<0.001	<0.003
	05-May-10	<0.0050	<0.00040	0.00369	0.0544	<0.00050	---	0.144	<0.00010	<0.0050	0.00157	<0.0010	<0.00010	<0.00010	0.00041	0.0043	<0.00040	<0.00010	---	<0.000050	---	0.00104	0.00139	<0.00010	0.0044
MW-03	07-Mar-05	<0.01	0.0007	0.0012	0.0744	<0.0005	<0.00005	0.128	<0.0001	0.0009	0.0012	<0.0006	<0.0001	<0.0001	0.0008	<0.0001	<0.0004	<0.0002	0.811	<0.0005	<0.0002	0.001	0.0007	<0.0001	0.003
	17-Nov-05	0.01	0.0006	0.0014	0.0418	<0.0005	0.00009	0.119	<0.0001	<0.0004	0.0008	0.0008	<0.0001	<0.0001	0.0015	0.0003	0.0005	<0.0002	0.828	<0.0001	<0.0002	0.0019	0.0007	<0.0001	<0.002
	15-Jun-06	<0.01	0.0006	0.0013	0.0411	<0.00045	<0.00005	0.109	<0.0001	0.0029	0.0008	0.0007	<0.0001	<0.0001	0.0007	<0.0001	0.0005	<0.0002	0.845	<0.00005	<0.0002	0.001	0.0007	<0.0001	0.01
	12-Jul-07	<0.01	0.0004	0.0014	0.0379	<0.0005	<0.00005	0.115	<0.0001	0.0012	0.0008	<0.0006	0.0005	0.00009	0.0029	<0.00001	<0.0002	<0.0002	0.001	0.0007	0.882	<0.00005	0.0002	<0.001	<0.002
	19-Dec-07	<0.001	<0.0002	<0.001	0.03	<0.001	---	0.11	<0.0002	0.002	0.0008	0.0002	0.0002	<0.00005	0.0012	0.0042	<0.001	<0.0001	0.82	<0.0002	<0.001	0.002	0.0006	0.001	<0.003
	21-Apr-09	<0.001	<0.0002	0.0013	---	<0.001	---	---	<0.000005	<0.001	0.0006	0.0007	<0.0002	0.000001	0.0007	0.001	<0.0002	<0.0001	---	<0.0002	<0.001	<0.001	0.0006	<0.001	<0.003
	06-May-10	<0.0050	<0.00040	0.00154	0.038	<0.00050	---	0.116	<0.00010	<0.0050	0.00076	<0.0010	<0.00010	<0.00010	0.00079	0.0027	<0.00040	<0.00010	---	<0.000050	---	0.00079	0.00056	0.00036	<0.0020
MW-04	08-Mar-05	<0.01	0.0009	0.0011	0.0737	<0.0005	<0.00005	0.101	<0.0001	0.0018	0.0007	0.0008	0.0002	<0.0001	0.0005	<0.0001	0.0006	<0.0002	0.561	<0.0005	<0.0002	0.0007	0.0029	<0.0001	0.004
	17-Nov-05	<0.01	0.0007	0.0006	0.0809	<0.0005	0.00007	0.093	<0.0001	0.0007	0.0049	0.0012	<0.0001	0.0002	0.003	0.014	0.0009	<0.0002	0.616	<0.0001	<0.0002	0.0004	0.0025	<0.0001	0.029
(Duplicate)	17-Nov-05	0.01	0.0006	0.0007	0.0817	<0.0005	0.00005	0.097	<0.0001	0.0009	0.0051	0.0012	<0.0001	0.0001	0.0028	0.0132	0.0009	<0.0002	0.609	<0.0001	<0.0002	0.0004	0.0026	<0.0001	0.032
	14-Jun-06	<0.01	0.0008	0.0006	0.764	<0.0005	<0.00005	0.092	<0.0001	0.0017	<0.0001	0.0009	<0.0001	<0.0001	0.0005	0.0007	0.001	<0.0002	0.585	<0.00005	<0.0002	0.0003	0.0028	0.0022	0.005
	13-Jul-07	<0.01	<0.0004	0.0008	0.085	<0.0005	<0.00005	0.1	<0.0001	0.0047	0.0001	<0.0006	<0.0001	0.0002	0.0005	0.0042	0.0006	<0.0002	0.59	0.00024	<0.0002	0.0004	0.0027	0.0009	0.005
	19-Dec-07	<0.001	<0.0002	<0.001	0.08	<0.001	---	0.09	<0.0002	0.001	<0.0003	0.0006	0.0002	<0.00005	0.0006	0.0052	<0.001	<0.0001	0.61	<0.0002	<0.001	0.002	0.0023	<0.001	<0.003
	21-Apr-09	<0.001	<0.0002	<0.0002	---	<0.001	---	---	0.000024	<0.001	<0.0003	0.0009	<0.0002	0.000003	0.0004	0.0021	<0.0002	<0.0001	---	<0.0002	<0.001	<0.001	0.0029	<0.001	<0.003
	06-May-10	<0.0050	<0.00040	0.00117	0.0843	<0.00050	---	0.098	<0.00010	<0.0050	0.00054	<0.0010	<0.00010	<0.00010	0.00038	0.0047	0.00106	<0.00010	---	<0.000050	---	0.00046	0.00284	0.00072	<0.0020
MW-05	08-Mar-05	<0.01	0.0008	0.0035	0.0618	<0.0005	<0.00005	0.14	<0.0001	0.0009	0.0008	<0.0006	0.0002	<0.0001	0.0022	<0.0001	0.0004	<0.0002	0.71	<0.0005	<0.0002	0.0008	0.0014	0.0002	0.003
	17-Nov-05	<0.01	0.0005	0.0081	0.0564	<0.0005	0.00006	0.116	<0.0001	<0.0004	0.001	0.0007	<0.0001	<0.0001	0.0029	0.0022	0.0004	<0.0002	0.667	<0.0001	<0.0002	0.0009	0.0008	0.0001	<0.002
	14-Jun-06	<0.01	0.0007	0.0051	0.454	<0.0005	<0.00005	0.081	<0.0001	0.0016	0.0007	0.0006	<0.0001	<0.0001	0.0013	0.0002	<0.0004	<0.0002	0.659	<0.00005	<0.0002	0.0005	0.0007	0.0008	0.004
	13-Jul-07	<0.01	0.0005	0.0018	0.0455	<0.0005	<0.00005	0.052	<0.0001	0.0005	0.0008	0.0009	<0.0001	<0.0001	0.0006	0.0034	0.0005	<0.0002	0.684	<0.00005	<0.0002	0.0006	0.0007	<0.0001	0.005
	19-Dec-07	<0.001	<0.0002	0.001	0.04	<0.001	---	0.06	<0.0002	0.003	0.0007	<0.0002	0.0002	<0.00005	0.0005	0.0029	<0.001	<0.0001	0.63	<0.0002	<0.001	0.002	0.0007	0.001	<0.003
	21-Apr-09	<0.001	<0.0002	0.0014	---	<0.001	---	---	<0.000005	<0.001	0.0007	0.0008	<0.0002	0.000001	0.0006	0.0014	<0.0002	<0.0001	---	<0.0002	<0.001	<0.001	0.0007	<0.001	<0.003
	29-Apr-10	<0.0050	0.00052	0.0017	0.0478	<0.00050	---	0.064	<0.00010	<0.0050	0.00082	<0.0010	<0.00010	<0.00010	0.00063	0.0039	0.00086	<0.00010	---	<0.000050	---	0.00088	0.0007	0.00017	0.0025
MW-06	08-Mar-05	<0.01	0.0009	0.0042	0.071	<0.0005	<0.00005	0.148	<0.0001	0.0035	0.0012	0.0011	0.0004	<0.0001	0.0014	<0.0001	0.0005	<0.0002	1.2	<0.0005	<0.0002	0.0008	0.0023	0.0002	0.004
	17-Nov-05	0.01	0.0005	0.0038	0.0557	<0.0005	0.00006	0.16	<0.0001	<0.0004	0.0012	0.0012	<0.0001	<0.0001	0.0015	0.0004	0.0005	<0.0002	1.26	<0.0001	<0.0002	0.0015	0.0015	0.0001	<0.002
	16-Jun-06	<0.01	0.0009	0.0034	0.0666	<0.0005	<0.00005	0.149	<0.0001	0.0015	0.0007	0.0014	<0.0001	<0.0001	0.0014	<0.0001	0.0007	<0.0002	1.28	<0.0005	<0.0002	0.001	0.0016	<0.001	0.008
	12-Jul-07	<0.01	0.0005	0.0042	0.043	<0.0005	<0.00005	0.159	<0.0001	0.0014	0.0009	0.0014	<0.0001	<0.0001	0.0016	0.006	<0.0004	<0.00021	1.42	<0.0005	<0.0002	0.0014	0.0016	<0.0001	0.003
	19-Dec-07	<0.001	<0.0002	0.003	0.03	<0.001	---	0.13	<0.0002	0.002	0.0008	0.0011	0.0002	<0.00005	0.0012	0.0052	<0.001	<0.0001	1.4	<0.0002	<0.001	0.002	0.0018	0.001	<0.003
	22-Apr-09	<0.001	<0.0002	0.005	---	<0.001	---	---	0.000009	<0.001	0.0004	<0.0002	<0.0002	<0.000001	0.001	0.0015	<0.0002	<0.0001	---	<0.0002	<0.001	<0.001	0.0017	<0.001	<0.003
	06-May-10	<0.0050	<0.00040	0.00507	0.0353	<0.00050	---	0.15	<0.00010	<0.0050	0.00052	0.0012	<0.00010	<0.00010	0.00094	0.0039	0.00041	<0.00010	---	<0.000050	---	0.00125	0.00146	0.00016	0.0063
MW-07	09-Mar-05	<0.01	0.0008	0.0017	0.0733	<0.0005	<0.00005	0.366	<0.0001	0.0017	0.0026	0.0024	0.0004	<0.0001	0.001	<0.0001	0.0008	<0.0002	2.49	<0.0005	<0.0002	0.0012	0.0018	<0.0001	0.006
	17-Nov-05	<0.01	0.0007	0.0019	0.053	<0.0005	0.00005	0.311	<0.0001	<0.0004	0.002	0.0018	<0.0001	<0.0001	0.001	<0.0001	<0.0004	<0.0002	2.45	<0.0001	<0.0002	0.0009	0.0017	<0.0001	<0.002
	16-Jun-06	<0.01	0.0007	0.0022	0.0543	<0.0005	<0.00005	0.312	<0.0001	0.0018	0.0012	0.0023	<0.0001	<0.0001	0.0008	<0.0001	0.0007	<0.0002	2.58	<0.00005	<0.0002	0.001	0.0017	<0.0001	0.006
	12-Jul-07	<0.01	0.0005	0.0027	0.0596	<0.0005	<0.00005	0.289	<0.0001	0.0011	0.0014	0.0015	<0.0001	<0.0001	0.0012	0.0056	0.0008	<0.0002	2.49	<0.00005	<0.0002	0.0011	0.0016	<0.0001	0.002
	19-Dec-07	<0.001	<0.0002	0.001	0.04	<0.001	---	0.26	<0.0002	0.004	0.0013	0.0016	0.0003	<0.00005	0.0011	0.0059	<0.001	<0.0001	2.2	<0.0002	<0.001	0.002	0.0014	0.002	0.003
	22-Apr-09	<0.001	<0.0002	0.0021	---	<0.001	---	---	0.000016	<0.001	0.0013	0.0007	<0.0002	<0.000001	0.0004	0.0024	<0.0002	<0.0001	---	<0.0002	<0.001	<0.001	0.0016	<0.001	<0.003
	05-May-10	<0.0050	<0.00040	0.00361	0.049	<0.00050	---	0.279	<0.00010	<0.0050	0.00128	0.0014	<0.00010	<0.00010	0.00097	0.0056	0.00127	<0.00010	---	<0.000050	---	0.00109	0.00156	<0.00010	0.0057
MW-08	09-Mar-05	<0.01	0.0006	0.0042	0.084	<0.0005	<0.00005	0.244	<0.0001	0.0011	0.0008	0.001	0.0004	<0.0001	0.0012	<0.0001	0.0004	<0.0002	1.4	<0.0005	<0.0002	0.0008	0.0011	<0.0001	0.003
	15-Nov-05	<0.01	0.0005	0.0046	0.115	<0.0005	0.00009	0.184	<0.0001	0.0005	0.0009	0.001	<0.0001	<0.0001	0.0025	<0.0001	0.0005	<0.0002	1.27	<0.0001	<0.0002	0.001	0.0015	<0.0001	<0.002
	16-Jun-06	<0.01	0.0006	0.0044	0.0629	<0.0005	<0.00005	0.206	<0.0001	0.0012	0.0004	0.0011	<0.0001	<0.0001	0.0011	<0.0001	<0.0004	<0.0002	1.45	<0.00005	<0.0002	0.0008	0.0009	<0.0001	0.006
	11-Jul-07	<0.01	0.0005	0.0052	0.0519	<0.0005	<0.00005	0.176	<0.0001	0.0016	0.0005	0.0012	<0.0001	<0.0001	0.0016	0.0031	<0.0004	<0.0002	1.59	<0.00005	<0.0002	0.0012	0.0008	0.0004	0.004
	19-Dec-07	<0.001	<0.0002	0.002	0.03	<0.001	---	0.17	<0.0002	0.003	0.0004	0.0006	0.0002	<0.00005	0.0014	0.0036	<0.001	<0.0001	1.4	<0.0002	<0.001	0.002	0.0008	0.001	<0.003
	21-Apr-09	<0.001	<0.0002	0.0062	---	<0.001	---	---	<0.000005	<0.001	<0.0003	0.0016	<0.0002	<0.000001	0.002	0.0017	<0.0002	<0.0001	---	<0.0002	<0.001	<0.001	0.0007	<0.001	<0.003
	05-May-10	<0.0050	<0.00040	0.00672	0.0675	<0.00050	---	0.179	<0.00010	<0.0050	0.00035	<0.0010	<0.00010	<0.00010	0.00168	0.0027	<0.00040	<0.00010	---	<0.000050	---	0.00094	0.00072	0.00017	0.0163
MW-09	09-Mar-05	0.14[1]	0.0007	0.0019	0.0608	<0.0005	<0.00005	0.339	<0.0001	0.0016	0.0011	0.001	0.0001	<0.0001	0.0019	0.0002	<0.0004	<0.0002	0.843	<0.0005	<0.0002	0.0058	0.0019	0.0005	0.003
(Duplicate)	09-Mar-05	0.12[1]	0.0007	0.0019	0.0616	<0.0005	<0.00005	0.332	<0.0001	0.0012	0.0012	0.001	0.0003	<0.0001	0.0019	0.0002	<0.0004	<0.0002	0.841	<0.0005	<0.0002	0.0059	0.0018	0.0004	0.004
	17-Nov-05	0.02	0.0006	0.0018	0.052	<0.0005	<0.0001	0.294	<0.0001	0.0006	0.0023	0.0011	<0.0001	<0.0001	0.0038	0.0087	0.0005	<0.0002	0.869	<0.0001	<0.0002	0.0038	0.0015	0.0002	<0.002
	16-Jun-06	<0.01	0.0006	0.0018	0.0389	<0.0005	<0.00005	0.289	<0.0001	0.0013	0.0011	0.0012	<0.0001	<0.0001	0.0015	<0.0001	<0.0004	<0.0002	0.861	<0.00005	<0.0002	0.0008	0.0014	<0.0001	0.005
	11-Jul-07	<0.01	0.0004	0.002	0.0302	<0.0005	<0.00005	0.26	<0.0001	0.0016	0.0009	0.0008	<0.0001	<0.0001	0.0017	0.003	<0.0004	<0.0002	0.961	<0.00005	<0.0002	0.0009	0.0014	0.0005	<0.002
	18-Dec-07	<0.001	<0.0002	0.002	0.02	<0.001	---	0.26	<0.0002	<0.001	0.0009	0.0008	<0.0002	<0.00005	0.0018	0.0023	<0.001	<0.0001	0.81	<0.0002	<0.001	0.002	0.0014	<0.001	0.003
	22-Apr-09	0.1	<0.0002	0.0023	---	<0.001	---	---	0.000008	<0.001	0.0008	0.0003	<0.0002	<0.000001	0.0016	0.0017	<0.0002	<0.0001	---	<0.0002	<0.001	0.005	0.0012	<0.001	<0.003
	06-May-10	<0.0050	<0.00040	0.00255	0.025	<0.00050	---	0.267	<0.00010	<0.0050	0.00085	<0.0010	<0.00010	<0.00010	0.00158	0.0027	<0.00040	<0.00010	---	<0.000050	---	0.00078	0.00121	<0.00010	<0.0020
(Duplicate)	06-May-10	<0.0050	<0.00040	0.00257	0.0247	<0.00050	---	0.261	<0.00010	<0.0050	0.00086	<0.0010	<0.00010	<0.00010	0.00154	0.0027	<0.00040	<0.00010	---	<0.000050	---	0.00077	0.0012	<0.00010	0.002
MW-10	09-Mar-05	<0.01	0.0007	0.003	0.0296	<0.0005	<0.00005	0.209	<0.0001	0.0012	0.0003	0.0007	0.0004	<0.0001	0.0009	<0.0001	<0.0004	<0.0002	1.29	<0.0005	<0.0002	0.0008	0.0019	<0.0001	0.003
	16-Nov-05	<0.01	0.0006	0.0037	0.0331	<0.0005	<0.0001	0.202	<0.0001	<0.0004	0.0005	0.0009	<0.0001	<0.0001	0.001	<0.0001	0.0006	<0.0002	1.43	<0.0001	<0.0002	0.0008	0.0015	<0.0001	<0.002

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Table 5

Dissolved Metal Data for Groundwater Samples

PROJECT NO.: E00100101

Monitoring Station	Date (d-m-y)	Aluminum:D (mg/L)	Antimony:D (mg/L)	Arsenic:D (mg/L)	Barium:D (mg/L)	Beryllium:D (mg/L)	Bismuth:D (mg/L)	Boron:D (mg/L)	Cadmium:D (mg/L)	Chromium:D (mg/L)	Cobalt:D (mg/L)	Copper:D (mg/L)	Lead:D (mg/L)	Mercury:D (mg/L)	Molybdenum:D (mg/L)	Nickel:D (mg/L)	Selenium:D (mg/L)	Silver:D (mg/L)	Strontium:D (mg/L)	Thallium:D (mg/L)	Tin:D (mg/L)	Titanium:D (mg/L)	Uranium:D (mg/L)	Vanadium:D (mg/L)	Zinc:D (mg/L)
Canadian Drinking Water AO Guidelines (Health Canada, 2008)		**0.1**	---	---	---	---	---	---	---	---	---	**1**	---	---	---	---	---	---	---	---	---	---	---	---	---	**5**
Canadian Drinking Water MAC Guidelines (Health Canada, 2008)		---	**0.006**	**0.01**	**1**	---	---	**5**	**0.005**	**0.05**	---	---	**0.01**	**0.001**	---	---	---	**0.01**	---	---	---	---	---	**0.02**	---	---
	16-Jun-06	<0.01	0.0006	0.0036	0.0319	<0.0005	<0.00005	0.187	<0.0001	0.0011	0.0003	0.0009	<0.0001	<0.0001	0.0009	<0.0001	<0.0004	<0.0002	1.41	<0.00005	<0.0002	0.0007	0.0014	<0.0001	0.009
	11-Jul-07	<0.01	0.0005	0.0039	0.0291	<0.0005	<0.00005	0.168	<0.0001	0.0015	0.0004	0.0008	<0.0001	<0.0001	0.0009	0.003	<0.0004	<0.0002	1.55	<0.00005	<0.0002	0.0007	0.0013	0.0004	0.015
	18-Dec-07	<0.001	<0.0002	0.002	0.02	<0.001	---	0.16	<0.0002	<0.001	0.0005	0.0006	<0.0002	<0.00005	0.0011	0.0029	<0.001	<0.0001	1.3	<0.0002	<0.001	0.002	0.0014	<0.001	<0.003
	22-Apr-09	<0.001	<0.0002	0.0044	---	<0.001	---	---	0.000007	<0.001	<0.0003	0.0006	<0.0002	<0.000001	0.0009	0.001	<0.0002	<0.0001	---	<0.0002	<0.001	<0.001	0.0011	<0.001	<0.003
	05-May-10	<0.0050	<0.00040	0.00459	0.029	<0.00050	---	0.177	<0.00010	<0.0050	0.00044	0.0015	<0.00010	<0.00010	0.00097	0.0029	<0.00040	<0.00010	---	<0.000050	---	0.00083	0.00115	<0.00010	0.0023
MW-11	10-Mar-05	<0.01	0.0008	0.0022	0.0494	<0.0005	<0.00005	0.189	<0.0001	0.0011	0.0006	<0.0006	<0.0001	<0.0001	0.001	<0.0001	<0.0004	<0.0002	1.27	<0.0005	<0.0002	0.0008	0.0012	0.0001	0.004
	16-Nov-05	0.02	0.0006	0.0025	0.0466	<0.0005	0.00008	0.227	<0.0001	0.0006	0.0007	0.0009	<0.0001	<0.0001	0.0009	<0.0001	<0.0004	<0.0002	1.24	<0.0001	<0.0002	0.001	0.0012	<0.0001	<0.002
	16-Jun-06	<0.01	0.0006	0.0022	0.044	<0.0005	<0.00005	0.205	<0.0001	0.0013	0.0003	0.0009	<0.0001	<0.0001	0.0006	<0.0001	0.0004	<0.0002	1.22	<0.00005	<0.0002	0.001	0.0011	<0.0001	0.009
	11-Jul-07	<0.01	0.0004	0.0023	0.0377	<0.0005	<0.00005	0.186	<0.0001	0.0016	0.0004	<0.0006	<0.0001	<0.0001	0.0007	0.0027	<0.0004	<0.0002	1.35	<0.00005	<0.0002	0.0024	0.0011	0.0004	<0.002
	18-Dec-07	<0.001	<0.0002	<0.001	0.03	<0.001	---	0.18	<0.0002	<0.001	0.0006	0.0008	<0.0002	<0.00005	0.001	0.0027	<0.001	<0.0001	1.1	<0.0002	<0.001	0.003	0.0013	<0.001	<0.003
	22-Apr-09	<0.001	<0.0002	0.0024	---	<0.001	---	---	0.000009	<0.001	0.0004	0.0007	<0.0002	0.000001	0.0007	0.0008	<0.0002	<0.0001	---	<0.0002	<0.001	<0.001	0.001	<0.001	<0.003
	05-May-10	<0.0050	<0.00040	0.00259	0.0396	<0.00050	---	0.189	<0.00010	<0.0050	0.00047	<0.0010	<0.00010	<0.00010	0.00072	0.0027	<0.00040	<0.00010	---	<0.000050	---	0.00102	0.001	<0.00010	0.0023
MW-12	10-Mar-05	<0.01	0.0008	0.0022	0.153	<0.0005	<0.00005	0.234	<0.0001	0.0038	0.0008	<0.0006	0.0004	<0.0001	0.0015	<0.0001	<0.0004	<0.0002	0.915	<0.0005	<0.0002	0.0011	0.001	<0.0001	0.01
	16-Nov-05	<0.01	0.0005	0.0026	0.182	<0.0005	0.00006	0.282	<0.0001	<0.0004	0.001	0.0008	<0.0001	<0.0001	0.0013	<0.0001	<0.0004	<0.0002	0.903	<0.0001	<0.0002	0.0008	0.0011	<0.0001	<0.002
	16-Jun-06	<0.01	0.0006	0.0023	0.178	<0.0005	<0.00005	0.251	<0.00012	0.0016	0.0007	<0.0006	<0.0001	<0.0001	0.0012	<0.0001	<0.0004	<0.0002	0.925	<0.00005	<0.0002	0.0008	0.001	<0.0001	0.007
	11-Jul-07	<0.01	0.0005	0.0025	0.146	<0.0005	<0.00005	0.233	<0.001	0.0015	0.0012	<0.0006	<0.0001	<0.0001	0.0017	0.0033	<0.0004	<0.0002	0.972	<0.00005	<0.0002	0.0007	0.0009	0.0004	0.004
	18-Dec-07	<0.001	<0.0002	0.002	0.1	<0.001	---	0.22	<0.0002	<0.001	0.0007	<0.0002	<0.0002	0.00007	0.0014	0.0021	<0.001	<0.0001	0.84	<0.0002	<0.001	0.002	0.0011	<0.001	<0.003
	22-Apr-09	<0.001	<0.0002	0.0026	---	<0.001	---	---	0.000006	<0.001	0.0006	0.0008	<0.0002	0.000001	0.0012	0.0012	<0.0002	<0.0001	---	<0.0002	<0.001	<0.001	0.0008	<0.001	<0.003
	06-May-10	<0.0050	<0.00040	0.00285	0.143	<0.00050	---	0.242	<0.00010	<0.0050	0.00065	<0.0010	<0.00010	<0.00010	0.00115	0.0022	<0.00040	<0.00010	---	<0.000050	---	0.00081	0.00083	<0.00010	<0.0020
MW-13	10-Mar-05	<0.01	0.0008	0.0012	0.389	<0.0005	<0.00005	0.258	<0.0001	0.0048	0.0008	<0.0006	0.0002	<0.0001	0.0023	0.0009	<0.0004	<0.0002	0.57	<0.0005	<0.0002	0.0006	0.0008	<0.0001	0.005
	16-Nov-05	0.07	0.0006	0.0016	0.413	<0.0005	<0.0001	0.301	<0.0001	0.0007	0.0033	0.0007	0.0002	0.0001	0.0027	0.0015	0.0005	<0.0002	0.542	<0.0001	<0.0002	0.0006	0.0009	<0.0001	<0.002
	16-Jun-06	<0.01	0.0006	0.0014	0.424	<0.0005	<0.00005	0.273	<0.0001	0.0011	0.0007	<0.0006	<0.0001	<0.0001	0.0021	<0.0001	<0.0004	<0.0002	0.553	<0.00005	<0.0002	0.0006	0.0008	<0.0001	0.009
	11-Jul-07	<0.01	0.0004	0.0014	0.428	<0.0005	<0.00005	0.246	<0.0001	0.0016	0.0009	<0.0006	<0.0001	<0.0001	0.0023	0.0022	<0.0004	<0.0002	0.58	<0.00005	<0.0002	0.0006	0.0008	0.0004	<0.002
	18-Dec-07	<0.001	<0.0002	0.001	0.29	<0.001	---	0.25	<0.0002	<0.001	0.0009	<0.0002	<0.0002	0.00007	0.0028	0.0016	<0.001	<0.0001	0.5	<0.0002	<0.001	0.002	0.0009	<0.001	<0.003
	22-Apr-09	<0.001	<0.0002	0.0015	---	<0.001	---	---	0.000005	<0.001	0.0007	0.0003	<0.0002	<0.000001	0.0022	0.0012	<0.0002	<0.0001	---	<0.0002	<0.001	<0.001	0.0007	<0.001	<0.003
	06-May-10	<0.0050	<0.00040	0.00162	0.407	<0.00050	---	0.254	<0.00010	<0.0050	0.00092	<0.0010	<0.00010	<0.00010	0.00219	0.0021	<0.00040	<0.00010	---	<0.000050	---	0.0007	0.00069	<0.00010	<0.0020
FIELD BLANK	05-May-10	<0.0050	<0.00040	<0.00040	<0.0050	<0.00050	---	<0.050	<0.00010	<0.0050	<0.00010	<0.0010	<0.00010	<0.00010	<0.00010	<0.0020	<0.00040	<0.00010	---	<0.000050	---	<0.00030	<0.00010	<0.00010	<0.0020
Relative Percent Difference (RPD) Report																									
MW-04	17-Nov-05	<0.01	0.0007	0.0006	0.0809	<0.0005	0.00007	0.093	<0.0001	0.0007	0.0049	0.0012	<0.0001	0.0002	0.003	0.014	0.0009	<0.0002	0.616	<0.0001	<0.0002	0.0004	0.0025	<0.0001	0.029
(Duplicate)	17-Nov-05	0.01	0.0006	0.0007	0.0817	<0.0005	0.00005	0.097	<0.0001	0.0009	0.0051	0.0012	<0.0001	0.0001	0.0028	0.0132	0.0009	<0.0002	0.609	<0.0001	<0.0002	0.0004	0.0026	<0.0001	0.032
RPD(%)		---	**15.38%**	**15.38%**	**0.98%**	---	**33.33%**	**4.21%**	---	**25.00%**	**4.00%**	**0.00%**	---	**66.67%**	**6.90%**	**5.88%**	**0.00%**	---	**1.14%**	---	---	**0.00%**	**3.92%**	---	**9.84%**
MW-09	09-Mar-05	0.14 [1]	0.0007	0.0019	0.0608	<0.0005	<0.00005	0.339	<0.0001	0.0016	0.0011	0.001	0.0001	<0.0001	0.0019	0.0002	<0.0004	<0.0002	0.843	<0.0005	<0.0002	0.0058	0.0019	0.0005	0.003
(Duplicate)	09-Mar-05	0.12 [1]	0.0007	0.0019	0.0616	<0.0005	<0.00005	0.332	<0.0001	0.0012	0.0012	0.001	0.0003	<0.0001	0.0019	0.0002	<0.0004	<0.0002	0.841	<0.0005	<0.0002	0.0059	0.0018	0.0004	0.004
RPD(%)		**15.38%**	**0.00%**	**0.00%**	**1.31%**	---	---	**2.09%**	---	**28.57%**	**8.70%**	**0.00%**	**100.00%**	---	**0.00%**	**0.00%**	---	---	**0.24%**	---	---	**1.71%**	**5.41%**	**22.22%**	**28.57%**
MW-09	06-May-10	<0.0050	<0.00040	0.00255	0.025	<0.00050	---	0.267	<0.00010	<0.0050	0.00085	<0.0010	<0.00010	<0.00010	0.00158	0.0027	<0.00040	<0.00010	---	<0.000050	---	0.00078	0.00121	<0.00010	<0.0020
(Duplicate)	06-May-10	<0.0050	<0.00040	0.00257	0.0247	<0.00050	---	0.261	<0.00010	<0.0050	0.00086	<0.0010	<0.00010	<0.00010	0.00154	0.0027	<0.00040	<0.00010	---	<0.000050	---	0.00077	0.0012	<0.00010	0.002
RPD(%)		---	---	**0.78%**	**1.21%**	---	---	**2.27%**	---	---	**1.17%**	---	---	---	**2.56%**	**0.00%**	---	---	---	---	---	---	**1.29%**	**0.83%**	---	---

NOTES:

1. *--- in guideline(s) row denotes no criteria, and in data row(s) indicates parameter not analyzed.*
2. *Highlighting indicates parameters above applied guideline/criteria.*
3. *Superscript [1] denotes values exceeding Canadian Drinking Water AO Guidelines (Health Canada, 2008)*
   (Health Canada, 2008. Guidelines for Canadian Drinking Water Quality. Summary Table. Prepared by the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment. May 2008.).
4. *Superscript [2] denotes values exceeding Canadian Drinking Water MAC Guidelines (Health Canada, 2008)*
   (Health Canada, 2008. Guidelines for Canadian Drinking Water Quality. Summary Table. Prepared by the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment. May 2008.).

Health Canada, 2008. Guidelines for Canadian Drinking Water Quality. Summary Table. Prepared by the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment. May 2008.

Aluminum:D

This is an operational guideline, designed to apply only to drinking water treatment plants using aluminum-based coagulates.

The operational guideline value of 0.1 mg/L applies to conventional treatment plants.

The operational guideline value of 0.2 mg/L applies to other types of treatment systems.

Figures

330000 335000 340000 345000 350000 355000 360000 365000 370000 375000 380000 385000

5975000 5970000 5965000 5960000 5955000 5950000 5945000

Twp. 57 Twp. 56 Twp. 55 Twp. 54

Rge. 25 Rge. 24 Rge. 23 Rge. 22 Rge. 21 Rge. 20 Rge. 19

BON ACCORD

GIBBONS

STURGEON COUNTY

BRUDERHEIM

LAMONT COUNTY

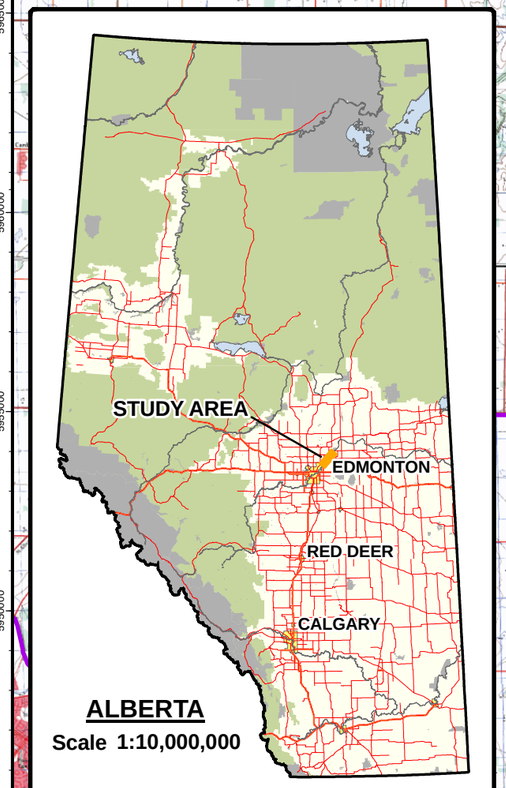
LAMONT

STRATHCONA COUNTY

FORT SASKATCHEWAN

EDMONTON

I. D. NO. 13 (ELK ISLAND)



Legend

- Study Area
- County Boundaries

Contour Interval = 10 m or 25 feet
Elevation in feet or metres above mean sea level
MAP SOURCE: NTS Basemap (1:50,000) 83H11, 83H12, 83H13, 83H14, 83H15

N

0 5 10 km

1:150,000

UTM Zone 12 NAD 83

Infrastructure & Environment

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 BEVERLY CHANNEL GROUNDWATER QUALITY MONITORING

SITE LOCATION MAP

WorleyParsons resources & energy

09-JUN-10	date	-	edited by	C.H.	drawn by	-	app by

PROJECT NUMBER: E00100101

FIGURE: 1

FILE: Q:\E10300113\ArcGIS\MXDs\Site_Location.mxd Issued By: Edmonton GIS

345000 350000 355000 360000 365000 370000 375000

5980000 5975000 5970000 5965000 5960000 5955000 5950000 5945000 5940000

Twp. 58 Twp. 57 Twp. 56 Twp. 55 Twp. 54 Twp. 53

MW-13 MW-12 MW-11 MW-10 MW-09 MW-08 MW-07 MW-06 MW-05 MW-04 MW-03 MW-01 MW-02

Rge. 23 Rge. 22 Rge. 21 Rge. 20

Legend

- Monitoring Well
- Beverly Channel
- Study Area

Image Source: www.geogratis.gc.ca, Dec. 2003

N

0 1 2 4 6

Kilometers

1:125,000

NAD 83 UTM Zone 12

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2010 BEVERLY CHANNEL GROUNDWATER QUALITY MONITORING

MONITORING WELL LOCATIONS

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05-JUL-10 date	C.H. edited by	C.H. drawn by	. . app by	PROJECT NUMBER: E00100101	FIGURE: 2

FILE: Q:\E00100101\ArcGIS\MXDs\monitoring_wells.mxd Issued By: Edmonton GIS

345000 350000 355000 360000 365000 370000 375000

5980000 5975000 5970000 5965000 5960000 5955000 5950000 5945000 5940000

Twp. 58 Twp. 57 Twp. 56 Twp. 55 Twp. 54 Twp. 53

MW-13 (593.6)
MW-12 (593.06)
MW-11 (594.52)
MW-10 (597.74)
MW-09 (596.12)
MW-08 (598.61)
MW-07 (596.69)
MW-06 (598.04)
MW-05 (598.97)
MW-04 (601.92)
MW-03 (601.61)
MW-02 (604.11)
MW-01 (602.34)

594 595 596 597 598 599 600 601 602 603 ?

Legend

- Monitoring Well
- Beverly Channel
- Study Area
- Groundwater Flow Contours (masl)
- Flow Direction

Image Source: www.geogratis.gc.ca, Dec. 2003

Rge. 23 Rge. 22 Rge. 21 Rge. 20

N

0 1 2 4 6

Kilometers

1:125,000

NAD 83 UTM Zone 12

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2010 BEVERLY CHANNEL GROUNDWATER QUALITY MONITORING

GROUNDWATER FLOW CONTOURS

WorleyParsons
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05-JUL-10	date	C.H.	edited by	C.H.	drawn by	. .	app by

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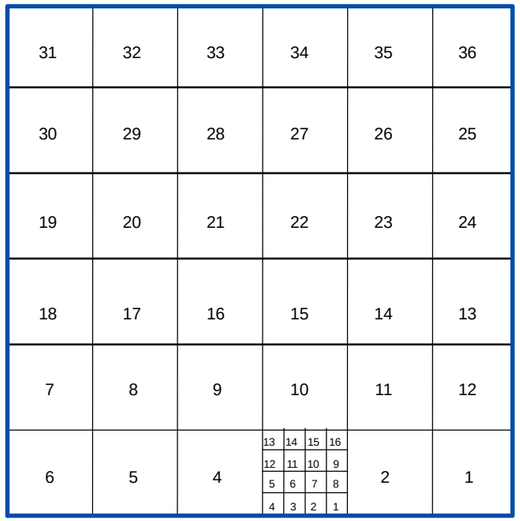
PROJECT NUMBER: E00100101

FIGURE: 3

FILE: Q:\E00100101\ArcGIS\MXD\gw_flow_contours.mxd Issued By: Edmonton GIS

Appendix 1 Water Well Records



Section and LSD Boundary Key

Legend

Water Well Records

- Chemistry Exists - Bedrock
- Chemistry Exists - Beverly
- Chemistry Exists
- No Chemistry

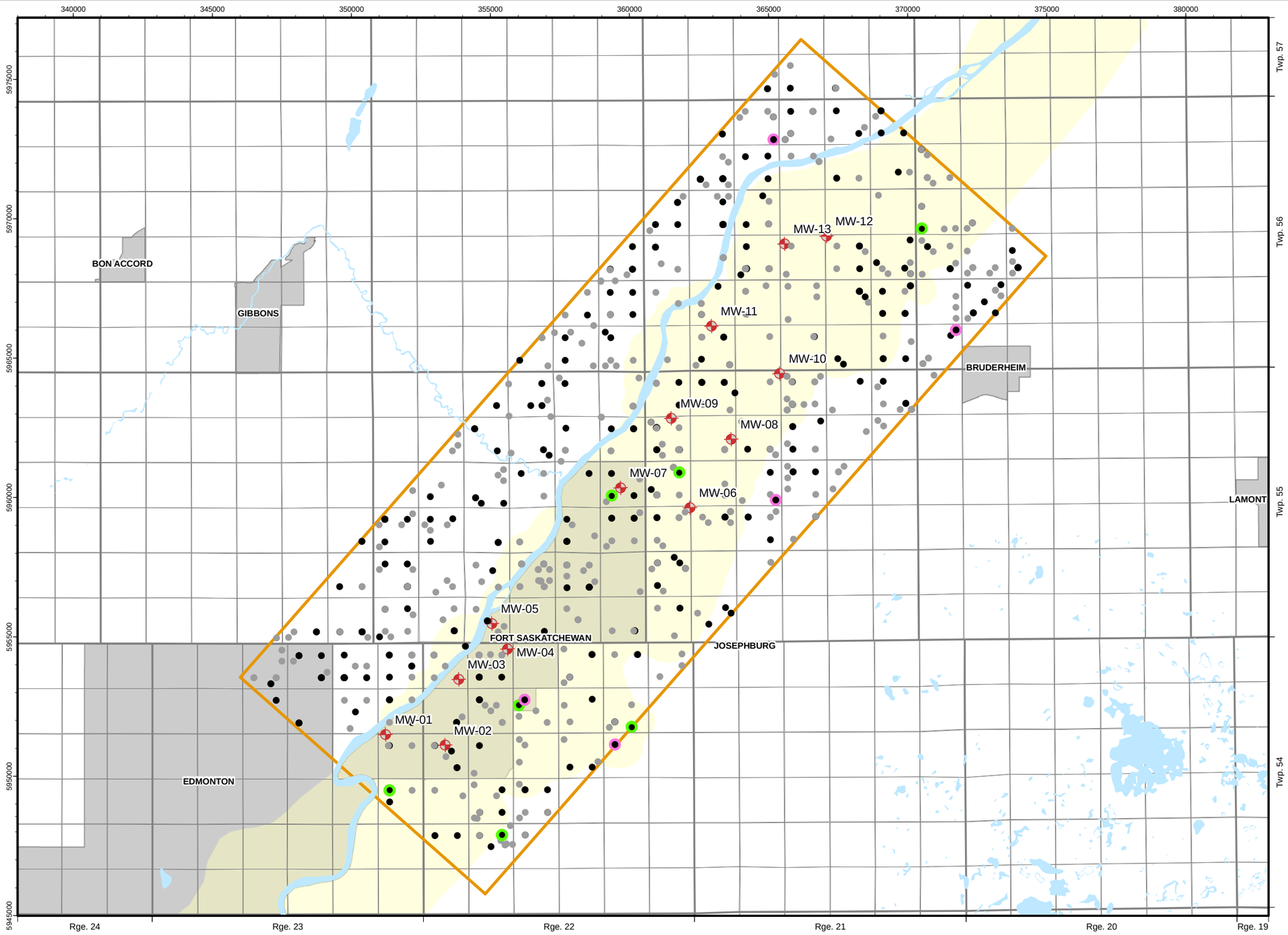
NCIA Monitoring Wells

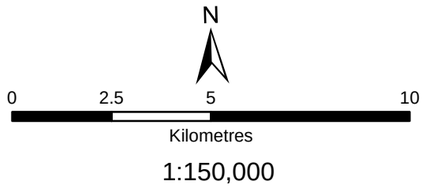
- Monitoring Well

- Study Area
- Beverly Channel
- Lake/River
- City/Town

Note: Well record locations are approximate and should not be used for scaling or real world positioning.

Data Source: Alberta Environment Water Well Database, June 2009





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NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 BEVERLY CHANNEL GROUNDWATER QUALITY MONITORING

WATER WELL RECORDS WITHIN THE STUDY AREA

WorleyParsons resources & energy

11-JUN-10 date	. . edited by	C.H. drawn by	app by

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PROJECT NUMBER: E00100101

FIGURE: A1-1

FILE: Q:\E00100101\ArcGIS\MXDs\WW_Search.mxd Issued By: Edmonton GIS

WorleyParsons

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Waterwell Records Within the Study Area

	WELL ID	LOCATION					WELL_FINISH	WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED_USE	TYPE_WORK	DRILL_METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN			FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
1	0261609	10	18	055	22	4	Not Applicable	792.5											11/08/1953		MID-WESTERN #10-18		Oil Exploratory	Unknown	No Chemistry
2	0261824	04	34	055	22	4	Not Applicable	295.7											22/05/1953		IMPERIAL OIL LTD #AO282 4		Oil Exploratory	Unknown	No Chemistry
3	0261198	SE	07	055	22	4	Unknown	1.8													HERDER, H		Chemistry	Hand Dug	Chemistry Exists
4	0263716	16	12	056	21	4	Screen	42.7							34.1	35.7			17/11/1975		BRUDERHEIM, TOWN OF #15-75		Unknown	Unknown	No Chemistry
5	0261734	04	27	055	22	4	Not Applicable	256.3											22/05/1953		IMPERIAL OIL LTD #AO282-6		Oil Exploratory	Unknown	No Chemistry
6	0268139	SE	01	055	23	4																			No Chemistry
7	0042021	13	24	056	21	4															ALTA ENV				No Chemistry
8	0261847	04	36	055	22	4	Not Applicable	299.0											21/05/1953		IMPERIAL OIL LTD		Oil Exploratory	Unknown	No Chemistry
9	0042022	SW	14	056	21	4																			No Chemistry
10	0261829	01	03	056	22	4	Not Applicable	268.2											13/05/1953		IMPERIAL OIL LTD #AO190-173		Oil Exploratory	Unknown	No Chemistry
11	1270077	07	10	055	22	4		21.6							17.1	20.1			25/05/1998		DOW CHEMICAL CANADA LTD	Contamination Investigatio	New Well	Drilled	No Chemistry
12	1270081	07	10	055	22	4		29.6							22.3	25.3			27/05/1998		DOW CHEMICAL CANADA LTD	Contamination Investigatio	New Well	Rotary	No Chemistry
13	1270085	07	10	055	22	4		24.7							20.7	23.8			24/06/1998		DOW CHEMICAL CANADA LTD	Contamination Investigatio	New Well	Rotary	No Chemistry
14	1270079	07	10	055	22	4		27.1							20.7	23.8			26/05/1998		DOW CHEMICAL CANADA LTD	Contamination Investigatio	New Well	Rotary	No Chemistry
15	1270082	07	10	055	22	4		28.3							22.6	25.6			28/05/1998		DOW CHEMICAL CANADA LTD	Contamination Investigatio	New Well	Rotary	No Chemistry
16	0261191	SE	07	055	22	4	Cribbed	6.1													HERDER, H	Contamination Investigatio	Chemistry	Hand Dug	Chemistry Exists
17	1270084	07	10	055	22	4		30.5							24.1	27.4			25/06/1998		DOW CHEMICAL CANADA LTD	Contamination Investigatio	New Well	Rotary	No Chemistry
18	1270086	07	10	055	22	4		13.4							10.1	11.6			29/09/1998		DOW CHEMICAL CANADA LTD	Contamination Investigatio	New Well	Rotary	No Chemistry
19	1270083	07	10	055	22	4		28.0							22.6	25.6			23/06/1998		DOW CHEMICAL CANADA LTD	Contamination Investigatio	New Well	Rotary	No Chemistry
20	1270078	07	10	055	22	4		24.7							19.2	22.3			25/05/1998		DOW CHEMICAL CANADA LTD	Contamination Investigatio	New Well	Drilled	No Chemistry
21	1270080	07	10	055	22	4		24.4							18.9	21.9			27/05/1998		DOW CHEMICAL CANADA LTD	Contamination Investigatio	New Well	Rotary	No Chemistry
22	0264146	SW	12	056	22	4	Unknown														SERINK, MIKE	Domestic	Chemistry	Unknown	No Chemistry
23	0262070	SE	34	054	23	4	Unknown														THIMER, ERIC	Domestic	Chemistry	Unknown	Chemistry Exists
24	0297082	SE	33	054	23	4	Not Applicable	36.6											21/06/2001	21/06/2001	STRAUSS, HOWARD #1	Domestic	Test Hole-Abandoned	Rotary	No Chemistry
25	0261750	NW	28	055	22	4	Unknown														VAN BOOM, H.	Domestic	Chemistry	Unknown	Chemistry Exists
26	0261610	00	26	054	23	4	Unknown	9.8													KIEL, RUDOLF	Domestic	Chemistry	Unknown	Chemistry Exists
27	0261590	NW	25	054	23	4	Unknown														MURPHY, H	Domestic	Chemistry	Drilled	Chemistry Exists
28	0261563	NW	24	054	23	4	Casing	9.1														Domestic	Chemistry	Unknown	Chemistry Exists
29	0260972	NW	13	054	23	4	Screen	32.0							29.3	32.0			29/05/1979		KIEL, RUDY	Domestic	New Well	Rotary	Chemistry Exists
30	0260922	NW	13	054	23	4	Unknown	82.3													GAVINCHUK, GEORGE	Domestic	Chemistry	Drilled	Chemistry Exists
31	0261009	NE	13	054	23	4	Unknown	12.2											01/01/1935		DAWSON, MAJ.	Domestic	Federal Well Survey	Hand Dug	No Chemistry
32	0262356	NW	35	054	23	4	Unknown	19.8											01/08/1976		L. PETERSON DEV LTD	Domestic	Chemistry	Bored	Chemistry Exists
33	1420006	NE	10	055	22	4		18.3							15.2	18.3			10/02/2005		FT SASKATC HOWAN,AGRIUM PLANT	Domestic	New Well	Rotary	No Chemistry
34	0261001	NW	13	054	23	4	Screen	32.0							29.0	32.0			24/04/1980		BERG, AARON	Domestic	New Well	Rotary	No Chemistry
35	0261729	SE	27	055	22	4	Unknown	6.1													BELAIR, R	Domestic	Chemistry	Unknown	Chemistry Exists
36	0264466	01	33	056	21	4	Screen	19.5							17.7	18.9			01/05/1977		KUIPER, A/D	Domestic	New Well	Rotary	Chemistry Exists
37	0264437	SE	32	056	21	4	Casing/Perforated Liner	42.7	36.6	39.6									16/04/1980		YAKIMETES, O J	Domestic	New Well	Rotary	No Chemistry
38	0264424	SE	32	056	21	4	Unknown	27.4													YAKIMETS, O	Domestic	Chemistry	Unknown	Chemistry Exists
39	1690085	NE	36	054	23	4		17.7	12.2	17.4									28/09/1999		NYHUIS, DAVE	Domestic	New Well	Rotary	No Chemistry
40	1795056	NE	08	054	22	4		93.0	67.1	93.0									18/07/2003		SUPINA, NICK	Domestic	New Well	Rotary	No Chemistry
41	1300079	NW	23	054	22	4		42.7	25.0	42.7									24/02/2005		MCEACHERN, MEL	Domestic	New Well	Rotary	No Chemistry
42	1420100	SW	26	055	22	4		30.5											18/01/2005	18/01/2005	NCIA	Domestic	Unknown	Rotary	No Chemistry
43	0262278	SW	35	054	23	4	Unknown	21.3													L. PETERSON DEV LTD	Domestic	Chemistry	Hand Dug	Chemistry Exists
44	0262511	SE	13	055	23	4		13.4													COURCHESNE, RAY	Domestic	Chemistry	Drilled	Chemistry Exists
45	0290926	SE	12	055	23	4	Perforated Casing/Liner	23.8	6.7	9.1	16.2	17.1							20/05/1998		PICHUNYH, JACK	Domestic	New Well	Bored	No Chemistry
46	0261759	SE	01	055	23	4	Open Hole	80.5											20/08/1984		SERNA, VICTOR	Domestic	Dry Hole	Rotary	No Chemistry
47	0261742	SE	01	055	23	4	Unknown														SERNA, VICTOR	Domestic	Chemistry	Unknown	Chemistry Exists
48	0273997	NW	36	054	23	4	Unknown	24.4													BISSON, R	Domestic	Chemistry	Unknown	Chemistry Exists
49	0262305	SW	35	054	23	4	Unknown	31.1													FEDORAK, J	Domestic	Chemistry	Unknown	Chemistry Exists
50	0261646	16	21	055	22	4	Unknown	61.0											18/12/1962		DAMCHUK, J	Domestic	New Well	Rotary	No Chemistry
51	0262397	NE	36	054	23	4	Unknown	12.2													SEVNE, GEORGE	Domestic	Chemistry	Unknown	No Chemistry
52	0261670	04	24	055	22	4	Unknown	4.3													SELTHGATE, G A	Domestic	Federal Well Survey	Hand Dug	No Chemistry
53	0261764	SW	01	055	23	4		24.4													PARADIS, F.	Domestic	Chemistry	Drilled	Chemistry Exists
54	0261757	SE	01	055	23	4	Open Hole	48.8											21/08/1984		SERNA, VICTOR	Domestic	Dry Hole	Rotary	No Chemistry
55	0261752	SE	01	055	23	4	Perforated Casing/Liner	94.5	61.0	94.5									01/09/1984		SERNA, VICTOR	Domestic	New Well	Rotary	Chemistry Exists
56	0261748	SE	01	055	23	4		15.2													SERNA, VICTOR	Domestic	Chemistry	Unknown	Chemistry Exists
57	0261745	SE	01	055	23	4		15.2													SERNA, VICTOR	Domestic	Chemistry	Unknown	Chemistry Exists
58	0261744	SE	01	055	23	4															SERNA, VICTOR	Domestic	Chemistry	Unknown	Chemistry Exists
59	0271736	SW	36	054	23	4	Unknown	39.3													SMITH, B.B.	Domestic	Chemistry	Drilled	Chemistry Exists
60	0267205	SW	01	055	23	4	Perforated Casing/Liner	64.0	57.9	64.0									06/09/1976		ROLF, RON	Domestic	New Well	Rotary	No Chemistry
61	0262385	NW	36	054	23	4	Unknown	20.1													NYHUIS, ALBERT	Domestic	Chemistry	Unknown	Chemistry Exists
62	0261769	SE	02	055	23	4		24.4													PARADIS, NORMAN	Domestic	Chemistry	Unknown	Chemistry Exists
63	0262393	NE	36	054	23	4	Perforated Casing/Liner	13.1											15/08/1986		GAUMONT, EMIL	Domestic	New Well	Bored	No Chemistry
64	0274006	EH	36	054	23	4	Unknown														GAUMONT, E	Domestic	Chemistry	Unknown	Chemistry Exists
65	0262332	SW	35	054	23	4	Casing/Perforated Liner	54.9	42.7	54.9									07/06/1978		HORNES, ALBERT	Domestic	New Well	Rotary	No Chemistry
66	0262324	SW	35	054	23	4	Casing	25.0											09/09/1980		BURAK, FRED	Domestic	New Well	Bored	Chemistry Exists
67	0262314	SW	35	054	23	4	Unknown	30.5													PALTZAT, MARVIN	Domestic	Chemistry	Bored	Chemistry Exists
68	0262296	SW	35	054	23	4	Unknown	25.9													HOFFSTETER, BEN	Domestic	Chemistry	Bored	Chemistry Exists
69	0262292	SW	35	054	23	4	Unknown	42.7													HOFFSTETER, B.	Domestic	Chemistry	Unknown	Chemistry Exists
70	0262285	SW	35	054	23	4	Unknown	36.6													HANES, ALBERT	Domestic	Chemistry	Unknown	Chemistry Exists
71	0262271	SW	35	054	23	4	Unknown	16.8													L. PETERSON DEV LTD	Domestic	Chemistry	Hand Dug	Chemistry Exists

Waterwell Records Within the Study Area

	WELL ID	LOCATION					WELL_FINISH	WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED_USE	TYPE_WORK	DRILL_METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN			FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
72	0262369	SE	36	054	23	4	Perforated Casing/Liner	80.5	73.2	79.2									03/11/1977		MAYRHUT, JAMES	Domestic	New Well	Rotary	No Chemistry
73	0260230	NW	28	054	22	4	Perforated Casing/Liner	73.2	67.1	71.9									12/08/1976		ROBERT, VICTOR	Domestic	New Well	Rotary	Chemistry Exists
74	0264491	NE	33	056	21	4	Unknown														LUBEMSKI, K.	Domestic	Chemistry	Unknown	No Chemistry
75	0261654	NE	22	055	22	4	Casing/Perforated Liner	97.5	85.3	97.5									26/11/1981		CNR	Domestic	New Well	Rotary	No Chemistry
76	0160456	NE	34	056	21	4	Not Applicable	12.2													GORGICHUK, DIANA	Domestic	Chemistry	Not Applicable	No Chemistry
77	0289381	SE	09	055	22	4	Casing/Perforated Liner	73.2	61.0	73.2									19/05/1998		NANAKSAR, GURDWARA	Domestic	New Well	Rotary	No Chemistry
78	0261203	SE	07	055	22	4	Not Applicable	82.3											26/08/1974	26/08/1974	JUKASZ, A.	Domestic	Dry Hole-Abandoned	Rotary	No Chemistry
79	0261213	NW	07	055	22	4	Casing	18.3											23/05/1969		CHRISTIANSEN, J.M.	Domestic	New Well	Bored	Chemistry Exists
80	0261151	03	06	055	22	4	Casing	8.2											01/01/1906		LAMOUREUX, A.L.	Domestic	Federal Well Survey	Hand Dug	No Chemistry
81	0264293	SE	05	055	22	4	Unknown														GAUMONT, GILBERTE	Domestic	Chemistry	Unknown	Chemistry Exists
82	0262141	SW	01	055	23	4	Unknown	19.8											10/07/1920		PARDIS, W.	Domestic	Federal Well Survey	Backhoe	No Chemistry
83	0260234	NW	28	054	22	4	Casing/Open Hole	60.0											06/05/1970		PIERCE, E.	Domestic	New Well	Rotary	Chemistry Exists
84	0261726	NW	26	055	22	4	Unknown	54.9											01/01/1963		JIGOLYK, L.	Domestic	Chemistry	Unknown	Chemistry Exists
85	0264921	NE	08	054	22	4	Unknown	10.4													KENNEDY, C.A.	Domestic	Chemistry	Unknown	Chemistry Exists
86	0264908	NE	08	054	22	4	Unknown	54.9													KALISTA, JOE	Domestic	Chemistry	Drilled	Chemistry Exists
87	0260058	NE	08	054	22	4	Casing/Open Hole	11.9											28/05/1986		HESKE, GERRY	Domestic	New Well	Bored	Chemistry Exists
88	0260054	NE	08	054	22	4	Casing	10.1											30/04/1984		KENSON HLDG	Domestic	New Well	Bored	No Chemistry
89	0260046	NE	08	054	22	4	Casing	9.1											28/08/1978		TOMPLINS, D.	Domestic	New Well	Bored	Chemistry Exists
90	0297083	SE	33	054	23	4	Perforated Casing/Liner	36.6	25.9	32.0									22/06/2001		STRAUSS, HOWARD	Domestic	New Well	Rotary	No Chemistry
91	0262468	SW	12	055	23	4	Casing/Open Hole	21.3											01/05/1968		STRAUSS, L.	Domestic	New Well	Rotary	Chemistry Exists
92	0285792	SE	12	055	23	4	Perforated Casing/Liner	21.9	9.8	11.9	18.6	19.5							24/10/1996		PICKUNYK, NICK	Domestic	New Well	Bored	No Chemistry
93	0261771	SE	02	055	23	4	Unknown	22.9													PARADIS, NORMAN	Domestic	Chemistry	Drilled	Chemistry Exists
94	0260366	NW	28	054	22	4	Perforated Casing/Liner	76.8											26/10/1977		SHEPPARD, JOHN	Domestic	New Well	Rotary	No Chemistry
95	0263714	NW	12	056	21	4	Unknown	33.5													GABERT, M.	Domestic	Chemistry	Unknown	Chemistry Exists
96	0263963	NW	16	056	21	4	Unknown	6.7													BLENN	Domestic	Chemistry	Unknown	Chemistry Exists
97	0263910	NE	14	056	21	4	Unknown														SMIBERT, R	Domestic	Chemistry	Unknown	No Chemistry
98	0263887	NE	14	056	21	4	Casing/Open Hole	48.8											17/05/1985		PERCY, G.	Domestic	New Well	Rotary	No Chemistry
99	0263877	NE	14	056	21	4	Casing	13.4											01/08/1972		HODGSON, G	Domestic	New Well	Bored	No Chemistry
100	0263870	NE	14	056	21	4	Unknown	10.7													HODGSON, G A	Domestic	Chemistry	Unknown	Chemistry Exists
101	0263736	SE	13	056	21	4	Unknown	7.9													YOUNG, C.S.	Domestic	Chemistry	Unknown	Chemistry Exists
102	0263707	SW	12	056	21	4	Unknown	61.0													GABERT, M.	Domestic	Chemistry	Unknown	Chemistry Exists
103	0263697	SE	12	056	21	4	Unknown														MIZERA, T.	Domestic	Chemistry	Unknown	Chemistry Exists
104	0263583	15	08	056	21	4	Unknown	11.6													BRODIE, H.L.	Domestic	Chemistry	Unknown	Chemistry Exists
105	0263676	SE	12	056	21	4	Unknown	7.9													ESCH, G	Domestic	Chemistry	Hand Dug	Chemistry Exists
106	0263933	SW	16	056	21	4	Unknown														BOLTON SCHOOL	Domestic	Chemistry	Unknown	Chemistry Exists
107	0263651	NE	11	056	21	4	Perforated Casing/Liner	18.0											20/06/1986		BREIT, E	Domestic	New Well	Backhoe	Chemistry Exists
108	0263645	NE	11	056	21	4	Unknown	36.6													O'BRIEN, N	Domestic	Chemistry	Unknown	Chemistry Exists
109	0263640	NE	11	056	21	4	Screen	43.3							41.1	42.4			17/08/1984		ANDRUCHOW, E	Domestic	New Well	Rotary	Chemistry Exists
110	0263595	NE	11	056	21	4	Screen	64.6													NAURATIL, J	Domestic	Chemistry	Drilled	Chemistry Exists
111	0263633	09	11	056	21	4	Unknown	10.7													NAVRATIL, J	Domestic	Chemistry	Bored	Chemistry Exists
112	0263592	SW	09	056	21	4	Unknown														LECHENKO #3 DRINKING WELL	Domestic	Chemistry	Unknown	Chemistry Exists
113	0152373	WH	08	056	21	4	Open Hole	25.0											26/06/1990		MASCHMEYER, RAY	Domestic	New Well	Rotary	No Chemistry
114	0263579	SW	08	056	21	4	Screen	25.0							22.9	24.4			11/11/1966		MASCHMEYER, R	Domestic	New Well	Rotary	No Chemistry
115	0195146	NW	33	056	21	4	Open Hole	15.2											01/08/1973		PICH, PETER	Domestic	New Well	Bored	No Chemistry
116	0263683	SE	12	056	21	4	Casing/Perforated Liner	91.4	79.2	91.4									05/11/1981		ESCH, G	Domestic	New Well	Rotary	No Chemistry
117	0264148	SE	20	056	21	4	Screen	54.9											01/08/1977		SAWYER, D	Domestic	Chemistry	Drilled	Chemistry Exists
118	0264297	NE	28	056	21	4	Unknown	18.3													SHIPLEY, J.	Domestic	Chemistry	Auger	Chemistry Exists
119	0161790	NW	27	056	21	4	Not Applicable	3.7													JOHNSTON, DAVID	Domestic	Chemistry	Not Applicable	No Chemistry
120	0157041	NE	27	056	21	4	Not Applicable	54.9													EASTWOOD, J.W.	Domestic	Chemistry	Not Applicable	No Chemistry
121	0264277	09	27	056	21	4	Slotted & Open Hole	61.0	50.3	56.4									24/07/1979		RYKMANS, H.	Domestic	New Well	Rotary	No Chemistry
122	0264268	SW	26	056	21	4	Perforated Casing/Liner	17.4	4.6	12.2									31/03/1988		SAWATZKI, W	Domestic	New Well	Bored	No Chemistry
123	0264263	SW	26	056	21	4	Unknown	4.3													SAWATZKY, H	Domestic	Chemistry	Unknown	Chemistry Exists
124	0264258	SE	26	056	21	4	Casing	39.0											12/05/1987		VAN INVEN, F.	Domestic	Unknown	Unknown	No Chemistry
125	0264255	07	25	056	21	4	Casing	14.6											20/08/1984		ESSO RES	Domestic	New Well	Bored	Chemistry Exists
126	0290979	SE	21	056	21	4	Perforated Casing/Liner	18.3	3.7	4.3	13.1	14.3	16.2	16.8					14/07/1998		MARQUARDT, BRENT	Domestic	New Well	Bored	No Chemistry
127	0208911	SE	16	056	21	4	Perforated Casing/Liner	11.9	4.6	11.3									25/09/1992		HENKELMAN, PERCY	Domestic	New Well	Bored	No Chemistry
128	0264190	SE	21	056	21	4	Not Applicable	16.5											12/05/1978		DEBAAN, J	Domestic	New Well-Abandoned	Rotary	No Chemistry
129	0263924	SW	16	056	21	4	Not Applicable														KROPP, L.	Domestic	Spring	Not Applicable	Chemistry Exists
130	0264167	NE	20	056	21	4	Unknown	24.4													FEDORAK, M	Domestic	Chemistry	Unknown	Chemistry Exists
131	0264176	16	20	056	21	4	Unknown												01/01/1921		MYRON, S.	Domestic	Federal Well Survey	Drilled	No Chemistry
132	0263992	SW	19	056	21	4	Casing	18.9											20/06/1984		S V HALF DIAMOND RANCHES	Domestic	New Well	Bored	No Chemistry
133	0263991	SW	19	056	21	4	Unknown	22.9													SMULSKI, J.	Domestic	Chemistry	Unknown	Chemistry Exists
134	0263974	SE	19	056	21	4	Unknown	9.1													CAMPBELL, R	Domestic	Chemistry	Hand Dug	Chemistry Exists
135	0263993	NE	19	056	21	4	Unknown	12.2													ROBINSON, J	Domestic	Chemistry	Unknown	Chemistry Exists
136	0161789	NE	19	056	21	4	Not Applicable	7.6													MELTON, JAMES	Domestic	Chemistry	Not Applicable	No Chemistry
137	0263969	NW	18	056	21	4	Unknown	22.9													VISSCHER, H	Domestic	Chemistry	Unknown	Chemistry Exists
138	0263474	SW	05	056	21	4	Unknown	16.8													REED, D	Domestic	Chemistry	Drilled	Chemistry Exists
139	0264203	SE	21	056	21	4	Screen	57.9							12.8	14.3			12/09/1978		DEBAAN, J	Domestic	New Well	Rotary	No Chemistry
140	0169519	SW	02	057	21	4	Unknown	3.0													SUDAYKO, MIKE	Domestic	Chemistry	Unknown	No Chemistry
141	1755005	SW	02	057	21	4		18.3	4.0	5.8									22/10/2002		SUDAYKO, MIKE	Domestic	New Well	Bored	No Chemistry
142	0265801	SW	02	057	21	4	Unknown	27.4													MCCULLOUGH, DAVID	Domestic	Chemistry	Hand Dug	Chemistry Exists

Waterwell Records Within the Study Area

	WELL ID	LOCATION					WELL_FINISH	WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED_USE	TYPE_WORK	DRILL_METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN			FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
143	0264680	SE	36	056	21	4	Cribbed	5.2													RUDKO, W.	Domestic	Chemistry	Unknown	Chemistry Exists
144	0040835	NW	03	057	21	4	Perforated Casing/Liner	18.3	12.2	18.3									22/08/2001		LANE, COLLEEN	Domestic	New Well	Rotary	No Chemistry
145	0265811	SE	04	057	21	4	Screen & Open Hole	30.5							25.0	27.4			03/08/1979		SCHWING, ROMAN	Domestic	New Well	Rotary	Chemistry Exists
146	0162337	09	04	057	21	4	Screen	22.9							16.2	22.3			16/11/1991		LANE, C./EST OF M. PICH#WELL 2	Domestic	New Well	Cable Tool	No Chemistry
147	0265805	SW	03	057	21	4	Unknown	10.4											01/01/1940		LIBBEY, KATHERINE	Domestic	Chemistry	Drilled	Chemistry Exists
148	0265804	SW	02	057	21	4	Unknown	3.0													MCCULLOUGH, DAVE	Domestic	Chemistry	Unknown	Chemistry Exists
149	0263560	SW	08	056	21	4	Casing	48.8											01/04/1973		KOFLUK, D	Domestic	New Well	Rotary	Chemistry Exists
150	0169601	SW	02	057	21	4	Unknown	48.8													SUDAYKO, MIKE	Domestic	Chemistry	Unknown	No Chemistry
151	0091496	SW	06	056	20	4	Unknown	3.0													THORNE, KEITH	Domestic	Chemistry	Unknown	No Chemistry
152	0264699	SW	36	056	21	4	Unknown	7.3													DRABBLE, R.	Domestic	Chemistry	Unknown	Chemistry Exists
153	0264712	NW	36	056	21	4	Cribbed	6.4													MAKOWECKI, A	Domestic	Chemistry	Hand Dug	Chemistry Exists
154	0264707	NW	36	056	21	4	Unknown	9.1													MAKOWECKI, A	Domestic	Chemistry	Drilled	Chemistry Exists
155	0264659	SE	35	056	21	4	Unknown	4.9													SCHILLER, J	Domestic	Chemistry	Auger	Chemistry Exists
156	0264666	NW	35	056	21	4	Unknown	4.3													HESS, R	Domestic	Chemistry	Jet	Chemistry Exists
157	0264630	NW	34	056	21	4	Unknown	24.4													MAHONEY, R.	Domestic	Chemistry	Unknown	Chemistry Exists
158	0261813	SE	33	055	22	4	Unknown	42.7													ALLISON, G	Domestic	Chemistry	Unknown	Chemistry Exists
159	0262057	SE	34	054	23	4	Unknown	29.6													BLOWER, JERRY	Domestic	Chemistry	Bored	Chemistry Exists
160	0264507	04	34	056	21	4	Casing/Perforated Liner	15.2	3.7	4.6									12/06/1985		WOLANSKY, W	Domestic	New Well	Backhoe	Chemistry Exists
161	0265802	SW	02	057	21	4	Casing	74.7											05/10/1981		ROMANIUK, ELI	Domestic	New Well	Rotary	No Chemistry
162	0091566	11	18	056	20	4	Cribbed	14.9											17/06/1979		SERINK, W.	Domestic	New Well	Bored	No Chemistry
163	0263492	NW	05	056	21	4	Casing/Perforated Liner	42.7											12/01/1961	28/02/1974	CHOLOWSKI, R.	Domestic	Old Well-Abandoned	Drilled	No Chemistry
164	0263543	NE	05	056	21	4	Unknown	4.9													CHOLOWSKI, R.	Domestic	Chemistry	Unknown	Chemistry Exists
165	0263525	NE	05	056	21	4	Casing	6.1													CHOLOWSKI, R.	Domestic	Chemistry	Bored	Chemistry Exists
166	0263484	04	05	056	21	4	Casing	8.5											28/01/1970		YARSHUK, P	Domestic	New Well	Bored	No Chemistry
167	0091573	12	19	056	20	4	Cribbed	10.4											01/07/1974		MATTHEWS, BILL	Domestic	New Well	Bored	Chemistry Exists
168	0091572	04	19	056	20	4	Casing/Open Hole	44.2											23/09/1978		SERINK, BILL	Domestic	New Well	Rotary	No Chemistry
169	0224564	SE	18	056	20	4	Screen	42.7							35.4	41.5			09/10/1993		MCLELLAN, ART	Domestic	New Well	Rotary	No Chemistry
170	0091562	SE	18	056	20	4	Casing/Perforated Liner	67.1	61.0	67.1									31/12/1981		MCLELLAN, ARTHUR	Domestic	New Well	Rotary	Chemistry Exists
171	0091561	SE	18	056	20	4	Casing/Perforated Liner	33.5											17/12/1981		MCLELLAN, ARTHUR L.	Domestic	New Well	Cable Tool	No Chemistry
172	0091494	04	06	056	20	4	Unknown	6.1													SAMPERT, T.	Domestic	Federal Well Survey	Hand Dug	No Chemistry
173	0091565	NW	18	056	20	4	Cribbed	12.2													SERINK, W.	Domestic	Chemistry	Bored	Chemistry Exists
174	0091498	NE	06	056	20	4	Unknown	91.4													SCHRAM, GEORGE	Domestic	Chemistry	Unknown	Chemistry Exists
175	0091564	04	18	056	20	4	Unknown														STELTER, A.	Domestic	Federal Well Survey	Hand Dug	No Chemistry
176	0091550	SW	16	056	20	4	Cribbed	6.1													ROSNAU, N.	Domestic	Chemistry	Unknown	Chemistry Exists
177	0091504	SW	08	056	20	4	Unknown	23.8													SCHRAM, ED	Domestic	Chemistry	Unknown	Chemistry Exists
178	0196672	SE	08	056	20	4	Unknown	6.1													ALEXANDER, BOB	Domestic	Chemistry	Unknown	No Chemistry
179	0091507	NE	08	056	20	4	Unknown	5.5													FREY, B.	Domestic	Chemistry	Unknown	No Chemistry
180	0091506	16	08	056	20	4	Casing/Open Hole	75.0											15/11/1961		FREY, BERT W.	Domestic	New Well	Rotary	Chemistry Exists
181	0091508	09	08	056	20	4	Unknown	12.2											01/01/1920		FREY, J.	Domestic	Federal Well Survey	Bored	No Chemistry
182	0091502	09	07	056	20	4	Unknown	9.1													DRIESNER, D.	Domestic	Federal Well Survey	Bored	No Chemistry
183	0262265	SW	35	054	23	4	Unknown	28.3													KJENNER, GEORGE	Domestic	Chemistry	Drilled	Chemistry Exists
184	0091558	SE	18	056	20	4	Cribbed	5.8													MCLELLAN, ARTHUR	Domestic	Chemistry	Unknown	Chemistry Exists
185	0260225	SW	27	054	22	4	Slotted & Open Hole	50.3	33.5	47.2									20/12/1969		SHAREK, TONY	Domestic	New Well	Rotary	No Chemistry
186	0260383	SE	30	054	22	4	Unknown	76.2													KREBS, D.	Domestic	Chemistry	Unknown	Chemistry Exists
187	0260375	NW	29	054	22	4	Unknown	13.7													VLA	Domestic	Chemistry	Hand Dug	Chemistry Exists
188	0290974	SE	28	054	22	4	Casing/Perforated Liner	39.6	33.5	39.6									07/10/1998		ROBERTSON, DALE	Domestic	New Well	Rotary	No Chemistry
189	0260237	NW	28	054	22	4	Casing/Perforated Liner	30.5											19/01/1961		WETZTREN, M.	Domestic	New Well	Cable Tool	Chemistry Exists
190	0260236	NW	28	054	22	4	Casing/Perforated Liner	30.5											07/10/1960		PETROSKI CONTRACTING	Domestic	New Well	Drilled	No Chemistry
191	0260235	NW	28	054	22	4	Screen	30.5											17/09/1959		BOHNET, HANS	Domestic	New Well	Rotary	Chemistry Exists
192	0260233	NW	28	054	22	4	Casing/Perforated Liner	30.5											25/09/1960		STARK, R.	Domestic	New Well	Drilled	No Chemistry
193	0260232	NW	28	054	22	4	Casing/Perforated Liner	27.4											20/08/1960		SNEDSTEAD	Domestic	New Well	Drilled	No Chemistry
194	0262074	SE	34	054	23	4	Unknown	61.0													MARSH, JEROME L	Domestic	Chemistry	Rotary	Chemistry Exists
195	0260369	12	28	054	22	4	Screen & Open Hole	32.3							28.3	29.3			02/07/1959		HAMILTON, CALVIN	Domestic	New Well	Rotary	Chemistry Exists
196	0280645	NW	31	054	22	4	Gravel Pack	10.7											18/09/1980		LAMOUREUX HALL	Domestic	New Well	Bored	No Chemistry
197	0260227	NE	27	054	22	4	Perforated Casing/Liner	61.9	24.4	61.0									11/04/1967		SIMMONS, HECTOR	Domestic	New Well	Rotary	Chemistry Exists
198	0260203	NW	23	054	22	4	Slotted & Open Hole	46.9	22.6	46.0									17/04/1984		MCEACHERN, MEL	Domestic	New Well	Rotary	Chemistry Exists
199	0260194	NW	21	054	22	4	Casing/Perforated Liner	70.1	61.0	68.6									03/04/1985		GRAYMAN, LYLE	Domestic	New Well	Cable Tool	No Chemistry
200	0168181	09	18	054	22	4	Perforated Casing/Liner	9.8	4.9	9.8									21/07/1992		DAKIN, DEXTER	Domestic	New Well	Bored	No Chemistry
201	0260171	SE	16	054	22	4	Casing/Perforated Liner	61.0	54.9	61.0									03/11/1988		BONOWICZ, JOE	Domestic	New Well	Cable Tool	Chemistry Exists
202	0160801	SE	16	054	22	4	Not Applicable	5.5													BONOWICZ, KEN	Domestic	Chemistry	Not Applicable	No Chemistry
203	0260035	NW	08	054	22	4	Casing/Perforated Liner	61.0	48.8	57.9									22/09/1983		CHIMERA, WALTER	Domestic	New Well	Cable Tool	Chemistry Exists
204	0287800	NE	08	054	22	4	Casing/Perforated Liner	82.3	70.1	82.3									11/09/1996		RICE, LYALL	Domestic	New Well	Rotary	No Chemistry
205	0260229	NW	28	054	22	4	Casing/Perforated Liner	47.5											29/02/1960		DAVIS, DON	Domestic	New Well	Rotary	No Chemistry
206	0274184	16	31	054	22	4	Perforated Casing/Liner	14.6											08/05/1989		BANDURA, E	Domestic	New Well	Bored	No Chemistry
207	0261187	09	06	055	22	4	Casing	18.3											01/01/1927		ADAMS, B.S.	Domestic	Federal Well Survey	Drilled	No Chemistry
208	0261154	04	06	055	22	4	Casing	51.8													ZIMA, M	Domestic	Chemistry	Unknown	Chemistry Exists
209	0274248	SE	05	055	22	4	Gravel Pack	12.2											20/06/1985		LAMOUREUX, C	Domestic	New Well	Bored	Chemistry Exists
210	0274171	SE	05	055	22	4	Perforated Casing/Liner	14.9	8.2	12.8									19/08/1991		GILLARD, R	Domestic	New Well	Bored	No Chemistry
211	0271650	SE	05	055	22	4	Screen	59.4							57.0	58.5			13/07/1978		GODBOUT, ROMEO	Domestic	New Well	Rotary	No Chemistry
212	0264290	SE	05	055	22	4	Unknown	4.3													GODBOUT, VIVIAN	Domestic	Chemistry	Unknown	No Chemistry
213	0261139	SE	05	055	22	4	Casing	11.3											11/05/1959		LAMOUREUX, R	Domestic	New Well	Bored	Chemistry Exists

Waterwell Records Within the Study Area

	WELL ID	LOCATION					WELL_FINISH	WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED_USE	TYPE_WORK	DRILL_METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN			FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
214	0261133	SE	05	055	22	4	Casing/Open Hole	11.3											14/09/1982		LAMOUREUX, J	Domestic	New Well	Bored	Chemistry Exists
215	0260386	SE	30	054	22	4	Casing	76.2											30/05/1968		KREBS, DON	Domestic	New Well	Rotary	No Chemistry
216	0274249	SE	05	055	22	4	Perforated Casing/Liner	14.6	9.1	12.8									24/03/1988		LAMOUREAX, R.	Domestic	New Well	Bored	No Chemistry
217	0286991	SE	31	054	22	4	Casing/Perforated Liner	16.2	9.8	14.9									27/07/1996		GAUMONT, LARRAINE	Domestic	New Well	Bored	No Chemistry
218	0280651	00	04	055	22	4	Unknown	15.2													FLEMING, E.B.	Domestic	Chemistry	Unknown	Chemistry Exists
219	0261129	00	04	055	22	4	Unknown														LAMOUREUX CHILDRENS HOME	Domestic	Chemistry	Hand Dug	Chemistry Exists
220	0261107	16	31	054	22	4	Unknown	2.7													CAMERON, D.	Domestic	Chemistry	Unknown	Chemistry Exists
221	0156872	SW	01	055	22	4	Not Applicable														THEROUX, CHRIS	Domestic	Chemistry	Not Applicable	No Chemistry
222	0260447	NW	35	054	22	4	Unknown	48.2											01/01/1912		SIMMONS, F.	Domestic	New Well	Drilled	No Chemistry
223	0260425	SW	34	054	22	4	Unknown	45.7													FLEMING, ERNEST	Domestic	Chemistry	Drilled	Chemistry Exists
224	0260441	NE	34	054	22	4	Unknown	57.9													BARTELL, RICHARD	Domestic	Chemistry	Unknown	Chemistry Exists
225	0260397	SE	32	054	22	4	Unknown	24.4													CHOLOWSKI, GERALD	Domestic	Chemistry	Unknown	Chemistry Exists
226	0264915	NE	08	054	22	4	Casing	13.1											08/06/1979		LEVERSEDGE, DAN	Domestic	New Well	Bored	Chemistry Exists
227	0159287	SE	05	055	22	4	Perforated Casing/Liner	14.6	8.2	14.6									10/07/1991		GODBOUT, ROMEO	Domestic	New Well	Bored	No Chemistry
228	0158577	NE	03	056	22	4	Perforated Casing/Liner	64.0	30.5	64.0									06/04/1968		KUGLER, ERIKA	Domestic	New Well	Rotary	No Chemistry
229	0286990	NE	08	054	22	4	Casing/Perforated Liner	85.3	43.9	85.3									07/01/1997		MARSHALL, RANDY	Domestic	New Well	Rotary	No Chemistry
230	0240722	09	08	054	22	4	Perforated Casing/Liner	14.9	4.6	10.7									22/10/1993		MRASEK, DAVID	Domestic	New Well	Bored	No Chemistry
231	0156817	NW	07	054	22	4	Unknown	67.1													ALLEN, GERALD	Domestic	Chemistry	Unknown	No Chemistry
232	0260033	NE	07	054	22	4	Slotted & Open Hole	59.7											01/01/1958		GALLOWAY, K.	Domestic	New Well	Cable Tool	Chemistry Exists
233	0264187	SW	13	056	22	4	Casing	65.5													BLOM, KLAAS	Domestic	Chemistry	Unknown	Chemistry Exists
234	0264184	SW	13	056	22	4	Unknown	76.2													BLOM, BERNARD	Domestic	Chemistry	Drilled	Chemistry Exists
235	0264150	SW	12	056	22	4	Unknown														SERINK, MIKE	Domestic	Chemistry	Unknown	No Chemistry
236	0264151	NW	12	056	22	4	Unknown	22.9											01/05/1968		MINCHOU, CLARENCE	Domestic	New Well	Unknown	Chemistry Exists
237	0240723	09	08	054	22	4	Perforated Casing/Liner	14.9	5.5	11.6									01/10/1993		BALANKO, RON	Domestic	New Well	Bored	No Chemistry
238	0263867	SW	03	056	22	4	Unknown	54.9													MELENKA, ALEX	Domestic	Chemistry	Unknown	Chemistry Exists
239	0241116	10	08	054	22	4	Perforated Casing/Liner	14.9	4.9	12.2									13/05/1994		BOWES, MURRAY	Domestic	New Well	Bored	No Chemistry
240	0263852	SW	02	056	22	4	Unknown	61.0													NOEL, MAURICE	Domestic	Chemistry	Unknown	Chemistry Exists
241	0263854	NW	02	056	22	4	Unknown	36.6													SANK, LLOYD	Domestic	Chemistry	Unknown	Chemistry Exists
242	0261845	NW	35	055	22	4	Casing/Open Hole	51.8							24.4	42.7			12/05/1983		SYVENKY, P.	Domestic	New Well	Rotary	No Chemistry
243	0261830	NW	35	055	22	4	Unknown	49.7													DOSHEWNEK, G	Domestic	Chemistry	Drilled	Chemistry Exists
244	0261823	SH	34	055	22	4	Unknown	9.8													CARROLL, T	Domestic	Chemistry	Unknown	Chemistry Exists
245	0261820	SE	34	055	22	4	Unknown	9.4													JIGOLYK, H.	Domestic	Chemistry	Unknown	Chemistry Exists
246	0261828	NE	34	055	22	4	Casing/Perforated Liner	39.6	27.4	39.6											HOLMES, R	Domestic	New Well	Cable Tool	No Chemistry
247	0261827	NE	34	055	22	4	Unknown	45.7													HOLMES, S	Domestic	Chemistry	Drilled	Chemistry Exists
248	0292191	SE	33	055	22	4	Casing/Perforated Liner	47.2	39.6	45.7									26/04/1999		WESTRA, MARTIN/WESTRALIA FARM	Domestic	New Well	Rotary	No Chemistry
249	0264112	SW	11	056	22	4	Slotted & Open Hole	106.7	14.0	64.0									06/03/1980		BRIGGS, EARL	Domestic	Deepened	Cable Tool	No Chemistry
250	0240644	NE	08	054	22	4	Casing/Perforated Liner	64.0	57.9	64.0									16/03/1994		GETSON, DON	Domestic	New Well	Cable Tool	No Chemistry
251	0261149	SE	06	055	22	4	Casing/Perforated Liner	73.2	43.3	49.4									15/07/1980		BOYCHUK, N	Domestic	New Well	Rotary	No Chemistry
252	0264913	NE	08	054	22	4	Unknown	11.6													SPALLIN, K./L.	Domestic	Chemistry	Drilled	Chemistry Exists
253	0264911	NE	08	054	22	4	Unknown	9.1													ATTEW, ELAINE	Domestic	Chemistry	Bored	Chemistry Exists
254	0264902	NE	08	054	22	4	Casing/Open Hole	79.9											24/06/1970		KENNEDY, CLIFF	Domestic	New Well	Rotary	Chemistry Exists
255	0260052	NE	08	054	22	4	Casing	9.1											27/10/1980		KROENTING, GREG	Domestic	New Well	Bored	Chemistry Exists
256	0260048	NE	08	054	22	4	Perforated Casing/Liner	8.8											06/09/1979		THOME, MIKE	Domestic	New Well	Bored	No Chemistry
257	0260045	NE	08	054	22	4	Casing/Perforated Liner	73.2	45.7	73.2									16/06/1972		KALISTA, M.J.	Domestic	New Well	Cable Tool	Chemistry Exists
258	0260039	NE	08	054	22	4	Casing	8.5											01/04/1971		SWANSON, K.	Domestic	New Well	Bored	No Chemistry
259	0225474	09	08	054	22	4	Perforated Casing/Liner	14.9	6.1	12.2									27/08/1993		CLARK, DARCY	Domestic	New Well	Bored	No Chemistry
260	0260037	NE	08	054	22	4	Casing/Perforated Liner	73.5											01/10/1973		GYDISH, ROBERT	Domestic	New Well	Cable Tool	Chemistry Exists
261	0264923	NE	08	054	22	4	Casing	14.9											11/06/1979		KENNEDY, KEN	Domestic	New Well	Bored	Chemistry Exists
262	0169305	NE	08	054	22	4	Unknown	9.4													DAKIN, DOREEN	Domestic	Chemistry	Unknown	No Chemistry
263	0168267	NE	08	054	22	4	Perforated Casing/Liner	11.3	6.1	11.3									16/07/1992		DORLICH, HELGA	Domestic	New Well	Bored	No Chemistry
264	0167085	NE	08	054	22	4	Unknown	11.6													AMBLER, TERRY D.	Domestic	Chemistry	Unknown	No Chemistry
265	0166298	NE	08	054	22	4	Casing/Perforated Liner	73.2	42.7	72.2									01/06/1992		TAPLEY, CAM	Domestic	New Well	Rotary	No Chemistry
266	0161740	NE	08	054	22	4	Not Applicable	30.5													OSTERLAND, JOYCE	Domestic	Chemistry	Not Applicable	No Chemistry
267	0158533	NE	08	054	22	4	Perforated Casing/Liner	23.2											01/07/1972		OGDEN, WAYNE	Domestic	New Well	Bored	No Chemistry
268	0158532	NE	08	054	22	4	Perforated Casing/Liner	14.0											07/07/1979		MAKUCH, PETER J.	Domestic	New Well	Bored	No Chemistry
269	0168098	16	08	054	22	4	Perforated Casing/Liner	14.6	4.3	9.8									25/06/1992		COOL, NORMAND	Domestic	New Well	Bored	No Chemistry
270	0225468	10	08	054	22	4	Perforated Casing/Liner	14.9	7.3	8.5	10.1	14.6							26/08/1993		HESKE, GERRY	Domestic	New Well	Bored	No Chemistry
271	0260038	NE	08	054	22	4	Casing/Perforated Liner	73.2	47.5	73.2									08/03/1974		RAFUSE, A.J.	Domestic	New Well	Cable Tool	No Chemistry
272	0260906	NW	13	054	23	4	Screen	31.7							28.3	31.7			01/10/1977		OBRADOVICH, VUKSAN	Domestic	New Well	Rotary	Chemistry Exists
273	0261672	NW	24	055	22	4	Unknown	30.5													MAGEE,, K	Domestic	Chemistry	Drilled	Chemistry Exists
274	0261564	NE	24	054	23	4	Casing/Perforated Liner	53.3											16/07/1980		MOLINEUX, RALPH/TABLER, PAUL	Domestic	New Well	Cable Tool	No Chemistry
275	0260903	WH	13	054	23	4	Unknown	3.7													MITHELL, DOUG	Domestic	Chemistry	Unknown	Chemistry Exists
276	0263502	NW	13	054	23	4	Screen	34.1							32.3	33.8			05/05/1981		NISBET, BOB	Domestic	New Well	Rotary	No Chemistry
277	0263489	NW	13	054	23	4	Screen	33.5							30.8	32.3			05/02/1987		DOREJKO, GERRY	Domestic	New Well	Rotary	No Chemistry
278	0260996	NW	13	054	23	4	Unknown	36.6													BERG, AARON	Domestic	Chemistry	Unknown	Chemistry Exists
279	0260987	NW	13	054	23	4	Screen & Open Hole	42.7							29.9	31.4			04/11/1980		MITCHELL, DOUGLAS B.	Domestic	New Well	Rotary	No Chemistry
280	0260980	NW	13	054	23	4	Casing/Open Hole	31.7											04/07/1979		SIGURDSON, HOWARD	Domestic	New Well	Rotary	Chemistry Exists
281	0261587	NW	25	054	23	4	Unknown	28.3													ORAM, JAMES M	Domestic	Chemistry	Unknown	Chemistry Exists
282	0260914	NW	13	054	23	4	Unknown	82.3													ELLEFSON, NORM	Domestic	Chemistry	Cable Tool	Chemistry Exists
283	0261588	NW	25	054	23	4	Unknown	12.8													VILLENEUVE, L	Domestic	Chemistry	Hand Dug	Chemistry Exists
284	0231919	NW	13	054	23	4	Screen	31.7							29.3	31.7			20/12/1977		ESQUIRE HOMES LTD/FUNG, DR. G.	Domestic	New Well	Rotary	No Chemistry

Waterwell Records Within the Study Area

	WELL ID	LOCATION					WELL_FINISH	WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED_USE	TYPE_WORK	DRILL_METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN			FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
285	0150309	SE	29	055	22	4	Perforated Casing/Liner	91.4											25/01/1990		GROOT, DON	Domestic	New Well	Combination	No Chemistry
286	0261737	SE	28	055	22	4	Unknown														SAWCHUK, J	Domestic	Chemistry	Unknown	Chemistry Exists
287	0261746	NW	28	055	22	4	Unknown	30.5													BOHNET, H	Domestic	Chemistry	Drilled	Chemistry Exists
288	0261738	NW	28	055	22	4	Casing/Open Hole	50.9											30/04/1965		GOUTBECK, P.	Domestic	New Well	Rotary	Chemistry Exists
289	0261731	SE	27	055	22	4	Casing/Perforated Liner	96.0	50.3	96.0									14/10/1986		BELAIR, R	Domestic	New Well	Rotary	No Chemistry
290	0261681	NW	25	055	22	4	Unknown	7.6													GAUMONT, M	Domestic	Chemistry	Unknown	Chemistry Exists
291	0261669	SW	24	055	22	4	Unknown	4.6													MAGEE, K	Domestic	Chemistry	Bored	Chemistry Exists
292	0261182	NE	06	055	22	4	Unknown	79.2													ELLIOTT, F	Domestic	Chemistry	Unknown	Chemistry Exists
293	0260948	NW	13	054	23	4	Screen & Open Hole	31.7							29.0	31.4			23/03/1978		PESKLEVIS, ALBERT	Domestic	New Well	Rotary	Chemistry Exists
294	0289102	NE	28	054	23	4	Perforated Casing/Liner	48.8	36.6	45.7									11/07/1997		NORTH COUNTRY CATTLE CO	Domestic	New Well	Rotary	No Chemistry
295	0262113	SE	35	054	23	4	Unknown	76.2													DEVEREUX, J.R.	Domestic	Chemistry	Unknown	Chemistry Exists
296	0262366	00	35	054	23	4	Unknown	16.8													PALZAT, M.	Domestic	Chemistry	Drilled	No Chemistry
297	0264289	NW	28	056	21	4	Unknown	4.6													RESEARCH COUNCIL #6-DRINKING	Domestic	Chemistry	Unknown	Chemistry Exists
298	0262061	SE	34	054	23	4	Casing/Open Hole	22.6											20/06/1975		NEWMAN, NELSON	Domestic	New Well	Bored	Chemistry Exists
299	0264531	SW	34	056	21	4	Slotted & Open Hole	61.0	15.2	24.4									30/03/1974		WOLANSKI, W.	Domestic	New Well	Rotary	Chemistry Exists
300	0165347	SE	34	054	23	4	Unknown	24.4													MOAK, CARL A.	Domestic	Chemistry	Unknown	No Chemistry
301	0262104	NW	34	054	23	4	Casing	24.4													PARADIS, GILBERT	Domestic	Chemistry	Unknown	Chemistry Exists
302	0262083	NW	34	054	23	4	Unknown	76.2													MELNYCHUK, GEORGE G	Domestic	Chemistry	Drilled	Chemistry Exists
303	0261593	NE	25	054	23	4	Unknown	10.1													BYERS, D.H.	Domestic	Chemistry	Unknown	No Chemistry
304	0262011	02	33	054	23	4	Unknown	37.5													STRAUSS, HOWARD	Domestic	Chemistry	Unknown	Chemistry Exists
305	0261657	NE	23	055	22	4	Unknown	20.4													JOHNSTON, GARY	Domestic	Chemistry	Drilled	Chemistry Exists
306	0287802	NE	28	054	23	4	Not Applicable	61.0											10/07/1997	10/07/1997	NORTH COUNTRY CATTLE CO	Domestic	Test Hole-Abandoned	Rotary	No Chemistry
307	0261678	NE	28	054	23	4	Unknown	13.1													PARENTEAU, L	Domestic	Chemistry	Bored	Chemistry Exists
308	0261629	SW	27	054	23	4	Unknown	29.9													FEDORAK, NESTOR	Domestic	Chemistry	Unknown	Chemistry Exists
309	0261619	SW	27	054	23	4	Casing/Perforated Liner	61.0	24.4	61.0									31/05/1978		FYITH, JAMES	Domestic	New Well	Rotary	Chemistry Exists
310	0261615	SW	27	054	23	4	Unknown	24.4													PENNY, STEPHEN	Domestic	Chemistry	Unknown	Chemistry Exists
311	0261598	NW	26	054	23	4	Perforated Casing/Liner	29.0	21.3	27.4									01/06/1969		MCGEACHY, JIM	Domestic	New Well	Rotary	No Chemistry
312	0261605	NE	26	054	23	4	Casing	73.2											07/06/1978		SIMPSON, TOM	Domestic	New Well	Rotary	No Chemistry
313	0261575	SE	25	054	23	4	Unknown	36.0													BARRY, M	Domestic	Chemistry	Drilled	Chemistry Exists
314	0261567	SE	25	054	23	4	Casing	6.4													FT SASK LANDFILL #OBS WELL	Domestic	Chemistry	Unknown	Chemistry Exists
315	0262109	NE	34	054	23	4	Unknown	61.0													MELNYCHUK, GEORGE G	Domestic	Chemistry	Unknown	Chemistry Exists
316	0261368	SE	11	055	22	4	Unknown	73.2													SHEWCHUK, S	Domestic	Chemistry	Unknown	Chemistry Exists
317	0261662	SW	24	055	22	4	Screen	12.2							5.8	7.3			23/07/1966		MCGEE, K.	Domestic	New Well	Rotary	Chemistry Exists
318	0261493	NW	14	055	22	4	Unknown	18.3													TAILLEFER, G	Domestic	Chemistry	Drilled	Chemistry Exists
319	0169284	08	14	055	22	4	Screen	40.5							37.8	39.3			02/10/1992		FEDERATED PIPELINE LTD	Domestic	New Well	Rotary	No Chemistry
320	0261447	NW	13	055	22	4	Unknown	12.2													WOUDENBERG, M.	Domestic	Chemistry	Drilled	Chemistry Exists
321	0261446	NW	13	055	22	4	Unknown	24.4													WOUDENBERG, M.	Domestic	Chemistry	Unknown	Chemistry Exists
322	0261403	SW	11	055	22	4	Unknown	54.9													SHEWCHUK, T	Domestic	Chemistry	Unknown	Chemistry Exists
323	0261398	SE	11	055	22	4	Unknown	27.4													DENNIS, D.	Domestic	Chemistry	Unknown	Chemistry Exists
324	0261396	SE	11	055	22	4	Unknown	64.0													TINDALL, V	Domestic	Chemistry	Unknown	Chemistry Exists
325	0280653	SE	16	055	22	4	Unknown	6.1													RANDON, J.R.	Domestic	Chemistry	Unknown	Chemistry Exists
326	0261376	SE	11	055	22	4	Unknown	61.0													HAREL, C.	Domestic	Chemistry	Unknown	Chemistry Exists
327	0280654	SE	16	055	22	4	Unknown	39.6													RANDON, J.R.	Domestic	Chemistry	Unknown	Chemistry Exists
328	0261357	SE	11	055	22	4	Perforated Casing/Liner	79.2											01/08/1965		TIMNALL, C./V.	Domestic	New Well	Rotary	No Chemistry
329	0261348	SE	11	055	22	4	Casing/Open Hole	36.9							34.4	36.9			27/04/1978		WOUDENBERG, M.	Domestic	New Well	Rotary	No Chemistry
330	0280703	SE	09	055	22	4	Perforated Casing/Liner	17.4	7.6	15.2									26/04/1994		LAMOUREUX, ROBERT	Domestic	New Well	Bored	No Chemistry
331	0261250	10	09	055	22	4	Unknown	19.8													KEITH, D	Domestic	Chemistry	Unknown	Chemistry Exists
332	0261202	SE	07	055	22	4	Cribbed	9.1													HERDER, H	Domestic	Chemistry	Drilled	Chemistry Exists
333	0261225	NE	07	055	22	4	Casing	11.6											21/10/1978		PRINS, W	Domestic	New Well	Bored	No Chemistry
334	0261220	NE	07	055	22	4	Unknown	10.7													PRINS, W	Domestic	Chemistry	Unknown	Chemistry Exists
335	0261147	SW	06	055	22	4	Casing/Open Hole	39.6											01/07/1973		GABERT, B	Domestic	New Well	Cable Tool	No Chemistry
336	0262261	SW	35	054	23	4	Unknown	30.5													GAUMONT, P	Domestic	Chemistry	Unknown	Chemistry Exists
337	0261383	SE	11	055	22	4	Casing/Perforated Liner	121.9	103.6	121.9									20/10/1977		WOUDENBERG, M.	Domestic	New Well	Rotary	No Chemistry
338	0261589	NW	18	055	22	4	Unknown	22.9													CURTIS, R.	Domestic	Chemistry	Unknown	Chemistry Exists
339	0261653	NW	22	055	22	4	Unknown														RIVARD, K	Domestic	Chemistry	Unknown	Chemistry Exists
340	0261639	SW	21	055	22	4	Unknown	7.6													COURCHESNE, L	Domestic	Chemistry	Hand Dug	Chemistry Exists
341	0261635	SW	21	055	22	4	Unknown	11.6													COURCHESNE, L	Domestic	Chemistry	Bored	Chemistry Exists
342	0261652	NE	21	055	22	4	Unknown														GAUMONT, J R	Domestic	Chemistry	Unknown	No Chemistry
343	0261640	03	21	055	22	4	Casing/Perforated Liner	91.4	79.2	91.4									08/04/1986		COURCHESNE, L E	Domestic	New Well	Rotary	Chemistry Exists
344	0261618	01	21	055	22	4	Unknown	10.4													DEMERS,	Domestic	Chemistry	Unknown	Chemistry Exists
345	0261614	SW	20	055	22	4	Unknown	30.5											01/01/1960		CRAIG, R.S.	Domestic	Chemistry	Unknown	Chemistry Exists
346	0156874	00	20	055	22	4	Not Applicable	8.5													LAMOUREUX, JOHN C./CRAIG, RAY	Domestic	Chemistry	Not Applicable	No Chemistry
347	0261468	SW	14	055	22	4	Perforated Casing/Liner	64.0											01/04/1959			Domestic	New Well	Unknown	No Chemistry
348	0261591	NW	18	055	22	4	Unknown	15.2													CURTIS, R.	Domestic	Chemistry	Unknown	Chemistry Exists
349	0264298	NW	06	055	22	4	Unknown	18.3													JESKE, O.	Domestic	Chemistry	Unknown	Chemistry Exists
350	0261586	NW	18	055	22	4	Unknown														CURTIS, R.L.	Domestic	Chemistry	Unknown	Chemistry Exists
351	0261578	NW	18	055	22	4	Unknown	9.1													CURTIS, R.	Domestic	Chemistry	Unknown	Chemistry Exists
352	0261556	NW	18	055	22	4	Unknown	8.2													CURTIS, R.	Domestic	Chemistry	Unknown	Chemistry Exists
353	0261606	NE	18	055	22	4	Unknown														ANWEILER, S.	Domestic	Chemistry	Unknown	Chemistry Exists
354	0286113	WH	17	055	22	4	Unknown	22.9											30/04/1968		READNER, HENRY #400-H	Domestic	New Well	Auger	No Chemistry
355	0261513	SW	17	055	22	4	Unknown														GRANT, G.	Domestic	Chemistry	Unknown	Chemistry Exists

Waterwell Records Within the Study Area

	WELL ID	LOCATION					WELL_FINISH	WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED_USE	TYPE_WORK	DRILL_METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN			FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
356	0261521	NW	17	055	22	4	Unknown	18.3													READNER, H	Domestic	Chemistry	Bored	Chemistry Exists
357	0261530	NE	17	055	22	4	Unknown	115.8													RUSSEL, L	Domestic	Chemistry	Unknown	Chemistry Exists
358	0280657	SE	16	055	22	4	Unknown	7.6													GEM SOD FARMS	Domestic	Chemistry	Hand Dug	Chemistry Exists
359	0261542	SW	18	055	22	4	Unknown	9.1													CURTIS, L	Domestic	Chemistry	Bored	Chemistry Exists
360	0083518	SW	30	055	21	4	Unknown	6.1											12/12/1968		DAYTON, GEORGE	Domestic	Chemistry	Bored	Chemistry Exists
361	0282099	NW	18	055	21	4	Unknown	24.4													MAGEE, KEN	Domestic	Chemistry	Hand Dug	Chemistry Exists
362	0083538	NW	32	055	21	4	Unknown	45.7													PCL BRAUN SIMONS LTD	Domestic	Chemistry	Unknown	Chemistry Exists
363	0083537	NW	32	055	21	4	Unknown	39.6													PCL BRAUN SIMONS LTD	Domestic	Chemistry	Unknown	Chemistry Exists
364	0083536	NW	32	055	21	4	Unknown	39.6													PCL BRAUN SIMONS LTD	Domestic	Chemistry	Unknown	Chemistry Exists
365	0083534	NE	31	055	21	4	Unknown	39.6													PCL BRAUN SIMONS LTD	Domestic	Chemistry	Unknown	Chemistry Exists
366	0193975	SW	30	055	21	4	Unknown	42.7												01/01/2001	G&J TRAILER ENT	Domestic	Chemistry	Unknown	No Chemistry
367	0083552	05	34	055	21	4	Screen	35.1							32.0	35.1			09/02/1986		RADKE, J./ R.	Domestic	New Well	Rotary	No Chemistry
368	0083519	SW	30	055	21	4	Unknown	6.7													DEMEULE, LORETTA	Domestic	Chemistry	Hand Dug	Chemistry Exists
369	0083554	NW	34	055	21	4	Unknown	18.3													PICKARD, WAYNE	Domestic	Chemistry	Drilled	Chemistry Exists
370	0160666	SE	30	055	21	4	Not Applicable	8.5													SOWDEN, HELEN	Domestic	Chemistry	Not Applicable	No Chemistry
371	0083517	SE	30	055	21	4	Unknown	45.7													WOUDENBURG, MARY	Domestic	Chemistry	Unknown	Chemistry Exists
372	0083516	SE	30	055	21	4	Unknown	12.2													WATERS, DEAN	Domestic	Chemistry	Drilled	Chemistry Exists
373	0083513	SE	30	055	21	4	Cribbed	14.3											15/02/1970		BALIMORE, WESLY	Domestic	New Well	Bored	No Chemistry
374	0083512	SE	30	055	21	4	Unknown	9.1													HARBOWAY, M.	Domestic	Chemistry	Hand Dug	Chemistry Exists
375	0083511	SE	30	055	21	4	Unknown	7.6												01/01/2001	DOCKSTEADER, ILEF	Domestic	Chemistry	Hand Dug	Chemistry Exists
376	0083523	SW	30	055	21	4	Unknown	9.1													DEMEULE, N.E.	Domestic	Chemistry	Drilled	Chemistry Exists
377	0083570	SE	36	055	21	4	Unknown	18.3													NAVRATIL, JOHN	Domestic	Chemistry	Bored	Chemistry Exists
378	0263327	SW	02	056	21	4	Unknown	10.7													HALABEY, A	Domestic	Chemistry	Bored	Chemistry Exists
379	0264286	SE	28	056	21	4	Unknown	21.3													BELLAND, R.	Domestic	Chemistry	Drilled	Chemistry Exists
380	0263315	SW	01	056	21	4	Unknown	36.6													OLD, R/C	Domestic	Chemistry	Unknown	Chemistry Exists
381	0263308	SW	01	056	21	4	Casing	14.0													TARON, D.E.	Domestic	Chemistry	Drilled	Chemistry Exists
382	0263303	SE	01	056	21	4	Unknown	12.2													GUENETTE, D	Domestic	Chemistry	Bored	Chemistry Exists
383	0157040	NW	01	056	21	4	Not Applicable	11.0													CHOLOWSKI, TOM	Domestic	Chemistry	Hand Dug	No Chemistry
384	0083549	04	34	055	21	4	Cribbed	12.2											26/08/1975		RADKE, BEN	Domestic	New Well	Bored	No Chemistry
385	0083571	SE	36	055	21	4	Unknown	15.2													WIENS, LORI	Domestic	Chemistry	Unknown	Chemistry Exists
386	0083531	NW	30	055	21	4	Cribbed	12.2											06/02/1970		YARSHUK, PETER	Domestic	New Well	Bored	No Chemistry
387	0083573	NW	36	055	21	4	Unknown	12.2													PROKOPCZAK, DAVID	Domestic	Chemistry	Unknown	Chemistry Exists
388	0083564	NE	35	055	21	4	Unknown	12.8													CHARBONNEAU, MARCEL	Domestic	Chemistry	Drilled	Chemistry Exists
389	0083551	SW	34	055	21	4	Unknown														RADKE	Domestic	Chemistry	Unknown	No Chemistry
390	0083548	SW	34	055	21	4	Unknown	15.2													RADKE, JAMES	Domestic	Chemistry	Drilled	Chemistry Exists
391	0083560	NW	34	055	21	4	Screen	42.7							36.6	42.7			14/08/1989		DAOUST, C.	Domestic	New Well	Rotary	No Chemistry
392	0083556	NW	34	055	21	4	Screen	39.6							34.4	36.0			01/10/1970		FISHER, GEORGE P.	Domestic	New Well	Rotary	No Chemistry
393	0083572	SW	36	055	21	4	Casing/Perforated Liner	39.6	37.8	39.6									07/04/1988		UNITED GRAIN GROWERS LTD	Domestic	New Well	Cable Tool	No Chemistry
394	0083458	NE	19	055	21	4	Unknown	18.3													NYHUIS, ALBERT	Domestic	Chemistry	Hand Dug	Chemistry Exists
395	0083470	NW	22	055	21	4	Unknown	64.0													LARSEN, SVEND	Domestic	Chemistry	Drilled	Chemistry Exists
396	0083473	NE	22	055	21	4	Unknown	18.3													CHERNICHAN, JOHN	Domestic	Chemistry	Bored	Chemistry Exists
397	0083467	NE	21	055	21	4	Unknown	76.2													SCOTFORD HUTTERITE COLONY	Domestic	Chemistry	Unknown	Chemistry Exists
398	0083463	SE	20	055	21	4	Unknown														CNR#SCOTFORD YARD	Domestic	Chemistry	Unknown	No Chemistry
399	0083462	SE	20	055	21	4	Unknown	99.4													CNR#BEAMER SPUR	Domestic	Chemistry	Unknown	Chemistry Exists
400	0083448	NW	19	055	21	4	Unknown	6.1												01/01/2001	BACHLEITNER, CATHY	Domestic	Chemistry	Hand Dug	Chemistry Exists
401	0285789	NW	30	055	21	4	Screen	51.8							46.3	47.9			30/05/1995	01/01/2001	BENFELD, BILL	Domestic	New Well	Rotary	No Chemistry
402	0083460	NE	19	055	21	4	Unknown	9.1													DOIGE, J.F.	Domestic	Chemistry	Unknown	Chemistry Exists
403	0167584	NW	25	055	21	4	Unknown	61.0													PROKOPCZAK, WM	Domestic	Chemistry	Unknown	No Chemistry
404	0083453	NE	19	055	21	4	Unknown	39.0													NEBEL, ROBERT	Domestic	Chemistry	Drilled	Chemistry Exists
405	0083452	NE	19	055	21	4	Unknown	48.8													ENOS, AL	Domestic	Chemistry	Drilled	Chemistry Exists
406	0083450	NE	19	055	21	4	Unknown	61.0													OLSON, FRED	Domestic	Chemistry	Unknown	Chemistry Exists
407	0083449	NE	19	055	21	4	Screen	39.6							36.6	38.1			23/07/1975	01/01/2001	EDE, WILLIAM	Domestic	New Well	Rotary	Chemistry Exists
408	0083455	15	19	055	21	4	Screen	11.6							10.1	11.3			11/05/1978		NEBEL, ROBERT	Domestic	New Well	Rotary	No Chemistry
409	0083447	05	19	055	21	4	Unknown	46.9													DZURNY, EMIL	Domestic	Chemistry	Unknown	Chemistry Exists
410	0083461	NE	19	055	21	4	Unknown	50.3													CAMERON, ED	Domestic	Chemistry	Unknown	Chemistry Exists
411	0280650	SW	28	055	21	4	Unknown	9.1													VISSCHER, D.	Domestic	Chemistry	Unknown	Chemistry Exists
412	0263375	SW	03	056	21	4	Unknown	6.4											01/01/1973		HANNERMAN, R	Domestic	Chemistry	Unknown	Chemistry Exists
413	0083528	NW	30	055	21	4	Unknown	12.2													FRANCOUER, LARRY	Domestic	Chemistry	Drilled	Chemistry Exists
414	0083527	NW	30	055	21	4	Unknown	9.1													BECK, LINDA	Domestic	Chemistry	Unknown	Chemistry Exists
415	0083526	NW	30	055	21	4	Unknown	7.3													FRANCOUER, LARRY	Domestic	Chemistry	Unknown	Chemistry Exists
416	0083524	NW	30	055	21	4	Unknown	6.7													BAKER, I.H.	Domestic	Chemistry	Drilled	Chemistry Exists
417	0083532	13	30	055	21	4	Cribbed	8.5											12/02/1970	01/01/2001	YARSHUK, PETER	Domestic	New Well	Bored	No Chemistry
418	0083471	NW	22	055	21	4	Unknown	54.9													LARSEN, HELEN	Domestic	Chemistry	Unknown	Chemistry Exists
419	0083521	03	30	055	21	4	Cribbed	13.4											02/02/1970		YARSHUK, PETE	Domestic	New Well	Bored	No Chemistry
420	0153167	SE	22	055	21	4	Screen	48.8							41.1	42.7			20/07/1990		POULIN, RODGER	Domestic	New Well	Rotary	No Chemistry
421	0083506	SE	28	055	21	4	Unknown	24.4													ROYCE, SIDNEY	Domestic	Chemistry	Unknown	No Chemistry
422	0083505	SE	28	055	21	4	Unknown	38.7													ROYCE, SIDNEY	Domestic	Chemistry	Drilled	Chemistry Exists
423	0083501	SW	27	055	21	4	Unknown	67.1													CHIPCHASE, G.	Domestic	Chemistry	Unknown	Chemistry Exists
424	0083500	SW	27	055	21	4	Unknown														CHOLOWSKI, ALBERT	Domestic	Chemistry	Unknown	No Chemistry
425	0083503	NW	27	055	21	4	Unknown	42.7													MILLWARD, DONALD	Domestic	Chemistry	Unknown	Chemistry Exists
426	0083502	NW	27	055	21	4	Unknown	42.7													MILLWARD, DONALD	Domestic	Chemistry	Unknown	Chemistry Exists

Waterwell Records Within the Study Area

	WELL ID	LOCATION					WELL_FINISH	WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED_USE	TYPE_WORK	DRILL_METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN			FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
427	0238531	NW	30	055	21	4	Perforated Casing/Liner	42.1	36.0	42.1									26/01/1994	01/01/2001	LEUENG, DALE	Domestic	New Well	Rotary	No Chemistry
428	0083520	06	30	055	21	4	Screen	41.1							39.6	41.1			08/08/1984		MOSER, GEORGETTE	Domestic	New Well	Rotary	No Chemistry
429	0083525	NW	30	055	21	4	Unknown	7.3													LINING, DALE	Domestic	Chemistry	Bored	Chemistry Exists
430	0083544	NE	32	055	21	4	Unknown	46.3													VISSCHER, D.	Domestic	Chemistry	Unknown	Chemistry Exists
431	0083533	SE	31	055	21	4	Unknown	41.1													PCL BRAUN SIMONS LTD	Domestic	Chemistry	Unknown	Chemistry Exists
432	0293392	NW	31	055	21	4	Screen	24.4							19.8	21.3			13/09/1999		MCKAY, BRIAN	Domestic	New Well	Rotary	No Chemistry
433	0083522	SW	30	055	21	4	Unknown	10.7													WIEBE, G.	Domestic	Chemistry	Unknown	Chemistry Exists
434	0156871	SE	30	055	21	4	Not Applicable	9.8													HONISCH, VERNON	Domestic	Chemistry	Not Applicable	No Chemistry
435	0083514	SE	30	055	21	4	Unknown	6.1													ORDELL, RICHARD	Domestic	Chemistry	Unknown	Chemistry Exists
436	0261660	SE	24	055	22	4	Unknown	6.1													ESLER, J	Domestic	Chemistry	Hand Dug	Chemistry Exists
437	0083529	NW	30	055	21	4	Cribbed	9.8											30/11/1965		YANCHUK, PETE	Domestic	New Well	Bored	No Chemistry
438	0263842	SE	14	056	21	4	Unknown	3.7													SMART, D	Domestic	Chemistry	Hand Dug	Chemistry Exists
439	0083451	NE	19	055	21	4	Screen	40.2							34.7	40.2			10/10/1981		EDE, W.J.	Domestic	New Well	Rotary	No Chemistry
440	0083439	SW	18	055	21	4	Unknown	45.7													DUECK, MICHAEL	Domestic	Chemistry	Unknown	No Chemistry
441	0083426	NE	17	055	21	4	Unknown	79.2													SCOTFORD HUTTERITE BRETHREN	Domestic	Chemistry	Unknown	Chemistry Exists
442	0083419	NW	16	055	21	4	Unknown	56.4													KREBS, BERNARD	Domestic	Chemistry	Unknown	Chemistry Exists
443	0266031	SE	13	056	22	4	Unknown	12.2													SCHROTER, RON	Domestic	Chemistry	Unknown	Chemistry Exists
444	0264637	NE	34	056	21	4	Perforated Casing/Liner	32.0	26.5	32.0									10/03/1974		ANDERSON, K	Domestic	New Well	Rotary	Chemistry Exists
445	0083510	SE	30	055	21	4	Unknown	9.8													WATERS, DEAN	Domestic	Chemistry	Unknown	Chemistry Exists
446	0091553	12	16	056	20	4	Cribbed	19.5											20/03/1985		NEAVE, JOHN	Domestic	New Well	Bored	Chemistry Exists
447	1130470	NW	34	055	21	4		35.4	29.3	35.4									19/07/2007		HALLS AUTO PARTS	Domestic	New Well	Rotary	No Chemistry
448	1690074	SE	01	055	22	4		59.4	51.8	57.9									13/05/1999		RASMUSSEN, RON	Domestic	New Well	Rotary	No Chemistry
449	1420106	SE	36	055	22	4		12.2											19/01/2005	19/01/2005	NCIA	Domestic	Unknown	Rotary	No Chemistry
450	0297410	SW	30	056	20	4	Not Applicable	85.3	36.6	42.7	48.8	54.9	61.0	67.1					15/05/2000	16/05/2000	SHILOH REBMAN YOUTH CAMP #2	Domestic	New Well	Rotary	No Chemistry
451	0100948	SW	20	056	20	4	Unknown	45.7													WATSON, D.	Domestic	Chemistry	Unknown	No Chemistry
452	0091559	SE	18	056	20	4	Unknown	6.7													MCLELLAN, ARTHUR	Domestic	Chemistry	Hand Dug	Chemistry Exists
453	0083561	NE	34	055	21	4	Screen	30.5							28.3	29.9			05/06/1968		BERG, ALFRED	Domestic	New Well	Rotary	No Chemistry
454	0100944	SW	16	056	20	4	Unknown	93.0													ROSNAU, NEIL	Domestic	Chemistry	Unknown	Chemistry Exists
455	0263883	NE	14	056	21	4	Unknown	11.3													PERCY, G.	Domestic	Chemistry	Bored	Chemistry Exists
456	0100929	SW	08	056	20	4	Unknown	7.9													SCHRAM, ED	Domestic	Chemistry	Hand Dug	Chemistry Exists
457	0297579	SE	21	056	21	4	Perforated Casing/Liner	21.0	13.7	16.8									18/09/2001		MARQUARDT, B.	Domestic	New Well	Bored	No Chemistry
458	0264156	15	20	056	21	4	Unknown	19.8											24/10/1958		FEDORAK, M	Domestic	New Well	Bored	No Chemistry
459	0263996	NE	19	056	21	4	Unknown	8.5													ROBINSON, J	Domestic	Chemistry	Hand Dug	Chemistry Exists
460	0263970	NW	18	056	21	4	Unknown	12.2													VISSCHER, H	Domestic	Chemistry	Unknown	Chemistry Exists
461	0263959	SW	16	056	21	4	Unknown	9.1													MARQUARDT, E	Domestic	Chemistry	Drilled	Chemistry Exists
462	0299631	NW	07	055	21	4	Casing/Perforated Liner	71.0	63.1	69.2									17/05/2001		CHARTRAND, LOUIE/MARY	Domestic	New Well	Rotary	No Chemistry
463	0091554	02	17	056	20	4	Cribbed	34.1											06/05/1981		SAMPERT, RAY	Domestic	New Well	Bored	No Chemistry
464	0261075	SE	01	055	22	4	Unknown														BARR, F	Domestic	Chemistry	Unknown	Chemistry Exists
465	0264304	NE	25	055	22	4	Unknown	61.0													GAUMONT, MICHAEL #2	Domestic	Chemistry	Unknown	Chemistry Exists
466	0261710	NE	25	055	22	4	Casing/Open Hole	76.2													GAUMONT, M	Domestic	New Well	Unknown	Chemistry Exists
467	0261675	NE	24	055	22	4	Casing														FISH & GAME ASSOC	Domestic	Chemistry	Unknown	Chemistry Exists
468	0261453	NE	13	055	22	4	Unknown	7.3													DAWSON, J B	Domestic	Chemistry	Bored	Chemistry Exists
469	0261450	NE	13	055	22	4	Unknown	7.3													MCARTHUR, DOUGLAS	Domestic	Chemistry	Unknown	Chemistry Exists
470	0261449	NE	13	055	22	4	Casing	7.3											01/04/1971		BARON, F.	Domestic	New Well	Bored	No Chemistry
471	0261716	NE	25	055	22	4	Unknown	61.0													GAUMONT, M	Domestic	Chemistry	Unknown	Chemistry Exists
472	0261078	SE	01	055	22	4	Unknown	121.9													BEST, S.	Domestic	Chemistry	Unknown	Chemistry Exists
473	0100931	00	08	056	20	4	Unknown	17.1													INKSTER, COLIN	Domestic	Chemistry	Unknown	Chemistry Exists
474	0261073	SE	01	055	22	4	Unknown														WALLACE, J	Domestic	Chemistry	Unknown	Chemistry Exists
475	0261039	SE	01	055	22	4	Casing/Open Hole	54.9													HANSEN, P E	Domestic	New Well	Unknown	No Chemistry
476	0261032	SE	01	055	22	4	Unknown	45.7													SCHWANDT, E A	Domestic	Chemistry	Unknown	Chemistry Exists
477	0264173	SE	13	056	22	4	Screen	35.1							32.0	35.1			03/11/1989		DUPONT CAN	Domestic	New Well	Rotary	No Chemistry
478	0264163	NE	12	056	22	4	Unknown	76.2													PUCHALIK, NICK	Domestic	Chemistry	Drilled	Chemistry Exists
479	0263334	03	02	056	21	4	Casing/Perforated Liner	118.9											09/07/1965		HALABEY, ALEX	Domestic	New Well	Drilled	Chemistry Exists
480	0261082	SE	01	055	22	4	Unknown														SCHLOSSER, D	Domestic	Chemistry	Unknown	Chemistry Exists
481	0293774	SW	17	056	20	4	Perforated Casing/Liner	85.3	72.2	74.7	77.7	80.8							17/10/1999		SCHRAM, BARRY	Domestic	New Well	Rotary	No Chemistry
482	0297564	SE	18	056	20	4	Not Applicable	67.1											07/10/2000		HELMER, MURIEL/ABNER	Domestic	Old Well-Test	Not Applicable	No Chemistry
483	0297580	NE	21	056	21	4	Perforated Casing/Liner	21.0	13.7	16.8									19/09/2001		LEICHNER, WALTER	Domestic	New Well	Bored	No Chemistry
484	0297411	SW	30	056	20	4	Perforated Casing/Liner	36.6	26.8	32.9									17/05/2000		SHILOH REBMAN YOUTH CAMP #3	Domestic	New Well	Rotary	No Chemistry
485	0297409	SW	30	056	20	4	Not Applicable	82.3											18/05/2000	18/05/2001	SHILOH REBMAN YOUTH CAMP	Domestic	Dry Hole-Abandoned	Rotary	No Chemistry
486	0040488	SE	19	055	21	4	Not Applicable	13.4											02/02/1970		HEARTLAND PROPERTIES	Domestic	Old Well-Abandoned	Not Applicable	No Chemistry
487	0297115	NE	18	056	20	4	Casing/Open Hole	18.3											07/10/2000		MARTIN, BONNIE	Domestic	Old Well-Test	Unknown	No Chemistry
488	0295164	SW	30	056	20	4	Perforated Casing/Liner	37.2	31.1	37.2									18/05/2000		SHILOH REBMAN YOUTH CAMP	Domestic	New Well	Rotary	No Chemistry
489	0293775	SW	17	056	20	4	Not Applicable	123.4											12/10/1999	12/10/1999	SCHRAM, BARRY	Domestic	Dry Hole-Abandoned	Rotary	No Chemistry
490	0100930	SE	08	056	20	4	Unknown	9.1													KRAUSE, F.	Domestic	Chemistry	Unknown	Chemistry Exists
491	0100947	SW	20	056	20	4	Unknown	45.7													BETTAC, E.	Domestic	Chemistry	Unknown	Chemistry Exists
492	0100946	SW	16	056	20	4	Cribbed	28.7											18/10/1977		ROSNAU, WESLEY	Domestic	New Well	Bored	Chemistry Exists
493	0100945	SW	16	056	20	4	Unknown	24.7													BOWES, GEORGE	Domestic	Chemistry	Unknown	Chemistry Exists
494	0100943	SW	16	056	20	4	Casing/Perforated Liner	62.5	56.4	62.5									01/11/1973		ROSNAU, NEIL	Domestic	New Well	Cable Tool	Chemistry Exists
495	0090354	SE	27	055	21	4	Slotted & Open Hole	54.9	39.0	42.7									01/08/1972		CHOLOWSKI, ALBERT	Domestic	New Well	Rotary	No Chemistry
496	0100932	NE	08	056	20	4	Cribbed	19.5											14/07/1973		INKSTER, COLIN	Domestic	New Well	Bored	No Chemistry
497	0263380	NE	03	056	21	4	Unknown	39.6													VELTMAN, H	Domestic	Chemistry	Unknown	Chemistry Exists

Waterwell Records Within the Study Area

	WELL ID	LOCATION					WELL_FINISH	WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED_USE	TYPE_WORK	DRILL_METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN			FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
498	0294342	SE	21	056	21	4	Perforated Casing/Liner	24.4	10.1	12.5	15.5	20.1	23.2	23.5					08/08/1998		SOOREE, DICK	Domestic	New Well	Bored	No Chemistry
499	0083379	15	07	055	21	4	Unknown	81.1													GEISLINGER, W.	Domestic	Chemistry	Unknown	Chemistry Exists
500	0264305	SE	29	056	21	4	Casing	54.9													PACHALUCK, P.	Domestic	Chemistry	Unknown	Chemistry Exists
501	0083372	SW	07	055	21	4	Unknown	39.6													NEWMAN, WILBERT	Domestic	Chemistry	Drilled	Chemistry Exists
502	0083376	NW	07	055	21	4	Unknown	9.1													FINCH, EDWARD	Domestic	Chemistry	Drilled	Chemistry Exists
503	0083375	NW	07	055	21	4	Casing/Perforated Liner	54.9	48.8	54.9									12/09/1987		FINCH, E.	Domestic	New Well	Cable Tool	No Chemistry
504	0264343	SE	29	056	21	4	Casing	7.6											15/08/1963		SMULSKI, J.	Domestic	New Well	Backhoe	No Chemistry
505	0274956	NE	05	055	21	4	Casing/Open Hole	41.1											05/09/1978		PICKETT, J	Domestic	New Well	Rotary	Chemistry Exists
506	0264347	SE	29	056	21	4	Unknown	76.2													KALISVAART, J/T	Domestic	Chemistry	Drilled	Chemistry Exists
507	0264368	SE	29	056	21	4	Unknown	14.0													PUCHALIK, P.	Domestic	Chemistry	Unknown	Chemistry Exists
508	0264384	SW	29	056	21	4	Casing	9.8													PUCHALIK, S.	Domestic	Chemistry	Unknown	Chemistry Exists
509	0083383	NE	09	055	21	4	Unknown														EDE, W.	Domestic	Chemistry	Unknown	No Chemistry
510	0264386	SW	29	056	21	4	Casing	7.3											24/09/1958		PUCHALIK, S.	Domestic	New Well	Bored	Chemistry Exists
511	0083377	NE	07	055	21	4	Unknown	9.1													ENGLISH, LESLIE	Domestic	Chemistry	Unknown	Chemistry Exists
512	0264392	SW	29	056	21	4	Unknown														PUCHALIK, S.#PUMPHOUSE WELL	Domestic	Chemistry	Unknown	Chemistry Exists
513	0264393	SW	29	056	21	4	Casing	13.7													PUCHALIK, S.	Domestic	Chemistry	Unknown	Chemistry Exists
514	0083363	06	05	055	21	4	Unknown	35.1													WESTMAN, F.W.	Domestic	Chemistry	Drilled	Chemistry Exists
515	0083365	09	05	055	21	4	Cribbed	4.3													PICKETT, JACK	Domestic	Chemistry	Unknown	Chemistry Exists
516	0083364	12	05	055	21	4	Unknown	24.4											01/01/1920		COATTA, E.J.	Domestic	Federal Well Survey	Bored	No Chemistry
517	0083368	NE	06	055	21	4	Unknown	18.3													SCHNEIDER, EARL A.	Domestic	Chemistry	Bored	Chemistry Exists
518	0083374	12	07	055	21	4	Unknown	24.4											01/01/1920		THORNE, A.	Domestic	Federal Well Survey	Drilled	No Chemistry
519	0083373	09	07	055	21	4	Unknown	30.5													MELTON, OTIS	Domestic	Chemistry	Drilled	Chemistry Exists
520	0083440	NW	18	055	21	4	Unknown	5.5													MAGEE, GARY	Domestic	Chemistry	Unknown	Chemistry Exists
521	0083367	NW	06	055	21	4	Casing/Open Hole	64.0											03/08/1979		GAUF, ROD	Domestic	New Well	Rotary	No Chemistry
522	0264385	SW	29	056	21	4	Unknown														PUCHALIK, S.	Domestic	Chemistry	Unknown	Chemistry Exists
523	0285787	NE	17	055	21	4	Screen	18.6							12.2	18.3			04/06/1996		HUTTERIAN BRETHREN	Domestic	New Well	Rotary	No Chemistry
524	0156870	NW	16	055	21	4	Not Applicable	74.7													KREBS, BERNARD L.	Domestic	Chemistry	Rotary	Chemistry Exists
525	0083425	NE	17	055	21	4	Casing/Perforated Liner	82.3	70.1	82.3									17/08/1983		SCOTFORD COLONY	Domestic	New Well	Rotary	No Chemistry
526	0264396	NE	29	056	21	4	Unknown														SAUNDERS, P	Domestic	Chemistry	Unknown	No Chemistry
527	0083423	11	17	055	21	4	Screen	21.3							20.1	21.3			09/04/1985		CNR	Domestic	New Well	Rotary	No Chemistry
528	0083417	SW	15	055	21	4	Casing/Perforated Liner	54.9	48.8	54.9									08/06/1989		WHELAN, JAMES	Domestic	New Well	Rotary	No Chemistry
529	0154895	NW	16	055	21	4	Casing/Perforated Liner	48.8	42.7	48.8									13/10/1990		KREBS, BERNARD L.	Domestic	New Well	Rotary	No Chemistry
530	0083428	NE	17	055	21	4	Unknown	36.6													SCOTFORD COLONY	Domestic	Chemistry	Unknown	Chemistry Exists
531	0264357	SE	29	056	21	4	Casing/Open Hole	74.7											02/09/1961		PUCHALIK, P.	Domestic	Deepened	Drilled	Chemistry Exists
532	0083418	NE	15	055	21	4	Unknown	91.4													ANWEILER, SAL	Domestic	Chemistry	Unknown	Chemistry Exists
533	0083656	SE	16	055	21	4	Unknown	48.2													RIETVELD, LEENDERT	Domestic	Chemistry	Drilled	Chemistry Exists
534	0264494	09	33	056	21	4	Casing/Open Hole	23.5											16/08/1961		SCURRY RAINBOW OIL LTD	Domestic & Industrial	New Well	Rotary	Chemistry Exists
535	0260034	NW	08	054	22	4	Unknown	47.2											01/01/1925		ARBS, E.	Domestic & Stock	New Well	Drilled	No Chemistry
536	0299620	SW	33	054	23	4	Casing/Perforated Liner	54.9	29.9	32.6	35.7	51.8							23/03/2002		HAZELAAR, HARVEY	Domestic & Stock	New Well	Rotary	No Chemistry
537	0260223	SW	26	054	22	4	Casing/Perforated Liner	61.0	47.9	61.0									04/10/1984		GALLOWAY, ED	Domestic & Stock	New Well	Cable Tool	No Chemistry
538	0083535	01	32	055	21	4	Unknown														MOHR, G.P.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
539	0260068	NW	09	054	22	4	Unknown	30.5													MCEACHERN, J.	Domestic & Stock	Chemistry	Drilled	No Chemistry
540	0261392	08	11	055	22	4	Casing	61.0											01/01/1921		MAGEE, K	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
541	0263732	SE	13	056	21	4	Casing/Open Hole	42.1													WAGNER, J	Domestic & Stock	New Well	Cable Tool	No Chemistry
542	0261728	01	27	055	22	4	Casing	4.6													BELAIR, E C	Domestic & Stock	Chemistry	Hand Dug	Chemistry Exists
543	0264170	02	13	056	22	4	Unknown	10.7											01/01/1916		BERWICK, C.D.	Domestic & Stock	New Well	Hand Dug	No Chemistry
544	0261429	01	12	055	22	4	Casing	32.3											01/01/1922		BRICKRIDGE, A	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
545	0083378	09	07	055	21	4	Unknown	12.2													MAGEE, H.	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
546	0261778	09	29	055	22	4	Casing	22.9											01/01/1931		LANGLOIS, G R	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
547	0083433	NE	17	055	21	4	Casing/Perforated Liner	109.7	91.4	109.7									19/03/1986		SCOTFORD COLONY	Domestic & Stock	Deepened	Rotary	No Chemistry
548	0264301	SE	22	055	22	4	Perforated Casing/Liner	14.3											25/06/1985		GODBOUT, N.	Domestic & Stock	New Well	Bored	No Chemistry
549	0263820	SW	13	056	21	4	Perforated Casing/Liner	47.2	35.1	47.2									09/05/1988		PROCHNAU, E.	Domestic & Stock	New Well	Rotary	No Chemistry
550	0262076	08	34	054	23	4	Casing	18.3											01/01/1928		PARRIDY, C.	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
551	0262348	SW	35	054	23	4	Casing/Perforated Liner	42.7	30.5	42.7									26/09/1988		HANES, ALBERT	Domestic & Stock	New Well	Rotary	No Chemistry
552	0262130	SE	35	054	23	4	Casing/Perforated Liner	79.2	67.1	79.2									22/11/1988		DEVEREUX, W	Domestic & Stock	New Well	Rotary	No Chemistry
553	0083563	04	35	055	21	4	Unknown	30.5											01/01/1926		BERG, R.	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
554	0261886	09	01	056	21	4	Unknown	4.6													SCHULTZ, E	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
555	0280646	NE	36	054	23	4	Perforated Casing/Liner	14.3											19/10/1987		LAMOUREUX, JIM	Domestic & Stock	New Well	Bored	No Chemistry
556	0083420	NE	16	055	21	4	Casing/Open Hole	51.8											23/04/1965		MOHR, GUS	Domestic & Stock	New Well	Jet	No Chemistry
557	0231536	SW	02	055	23	4	Perforated Casing/Liner	67.1	57.9	64.0									09/08/1993		ARNDT, PETER	Domestic & Stock	New Well	Rotary	No Chemistry
558	0260224	10	26	054	22	4	Casing	30.2											01/01/1930		BETHIEL, A.	Domestic & Stock	New Well	Drilled	No Chemistry
559	0262102	12	34	054	23	4	Unknown	35.1											01/01/1921		SPEER, C.R.	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
560	0263735	08	13	056	21	4	Unknown	4.9											01/01/1927		WAGNER, J	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
561	0262018	SW	33	054	23	4	Not Applicable	45.7											02/11/1988	02/11/1988	STRAUSS, HOWARD #TEST HOLE 2	Domestic & Stock	Test Hole	Rotary	No Chemistry
562	0262005	SE	33	054	23	4	Not Applicable	42.7											03/11/1988	03/11/1988	STRAUSS, HOWARD #TEST HOLE	Domestic & Stock	Test Hole	Rotary	No Chemistry
563	0261595	03	26	054	23	4	Unknown	4.9													PODHANIUK, W.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
564	0154442	SE	36	055	22	4	Screen	30.5							29.3	30.5			21/03/1990		STEFFLER, BEN/GERALD	Domestic & Stock	New Well	Rotary	No Chemistry
565	0262523	SE	13	055	23	4	Casing/Perforated Liner	103.6	82.3	103.6									19/03/1983		KOZAK, NICK	Domestic & Stock	New Well	Rotary	Chemistry Exists
566	0274016	EH	36	054	23	4	Perforated Casing/Liner	17.7											25/04/1983		GAUMONT, C	Domestic & Stock	New Well	Bored	Chemistry Exists
567	0260217	02	26	054	22	4	Perforated Casing/Liner	70.1	50.3	61.3									12/12/1966		SLATER, GRACE	Domestic & Stock	New Well	Rotary	Chemistry Exists
568	0260928	NW	13	054	23	4	Unknown	4.9													TURNBULL, R.J.	Domestic & Stock	Chemistry	Hand Dug	Chemistry Exists

Waterwell Records Within the Study Area

	WELL ID	LOCATION					WELL_FINISH	WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED_USE	TYPE_WORK	DRILL_METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN			FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
569	0263896	NE	14	056	21	4	Screen	48.8							42.4	43.9			04/11/1988		HODGSON, G	Domestic & Stock	New Well	Rotary	No Chemistry
570	0264387	03	29	056	21	4	Unknown	5.5													PUCHALACH	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
571	0263979	04	19	056	21	4	Casing	15.2											01/01/1921		TAYLOR, J	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
572	0260195	13	21	054	22	4	Casing	61.0											01/01/1928		ARMSTRONG, G.	Domestic & Stock	New Well	Drilled	No Chemistry
573	0260193	05	21	054	22	4	Casing	42.7											01/01/1920		ARMSTRONG, J.	Domestic & Stock	New Well	Drilled	No Chemistry
574	0260192	NW	20	054	22	4	Screen & Open Hole	36.6							27.4	29.0			10/05/1966		STETSON, H.A.	Domestic & Stock	New Well	Rotary	Chemistry Exists
575	0260179	SW	17	054	22	4	Casing	61.0											01/01/1935		GALLOWY, P.	Domestic & Stock	New Well	Drilled	No Chemistry
576	0166391	SE	17	054	22	4	Perforated Casing/Liner	12.2	6.1	10.7									28/06/1989		TWIGGE, MRS E.	Domestic & Stock	New Well	Bored	No Chemistry
577	0260181	13	17	054	22	4	Casing	25.9													PETERS, H.B.	Domestic & Stock	New Well	Bored	No Chemistry
578	0160258	SW	16	054	22	4	Perforated Casing/Liner	15.2	7.6	13.7									09/11/1991		BIZUK, MORRIS	Domestic & Stock	New Well	Bored	No Chemistry
579	0260174	13	16	054	22	4	Casing	24.4											01/01/1910		SPALAN, G.	Domestic & Stock	New Well	Drilled	No Chemistry
580	0260172	04	16	054	22	4	Unknown	6.7													FLEMING, J.	Domestic & Stock	New Well	Hand Dug	No Chemistry
581	0260196	SE	22	054	22	4	Casing/Open Hole	37.2											29/11/1988		LA TRACE, DARLENE	Domestic & Stock	New Well	Rotary	Chemistry Exists
582	0153068	NE	08	054	22	4	Casing/Perforated Liner	73.2	61.0	73.2									26/09/1988		BORYS, BILLIE	Domestic & Stock	New Well	Cable Tool	No Chemistry
583	0260219	04	26	054	22	4	Slotted & Open Hole	59.4	49.1	55.2									24/03/1969		KLAUTT, A.R.	Domestic & Stock	New Well	Drilled	No Chemistry
584	0264354	01	29	056	21	4	Unknown	30.5													PUCHLUK, J.	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
585	0264143	SW	12	056	22	4	Casing	26.8											22/08/1985		SERINK, MIKE	Domestic & Stock	New Well	Bored	Chemistry Exists
586	0164457	NE	11	056	22	4	Casing/Perforated Liner	59.4	30.2	58.5									10/03/1992		BRIGGS, ALAN	Domestic & Stock	New Well	Rotary	No Chemistry
587	0263856	14	02	056	22	4	Casing	54.9											01/01/1924		TROTTER, J.	Domestic & Stock	New Well	Drilled	No Chemistry
588	0263863	10	02	056	22	4	Unknown	10.7											02/01/1900		MCPIKE, T.	Domestic & Stock	New Well	Hand Dug	No Chemistry
589	0263841	NW	01	056	22	4	Perforated Casing/Liner	34.4											10/12/1987		LAMOUREUX, RENALD	Domestic & Stock	New Well	Bored	Chemistry Exists
590	0266021	13	01	056	22	4	Casing	18.3											01/01/1934		YANCH, J.	Domestic & Stock	New Well	Bored	Chemistry Exists
591	0263834	04	01	056	22	4	Casing	64.0											01/01/1929		MORROW, E.	Domestic & Stock	New Well	Drilled	No Chemistry
592	0261844	13	35	055	22	4	Casing	22.9											01/01/1935		LECLAIRE, L	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
593	0261822	SE	34	055	22	4	Casing/Perforated Liner	54.9	42.7	53.3									19/03/1984		JIGOLYK, H.	Domestic & Stock	New Well	Cable Tool	No Chemistry
594	0261821	08	34	055	22	4	Casing	60.0											01/01/1926		LA CHAPPELLE	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
595	0264395	09	29	056	21	4	Unknown	12.2													KACHUK	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
596	0261215	12	07	055	22	4	Unknown	5.5											01/01/1908		LAMOUREUX, A.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
597	0261651	09	21	055	22	4	Casing	11.0											01/01/1922		GAUMONT, A	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
598	0083366	02	06	055	21	4	Unknown	16.5													BRICK, A.W.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
599	0206702	NE	03	056	21	4	Screen	44.2							40.5	42.1			26/03/1993		VELTMAN, HERB	Domestic & Stock	New Well	Rotary	No Chemistry
600	0261602	12	18	055	22	4	Unknown	6.4											01/01/1930		MCIASSIC, S	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
601	0263966	06	18	056	21	4	Casing	42.7											01/01/1922		MATHIEU, A	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
602	0083265	14	31	055	20	4	Unknown	24.1											01/01/1915		FISHER, J.	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
603	0264014	16	19	056	21	4	Unknown	7.3											01/01/1930		SMOLSKI, D.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
604	0261433	04	13	055	22	4	Casing	111.3											01/01/1922		KELLY, G	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
605	0261231	SE	08	055	22	4	Perforated Casing/Liner	14.9	7.0	9.1	12.2	14.9							28/07/1988		COURCHESNE, R	Domestic & Stock	New Well	Bored	No Chemistry
606	0261229	07	08	055	22	4	Unknown	9.1													ADDERHORD, A.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
607	0260198	13	22	054	22	4	Casing	61.0											01/01/1916		ROTH, H.G.	Domestic & Stock	New Well	Drilled	No Chemistry
608	0083438	03	18	055	21	4	Unknown	12.2											01/01/1938		MOORE, T.	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
609	0261679	09	24	055	22	4	Unknown	4.9											01/01/1932		THORNE, R E	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
610	0083459	NE	19	055	21	4	Unknown														SPRUCE HILL HOG RANCH	Domestic & Stock	Chemistry	Unknown	No Chemistry
611	0271540	NE	05	055	22	4	Open Hole	13.4											21/06/1985		GODBOUT, ROMEO	Domestic & Stock	New Well	Bored	No Chemistry
612	0083555	NW	34	055	21	4	Screen	42.7							38.1	39.9			01/09/1970		DAUST, CHARLIE	Domestic & Stock	New Well	Rotary	No Chemistry
613	0260442	NE	34	054	22	4	Screen	42.7											21/11/1988		BARTEL, RICHARD	Domestic & Stock	New Well	Rotary	Chemistry Exists
614	0260438	13	34	054	22	4	Casing	54.9											01/01/1926		WALL, T.	Domestic & Stock	New Well	Drilled	No Chemistry
615	0260427	04	34	054	22	4	Casing	48.8											01/01/1930		LAWRENCE, F.B.	Domestic & Stock	New Well	Drilled	No Chemistry
616	0260424	SE	32	054	22	4	Unknown	6.1														Domestic & Stock	New Well	Hand Dug	No Chemistry
617	0260378	11	29	054	22	4	Casing	61.0											01/01/1911		ADAMSON, R.F.	Domestic & Stock	New Well	Drilled	No Chemistry
618	0264335	SE	29	056	21	4	Casing/Perforated Liner	70.1											02/06/1976		PUCHALIK, P.	Domestic & Stock	New Well	Cable Tool	Chemistry Exists
619	0260228	05	28	054	22	4	Casing	30.5											01/01/1928		CRANSON, G.A.	Domestic & Stock	New Well	Drilled	No Chemistry
620	0260226	12	27	054	22	4	Casing	21.3													ROBERTSON, F.A.	Domestic & Stock	New Well	Bored	No Chemistry
621	0083435	NE	17	055	21	4	Casing/Perforated Liner	97.5	85.3	97.5									18/06/1985		SCOTFORD COLONY	Domestic & Stock	New Well	Rotary	No Chemistry
622	0091575	04	20	056	20	4	Unknown	3.7											01/01/1917		WIKEHLERK	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
623	0091499	16	06	056	20	4	Casing/Perforated Liner	68.0	48.8	68.0									12/04/1985		SCHRAM, GEORGE	Domestic & Stock	New Well	Rotary	Chemistry Exists
624	0264375	08	35	056	21	4	Unknown	3.7													CONSARTO	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
625	1911765	SW	02	057	21	4		79.2	71.0	77.1									27/02/2006	27/02/2006	SUNDAY KO, MIKE	Domestic & Stock	New Well	Rotary	No Chemistry
626	0083010	13	25	055	21	4	Unknown	27.4													HOFFMAN	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
627	0091560	SE	18	056	20	4	Cribbed	15.8											09/08/1978		MCLELLAN, ARTHUR	Domestic & Stock	New Well	Bored	No Chemistry
628	0264486	12	33	056	21	4	Unknown	24.4													PSYCH	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
629	0153696	NW	36	056	21	4	Casing/Perforated Liner	45.7	36.6	45.7									14/04/1989		BOWERIN, CATHERINE	Domestic & Stock	New Well	Cable Tool	No Chemistry
630	0264716	12	36	056	21	4	Unknown	4.0													TKACHUK	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
631	0262432	04	02	055	23	4	Unknown														SPEER, C.R.	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
632	0265807	SE	04	057	21	4	Casing/Perforated Liner	30.5											02/12/1976		SAWKA, WALTER	Domestic & Stock	New Well	Cable Tool	Chemistry Exists
633	0091563	08	18	056	20	4	Unknown	4.6											01/01/1925		KAUS, A.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
634	0091570	02	19	056	20	4	Unknown	12.8													SCHUMAK, A.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
635	0091495	04	06	056	20	4	Cribbed	17.1											16/04/1986		YAWORSKI, MIKE	Domestic & Stock	New Well	Bored	No Chemistry
636	0083436	NE	17	055	21	4	Unknown	79.9													SCOTFORD HUTTERITE BRETHREN	Domestic & Stock	Chemistry	Unknown	Chemistry Exists
637	0083437	NE	17	055	21	4	Unknown														SCOTFORD COLONY	Domestic & Stock	Chemistry	Unknown	No Chemistry
638	0264672	SE	36	056	21	4	Casing/Perforated Liner	42.7	27.4	42.7									12/05/1976		CORNELIUS	Domestic & Stock	New Well	Cable Tool	No Chemistry
639	0083465	SE	21	055	21	4	Casing/Open Hole	64.0											12/09/1982		THOMAS, WARREN	Domestic & Stock	New Well	Rotary	No Chemistry

Waterwell Records Within the Study Area

	WELL ID	LOCATION					WELL_FINISH	WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED_USE	TYPE_WORK	DRILL_METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN			FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
640	0083468	05	22	055	21	4	Unknown	39.0											01/01/1915		LANGHAUSEN, J.	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
641	0083477	NW	23	055	21	4	Screen	36.6							35.4	36.6			02/07/1968		ARNDT, ERDMAN	Domestic & Stock	New Well	Rotary	No Chemistry
642	0083469	NW	22	055	21	4	Casing/Open Hole	51.8											01/04/1965		LARSEN, S.A.	Domestic & Stock	New Well	Cable Tool	No Chemistry
643	0264662	04	35	056	21	4	Unknown	19.2													ROMANIUK, E.	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
644	0153768	NW	23	055	21	4	Screen	42.7							35.4	36.6			31/08/1990		ARNDT, R.E.	Domestic & Stock	New Well	Rotary	No Chemistry
645	0091574	12	19	056	20	4	Cribbed	14.6											20/09/1985		MATTHEWS, B.	Domestic & Stock	New Well	Bored	No Chemistry
646	0264503	04	34	056	21	4	Unknown	3.7													MALOWNY	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
647	0091555	SE	17	056	20	4	Cribbed	19.2	4.3	17.4									19/08/1986		SAMPERT, RAY	Domestic & Stock	New Well	Bored	No Chemistry
648	0091503	04	08	056	20	4	Unknown	7.6											01/01/1919		RISKE, E.	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
649	0091505	13	08	056	20	4	Cribbed	17.7											18/07/1984		SAMPERT, ROGER	Domestic & Stock	New Well	Bored	Chemistry Exists
650	0083499	05	27	055	21	4	Unknown	30.5											01/01/1924		UNDERSCHULTZ, A.	Domestic & Stock	Federal Well Survey	Drilled	No Chemistry
651	0262341	SW	35	054	23	4	Casing/Perforated Liner	48.8	36.6	48.8									13/10/1981		HANES, ALBERT R	Domestic & Stock	New Well	Rotary	No Chemistry
652	0091500	08	07	056	20	4	Cribbed	14.6											24/07/1981		SCHRAM, ELMER	Domestic & Stock	New Well	Bored	No Chemistry
653	0220716	NE	17	055	21	4	Casing/Perforated Liner	105.2											20/09/1991		SCOTFORD COLONY	Domestic & Stock	Reconstructed	Cable Tool	No Chemistry
654	0158576	SW	08	056	20	4	Perforated Casing/Liner	21.0											25/09/1979		SCHRAM, EDWARD	Domestic & Stock	New Well	Bored	No Chemistry
655	0091552	04	16	056	20	4	Unknown	6.7											01/01/1930		HENKLEMAN	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
656	0083497	09	26	055	21	4	Unknown	13.7											01/01/1933		FLUKER, R.	Domestic & Stock	Federal Well Survey	Bored	No Chemistry
657	0274028	EH	36	054	23	4	Perforated Casing/Liner	15.5	9.8	13.7									20/04/1989		GAUMONT, L	Domestic & Stock	New Well	Bored	No Chemistry
658	0091551	05	16	056	20	4	Unknown	4.9											01/01/1930		KALAS	Domestic & Stock	Federal Well Survey	Hand Dug	No Chemistry
659	0208867	SW	06	056	20	4	Perforated Casing/Liner	16.5	4.6	13.7									12/03/1993		YAWORSKI, MICHEAL	Domestic & Stock	New Well	Bored	No Chemistry
660	0282105	NW	11	055	22	4	Open Hole	100.0											26/04/1984		DOW CHEMICAL #370-3	Industrial	New Well	Rotary	No Chemistry
661	0261535	10	17	055	22	4	Not Applicable	967.7											12/06/1953		NORTHWESTERN UTILITIES LTD#5	Industrial	Unknown	Unknown	No Chemistry
662	0261761	01	01	055	23	4		9.1													#SP. 1914497	Industrial	Flowing Shot Hole	Unknown	No Chemistry
663	0083546	SH	34	055	21	4	Unknown	36.6													NORTHWESTERN UTILITIES	Industrial	Chemistry	Unknown	No Chemistry
664	0083545	SE	34	055	21	4	Casing/Perforated Liner	54.9	0.3	54.9									19/10/1982		NORTHWESTERN UTILITIES	Industrial	New Well	Rotary	No Chemistry
665	0289175	EH	17	056	21	4	Not Applicable	14.9	11.9	14.9									06/09/1997	06/09/1997	I.O.L. #2	Industrial	Test Hole-Abandoned	Rotary	No Chemistry
666	0083566	01	36	055	21	4	Slotted & Open Hole	24.4	20.4	21.9									16/11/1980		SHELL OIL	Industrial	New Well	Rotary	No Chemistry
667	0289174	EH	17	056	21	4	Not Applicable	13.4											08/09/1997	08/09/1997	I.O.L. #5	Industrial	Test Hole-Abandoned	Rotary	No Chemistry
668	0282106	NW	11	055	22	4	Open Hole	94.8											25/04/1984		DOW CHEMICAL #370-2	Industrial	New Well	Rotary	No Chemistry
669	0280652	WH	11	055	22	4	Not Applicable	29.0											19/07/1984		DOW CHEMICAL	Industrial	Cathodic Protection	Rotary	No Chemistry
670	0282102	SW	11	055	22	4	Open Hole	27.4											03/05/1984		DOW CHEMICAL #R-240-2	Industrial	New Well	Rotary	No Chemistry
671	0289177	EH	17	056	21	4	Not Applicable	15.2											08/09/1997	08/09/1997	I.O.L. #4	Industrial	Test Hole-Abandoned	Rotary	No Chemistry
672	0261436	SW	13	055	22	4	Unknown	4.9													DOW CHEMICAL	Industrial	Chemistry	Unknown	No Chemistry
673	0289173	EH	17	056	21	4	Not Applicable	15.2	11.9	13.4									09/09/1997	09/09/1997	I.O.L. #6	Industrial	Test Hole-Abandoned	Rotary	No Chemistry
674	0152048	NW	10	055	22	4	Screen	37.8							34.7	37.8			13/12/1989		DOW CHEMICAL#MONITORING WELL	Industrial	New Well	Rotary	No Chemistry
675	0152047	NW	10	055	22	4	Screen	41.1							38.1	41.1			10/12/1989		DOW CHEMICAL#MONITORING WELL	Industrial	New Well	Rotary	No Chemistry
676	0152045	NW	10	055	22	4	Screen	37.8							34.7	37.8			08/12/1989		DOW CHEMICAL#MONITORING WELL	Industrial	New Well	Rotary	No Chemistry
677	0261496	11	14	055	22	4	Screen	39.6							33.2	35.1			14/09/1974		DOME PETRO	Industrial	New Well	Rotary	No Chemistry
678	0261344	10	10	055	22	4	Not Applicable	1881.5											30/08/1966		DOW CHEMICAL #NACL	Industrial	Cathodic Protection	Unknown	No Chemistry
679	0282103	NW	11	055	22	4	Open Hole	98.8											01/05/1984		DOW CHEMICAL #370-5	Industrial	New Well	Rotary	No Chemistry
680	0282117	SE	10	055	22	4	Open Hole	25.9											04/05/1984		DOW CHEMICAL #150-2	Industrial	New Well	Rotary	No Chemistry
681	0282104	NW	11	055	22	4	Open Hole	100.6											03/05/1984		DOW CHEMICAL #370-4	Industrial	New Well	Rotary	No Chemistry
682	0298284	SW	19	055	21	4	Not Applicable	41.1														Industrial	Old Well-Abandoned	Not Applicable	No Chemistry
683	0261848	16	36	055	22	4	Not Applicable	365.8											11/05/1946		IMPERIAL OIL LTD #615	Industrial	Oil Exploratory	Unknown	No Chemistry
684	0083568	02	36	055	21	4	Slotted & Open Hole	15.2	11.9	13.1									18/11/1980		SHELL OIL	Industrial	New Well	Rotary	No Chemistry
685	0083569	01	36	055	21	4	Screen	30.5							13.1	18.9			06/11/1980		SHELL OIL	Industrial	New Well	Rotary	No Chemistry
686	0083567	01	36	055	21	4	Slotted & Open Hole	45.7	40.2	41.5									17/11/1980		SHELL OIL	Industrial	New Well	Rotary	No Chemistry
687	0083509	SE	29	055	21	4	Slotted & Open Hole	45.7	41.8	44.8									24/06/1977		CF BRAUN CO	Industrial	New Well	Rotary	No Chemistry
688	0083565	01	36	055	21	4	Screen	24.4							18.0	22.6			15/11/1980		SHELL OIL	Industrial	New Well	Rotary	No Chemistry
689	0282101	SE	10	055	22	4	Open Hole	71.9											08/05/1984		DOW CHEMICAL#R-90-3	Industrial	New Well	Rotary	No Chemistry
690	0083540	NE	32	055	21	4	Screen	41.1							35.7	41.1			06/10/1981		PCL BRAUN SIMONS LTD #HOLE5	Industrial	New Well	Rotary	No Chemistry
691	0261736	16	27	055	22	4	Not Applicable	304.5											21/05/1953		IMPERIAL OIL LTD #AO282-3	Industrial	Oil Exploratory	Unknown	No Chemistry
692	0152046	NW	10	055	22	4	Screen	36.0							32.9	36.0			12/12/1989		DOW CHEMICAL#MONITORING WELL	Industrial	New Well	Rotary	No Chemistry
693	0263849	01	02	056	22	4	Unknown	304.5											17/05/1953		IMPERIAL OIL LTD	Industrial	Oil Exploratory	Drilled	No Chemistry
694	0264153	04	13	056	22	4	Unknown												11/08/1953		IMPERIAL OIL LTD	Industrial	Flowing Shot Hole	Unknown	No Chemistry
695	0260380	10	29	054	22	4	Unknown	751.3											02/10/1953		MID-WESTERN IND GAS LTD	Industrial	Oil Exploratory	Drilled	No Chemistry
696	0260182	10	17	054	22	4	Unknown	780.3											10/05/1954		TRIZONE OIL DEV CO LTD	Industrial	Oil Exploratory	Drilled	No Chemistry
697	0091601	03	30	056	20	4	Open Hole	954.0											21/12/1950		IMPERIAL OIL LTD	Industrial	Oil Exploratory	Rotary	No Chemistry
698	0289172	EH	07	056	21	4	Not Applicable	30.5											06/09/1997	06/09/1997	I.O.L. #1	Industrial	Test Hole-Abandoned	Rotary	No Chemistry
699	0263918	04	15	056	21	4	Not Applicable	996.1											15/11/1950		SEABOARD OIL CO #4-15	Industrial	Oil Exploratory	Unknown	No Chemistry
700	0264161	13	12	056	22	4	Unknown	292.6											14/05/1953		IMPERIAL OIL LTD	Industrial	Test Hole	Drilled	No Chemistry
701	0261104	08	04	055	22	4	Unknown	762.0											03/09/1962		MIDWESTERN IND GAS LTD #8-4	Industrial	New Well	Unknown	No Chemistry
702	0264108	01	11	056	22	4	Unknown	286.5											14/05/1953		IMPERIAL OIL LTD	Industrial	Test Hole	Drilled	No Chemistry
703	0261723	04	26	055	22	4	Not Applicable	317.9											17/05/1953		IMPERIAL OIL LTD #AO282-1	Industrial	Oil Exploratory	Unknown	No Chemistry
704	1575400	SE	18	056	21	4		47.2							16.8	47.2			25/10/2006		ACCESS PIPELINES	Industrial	New Well	Rotary	No Chemistry
705	0264189	03	13	056	22	4	Unknown	246.3														Industrial	Flowing Shot Hole	Drilled	No Chemistry
706	0261247	06	09	055	22	4	Not Applicable	765.0											03/12/1959		DOME PETRO LTD	Industrial	Oil Exploratory	Unknown	No Chemistry
707	0260408	NW	32	054	22	4	Casing/Perforated Liner	35.7	31.4	35.1									01/01/1955		PEACE RIVER GLASS	Industrial	New Well	Unknown	No Chemistry
708	0261097	SE	03	055	22	4	Unknown	64.0													CAN COMSTOCK LTD	Industrial	Chemistry	Unknown	Chemistry Exists
709	0282100	NW	02	055	22	4	Open Hole	70.7											09/05/1984		DOW CHEMICAL#R-240-1	Industrial	New Well	Rotary	No Chemistry
710	0261092	00	02	055	22	4	Casing/Perforated Liner	42.7	39.6	42.7									08/03/1978		DOW CHEMICALS	Industrial	New Well	Unknown	No Chemistry

Waterwell Records Within the Study Area

	WELL ID	LOCATION					WELL_FINISH	WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED_USE	TYPE_WORK	DRILL_METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN			FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
711	0261087	00	02	055	22	4	Casing/Perforated Liner	25.9	21.3	25.9									02/03/1978		DOW CHEMICALS	Industrial	New Well	Unknown	No Chemistry
712	0263860	13	02	056	22	4	Unknown	286.5											18/05/1953		IMPERIAL OIL LTD	Industrial	Oil Exploratory	Drilled	No Chemistry
713	0261825	12	34	055	22	4	Not Applicable	304.5											13/05/1953		IMPERIAL OIL LTD #AO282 5	Industrial	Oil Exploratory	Unknown	No Chemistry
714	0263838	03	01	056	22	4	Unknown	1321.3											28/02/1951		LINGNORA GOLD MINES LTD	Industrial	Unknown	Drilled	No Chemistry
715	0261682	04	36	055	22	4	Not Applicable	299.0											21/05/1953		IMPERIAL OIL LTD #AO282-2	Industrial	Oil Exploratory	Unknown	No Chemistry
716	0260402	NW	32	054	22	4	Casing	64.0											29/11/1956		PEACE RIVER GLASS	Industrial	New Well	Drilled	No Chemistry
717	0289176	EH	17	056	21	4	Not Applicable	18.3	15.8	17.4									07/09/1997	07/09/1997	I.O.L. #3	Industrial	Test Hole-Abandoned	Rotary	No Chemistry
718	0083543	NE	32	055	21	4	Slotted & Open Hole	42.7	40.5	42.7									25/08/1981		PCL BRAUN SIMONS LTD #HOLE3	Industrial	New Well	Rotary	No Chemistry
719	0083542	NE	32	055	21	4	Slotted & Open Hole	42.7	40.2	42.7									02/09/1981		PCL BRAUN SIMONS LTD #HOLE2	Industrial	New Well	Rotary	No Chemistry
720	0083541	NE	32	055	21	4	Slotted & Open Hole	42.7	40.2	42.7									20/08/1981		PCL BRAUN SIMONS LTD #HOLE1	Industrial	New Well	Rotary	No Chemistry
721	0083539	NE	32	055	21	4	Screen	41.1							35.1	41.1			09/10/1981		PCL BRAUN SIMONS LTD #WELL4	Industrial	New Well	Rotary	Chemistry Exists
722	0261083	00	02	055	22	4	Casing/Perforated Liner	44.2	33.5	39.6									24/02/1978		DOW CHEMICAL	Industrial	New Well	Unknown	No Chemistry
723	0242400	NW	11	055	22	4	Perforated Casing/Liner	7.9	0.9	7.9									22/11/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
724	0242405	NW	11	055	22	4	Perforated Casing/Liner	11.6	0.9	11.6									22/11/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
725	0242404	NW	11	055	22	4	Perforated Casing/Liner	10.7	0.9	10.7									22/11/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
726	0242406	SE	11	055	22	4	Open Hole	13.1											29/11/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
727	0242403	NW	11	055	22	4	Perforated Casing/Liner	9.8	0.9	9.8									22/11/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
728	0242402	NW	11	055	22	4	Perforated Casing/Liner	9.4	0.9	9.4									22/11/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
729	0242401	NW	11	055	22	4	Perforated Casing/Liner	8.5	0.9	8.5									22/11/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
730	0261846	NE	35	054	22	4	Not Applicable	30.5											05/08/1976		ALTA ENV	Investigation	Test Hole	Unknown	No Chemistry
731	0242398	NW	11	055	22	4	Perforated Casing/Liner	7.3	0.9	7.3									22/11/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
732	0281173	SE	01	056	22	4	Not Applicable	29.0											11/05/1969		ALTA ENV #0292E	Investigation	Test Hole	Drilled	No Chemistry
733	0261826	NE	34	054	22	4	Not Applicable	36.6											07/08/1976		EDMONTON REGIONAL GW ST#16208	Investigation	Test Hole	Unknown	No Chemistry
734	0281168	SH	06	056	21	4	Not Applicable	36.6											11/05/1969		ALTA ENV #0294E	Investigation	Test Hole	Drilled	No Chemistry
735	0242397	SE	10	055	22	4	Open Hole	12.2											14/11/1978		DOW CHEMICAL	Investigation	Test Hole	Cable Tool	No Chemistry
736	0242399	NW	11	055	22	4	Perforated Casing/Liner	7.6	0.9	7.6									22/11/1978		DOW CHEMICAL	Investigation	New Well	Cable Tool	No Chemistry
737	0281169	09	33	056	21	4	Not Applicable	19.8											18/04/1972		ALTA ENV #0792E	Investigation	Test Hole	Drilled	No Chemistry
738	0281170	09	32	055	21	4	Screen	47.2							40.5	42.1	45.1	46.3	09/05/1970		ALTA ENV #0499E	Investigation	Test Hole	Drilled	Chemistry Exists
739	1420564	NW	19	054	22	4		38.1							27.7	34.4			24/01/2005		N C I A	Monitoring	New Well	Rotary	No Chemistry
740	0261489	SW	14	055	22	4	Screen	6.1							4.6	6.1					DOME PETRO#UGS@BRINEPITSITE 4	Monitoring	Chemistry	Unknown	Chemistry Exists
741	0261460	SW	14	055	22	4	Screen	6.1							4.6	6.1					DOME PETRO#BRINE UGS PITSITE 1	Monitoring	Chemistry	Unknown	Chemistry Exists
742	0261475	SW	14	055	22	4	Screen	6.1							4.6	6.1					DOME PETRO#BRINE UGS PITSITE 2	Monitoring	Chemistry	Unknown	Chemistry Exists
743	0042021	13	24	056	21	4	Screen	4.6							3.0	4.6			25/09/1991		ALTA ENV	Monitoring	New Well	Rotary	No Chemistry
744	0042022	SW	14	056	21	4	Screen	6.1							3.1	4.6			25/09/1991		ALTA ENV/CHMILIAR, W.	Monitoring	New Well	Rotary	No Chemistry
745	0261485	SW	14	055	22	4	Screen	6.1							4.6	6.1					DOME PETRO#UGS@BRINEPITSITE 3	Monitoring	Chemistry	Unknown	Chemistry Exists
746	0264103	SE	20	056	21	4	Unknown	3.0													IMPERIAL OIL #9	Monitoring	Chemistry	Unknown	Chemistry Exists
747	0264078	SE	20	056	21	4	Unknown	5.5													IMPERIAL OIL #7	Monitoring	Chemistry	Unknown	Chemistry Exists
748	0264081	SE	20	056	21	4	Unknown	5.5													IMPERIAL OIL #10	Monitoring	Chemistry	Unknown	Chemistry Exists
749	0264086	SE	20	056	21	4	Unknown	4.3													IMPERIAL OIL #8	Monitoring	Chemistry	Unknown	Chemistry Exists
750	0264089	SE	20	056	21	4	Unknown	4.3													IMPERIAL OIL #5H	Monitoring	Chemistry	Unknown	Chemistry Exists
751	0264094	SE	20	056	21	4	Unknown	4.3													IMPERIAL OIL #5E	Monitoring	Chemistry	Unknown	Chemistry Exists
752	0264056	SE	20	056	21	4	Unknown	43.3													IMPERIAL OIL #5A	Monitoring	Chemistry	Unknown	Chemistry Exists
753	0264098	SE	20	056	21	4	Unknown	4.0													IMPERIAL OIL #5G	Monitoring	Chemistry	Unknown	Chemistry Exists
754	0264054	SE	20	056	21	4	Unknown	2.1													IMPERIAL OIL #5F	Monitoring	Chemistry	Unknown	Chemistry Exists
755	0264021	SE	20	056	21	4	Unknown	5.2													IMPERIAL OIL #6A	Monitoring	Chemistry	Unknown	Chemistry Exists
756	0264050	SE	20	056	21	4	Unknown	43.0													IMPERIAL OIL #3B	Monitoring	Chemistry	Unknown	Chemistry Exists
757	0264075	SE	20	056	21	4	Unknown	7.3													IMPERIAL OIL #5D	Monitoring	Chemistry	Unknown	Chemistry Exists
758	1420288	NW	14	056	21	4		42.7							35.1	38.1			02/02/2005		NCIA	Monitoring	New Well	Rotary	No Chemistry
759	1420305	NW	31	055	21	4		42.7							31.1	37.2			28/01/2005		NCIA	Monitoring	Test Hole	Rotary	No Chemistry
760	1420309	NE	33	055	21	4		44.8							35.7	41.8			27/01/2005		NCIA	Monitoring	New Well	Rotary	No Chemistry
761	0264096	SE	20	056	21	4	Unknown	4.0													IMPERIAL OIL #4A	Monitoring	Chemistry	Unknown	Chemistry Exists
762	0261294	NW	10	055	22	4	Screen	16.5							13.4	16.5			26/10/1989		DOW CHEMICAL	Monitoring	Test Hole	Rotary	No Chemistry
763	0264036	SE	20	056	21	4	Unknown	21.9													IMPERIAL OIL #5B	Monitoring	Chemistry	Unknown	Chemistry Exists
764	0264045	SE	20	056	21	4	Unknown	33.5													IMPERIAL OIL #6B	Monitoring	Chemistry	Unknown	Chemistry Exists
765	0261420	NW	11	055	22	4	Screen	39.6							36.0	37.5			25/08/1980		DOW CHEMICAL	Monitoring	Test Hole	Rotary	No Chemistry
766	0261414	NW	11	055	22	4	Screen	36.6							34.1	35.7			27/08/1980		DOW CHEMICAL	Monitoring	Test Hole	Rotary	No Chemistry
767	0261427	NE	11	055	22	4	Perforated Casing/Liner	7.3	0.9	7.3									22/11/1978		DOW CHEMICAL #12 MONITORING W	Monitoring	Test Hole	Cable Tool	No Chemistry
768	0261423	NE	11	055	22	4	Casing/Open Hole	39.6											27/11/1978		DOW CHEMICAL #10 MONITORING W	Monitoring	Test Hole	Cable Tool	No Chemistry
769	0261297	NW	10	055	22	4	Screen	18.0							14.9	18.0			26/10/1989		DOW CHEMICAL	Monitoring	Test Hole	Rotary	No Chemistry
770	0261254	SE	10	055	22	4	Casing/Open Hole	8.5											08/11/1978		DOW CHEMICAL #MONCTOUNGWELL	Monitoring	New Well	Cable Tool	No Chemistry
771	0264061	SE	20	056	21	4	Unknown	15.2													IMPERIAL OIL #6C	Monitoring	Chemistry	Unknown	Chemistry Exists
772	0261271	NW	10	055	22	4	Casing/Open Hole	16.8							13.4	16.5			24/10/1989		DOW CHEMICAL	Monitoring	Test Hole	Rotary	No Chemistry
773	0261321	10	10	055	22	4	Casing/Open Hole	4.9											09/04/1979		DOW CHEMICAL #22 MONITORING W	Monitoring	Test Hole	Cable Tool	No Chemistry
774	0261340	09	10	055	22	4	Casing/Open Hole	5.8											09/04/1979		DOW CHEMICAL	Monitoring	Test Hole	Cable Tool	No Chemistry
775	0261261	08	10	055	22	4	Casing/Open Hole	7.9											14/11/1978		DOW CHEMICAL LTD #8	Monitoring	Test Hole	Cable Tool	No Chemistry
776	0261265	07	10	055	22	4	Casing/Open Hole	33.5											08/11/1978		DOW CHEMICAL #6 MONITORING	Monitoring	Test Hole	Cable Tool	No Chemistry
777	0264030	SE	20	056	21	4	Unknown	7.9													IMPERIAL OIL #6D	Monitoring	Chemistry	Unknown	Chemistry Exists
778	0261428	10	11	055	22	4	Perforated Casing/Liner	7.3	0.9	7.3									22/11/1978		DOW CHEMICAL #13 MONITORING W	Monitoring	Test Hole	Cable Tool	No Chemistry
779	0263459	01	05	056	21	4	Screen	42.7							39.0	40.5			03/05/1982		CAN BADGER CO LTD #8	Monitoring	New Well	Rotary	No Chemistry
780	0263447	01	05	056	21	4	Casing/Perforated Liner	76.2	64.0	73.2									22/04/1982	22/04/1982	CAN BADGER CO LTD	Monitoring	New Well-Abandoned	Rotary	No Chemistry
781	0263465	01	05	056	21	4	Casing/Open Hole	42.7											05/05/1982		CAN BADGER CO LTD #9	Monitoring	New Well	Rotary	No Chemistry

Waterwell Records Within the Study Area

	WELL ID	LOCATION					WELL_FINISH	WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED_USE	TYPE_WORK	DRILL_METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN			FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
782	0263387	01	05	056	21	4	Perforated Casing/Liner	42.1	39.3	42.1									27/04/1982		CAN BADGER CO LTD #7	Monitoring	New Well	Rotary	No Chemistry
783	1420299	SW	31	054	22	4		32.0							25.0	29.6			25/01/2005		NCIA	Monitoring	New Well	Rotary	No Chemistry
784	0263397	01	05	056	21	4	Perforated Casing/Liner	45.7	38.1	39.6									30/03/1982	30/03/1982	CAN BADGER CO LTD	Monitoring	New Well-Abandoned	Rotary	No Chemistry
785	0263417	01	05	056	21	4	Casing/Perforated Liner	61.0	45.7	61.0									08/04/1982		CAN BADGER CO LTD #3	Monitoring	New Well	Rotary	No Chemistry
786	0261285	NW	10	055	22	4	Screen	16.2							13.1	16.2			26/10/1989		DOW CHEMICAL	Monitoring	Test Hole	Rotary	No Chemistry
787	0261302	10	10	055	22	4	Casing/Open Hole	5.2											09/04/1979		DOW CHEMICAL #21	Monitoring	Test Hole	Cable Tool	No Chemistry
788	1420313	SE	04	055	22	4		36.6							26.5	31.1			03/02/2005		NCIA	Monitoring	New Well	Rotary	No Chemistry
789	0263410	01	05	056	21	4	Perforated Casing/Liner	47.2	38.1	41.1									06/04/1982		CAN BADGER CO LTD #2	Monitoring	New Well	Rotary	No Chemistry
790	0261281	NW	10	055	22	4	Screen & Open Hole	18.0							13.7	16.8			21/10/1989		DOW CHEMICAL #1 MONITOR	Monitoring	Test Hole	Rotary	No Chemistry
791	0263439	01	05	056	21	4	Casing/Perforated Liner	91.4	76.5	82.3									16/04/1982	16/04/1982	CAN BADGER CO LTD	Monitoring	New Well-Abandoned	Rotary	No Chemistry
792	0263423	01	05	056	21	4	Casing/Perforated Liner	61.0	45.7	61.0									13/04/1982		CAN BADGER CO LTD #4	Monitoring	New Well	Rotary	No Chemistry
793	0263828	16	13	056	21	4	Screen	36.6							31.1	32.3			10/11/1975		BRUDERHEIM, TOWN OF#13-75	Municipal	New Well-Abandoned	Unknown	Chemistry Exists
794	0263821	05	13	056	21	4	Screen & Open Hole	48.8							41.8	43.0			11/11/1975		BRUDERHEIM, TOWN OF#14-75	Municipal	New Well	Unknown	Chemistry Exists
795	0260416	NH	32	054	22	4	Casing/Open Hole	18.6														Municipal	New Well	Drilled	No Chemistry
796	0101384	NW	32	054	22	4	Unknown														FT SASK, TOWN OF #WELL 1	Municipal	Unknown	Unknown	No Chemistry
797	0264233	15	21	056	21	4	Screen	42.7							34.1	35.4			07/11/1975		BRUDERHEIM, TOWN OF#12-75	Municipal	New Well	Unknown	Chemistry Exists
798	0260180	04	17	054	22	4	Unknown	29.0											22/04/1972		ALTA ENV/WATER RES	Municipal	Unknown	Drilled	No Chemistry
799	0263738	01	13	056	21	4	Perforated Casing/Liner	43.6	30.8	38.4									16/07/1975		BRUDERHEIM, TOWN OF#6-75 PUMP	Municipal	New Well	Unknown	Chemistry Exists
800	0263912	09	14	056	21	4	Unknown	49.4											16/07/1975		BRUDERHEIM, TOWN OF	Municipal	New Well	Unknown	No Chemistry
801	0263729	16	12	056	21	4	Screen & Open Hole	42.7							33.8	37.2			04/11/1975		BRUDERHEIM, TOWN OF#10-75	Municipal	New Well	Unknown	Chemistry Exists
802	0263728	16	12	056	21	4	Screen & Open Hole	42.7							35.7	37.2			03/10/1975		BRUDERHEIM, TOWN OF #9-75	Municipal	New Well	Unknown	Chemistry Exists
803	0263723	16	12	056	21	4	Screen	42.7							29.3	30.8			06/11/1975		BRUDERHEIM, TOWN OF#11-75	Municipal	New Well	Unknown	Chemistry Exists
804	0156873	NW	09	055	22	4	Not Applicable														U.M.O.L.-C.R.N.E.W.S.	Municipal	Chemistry	Not Applicable	No Chemistry
805	0263789	01	13	056	21	4	Perforated Casing/Liner	35.7	34.4	35.7									16/07/1975		BRUDERHEIM, TOWN OF #6A-75	Municipal & Observation	New Well	Unknown	No Chemistry
806	1420210	15	09	056	21	4		48.8							32.0	53.3			22/03/2004		STANTEC CONSULTING LTD	Observation	New Well	Rotary	No Chemistry
807	1420565	SW	34	055	21	4		42.7											21/01/2005	21/01/2005	N C I A	Observation	New Well-Abandoned	Rotary	No Chemistry
808	1420224	16	10	056	21	4		48.8							40.2	43.3			24/03/2004		STANTEC CONSULTING LTD	Observation	New Well	Rotary	No Chemistry
809	0262034	09	33	054	23	4	Unknown	56.4											06/10/1972		ALTA ENV #0886E	Observation	Test Hole	Unknown	No Chemistry
810	0234526	SE	30	056	20	4	Unknown	37.5											13/05/1969		ALTA ENV #0299E	Observation	Test Hole	Unknown	No Chemistry
811	1420217	13	10	056	21	4		48.8							38.7	44.8			23/03/2004		STANTEC CONSULTING LTD	Observation	New Well	Rotary	No Chemistry
812	1420228	04	10	056	21	4		36.6							33.5	36.6			23/03/2004		STANTEC CONSULTING LTD	Observation	New Well	Rotary	No Chemistry
813	1420115	NE	10	055	22	4		24.7							18.6	24.7			09/02/2005		AGRIUM PLANT -FT SASKATCHEWAN	Observation	New Well	Rotary	No Chemistry
814	0234530	13	30	056	20	4	Screen	10.1							8.5	10.1			27/03/1985		ALTA ENV #2342E	Observation	Test Hole	Rotary	Chemistry Exists
815	1420174	SE	30	055	21	4		47.2											19/01/2005	19/01/2005	NCIA	Observation	Dry Hole-Abandoned	Rotary	No Chemistry
816	1420007	SW	24	055	22	4		43.9							37.8	43.9			15/05/2005		NCIA	Observation	New Well	Rotary	No Chemistry
817	0286117	13	28	055	21	4	Unknown	29.3											25/06/1969		#HOLE 669-H	Observation	Test Hole	Auger	No Chemistry
818	1420016	NE	10	055	22	4		17.4							14.3	17.4			10/02/2005		AGRIUM PLANT-FORT SASKATCHEWA	Observation	New Well	Rotary	No Chemistry
819	1420181	SE	36	055	22	4		12.2											19/01/2005	19/01/2005	NCIA	Observation	Dry Hole-Abandoned	Rotary	No Chemistry
820	1420030	NE	32	054	22	4		30.5							21.6	26.2			26/01/2005		NCIA	Observation	New Well	Rotary	No Chemistry
821	1420104	SW	10	055	22	4		15.8							12.8	15.8			10/11/2005		AGRIUM	Observation	New Well	Rotary	No Chemistry
822	1420197	SW	34	055	21	4		54.9											20/01/2005	20/01/2005	NCIA	Observation	Test Hole-Abandoned	Rotary	No Chemistry
823	1420143	NE	10	055	22	4		19.2							15.2	18.3			11/02/2005		AGRIUM PLANT-FT SASKATCHEWAN	Observation	New Well	Rotary	No Chemistry
824	0083370	SW	07	055	21	4	Casing/Open Hole	42.7											06/08/1976		ALTA ENV #1619BE	Observation	Test Hole	Rotary	No Chemistry
825	0083472	12	22	055	21	4	Open Hole	30.8											24/06/1969		ALTA AGRICULTURE	Observation	Test Hole	Rotary	No Chemistry
826	1420242	NW	15	056	21	4		42.7							36.0	40.5			02/02/2005		NCIA	Observation	New Well	Rotary	No Chemistry
827	1420203	SE	30	055	21	4		47.2											19/01/2005	19/01/2005	NCIA	Observation	Unknown	Rotary	No Chemistry
828	1420578	SE	16	056	21	4		48.8							39.6	45.7			23/06/2006		SHELL SCOTFORD	Observation	New Well	Rotary	No Chemistry
829	1420207	SW	34	055	21	4		54.9											20/01/2005	20/01/2005	NCIA	Observation	Test Hole	Rotary	No Chemistry
830	0286110	01	28	055	21	4	Unknown	21.3											24/06/1969		#HOLE 670-H	Observation	Test Hole	Auger	No Chemistry
831	0286112	13	22	055	21	4	Unknown	30.8											24/06/1969		#HOLE 671-H	Observation	Test Hole	Auger	No Chemistry
832	1420259	SE	29	054	22	4		36.6											17/01/2005	17/01/2005	NCIA	Observation	Test Hole-Abandoned	Rotary	No Chemistry
833	1420433	SW	32	055	21	4		45.7							38.7	41.8			08/09/2006		SHELL SCOTTFORD REFINERY	Observation	Piezometer	Rotary	No Chemistry
834	1420152	SW	25	055	22	4		48.8											21/01/2005	21/02/2005	NCIA	Observation	Test Hole-Abandoned	Rotary	No Chemistry
835	1420432	SW	32	055	21	4		17.1							14.0	17.1			08/09/2006		SHELL SCOTTFORD REFINERY	Observation	Piezometer	Rotary	No Chemistry
836	0260458	SW	36	054	22	4	Screen & Open Hole	13.7											07/04/1988			Observation	Test Hole	Bored	No Chemistry
837	0234548	13	30	056	20	4	Open Hole	78.9											19/03/1985		ALTA ENV #2339E	Observation	Test Hole	Rotary	Chemistry Exists
838	1420213	NE	32	054	22	4		30.5							21.6	26.2			26/01/2005		NCIA	Observation	New Well	Rotary	No Chemistry
839	0263831	SW	01	056	22	4	Unknown	19.8													ALTA ENV/WATER RES #0293E	Observation	Test Hole	Rotary	No Chemistry
840	0083369	NE	06	055	21	4	Casing/Open Hole	15.2											08/04/1988		ALTA ENV	Observation	Test Hole	Auger	No Chemistry
841	0234549	13	30	056	20	4	Not Applicable	72.5											11/03/1985	11/03/1985	ALTA ENV #2334E	Observation	Test Hole-Abandoned	Rotary	No Chemistry
842	1420579	NE	04	056	21	4		44.2							36.9	39.9			21/06/2006		SHELL SCOTFORD	Observation	New Well	Rotary	No Chemistry
843	1420418	NE	10	055	22	4		25.0							21.9	25.0			09/02/2005		AGRIUM PLANT, FT SASKATCHEWAN	Observation	New Well	Rotary	No Chemistry
844	0234538	13	30	056	20	4	Screen	10.1							8.5	10.1			27/03/1985		ALTA ENV #2343E	Observation	Test Hole	Rotary	Chemistry Exists
845	1420419	NE	10	055	22	4		30.5							21.9	25.0			09/02/2005		AGRIUM PLANT, FT SASKATCHEWAN	Observation	New Well	Rotary	No Chemistry
846	0234545	13	30	056	20	4	Screen	48.2							46.3	47.9			22/03/1985		ALTA ENV #2340E	Observation	Test Hole	Rotary	No Chemistry
847	0234532	13	30	056	20	4	Screen	36.9							35.4	36.9			26/03/1985		ALTA ENV #2341E	Observation	Test Hole	Rotary	No Chemistry
848	2058433	04	17	054	22	4		29.0											22/04/1972		ALTA ENV - #791E	Observation	Test Hole	Unknown	No Chemistry
849	1420003	NW	05	056	21	4		44.2							38.1	44.2			24/09/2004		SHELL CANADA	Observation	New Well	Rotary	No Chemistry
850	0234510	NW	30	056	20	4	Unknown	51.8											12/05/1969		ALTA ENV #0298E	Observation	Test Hole	Unknown	No Chemistry
851	1420023	NE	18	055	21	4		38.7							34.1	38.7			31/01/2005		NCIA	Observation	New Well	Rotary	No Chemistry
852	1420001	NE	10	055	22	4		19.2							16.2	19.2			10/02/2005		AGRIUM PLANT-FORT SASKATCHEWA	Observation	New Well	Rotary	No Chemistry

Waterwell Records Within the Study Area

	WELL ID	LOCATION					WELL_FINISH	WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED_USE	TYPE_WORK	DRILL_METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN			FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
853	0215410	08	30	054	22	4	Perforated Casing/Liner	42.7	29.0	34.1									06/08/1976		ALTA ENV #1619E	Observation	Test Hole	Unknown	No Chemistry
854	1420135	NE	10	055	22	4		18.3							15.2	18.3			10/02/2005		AGRIUM PLANT	Observation	New Well	Rotary	No Chemistry
855	1420161	SW	15	055	22	4		36.6											18/01/2005	18/01/2005	NCIA	Observation	Dry Hole-Abandoned	Rotary	No Chemistry
856	1420097	09	10	056	21	4		36.6											24/03/2004	24/03/2004	STANTEC CONSULTING LTD	Observation	Test Hole-Abandoned	Unknown	No Chemistry
857	1420165	NW	04	055	22	4		12.2											18/01/2005	18/01/2005	NCIA	Observation	Dry Hole-Abandoned	Rotary	No Chemistry
858	1495324	NE	12	056	21	4		34.4							31.1	34.1			22/08/2007		STRATHCONA COUNTY / UMA	Observation	New Well	Rotary	No Chemistry
859	1420173	SW	26	055	22	4		30.5											18/01/2005	18/01/2005	NCIA	Observation	Dry Hole-Abandoned	Rotary	No Chemistry
860	1420190	SW	15	055	22	4		36.6											18/01/2005	18/01/2005	NCIA	Observation	Unknown	Rotary	No Chemistry
861	1420020	SE	29	055	21	4		33.5							30.5	33.5			03/02/2005		NICA	Observation	New Well	Rotary	No Chemistry
862	1420018	NE	03	056	21	4		48.8											20/01/2005	20/01/2005	NCIA	Observation	Test Hole-Abandoned	Rotary	No Chemistry
863	0260051	NE	08	054	22	4	Screen	38.1							6.4	12.8			14/04/1977		KENNEDY	Observation	New Well	Rotary	No Chemistry
864	1420193	SW	25	055	22	4		48.8											21/01/2005	21/01/2005	NCIA	Observation	Test Hole	Rotary	No Chemistry
865	1420050	NW	24	054	23	4		19.8							15.5	19.8			24/01/2005		NCIA	Observation	New Well	Rotary	No Chemistry
866	0224185	SE	18	056	20	4	Not Applicable	73.2											08/10/1993	08/10/1993	MCLELLAN, ART	Observation	Test Hole-Abandoned	Rotary	No Chemistry
867	1420089	SW	24	055	22	4		43.9							37.8	43.9			15/02/2005		NCIA	Other	New Well	Rotary	No Chemistry
868	1420110	NE	10	055	22	4		25.0							21.9	25.0			09/02/2005		FT SASKATC HOWAN,AGRIUM PLANT	Other	New Well	Rotary	No Chemistry
869	1420095	SW	10	055	22	4		15.8							12.8	15.8			10/11/2005		AGRIUM	Other	New Well	Rotary	No Chemistry
870	1420102	NE	10	055	22	4		25.0							23.8	25.0			09/02/2005		FT SASKATC HOWAN,AGRIUM PLANT	Other	New Well	Rotary	No Chemistry
871	1420070	SE	29	054	22	4		36.6											17/01/2005	17/01/2005	NCIA	Other	New Well	Rotary	No Chemistry
872	1420140	NE	10	055	22	4		24.7							18.6	24.7			09/02/2005		AGRIUM PLANT	Other	New Well	Rotary	No Chemistry
873	1420195	NW	24	054	23	4		19.8							15.5	19.8			24/01/2005		NCIA	Other	New Well	Rotary	No Chemistry
874	0261523	12	17	055	22	4	Unknown	10.7											01/01/1935		NORMANDEAU, J	Other	Federal Well Survey	Hand Dug	No Chemistry
875	0196962	08	22	054	22	4	Unknown	150.9											29/05/1975		ARC# TH 3-75	Other	Coal Test Hole	Unknown	No Chemistry
876	1420148	NE	10	055	22	4		17.4							14.3	17.4			10/02/2005		FT SASKATC HOWAN,AGRIUM PLANT	Other	New Well	Rotary	No Chemistry
877	1420011	NE	10	055	22	4		18.3							15.2	18.3			11/02/2005		FT SASKATC HOWAN,AGRIUM PLANT	Other	New Well	Rotary	No Chemistry
878	1420155	SE	29	055	21	4		33.5							30.5	33.5			03/02/2005		NICA	Other	New Well	Rotary	No Chemistry
879	1420129	NE	10	055	22	4		25.0							21.9	25.0			09/02/2005		AGRIUM PLANT	Other	New Well	Rotary	No Chemistry
880	1420125	NE	10	055	22	4		19.2							16.2	19.2			10/02/2005		FT SASKATC HOWAN,AGRIUM PLANT	Other	New Well	Rotary	No Chemistry
881	1420117	NE	10	055	22	4		24.7							18.6	24.7			09/02/2005		FT SASKATC HOWAN,AGRIUM PLANT	Other	New Well	Rotary	No Chemistry
882	1420162	NE	18	055	21	4		38.7							34.1	38.7			31/01/2005		NCIA	Other	New Well	Rotary	No Chemistry
883	0261227	09	07	055	22	4	Unknown	7.9											01/01/1930		VILLENEUVE, E.	Stock	Federal Well Survey	Hand Dug	No Chemistry
884	0091568	NW	18	056	20	4	Slotted & Open Hole	47.2											24/08/1987		SERINK, WILLIAM	Stock	New Well	Rotary	No Chemistry
885	0264931	NE	17	054	22	4	Casing/Open Hole	67.1											18/04/1955		ARMSTRONG	Stock	New Well	Drilled	Chemistry Exists
886	0260183	NW	18	054	22	4	Casing/Open Hole	36.6											01/02/1974		SMITH, HARRY	Stock	New Well	Cable Tool	No Chemistry
887	0260190	SE	19	054	22	4	Casing	28.7											01/01/1925		LOREN, J.	Stock	New Well	Combination	No Chemistry
888	0264282	09	27	056	21	4	Screen	67.1							30.5	36.6	42.7	48.8	20/05/1986		MEDAK, W	Stock	New Well	Rotary	No Chemistry
889	0083430	16	17	055	21	4	Slotted & Open Hole	73.2	71.6	73.2									23/06/1978		SCOTFORD COLONY	Stock	New Well	Rotary	No Chemistry
890	0083424	NE	17	055	21	4	Casing/Perforated Liner	85.3	73.2	85.3									07/12/1983		SCOTFORD COLONY	Stock	New Well	Rotary	Chemistry Exists
891	0083422	NW	17	055	21	4	Casing/Open Hole	39.6											01/11/1973		SCOTFORD COLONY	Stock	New Well	Cable Tool	No Chemistry
892	0083441	16	18	055	21	4	Unknown	12.2											01/01/1928		BARCLEY, E.H.	Stock	Federal Well Survey	Bored	No Chemistry
893	0083515	SE	30	055	21	4	Cribbed	9.8	3.7	9.8									20/08/1975	01/01/2001	GODBOUT, STAN	Stock	New Well	Bored	No Chemistry
894	0264947	NE	35	054	22	4	Casing	51.8											01/09/1973		SIMMONS, HECTOR	Stock	New Well	Cable Tool	Chemistry Exists
895	0083432	16	17	055	21	4	Casing/Open Hole	134.1											02/12/1983		SCOTFORD COLONY	Stock	New Well	Rotary	No Chemistry
896	0083464	01	21	055	21	4	Casing/Perforated Liner	38.1	31.7	36.6									03/04/1980		KRIBS, ROBERT	Stock	New Well	Rotary	Chemistry Exists
897	1325000	NE	35	054	22	4		51.8											01/09/1973		SIMMONS, HECTOR	Stock	New Well	Cable Tool	No Chemistry
898	0260222	SW	26	054	22	4	Casing/Open Hole	54.9											08/06/1978		GALLOWAY, ED	Stock	New Well	Rotary	No Chemistry
899	0264254	08	25	056	21	4	Casing	14.9											17/06/1978		SERINK, W	Stock	New Well	Bored	No Chemistry
900	0083444	SW	19	055	21	4	Unknown	4.3													BLACKLOCK, BRIAN	Stock	Chemistry	Hand Dug	Chemistry Exists
901	0264315	SE	29	056	21	4	Casing	7.3													PUCHALUK, P.	Stock	Chemistry	Unknown	Chemistry Exists
902	0264272	SW	26	056	21	4	Perforated Casing/Liner	39.6	31.7	37.8									12/04/1988		SAWATZKI, W	Stock	New Well	Rotary	No Chemistry
903	0159288	SE	05	055	22	4	Perforated Casing/Liner	13.4	8.2	12.2									10/07/1991		GODBOUT, ROMEO	Stock	Reconstructed	Bored	No Chemistry
904	0083443	SW	19	055	21	4	Unknown	3.0													WING, GERRY	Stock	Chemistry	Hand Dug	Chemistry Exists
905	0261456	16	13	055	22	4	Casing	103.6											01/01/1924		KREPS, J.	Stock	Federal Well Survey	Drilled	No Chemistry
906	0091567	13	18	056	20	4	Unknown	6.7											01/01/1918		SERANT, M.	Stock	Federal Well Survey	Unknown	No Chemistry
907	0260184	SE	19	054	22	4	Screen & Open Hole	28.3							26.5	28.0			27/04/1968		GALLOWAY, R.	Stock	New Well	Drilled	No Chemistry
908	0083442	SW	19	055	21	4	Unknown	2.4													WING, H.S.	Stock	Chemistry	Hand Dug	Chemistry Exists
909	0264218	SW	21	056	21	4	Casing/Open Hole	53.6											01/03/1974		SMITH, E.	Stock	New Well	Cable Tool	Chemistry Exists
910	0297412	SW	36	056	21	4	Casing/Perforated Liner	48.8	36.6	48.8									23/05/2000		DABBLE, R.	Stock	New Well	Rotary	No Chemistry
911	0167849	NE	17	055	21	4	Not Applicable	14.9											10/07/1992		SCOTFORD COLONY	Stock	New Well-Abandoned	Bored	No Chemistry
912	1690056	NW	09	056	21	4		11.6	3.0	9.1									09/07/2002		GAUMONT, CONARD	Stock	New Well	Bored	No Chemistry
913	0083427	16	17	055	21	4	Casing/Open Hole	82.3											02/07/1974		SCOTFORD COLONY	Stock	New Well	Cable Tool	No Chemistry
914	0185985	SW	17	056	20	4	Casing/Perforated Liner	67.1	48.8	61.0									28/10/1992		SCHRAM, BARRY	Stock	New Well	Rotary	No Chemistry
915	0263699	SW	12	056	21	4	Casing/Open Hole	31.1													OLSON, R	Stock	New Well	Cable Tool	No Chemistry
916	0083454	15	19	055	21	4	Cribbed	7.3											10/05/1968	01/01/2001	NEBEL, ROBERT	Stock	New Well	Bored	Chemistry Exists
917	0083429	09	17	055	21	4	Casing/Open Hole	45.7											01/08/1973		SCOTFORD COLONY	Stock	New Well	Cable Tool	No Chemistry
918	0083559	13	34	055	21	4	Screen	42.7							36.6	42.7			14/07/1987		DAOUST, C.	Stock	New Well	Rotary	No Chemistry
919	0262001	02	33	054	23	4	Casing/Open Hole	152.4											01/01/1931		DORLAND	Stock	Federal Well Survey	Drilled	No Chemistry
920	0083466	04	21	055	21	4	Cribbed	18.3											14/09/1983		WAKARYK, ANDREW	Stock	New Well	Bored	No Chemistry
921	0167850	NE	17	055	21	4	Perforated Casing/Liner	20.4	12.2	13.1	19.5	20.4							12/07/1992		SCOTFORD COLONY	Stock	New Well	Bored	No Chemistry
922	0263703	SW	12	056	21	4	Casing/Open Hole	13.7											03/09/1977		OLSEN, R	Stock	New Well	Rotary	No Chemistry
923	0091556	04	17	056	20	4	Casing/Perforated Liner	42.7	27.4	42.7									16/08/1982		SCHRAM, BARRY	Stock	New Well	Cable Tool	No Chemistry

Waterwell Records Within the Study Area

	WELL ID	LOCATION					WELL_FINISH	WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED_USE	TYPE_WORK	DRILL_METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN			FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
924	0263710	NW	12	056	21	4	Casing/Open Hole	44.2											12/08/1983		GABERT, M.	Stock	New Well	Rotary	No Chemistry
925	0262361	EH	35	054	23	4	Casing/Open Hole	35.1	26.5	31.1									01/09/1973		DEVEREUX, J	Stock	New Well	Rotary	No Chemistry
926	0262123	SE	35	054	23	4	Casing/Perforated Liner	36.6	24.4	25.0	27.4	30.5	32.0	32.6					01/06/1975		DEVEREUX, JOHN	Stock	New Well	Drilled	No Chemistry
927	0083574	12	36	055	21	4	Unknown	12.2											01/01/1936		PROKOPCZAK, J.	Stock	Federal Well Survey	Bored	No Chemistry
928	0083431	16	17	055	21	4	Unknown	85.3													MANN, A.A.	Stock	Federal Well Survey	Drilled	No Chemistry
929	0261236	03	08	055	22	4	Casing	105.5											01/01/1924		HOULE, O.	Stock	Federal Well Survey	Drilled	No Chemistry
930	0262022	16	33	054	23	4	Unknown	15.2											01/01/1916		WILSON	Stock	Federal Well Survey	Bored	No Chemistry
931	0083478	14	23	055	21	4	Unknown	13.4											01/01/1926		ARNDT, G.	Stock	Federal Well Survey	Bored	No Chemistry
932	0270766	04	21	056	20	4	Casing/Open Hole	68.6													GRONER, LARRY	Stock	New Well	Cable Tool	No Chemistry
933	0083498	SE	27	055	21	4	Casing/Perforated Liner	56.4	40.2	51.2									30/11/1962		CHOLOWSKI, ALBERT	Stock	New Well	Rotary	No Chemistry
934	0083504	16	27	055	21	4	Casing/Open Hole	26.8											05/07/1974		HEINRICHS, ED	Stock	New Well	Cable Tool	Chemistry Exists
935	0083371	03	07	055	21	4	Casing/Perforated Liner	50.3	39.6	50.3									11/09/1981		MOYSEY, FRANK	Stock	New Well	Rotary	No Chemistry
936	0261833	NE	14	056	21	4	Casing	11.3											19/04/1989		HODGSON, GEORGE	Stock	Deepened	Bored	No Chemistry
937	0263941	04	16	056	21	4	Casing/Open Hole	42.7													KROPP, L.	Stock	New Well	Cable Tool	Chemistry Exists
938	0091557	12	17	056	20	4	Screen	48.8							39.6	41.5			04/06/1984		HODGSON, L.	Stock	New Well	Rotary	No Chemistry
939	0261753	08	29	055	22	4	Casing	22.9											01/01/1933		LANGLOIS, L	Stock	Federal Well Survey	Bored	No Chemistry
940	0091571	04	19	056	20	4	Casing/Open Hole	45.7											08/07/1977		SERINK, WILLIAM	Stock	New Well	Rotary	Chemistry Exists
941	0261550	04	18	055	22	4	Casing	118.9											01/01/1930		VILLENEUVE, M	Stock	Federal Well Survey	Drilled	No Chemistry
942	0083475	05	23	055	21	4	Unknown	54.9											01/01/1926		PENELTON, J.	Stock	Federal Well Survey	Drilled	No Chemistry
943	0083434	NE	17	055	21	4	Screen	21.3							17.7	19.2			27/08/1986		SCOTFORD COLONY	Stock	New Well	Rotary	No Chemistry
944	0083530	13	30	055	21	4	Casing/Open Hole	42.7											01/05/1974		LIVING, DALE	Stock	New Well	Cable Tool	Chemistry Exists
945	0263818	03	13	056	21	4	Unknown	4.9													PROCNAIM, R.	Stock	Federal Well Survey	Hand Dug	No Chemistry
946	0263351	SE	03	056	21	4	Casing/Perforated Liner	10.7	6.1	10.7									17/09/1974		PROKOPCZAK, J.	Stock	New Well	Backhoe	No Chemistry
947	0261611	08	19	055	22	4	Unknown	5.5											01/01/1931		ROCK, L.C.	Stock	Federal Well Survey	Hand Dug	No Chemistry
948	0159197	NE	34	055	21	4	Casing/Perforated Liner	54.9	46.6	52.7									29/09/1991		BERG, RON	Stock	New Well	Rotary	No Chemistry
949	0083553	04	34	055	21	4	Cribbed	14.6											06/11/1981		RADKE, BEN	Stock	New Well	Bored	No Chemistry
950	0083456	15	19	055	21	4	Cribbed	8.5	1.8	7.9									07/01/1980		HENDERSON, GARTH	Stock	New Well	Bored	No Chemistry
951	0083457	15	19	055	21	4	Cribbed	12.2	5.5	7.6									02/01/1980	01/01/2001	HENDERSON, GARTH	Stock	New Well	Bored	No Chemistry
952	0267241	SE	03	056	21	4	Casing/Perforated Liner	10.7	4.6	10.7									10/10/1974		PROKOPCZAK, L.J.	Stock	New Well	Bored	No Chemistry
953	0083547	04	34	055	21	4	Casing/Open Hole	32.0											13/04/1982		RADKE, BEN	Stock	New Well	Cable Tool	No Chemistry
954	0264180	SE	21	056	21	4	Screen	54.9							47.5	48.2			03/07/1978		DEBAAN, J	Stock	New Well	Rotary	No Chemistry
955	0290971	SW	34	056	21	4	Perforated Casing/Liner	16.8	12.8	15.8									18/10/1998		WOHNSKY, WALT	Stock	New Well	Bored	No Chemistry
956	0083562	16	34	055	21	4	Casing/Open Hole	53.3											01/05/1982		BERG, RON	Stock	New Well	Cable Tool	No Chemistry
957	0154375	NE	03	056	22	4	Casing/Perforated Liner	59.4	45.7	57.9									17/04/1985		KUGLER, IRWIN	Stock	New Well	Rotary	No Chemistry
958	0263607	NE	11	056	21	4	Casing	37.2											01/08/1973		FAIRWEATHER, B.	Stock	New Well	Cable Tool	Chemistry Exists
959	0083550	SW	34	055	21	4	Casing/Perforated Liner	94.5	85.3	94.5									28/09/1977		RADKE, BEN	Stock	New Well	Rotary	Chemistry Exists
960	0091569	01	19	056	20	4	Casing/Open Hole	50.3											31/07/1975		RADKE, SIEGFRIED	Stock	New Well	Cable Tool	No Chemistry
961	0083421	16	16	055	21	4	Unknown	14.0											01/01/1934		MANZ, A.	Stock	Federal Well Survey	Bored	No Chemistry
962	0159190	NE	17	055	21	4	Open Hole	82.3											28/05/1976		SCOTFORD COLONY#PUMP HOUSE	Stock	New Well	Rotary	Chemistry Exists
963	0083558	13	34	055	21	4	Casing/Open Hole	40.5											19/10/1978		DAOUST, CHARLES	Stock	New Well	Cable Tool	No Chemistry
964	0262430	SE	01	055	23	4	Unknown	12.2											14/07/1922		VAN ACKER, L.	Stock	Federal Well Survey	Hand Dug	No Chemistry
965	0262520	SE	13	055	23	4	Unknown	120.1											13/07/1925		VILLENEUVE, O.	Stock	Federal Well Survey	Drilled	No Chemistry
966	0083557	13	34	055	21	4	Casing/Open Hole	36.6											09/09/1981		HALL'S AUTO	Stock	New Well	Cable Tool	No Chemistry
967	0263599	NE	11	056	21	4	Casing/Open Hole	36.6													TAYLOR, G J	Stock	New Well	Cable Tool	Chemistry Exists
968	0260053	NE	08	054	22	4	Unknown														SUPINA, NICK	Unknown	Chemistry	Unknown	Chemistry Exists
969	1420578	SE	16	056	21	4														01/11/2007	SHELL CANADA LIMITED	Unknown	Old Well-Abandoned	Unknown	No Chemistry
970	0260056	NE	08	054	22	4	Unknown	24.4													HENDRICKSON, CONNIE	Unknown	Chemistry	Unknown	Chemistry Exists
971	0264091	SE	11	056	22	4	Casing/Perforated Liner	64.0	51.8	64.0									10/10/1973		SERINK, MIKE	Unknown	New Well	Rotary	Chemistry Exists
972	1575670	SW	16	056	21	4														11/06/2008	SHELL CANADA LTD.	Unknown	Old Well-Abandoned	Unknown	No Chemistry
973	0260055	NE	08	054	22	4	Unknown	7.9													BECKER, MARK	Unknown	Chemistry	Unknown	Chemistry Exists
974	1575671	SE	16	056	21	4														11/06/2008	SHELL CANADA LTD.	Unknown	Old Well-Abandoned	Unknown	No Chemistry
975	0262257	SW	35	054	23	4	Cribbed	21.0											12/11/1977	12/11/1977	YUSKIW, N	Unknown	Old Well-Abandoned	Bored	No Chemistry
976	0260057	NE	08	054	22	4	Unknown	3.0													SPALLIN, LYNNE	Unknown	Chemistry	Unknown	Chemistry Exists
977	0260059	NE	08	054	22	4	Unknown	16.8													KENNEDY, KENNETH	Unknown	Chemistry	Unknown	Chemistry Exists
978	0260060	NE	08	054	22	4	Unknown	9.1													GROTEN, HELEN	Unknown	Chemistry	Unknown	Chemistry Exists
979	1575669	SW	16	056	21	4														11/06/2008	SHELL CANADA LTD.	Unknown	Old Well-Abandoned	Unknown	No Chemistry
980	0164457	NE	11	056	22	4														08/12/2008	PETRO CANADA	Unknown	Old Well-Abandoned	Unknown	No Chemistry
981	1575428	SW	09	056	21	4														19/10/2007	SHELL CANADA LIMITED OIL SANDS	Unknown	Old Well-Abandoned	Unknown	No Chemistry
982	1575587	SE	30	055	21	4														02/11/2007	SHELL CANADA LIMITED	Unknown	Old Well-Abandoned	Unknown	No Chemistry
983	1575427	SW	09	056	21	4														19/10/2007	SHELL CANADA LIMITED OIL SANDS	Unknown	Old Well-Abandoned	Unknown	No Chemistry
984	1575585	SE	30	055	21	4														02/11/2007	SHELL CANADA LIMITED	Unknown	Old Well-Abandoned	Unknown	No Chemistry
985	0260042	NE	08	054	22	4	Unknown														GIDYCH, R.T.	Unknown	Chemistry	Unknown	Chemistry Exists
986	1575583	SW	16	056	21	4														20/10/2007	SHELL CANADA LIMITED	Unknown	Old Well-Abandoned	Unknown	No Chemistry
987	0160230	NE	08	054	22	4	Perforated Casing/Liner	17.7	6.1	13.7									24/10/1991		KROENING, GREG	Unknown	New Well	Bored	No Chemistry
988	0260036	NE	08	054	22	4	Unknown	21.3													TUCKER, CHARLES	Unknown	Chemistry	Bored	Chemistry Exists
989	1575582	SW	16	056	21	4														20/10/2007	SHELL CANADA LIMITED	Unknown	Old Well-Abandoned	Unknown	No Chemistry
990	0091501	01	07	056	20	4	Open Hole	27.4											17/07/1975		HYDROGEOLOGICAL CONSULT LTD	Unknown	Test Hole	Auger	No Chemistry
991	1690056	NW	09	056	21	4														01/11/2007	SHELL CANADA LIMITED	Unknown	Old Well-Abandoned	Unknown	No Chemistry
992	0260040	NE	08	054	22	4	Unknown	20.7											28/10/1974		KREBS, CLIFF	Unknown	Chemistry	Drilled	Chemistry Exists
993	0261749	SE	01	055	23	4		4.6														Unknown	Unknown	Unknown	No Chemistry
994	0263525	NE	05	056	21	4														19/10/2007	SHELL CANAD LIMITED	Unknown	Old Well-Abandoned	Unknown	Chemistry Exists

Waterwell Records Within the Study Area

	WELL ID	LOCATION					WELL_FINISH	WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED_USE	TYPE_WORK	DRILL_METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN			FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
995	1575588	SE	30	055	21	4														02/11/2007	SHELL CANADA LIMITED	Unknown	Old Well-Abandoned	Unknown	No Chemistry
996	0260061	00	08	054	22	4	Unknown	10.7													DIRKS, G.A.	Unknown	Chemistry	Unknown	Chemistry Exists
997	1575581	NW	09	056	21	4														20/10/2007	SHELL CANADA LIMITED	Unknown	Old Well-Abandoned	Unknown	No Chemistry
998	0260032	NW	07	054	22	4	Unknown	45.7													HOPKIN, JIM	Unknown	Chemistry	Drilled	Chemistry Exists
999	0240750	NE	30	055	21	4	Unknown	42.7											11/05/1969		ALTA ENV/WATER RES #0295E	Unknown	Test Hole	Rotary	No Chemistry
1000	0260043	NE	08	054	22	4	Unknown	8.2													STEVENSON, R.C.	Unknown	Chemistry	Hand Dug	Chemistry Exists
1001	0260044	NE	08	054	22	4	Unknown	7.9													LIVINGSTON, BRIAN	Unknown	Chemistry	Bored	Chemistry Exists
1002	1575584	SE	16	056	21	4														01/11/2007	SHELL CANADA LIMITED	Unknown	Old Well-Abandoned	Unknown	No Chemistry
1003	1575586	SE	30	055	21	4														02/11/2007	SHELL CANADA LIMITED	Unknown	Old Well-Abandoned	Unknown	No Chemistry
1004	0260047	NE	08	054	22	4	Unknown	67.1													MCKINLAY, R.L.	Unknown	Chemistry	Drilled	Chemistry Exists
1005	0260049	NE	08	054	22	4	Unknown	12.2													KENSON HLDG	Unknown	Chemistry	Bored	Chemistry Exists
1006	1420003	NW	05	056	21	4														01/11/2007	SHELL CANADA LIMITED	Unknown	Old Well-Abandoned	Unknown	No Chemistry
1007	0260041	NE	08	054	22	4	Unknown	23.8													WILKINSON, J.P.	Unknown	Chemistry	Bored	Chemistry Exists
1008	0260431	SW	34	054	22	4	Slotted & Open Hole	49.4											02/05/1955			Unknown	New Well	Drilled	No Chemistry
1009	0260405	NW	32	054	22	4	Unknown	15.8											01/01/1927		HOPPER#N SASK RIVER	Unknown	New Well	Drilled	No Chemistry
1010	0262042	SE	34	054	23	4	Casing/Open Hole	91.4	24.4	42.7									28/10/1974		BELYEA, A.F.	Unknown	New Well	Unknown	Chemistry Exists
1011	1575589	NW	30	055	21	4														02/11/2007	SHELL CANADA LIMITED	Unknown	Old Well-Abandoned	Unknown	No Chemistry
1012	0083529	NW	30	055	21	4														02/11/2007	SHELL CANADA LIMITED	Unknown	Old Well-Abandoned	Unknown	No Chemistry
1013	0261751	SE	01	055	23	4	Open Hole	29.6											28/08/1984	28/08/1984	SERNA, VICTOR	Unknown	New Well-Abandoned	Bored	No Chemistry
1014	0268135	SE	01	055	23	4		4.6														Unknown	Unknown	Unknown	No Chemistry
1015	0263661	09	11	056	21	4	Perforated Casing/Liner	66.4	32.9	36.0	36.9	37.8							31/08/1973		ANURATIL, J.	Unknown	Unknown	Unknown	No Chemistry
1016	0083507	01	28	055	21	4	Open Hole	21.3											24/06/1969		ALTA AGRICULTURE #670H	Unknown	Test Hole	Rotary	No Chemistry
1017	0240761	02	33	054	23	4	Unknown	42.7											20/09/1973		ALTA ENV #1072E	Unknown	Test Hole	Rotary	Chemistry Exists
1018	0260436	SW	34	054	22	4	Unknown														EMONTS, GERALD	Unknown	Chemistry	Unknown	No Chemistry
1019	0240752	NE	15	055	21	4	Unknown	24.4											12/05/1969		ALTA ENV #0297E	Unknown	Test Hole	Rotary	No Chemistry
1020	0240769	NE	34	054	22	4	Unknown	36.6											07/08/1976		ALTA ENV #1620E	Unknown	Test Hole	Rotary	No Chemistry
1021	0260401	SW	32	054	22	4	Unknown	12.8													DONALDSON, ARTHUR	Unknown	Chemistry	Unknown	Chemistry Exists
1022	0260400	SW	32	054	22	4	Unknown	9.1													KOHUT, WM	Unknown	Chemistry	Drilled	Chemistry Exists
1023	0260399	SW	32	054	22	4	Unknown														SCOTFORD COLONY	Unknown	Chemistry	Unknown	No Chemistry
1024	0260398	SW	32	054	22	4	Unknown	71.6													SEWCHUK, S.	Unknown	Chemistry	Unknown	Chemistry Exists
1025	0169121	SE	16	056	21	4	Not Applicable	34.7											23/09/1992	23/09/1992	HENKELMAN, P.R.	Unknown	New Well-Abandoned	Rotary	No Chemistry
1026	0260415	NW	32	054	22	4	Unknown														SHERRITT GORDON MINES	Unknown	Chemistry	Unknown	No Chemistry
1027	0260050	NE	08	054	22	4	Unknown	12.2													KENSON HLDG	Unknown	Chemistry	Bored	Chemistry Exists
1028	0262433	01	03	055	23	4	Unknown	15.2													WILSON	Unknown	Federal Well Survey	Bored	No Chemistry
1029	0260462	EH	36	054	22	4	Unknown	12.2													LAMOUREUX, JIM	Unknown	Chemistry	Unknown	No Chemistry
1030	0261432	SE	13	055	22	4	Unknown	56.4											01/09/1930		TATHAM, J	Unknown	New Well	Unknown	No Chemistry
1031	0208911	SE	16	056	21	4														01/11/2007	SHELL CANADA LIMITED	Unknown	Old Well-Abandoned	Unknown	No Chemistry
1032	0261038	SE	01	055	22	4	Casing/Open Hole	54.9											19/07/1959		HANSEN, P E	Unknown	New Well	Unknown	No Chemistry
1033	0261035	SE	01	055	22	4	Unknown	69.5											01/09/1930		ATKINSON, H	Unknown	Well Inventory	Unknown	No Chemistry
1034	0261596	16	18	055	22	4	Casing	12.5											23/10/1964		LAMOUREUX, J A	Unknown	New Well	Bored	No Chemistry
1035	0240767	NE	36	054	22	4	Unknown	12.2											08/08/1976		ALTA ENV #1621E	Unknown	Test Hole	Rotary	No Chemistry
1036	1575666	SW	12	056	22	4														08/12/2008	PETRO CANADA	Unknown	Old Well-Abandoned	Unknown	No Chemistry
1037	1575667	SW	13	056	22	4														09/12/2008	PETRO CANADA	Unknown	Old Well-Abandoned	Unknown	No Chemistry
1038	0262078	NW	34	054	23	4	Casing/Open Hole	67.1											01/07/1954		SPEER, A.	Unknown	New Well	Drilled	No Chemistry
1039	0260942	NW	13	054	23	4	Unknown	69.5											02/09/1930		ARMSTRONG, E.	Unknown	Other	Drilled	No Chemistry
1040	0152372	WH	08	056	21	4	Not Applicable	30.5											26/06/1990		MASCHMEYER, RAY	Unknown	Dry Hole	Rotary	No Chemistry
1041	0240768	NE	35	054	22	4	Unknown	30.5											05/08/1976		ALTA ENV #1618E	Unknown	Test Hole	Auger	No Chemistry
1042	0264168	SE	13	056	22	4	Unknown	61.0													BLOOM, B.	Unknown	Chemistry	Unknown	Chemistry Exists
1043	0264193	NE	13	056	22	4	Unknown	50.3													OOSTERHUIS, H.T.	Unknown	Chemistry	Unknown	Chemistry Exists
1044	0264141	SE	12	056	22	4	Unknown	61.0													SERINK, MIKE	Unknown	Chemistry	Unknown	Chemistry Exists
1045	0264390	SW	29	056	21	4	Unknown														ESSO RES	Unknown	Chemistry	Unknown	Chemistry Exists
1046	0261583	SW	25	054	23	4	Casing/Open Hole	39.6											12/10/1963		HANES, A	Unknown	New Well	Rotary	No Chemistry
1047	0298285	NE	19	055	21	4	Not Applicable															Unknown	Old Well-Abandoned	Not Applicable	No Chemistry
1048	0260218	02	26	054	22	4	Screen & Open Hole	22.9							12.2	13.4			18/09/1964		MID WESTERN INDUSTRIAL GAS LTD	Unknown	New Well	Unknown	No Chemistry
1049	1575668	SW	13	056	22	4														09/12/2008	PETRO CANADA	Unknown	Old Well-Abandoned	Unknown	No Chemistry
1050	0260189	10	19	054	22	4	Unknown	32.9														Unknown	Chemistry	Unknown	Chemistry Exists
1051	0260413	NW	32	054	22	4	Unknown														WALKER, L.	Unknown	Chemistry	Unknown	No Chemistry
1052	0260197	SW	22	054	22	4	Unknown	9.1													SHACKLETON, STV	Unknown	Chemistry	Unknown	Chemistry Exists
1053	0260359	NW	28	054	22	4	Unknown	32.0													KOVAC, JOE	Unknown	Chemistry	Unknown	Chemistry Exists
1054	0268141	SE	01	055	23	4		4.6														Unknown	Unknown	Unknown	No Chemistry
1055	0263560	SW	08	056	21	4														01/11/2007	SHELL CANADA - OIL SANDS	Unknown	Old Well-Abandoned	Unknown	Chemistry Exists
1056	0260191	04	20	054	22	4	Casing	28.3											01/01/1915		PETERS, R.J.	Unknown	New Well	Drilled	No Chemistry
1057	0260186	SE	19	054	22	4	Unknown	56.4													GALLOWAY, ROY	Unknown	Chemistry	Unknown	Chemistry Exists
1058	0260185	SE	19	054	22	4	Unknown	54.9													RIVER BRAE FARM	Unknown	Chemistry	Unknown	Chemistry Exists
1059	0260221	SW	26	054	22	4	Unknown	51.8													GALLOWAY, EDWARD	Unknown	Chemistry	Drilled	Chemistry Exists
1060	0260187	NW	19	054	22	4	Unknown	57.9													LAMPRECHT, HENRY	Unknown	Chemistry	Unknown	Chemistry Exists
1061	0260371	00	28	054	22	4	Unknown	24.4													FINDLAY, W.	Unknown	Chemistry	Unknown	No Chemistry
1062	0261166	NW	06	055	22	4	Not Applicable	57.9													JESKE, O	Unknown	Test Hole	Rotary	No Chemistry
1063	0260178	SW	17	054	22	4	Unknown	80.8													GALLOWAY, LLOYD	Unknown	Chemistry	Unknown	Chemistry Exists
1064	0260177	SE	17	054	22	4	Unknown	6.1													TWIGGE, E.R.	Unknown	Chemistry	Drilled	Chemistry Exists
1065	0091497	04	06	056	20	4	Open Hole	7.0											17/07/1975		HYDROGEOLOGICAL CONSULT LTD	Unknown	Test Hole	Auger	No Chemistry

Waterwell Records Within the Study Area

	WELL ID	LOCATION					WELL_FINISH	WELL DEPTH (m)	PERFORATIONS 1 (m)		PERFORATIONS 2 (m)		PERFORATIONS 3 (m)		SCREENINGS 1 (m)		SCREENINGS 2 (m)		DATE		WELL OWNER	PROPOSED_USE	TYPE_WORK	DRILL_METHOD	CHEMISTRY
		LSD	SECTION	TOWNSHIP	RANGE	MERIDIAN			FROM	TO	FROM	TO	FROM	TO	FROM	TO	FROM	TO	COMPLETED	ABANDONED					
1066	0263554	NW	07	056	21	4	Unknown	56.7													VISSCHER, P.	Unknown	Unknown	Unknown	No Chemistry
1067	0260175	NW	16	054	22	4	Unknown	29.6													MCKAY, A.A.	Unknown	Chemistry	Unknown	Chemistry Exists
1068	0260173	NW	16	054	22	4	Unknown	27.4													THOMAS, ALFRED	Unknown	Chemistry	Unknown	Chemistry Exists
1069	0260176	NE	16	054	22	4	Unknown	24.1													GUY, F.E.	Unknown	Chemistry	Unknown	Chemistry Exists
1070	0260188	NW	19	054	22	4	Unknown	70.1													GABERT, DOUG	Unknown	Chemistry	Drilled	Chemistry Exists
1071	0083446	SW	19	055	21	4	Unknown	3.7												20/12/2002	DZURNY, E.	Unknown	Chemistry	Unknown	No Chemistry
1072	0260395	NW	31	054	22	4	Unknown	23.2													#TH 5	Unknown	Test Hole	Unknown	No Chemistry
1073	0260394	NW	31	054	22	4	Unknown	15.8													#TH 4	Unknown	Test Hole	Unknown	No Chemistry
1074	0260392	NW	31	054	22	4	Unknown	16.8													#TH 3	Unknown	Test Hole	Unknown	No Chemistry
1075	0260391	NW	31	054	22	4		16.2													#TH 2	Unknown	Test Hole	Unknown	No Chemistry
1076	0260389	NW	31	054	22	4	Unknown	18.9													#TH 1	Unknown	Test Hole	Unknown	No Chemistry
1077	0260385	SE	30	054	22	4	Unknown	67.1													LAINPRECHT, H.	Unknown	Chemistry	Unknown	Chemistry Exists
1078	0240751	EH	20	055	21	4	Unknown	45.1											12/05/1969		ALTA ENV/WATER RES #0296E	Unknown	Test Hole	Rotary	No Chemistry
1079	0260374	NW	29	054	22	4	Unknown	35.1													VAN DEN BERG	Unknown	Chemistry	Unknown	Chemistry Exists
1080	0260220	SW	26	054	22	4	Unknown	61.0													IRELAND, KEN	Unknown	Chemistry	Bored	Chemistry Exists
1081	0240770	NW	29	054	22	4	Unknown	42.7											08/08/1976		ALTA ENV #1622E	Unknown	Test Hole	Rotary	No Chemistry
1082	0260067	NW	09	054	22	4	Unknown	61.0													VAN CAMP, ERIC	Unknown	Chemistry	Drilled	Chemistry Exists
1083	0260381	00	29	054	22	4	Casing	15.5											01/05/1965		HANFORD, R.M.	Unknown	New Well	Bored	No Chemistry
1084	0261055	NW	28	054	22	4	Unknown	36.0														Unknown	New Well	Drilled	No Chemistry
1085	0260364	NW	28	054	22	4	Casing	25.9													LEONHARDT, C.J.	Unknown	Chemistry	Drilled	Chemistry Exists
1086	0260363	NW	28	054	22	4	Unknown	29.9													HAMER, LYLE	Unknown	Chemistry	Unknown	Chemistry Exists
1087	0260361	NW	28	054	22	4	Unknown	30.5													MCNIRNE, ROBERT	Unknown	Chemistry	Unknown	Chemistry Exists
1088	0083508	13	28	055	21	4	Open Hole	29.3											25/06/1969		ALTA AGRICULTURE #669H	Unknown	Test Hole	Rotary	No Chemistry
1089	0083445	SW	19	055	21	4	Unknown														BLACKLOCK, OLGA	Unknown	Chemistry	Unknown	No Chemistry
1090	0260231	NW	28	054	22	4	Unknown	61.0													RUDOLPH, MARJORIE	Unknown	Chemistry	Drilled	Chemistry Exists
1091	0260372	NW	29	054	22	4	Unknown	10.4													VAN DEN BERG	Unknown	Chemistry	Unknown	Chemistry Exists

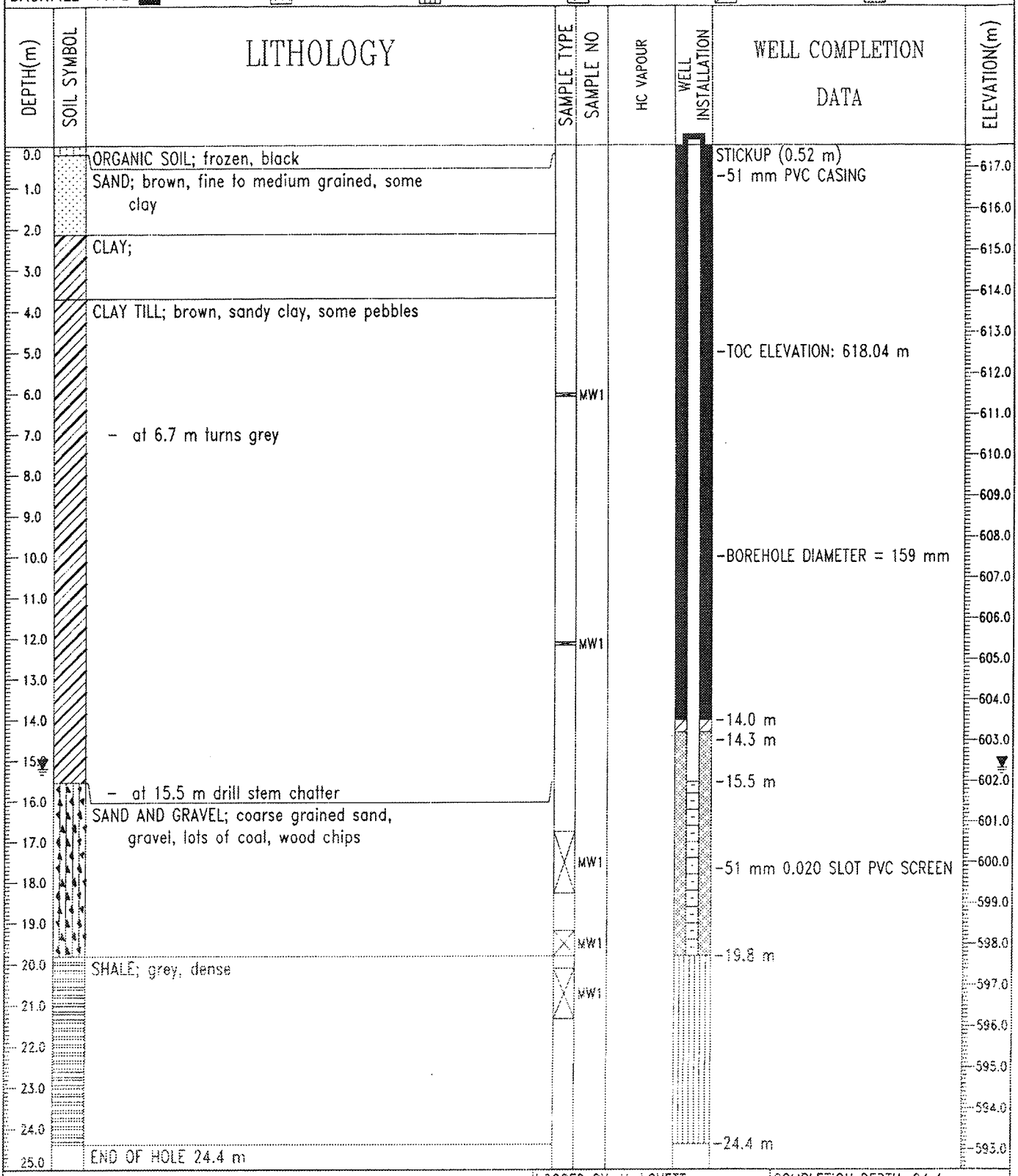
* Data Source: Alberta Environment Water Well Database, June 2009
* Date of Search: May 31, 2010

Appendix 2 Borehole Logs

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-01
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:350335.04 N:5951040.45	ELEVATION: 617.52 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND



Stantec Consulting Ltd.	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 24.4 m
Edmonton, Alberta	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/24/05
	Fig. No: 17094	Page 1 of 1

05/11/04 07:28PM (PETION-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-02
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:352457.80 N:5950583.37	ELEVATION: 630.71 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0		ORGANIC SOIL; frozen, black					STICKUP (0.60 m)	630.0
1.0		SAND; brown, medium grained					-51 mm PVC CASING	
2.0							-TOC ELEVATION: 631.31 m	629.0
3.0							-BOREHOLE DIAMETER = 159 mm	628.0
4.0								627.0
5.0								626.0
6.0								625.0
7.0		CLAY TILL; brown, sandy clay, silty, some pebbles, coal chips						624.0
8.0								623.0
9.0								622.0
10.0								621.0
11.0								620.0
12.0								619.0
13.0								618.0
14.0		SAND; brown, grey, speckled medium grained sand						617.0
15.0								616.0
16.0								615.0
17.0		CLAY; brown, sandy						614.0
18.0		SAND; grey, medium speckled sand		MW2				613.0
19.0								612.0
20.0								611.0
21.0								610.0
22.0								609.0
23.0								608.0
24.0				MW2				607.0
25.0								606.0

Stantec Consulting Ltd.
Edmonton, Alberta

LOGGED BY: H. LOVETT	COMPLETION DEPTH: 38.1 m
REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/24/05
Fig. No: 17094	Page 1 of 2

05/11/04 02:28PM (PELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-02
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:352457.80 N:5950583.37	ELEVATION: 630.71 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
25.0								605.0
26.0							-25.9 m	
27.0		SAND AND GRAVEL; coarse grained sand and gravel, coal chips, wood					-26.2 m	604.0
28.0								603.0
29.0		- at 29.0 m lots of chatter on drill stem						602.0
30.0				MW2			-51 mm 0.020 SLOT PVC SCREEN	601.0
31.0								600.0
32.0								599.0
33.0								598.0
34.0		SHALE; grey, dense					-33.8 m	597.0
35.0								596.0
36.0				MW2				595.0
37.0								594.0
38.0		END OF HOLE 38.1 m					-38.1 m	593.0
39.0								592.0
40.0								591.0
41.0								590.0
42.0								589.0
43.0								588.0
44.0								587.0
45.0								586.0
46.0								585.0
47.0								584.0
48.0								583.0
49.0								582.0
50.0								581.0

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Edmonton, Alberta

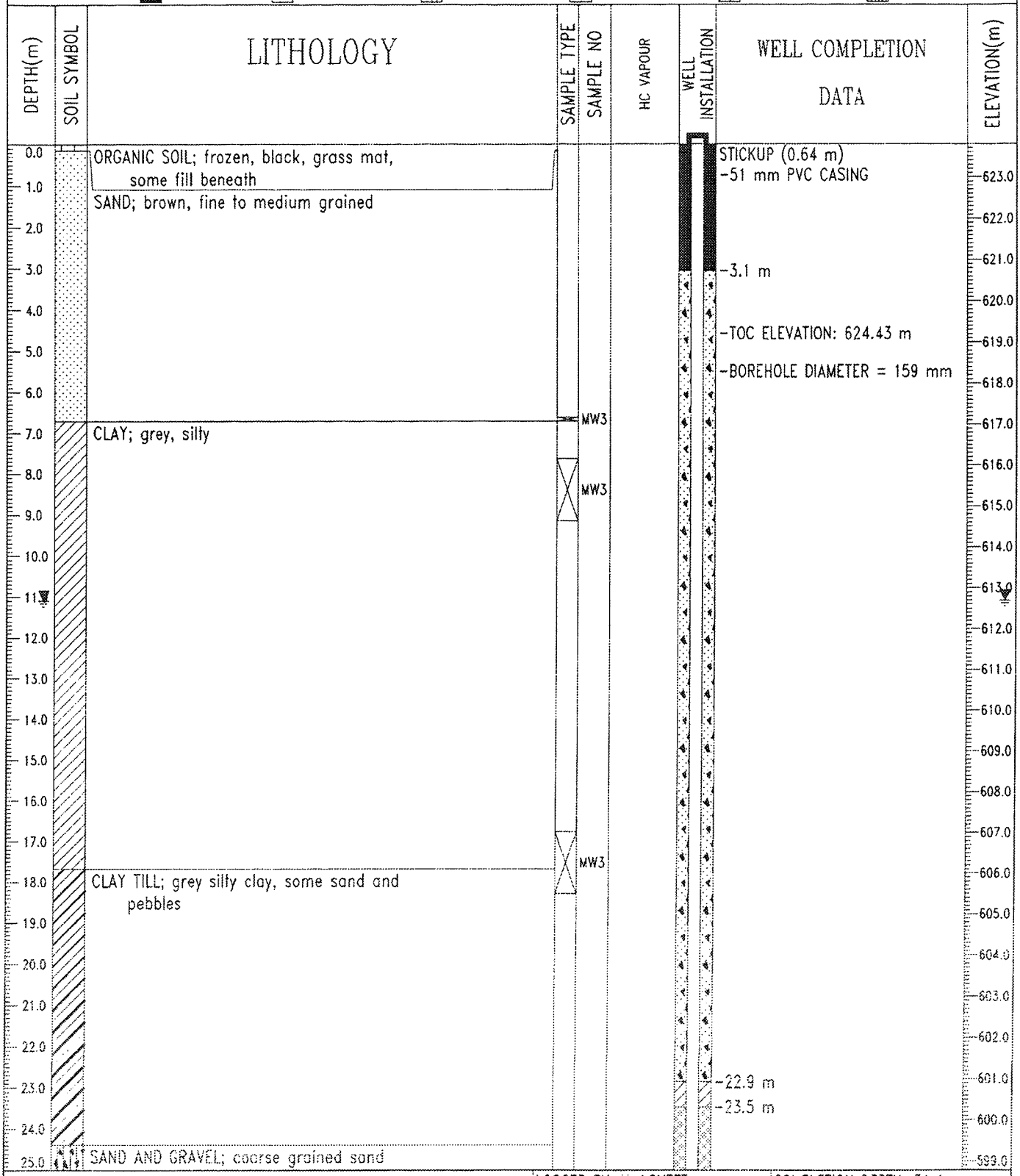
LOGGED BY: H. LOVETT	COMPLETION DEPTH: 38.1 m
REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/24/05
Fig. No: 17094	Page 2 of 2

05/11/04 02:28PM (PELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-03
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:353030.21 N:5952940.90	ELEVATION: 623.79 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND



Stantec Consulting Ltd.	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 31.4 m
Edmonton, Alberta	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/25/05
	Fig. No: 17094	Page 1 of 2

05/11/04 02:28PM (PETCH-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-03
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:353030.21 N:5952940.90	ELEVATION: 623.79 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
25.0	with coal and gravel					-25.0 m	598.0
26.0			MW3				
27.0			MW3			-51 mm 0.020 SLOT PVC SCREEN	597.0
28.0							596.0
29.0							595.0
30.0	SHALE; grey, dense		MW3			-29.6 m	594.0
31.0						-31.4 m	593.0
32.0	END OF HOLE 31.4 m						592.0
33.0							591.0
34.0							590.0
35.0							589.0
36.0							588.0
37.0							587.0
38.0							586.0
39.0							585.0
40.0							584.0
41.0							583.0
42.0							582.0
43.0							581.0
44.0							580.0
45.0							579.0
46.0							578.0
47.0							577.0
48.0							576.0
49.0							575.0
50.0							574.0

Stantec Consulting Ltd.
Edmonton, Alberta

LOGGED BY: H. LOVETT	COMPLETION DEPTH: 31.4 m
REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/25/05
Fig. No: 17094	Page 2 of 2

05/11/04 02:26PM (PETION-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-04
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:354823.41 N:5953959.76	ELEVATION: 620.25 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE / SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0	ORGANIC SOIL; black, frozen				STICKUP (0.54 m)	620.0
1.0	CLAY; grey, sandy				-152 mm PVC CASING	619.0
2.0					-1.5 m	618.0
3.0					-TOC ELEVATION: 620.79 m	617.0
4.0					-BOREHOLE DIAMETER = 222 mm	616.0
5.0						615.0
6.0						614.0
7.0	SAND; brown, fine to coarse grained, pebbles, black speckles	MW4				613.0
8.0						612.0
9.0						611.0
10.0						610.0
11.0						609.0
12.0						608.0
13.0						607.0
14.0						606.0
15.0						605.0
16.0						604.0
17.0	- at 16.8 m finer grained brown sand					603.0
18.0 ▼					-18.3 m	602.0 ▼
19.0	- at 18.3 m back to medium to coarse grained grey/brown sand				-19.5 m	601.0
20.0	SHALE; grey, clay					600.0
21.0		MW4				599.0
22.0	SAND; grey, medium to coarse grained	MW4			-21.6 m	598.0
23.0	SAND AND GRAVEL; grey, coarse grained sand and gravel, wood fibers	MW4				597.0
24.0						596.0
25.0					-155 mm 0.020 SLOT PVC SCREEN	

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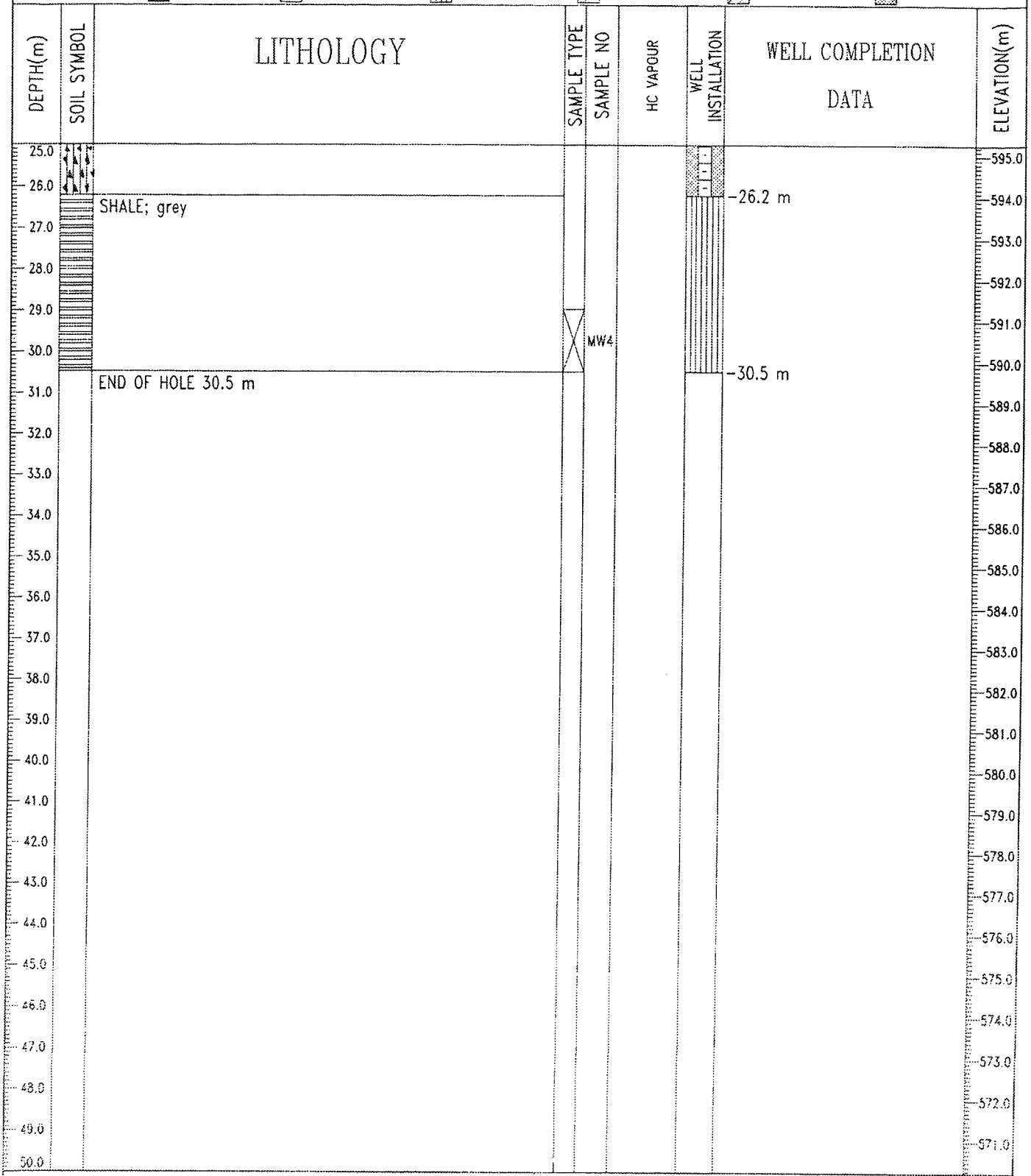
LOGGED BY: H. LOVETT	COMPLETION DEPTH: 30.5 m
REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/25/05
Fig. No: 17094	Page 1 of 2

05/11/04 02:32PM (PETIOR-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-04
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:354823.41 N:5953959.76	ELEVATION: 620.25 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND



Stantec Consulting Ltd.	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 30.5 m
Edmonton, Alberta	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/25/05
	Fig. No: 17094	Page 2 of 2

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-05
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:354293.74 N:5954889.46	ELEVATION: 624.28 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0		TOPSOIL; frozen, black, some organics					STICKUP (0.61 m)	624.0
1.0		SAND; brown, fine to medium grained					-51 mm PVC CASING	623.0
2.0								622.0
3.0							-3.1 m	621.0
4.0		CLAY; brown, soft, silty					-TOC ELEVATION: 624.89 m	620.0
5.0							-BOREHOLE DIAMTER = 159 mm	619.0
6.0								618.0
7.0		- from 7.3 to 10.7 m blue, silty clay						617.0
8.0								616.0
9.0								615.0
10.0								614.0
11.0		TILL; blue, silty clay, small gravel, multi colored						613.0
12.0								612.0
13.0								611.0
14.0								610.0
15.0								609.0
16.0		GRAVEL; large gravel, multi colored, tower shakes						608.0
17.0		TILL; sandy, sandy clay, fine grained, small gravel, grey						607.0
18.0		SAND AND GRAVEL; grey, medium to coarse grained sand, small gravel						606.0
19.0		CLAY TILL; sandy, grey, fine grained sandy clay till		MW5				605.0
20.0								604.0
21.0								603.0
22.0							-22.6 m	602.0
23.0		- well cemented from 23.2 to 25.0 m					-23.2 m	601.0
24.0								600.0
25.0				MW5				

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LOGGED BY: H. LOVETT	COMPLETION DEPTH: 37.5 m
REVIEWED BY: D. YOSHISAKA	COMPLETE: 02/03/05
Fig. No: 17094	Page 1 of 2

05/11/04 01:29PM (PELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-05
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:354293.74 N:5954889.46	ELEVATION: 624.28 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	LITHOLOGY	SAMPLE NO	WELL COMPLETION DATA	ELEVATION(m)
25.0		MW5		599.0
26.0	SAND; grey, salt and pepper color, fine to medium grained sand			598.0
27.0			-26.8 m	597.0
28.0	GRAVEL; small to large gravel, multi colored, sand and gravel mixed alot	MW	-28.4 m	596.0
29.0				595.0
30.0			-51 mm 0.020 SLOT PVC SCREEN	594.0
31.0			-31.4 m	593.0
32.0	SHALE; grey, dense			592.0
33.0				591.0
34.0				590.0
35.0				589.0
36.0				588.0
37.0			-37.5 m	587.0
38.0	END OF HOLE 37.5 m			586.0
39.0				585.0
40.0				584.0
41.0				583.0
42.0				582.0
43.0				581.0
44.0				580.0
45.0				579.0
46.0				578.0
47.0				577.0
48.0				576.0
49.0				575.0
50.0				

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LOGGED BY: H. LOVETT	COMPLETION DEPTH: 37.5 m
REVIEWED BY: D. YOSHISAKA	COMPLETE: 02/03/05
Fig. No: 17094	Page 2 of 2

05/11/04 02:29PM (PELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-06
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:361559.34 N:5958812.22	ELEVATION: 629.61 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0		TOPSOIL; black/brown, frozen, organics					STICKUP (0.67 m)	629.0
1.0		CLAY; sandy, light brown, fine grained					-51 mm PVC CASING	
2.0								628.0
3.0		- at 3.1 m turns grey, silty					-3.1 m	627.0
4.0				MW6			-TOC ELEVATION: 630.28 m	626.0
5.0							-BOREHOLE DIAMETER = 159 mm	
6.0								625.0
7.0				MW6				624.0
8.0		CLAY TILL; grey, silty, clay, some rocks and pebbles						623.0
9.0								622.0
10.0								621.0
11.0								620.0
12.0								619.0
13.0								618.0
14.0		- at 13.7 m becomes more sandy, firm						617.0
15.0								616.0
16.0								615.0
17.0								614.0
18.0								613.0
19.0								612.0
20.0								611.0
21.0								610.0
22.0								609.0
23.0		SAND; grey, black speckled, medium grained, some silt		MW6				608.0
24.0		CLAY; grey, sandy, silty						607.0
25.0		SAND;						606.0
								605.0

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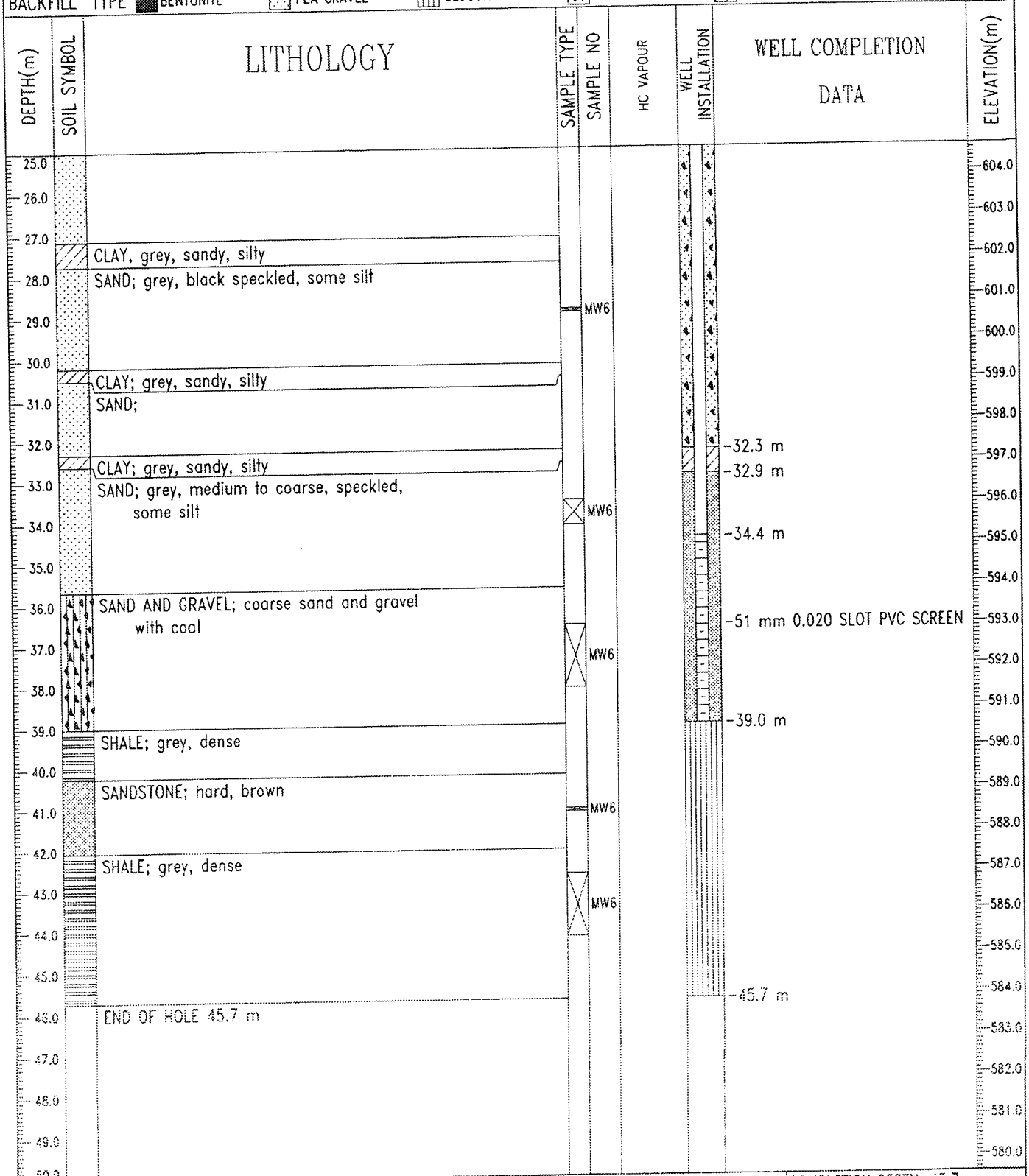
LOGGED BY: H. LOVETT | COMPLETION DEPTH: 45.7 m
REVIEWED BY: D. YOSHISAKA | COMPLETE: 01/31/05
Fig. No: 17094 |

05/11/04 02:42PM (PELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-06
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:361559.34 N:5958812.22	ELEVATION: 629.61 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND



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LOGGED BY: H. LOVETT	COMPLETION DEPTH: 45.7 m
REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/31/05
Fig. No: 17094	Page 2 of 2

05/11/04 02:42PM (PELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-07
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:359089.70 N:5959604.24	ELEVATION: 630.41 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0		SAND; brown, medium to coarse grained sand and gravel					STICKUP (0.60 m)	630.0
1.0							-152 mm PVC CASING	629.0
2.0								628.0
3.0		CLAY; grey, sandy					-TOC ELEVATION: 631.01 m	627.0
4.0		SAND; grey, fine grained					-BOREHOLE DIAMETER = 222 mm	626.0
5.0								625.0
6.0								624.0
7.0								623.0
8.0								622.0
9.0								621.0
10.0		CLAY; grey, sandy						620.0
11.0								619.0
12.0								618.0
13.0		SAND; grey, fine grained						617.0
14.0								616.0
15.0								615.0
16.0								614.0
17.0		CLAY TILL; grey, sandy clay with pebbles						613.0
18.0								612.0
19.0								611.0
20.0								610.0
21.0								609.0
22.0								608.0
23.0								607.0
24.0								606.0
25.0								

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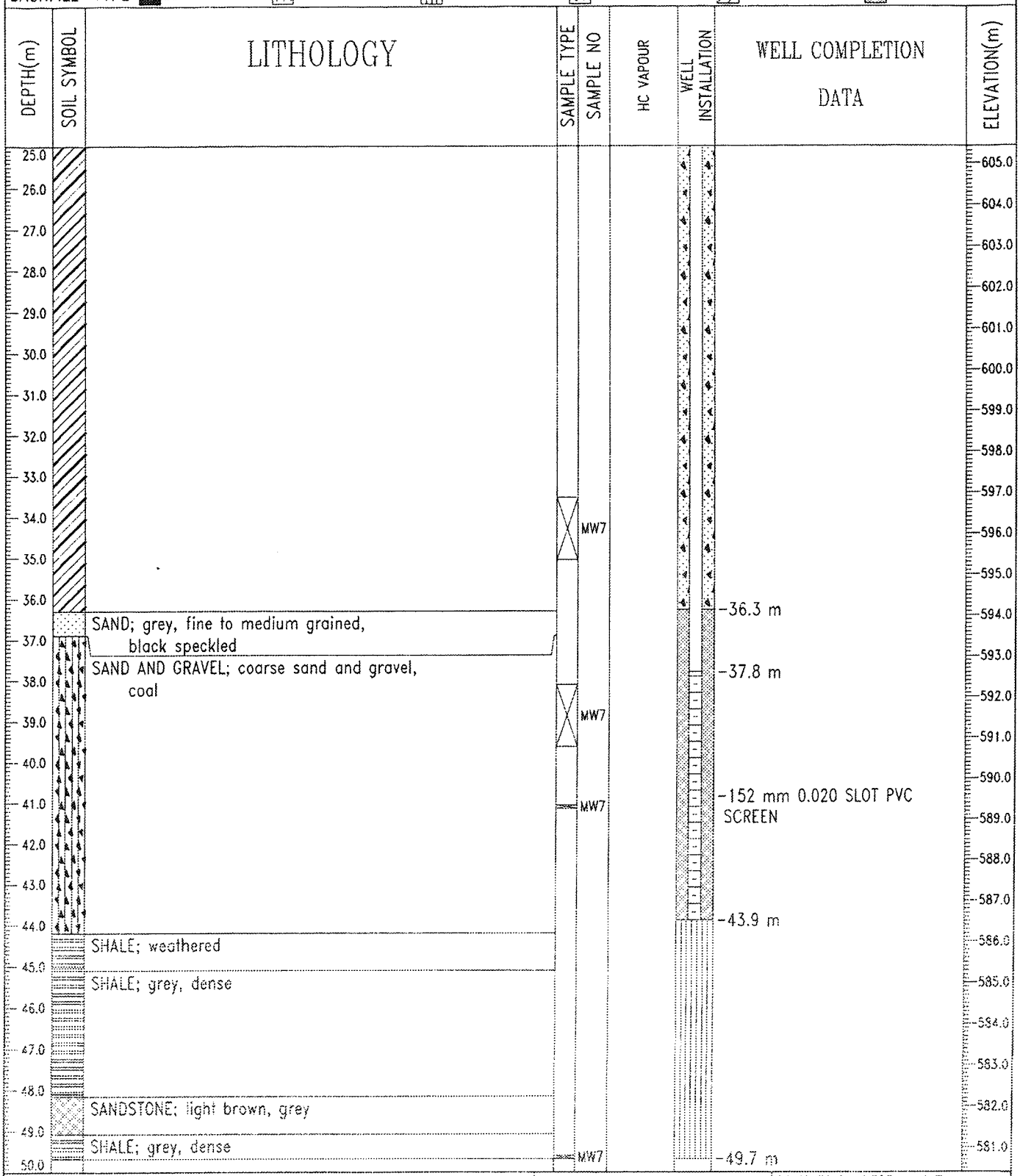
LOGGED BY: H. LOVETT | COMPLETION DEPTH: 49.7 m
REVIEWED BY: D. YOSHISAKA | COMPLETE: 02/14/05
Fig. No: 17094 |

05/11/04 02:47PM (PELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-07
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:359089.70 N:5959604.24	ELEVATION: 630.41 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND



Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 49.7 m
	REVIEWED BY: D. YOSHISAKA	COMPLETE: 02/14/05
	Fig. No: 17094	Page 2 of 2

05/11/04 02:47PM (PETION-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-08
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:363133.77 N:5961204.95	ELEVATION: 625.87 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0	TOPSOIL; black, roots, grasses					STICKUP (0.57 m)	625.0
1.0	SAND; brown/black grains, fine to medium grained					-51 mm PVC CASING	
2.0	CLAY; brown/grey, silty						624.0
3.0							623.0
4.0						-3.1 m -TOC ELEVATION: 626.44 m -BOREHOLE DIAMETER = 159 mm	622.0
5.0	SAND; silty, brown, very fine grained						621.0
6.0							620.0
7.0							619.0
8.0							618.0
9.0							617.0
10.0	CLAY; blue/grey, silty						616.0
11.0							615.0
12.0							614.0
13.0							613.0
14.0	CLAY TILL; blue clay, sandy						612.0
15.0							611.0
16.0							610.0
17.0							609.0
18.0							608.0
19.0	SAND; coarse grained, grey/brown						607.0
20.0	CLAY TILL; blue clay, small gravel, sandy						606.0
21.0							605.0
22.0			MW8				604.0
23.0							603.0
24.0	SHALE; rafted						602.0
25.0							601.0

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Edmonton, Alberta

LOGGED BY: H. LOVETT	COMPLETION DEPTH: 37.8 m
REVIEWED BY: D. YOSHISAKA	COMPLETE: 02/03/05
Fig. No: 17094	Page 1 of 2

05/11/04 02:28PM (PELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-08
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:363133.77 N:5961204.95	ELEVATION: 625.87 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
25.0								600.0
26.0		SAND; fine to medium grained, grey, black specks						599.0
27.0								598.0
28.0				MW8			-28.0 m	597.0
29.0							-28.7 m	596.0
30.0				MW8			-30.5 m	595.0
31.0		GRAVEL; brown/black, small gravel, coal chunks					-51 mm 0.020 SLOT PVC SCREEN	594.0
32.0								593.0
33.0				MW8			-33.5 m	592.0
34.0		SHALE; grey, dense						591.0
35.0								590.0
36.0				MW8				589.0
37.0								588.0
38.0		END OF HOLE 37.8 m					-37.8 m	587.0
39.0								586.0
40.0								585.0
41.0								584.0
42.0								583.0
43.0								582.0
44.0								581.0
45.0								580.0
46.0								579.0
47.0								578.0
48.0								577.0
49.0								576.0
50.0								

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LOGGED BY: H. LOVETT	COMPLETION DEPTH: 37.8 m
REVIEWED BY: D. YOSHISAKA	COMPLETE: 02/03/05
Fig. No: 17094	Page 2 of 2

05/11/24 02:29PM (PELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-09
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:361003.46 N:5962032.28	ELEVATION: 624.06 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0		ORGANIC SOIL; frozen, black					STICKUP (0.67 m)	624.0
1.0		CLAY; silty, light brown, some sand, some pebbles					-51 mm PVC CASING	623.0
2.0								622.0
3.0		- at 3.1 m turns darker brown					-TOC ELEVATION: 624.73 m	621.0
4.0							-BOREHOLE DIAMETER = 159 mm	620.0
5.0								619.0
6.0								618.0
7.0								617.0
8.0								616.0
9.0								615.0
10.0								614.0
11.0		CLAY TILL; grey, silty, some pebbles						613.0
12.0								612.0
13.0								611.0
14.0								610.0
15.0		- at 14.6 m becomes sandy						609.0
16.0								608.0
17.0								607.0
18.0		SAND; grey, fine to medium grained, some clay and coal						606.0
19.0		CLAY TILL; grey, fine to medium grained sand and pebbles						605.0
20.0								604.0
21.0								603.0
22.0								602.0
23.0								601.0
24.0								600.0
25.0								

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LOGGED BY: H. LOVETT	COMPLETION DEPTH: 43.6 m
REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/28/05
Fig. No: 17094	Page 1 of 2

05/11/04 02:30PM (PETION-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-09
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:361003.46 N:5962032.28	ELEVATION: 624.06 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
25.0							599.0
26.0	SAND; grey, medium grained, some clay, black coal speckles						598.0
27.0							597.0
28.0							596.0
29.0	CLAY; grey, sandy						595.0
30.0	GRAVEL; gravel with coarse sand and gravel					-29.9 m -30.5 m	594.0
31.0			MW9				593.0
32.0	SAND AND GRAVEL; coarse sand and coal with gravel					-32.0 m	592.0
33.0						-51 mm 0.020 SLOT PVC SCREEN	591.0
34.0	GRAVEL; gravel with coarse sand and coal						590.0
35.0							589.0
36.0			MW9			-36.6 m	588.0
37.0							587.0
38.0							586.0
39.0	SHALE; grey, dense						585.0
40.0			MW9				584.0
41.0							583.0
42.0							582.0
43.0						-43.6 m	581.0
44.0	END OF HOLE 43.6 m						580.0
45.0							579.0
46.0							578.0
47.0							577.0
48.0							576.0
49.0							575.0
50.0							

Stantec Consulting Ltd Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 43.6 m
	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/28/05
	Fig. No: 17094	Page 2 of 2

05/11/04 02:50PM (PEL GN-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-10
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:364,954.62 N:5,963,505.11	ELEVATION: 624.06 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0		TOPSOIL; brown, frozen, sandy					STICKUP (0.61 m)	624.0
1.0		SAND; brown, fine to medium grained					-152 mm PVC CASING	623.0
2.0								622.0
3.0		- at 3.1 m turns grey, some silt					-3.0 m	621.0
4.0							-TOC ELEVATION: 624.67 m	620.0
5.0							-BOREHOLE DIAMETER = 200 mm	619.0
6.0								618.0
7.0								617.0
8.0		CLAY; grey, silty						616.0
9.0								615.0
10.0								614.0
11.0								613.0
12.0		SAND; grey, fine grained						612.0
13.0								611.0
14.0								610.0
15.0								609.0
16.0		CLAY TILL; grey, silty						608.0
17.0		SILT; sandy, grey, fine grained sand and silt						607.0
18.0		CLAY TILL; grey, silty						606.0
19.0								605.0
20.0								604.0
21.0								603.0
22.0								602.0
23.0		SAND; grey, fine grained, some silt						601.0
24.0								600.0
25.0		CLAY; grey, silty, harder						

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Edmonton, Alberta

LOGGED BY: H. LOVETT | COMPLETION DEPTH: 44.8 m
REVIEWED BY: D. YOSHISAKA | COMPLETE: 01/26/05
Fig. No: 17094

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-10
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:364,954.62 N:5,963,505.11	ELEVATION: 624.06 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
25.0								599.0
25.0		SAND; cemented, grey, black speckled						598.0
27.0								597.0
28.0			GRAB	MW10				596.0
29.0								595.0
30.0							-30.2 m	594.0
31.0							-31.4 m	593.0
32.0								592.0
33.0								591.0
34.0		SAND AND GRAVEL; coarse grained sand and gravel, coal	GRAB	MW10			-SHALE BASKET	590.0
35.0								589.0
36.0							-35.7 m	588.0
37.0			GRAB	MW10			-152 mm 0.020 SLOT PVC SCREEN	587.0
38.0								586.0
39.0		GRAVEL; mostly gravel, lots of drill stem chatter, some sand						585.0
40.0								584.0
41.0								583.0
42.0		SHALE; grey, dense					-41.8 m	582.0
43.0			GRAB	MW10				581.0
44.0								580.0
45.0		END OF HOLE 44.8 m					-44.8 m	579.0
46.0								578.0
47.0								577.0
48.0								576.0
49.0								575.0
50.0								

Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 44.8 m
	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/26/05
	Fig. No: 17094	Page 2 of 2

CLIENT: NCIA	DRILLING COMPANY: SPT DRILLING LTD.	BOREHOLE NO: MW-11
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: N:5,965,300.71 E:362,564.36	ELEVATION: 624.491 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	LITHOLOGY	WELL COMPLETION DATA	ELEVATION(m)
0.0	TOPSOIL; soft, black, organic silty soil	-STICKUP (0.67 m)	
	SAND; loose, brown, fine to medium grained	-51 mm PVC CASING	624.0
1.0	CLAY; firm, brown, orange, grey, silty, no pebbles		623.0
2.0	CLAY TILL; firm, brown, sandy clay, grey, silt strands, some orange oxidation, some coal, pebbles		622.0
3.0		-3.0 m	621.0
4.0		-BOREHOLE DIAMETER 160 mm	620.0
5.0	- at 5.5 m turns grey		619.0
6.0	- at 6.4 m damp to moist		618.0
7.0			617.0
8.0			616.0
9.0			615.0
10.0			614.0
11.0			613.0
12.0			612.0
13.0			611.0
14.0			610.0
15.0	- from 15.2 to 17.7 m lots of sand, coarse grained, speckled, larger rocks mixed with clay, wet		609.0
16.0			608.0
17.0	- at 17.7 m returns to firm, grey clay till		607.0
18.0			606.0
19.0	- at 18.9 m small band of coarse grained sand then returns to grey		605.0
20.0			

Columns also headed: SOIL SYMBOL, SAMPLE TYPE, SAMPLE NO, HC VAPOUR, SLOTTED PIEZOMETER

Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 44.2 m
	REVIEWED BY: H. LOVETT	COMPLETE: 09/24/04
	Fig. No: 17094	

06/08/29 11:13AM (PELTON-1)

CLIENT: NCIA	DRILLING COMPANY: SPT DRILLING LTD.	BOREHOLE NO: MW-11
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: N:5,965,300.71 E:362,564.36	ELEVATION: 624.491 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	SLOTTED PIEZOMETER	WELL COMPLETION DATA	ELEVATION(m)
20.0		clay till						604.0
21.0								603.0
22.0								602.0
23.0								601.0
24.0								600.0
25.0								599.0
26.0								598.0
27.0		SAND; loose, fine to medium grained, wet						597.0
28.0								596.0
29.0								595.0
30.0								594.0
31.0								593.0
32.0								592.0
33.0								591.0
34.0								590.0
35.0							-35.1 m	589.0
36.0								588.0
37.0		SAND AND GRAVEL; loose, grey, wet, large gravel						587.0
38.0							-38.1 m	586.0
39.0								585.0
40.0								

Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 44.2 m
	REVIEWED BY: H. LOVETT	COMPLETE: 09/24/04
	Fig. No: 17094	Page 2 of 3

CLIENT: NCIA	DRILLING COMPANY: SPT DRILLING LTD.	BOREHOLE NO: MW-11
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: N:5,965,300.71 E:362,564.36	ELEVATION: 624.491 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	SLOTTED PIEZOMETER	WELL COMPLETION DATA	ELEVATION(m)
40.0								584.0
41.0							-51 mm 0.010 SLOT PVC SCREEN	583.0
42.0								582.0
43.0								581.0
44.0							-44.2 m	580.0
45.0		SHALE; dark grey, dry						579.0
46.0								578.0
47.0							-47.2 m	577.0
48.0		END OF HOLE 47.2 m NOTE: ON COMPLETION -backfill borehole with 10/20 grade sand to 44.2 mBGL MONITOR WELL INSTALLED -blue steel casing protector with lock added -above ground PVC stickup (0.67 mAGL) ON SEPTEMBER 24, 2004 -water level at 29.84 mBGL ON SEPTEMBER 28, 2004 -water level at 29.83 mBGL LOCAL COORDINATES: N:5242.77 E:2786.27 NOTE: -Originally installed for Shell Scotford Upgrader 04-10-44						576.0
49.0								575.0
50.0								574.0
51.0								573.0
52.0								572.0
53.0								571.0
54.0								570.0
55.0								569.0
56.0								568.0
57.0								567.0
58.0								566.0
59.0								565.0
60.0								

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Edmonton, Alberta

LOGGED BY: H. LOVETT | COMPLETION DEPTH: 44.2 m
REVIEWED BY: H. LOVETT | COMPLETE: 09/24/04
Fig. No: 17094 |

08/08/29 11:10AM (PETTOH-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-12
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:366805.93 N:5968379.85	ELEVATION: 625.46 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0		MOSS; frozen, green, some organics					STICKUP (0.61 m)	625.0
1.0		SAND; brown, fine to medium grained					-51 mm PVC CASING	624.0
2.0								623.0
3.0							-3.1 m	622.0
4.0							-TOC ELEVATION: 626.07 m	621.0
5.0							-BOREHOLE DIAMETER = 159 mm	620.0
6.0								619.0
7.0								618.0
8.0		CLAY; grey, silty SILT; grey						617.0
9.0								616.0
10.0								615.0
11.0		CLAY; grey, silty						614.0
12.0								613.0
13.0		SILT; grey						612.0
14.0								611.0
15.0		CLAY; grey, silty						610.0
16.0								609.0
17.0								608.0
18.0								607.0
19.0		CLAY TILL; grey, sandy, clay, some silt,						606.0
20.0		some pebbles						605.0
21.0								604.0
22.0								603.0
23.0								602.0
24.0								601.0
25.0								

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Edmonton, Alberta

LOGGED BY: H. LOVETT	COMPLETION DEPTH: 42.7 m
REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/02/05
Fig. No: 17094	Page 1 of 2

05/11/04 02:30PM (PELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-12
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:366805.93 N:5968379.85	ELEVATION: 625.46 (m)

SAMPLE TYPE: SHELBY TUBE, NO RECOVERY, GRAB, SPT, A-CASING, CORE

BACKFILL TYPE: BENTONITE, PEA GRAVEL, SLOUGH, GROUT, PELTONITE, SAND

DEPTH(m)	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	WELL COMPLETION DATA	ELEVATION(m)
25.0					600.0
26.0–27.5		GRAB	MW12		599.0–598.0
28.0	SAND; grey, medium grained, black speckled	GRAB	MW12		597.0
32.9				-32.9 m	
33.5				-33.5 m	
36.0–38.1				-51 mm 0.020 SLOT PVC SCREEN	
36.6	SAND AND GRAVEL; coarse sand and gravel, coal				
38.1				-38.1 m	
38.4	SHALE; grey, dense	GRAB	MW12		
	- brown, soft shale				
	- grey, dense	GRAB	MW12		
42.7	END OF HOLE 42.7 m			-42.7 m	

DEPTH(m): 25.0, 26.0, 27.0, 28.0, 29.0, 30.0, 31.0, 32.0, 33.0, 34.0, 35.0, 36.0, 37.0, 38.0, 39.0, 40.0, 41.0, 42.0, 43.0, 44.0, 45.0, 46.0, 47.0, 48.0, 49.0, 50.0

ELEVATION(m): 600.0, 599.0, 598.0, 597.0, 596.0, 595.0, 594.0, 593.0, 592.0, 591.0, 590.0, 589.0, 588.0, 587.0, 586.0, 585.0, 584.0, 583.0, 582.0, 581.0, 580.0, 579.0, 578.0, 577.0, 576.0

Columns: SOIL SYMBOL, HC VAPOUR, WELL INSTALLATION

Stantec Consulting Ltd. Edmonton, Alberta	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 42.7 m
	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/02/05
	Fig. No: 17094	Page 2 of 2

05/11/04 07:00PM (PETCON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-13
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:365292.72 N:5968147.12	ELEVATION: 625.65 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

DEPTH(m)	SOIL SYMBOL	LITHOLOGY	SAMPLE TYPE	SAMPLE NO	HC VAPOUR	WELL INSTALLATION	WELL COMPLETION DATA	ELEVATION(m)
0.0		PEAT MOSS;					STICKUP (0.63 m)	625.0
1.0		SAND; brown, fine to medium grained					-51 mm PVC CASING	624.0
2.0								623.0
3.0							-3.1 m	622.0
4.0							-TOC ELEVATION: 626.28 m	621.0
5.0							-BOREHOLE DIAMETER = 159 mm	620.0
6.0								619.0
7.0								618.0
8.0		CLAY; brown grey, silty						617.0
9.0		SAND; brown, grey, fine to medium grained, some clay						616.0
10.0		CLAY; grey, silty						615.0
11.0								614.0
12.0								613.0
13.0								612.0
14.0								611.0
15.0								610.0
16.0								609.0
17.0								608.0
18.0								607.0
19.0								606.0
20.0		CLAY TILL; grey, sandy (fine to medium grained), clay with pebbles - at 19.8 m rock						605.0
21.0								604.0
22.0								603.0
23.0				MW13				602.0
24.0								601.0
25.0								

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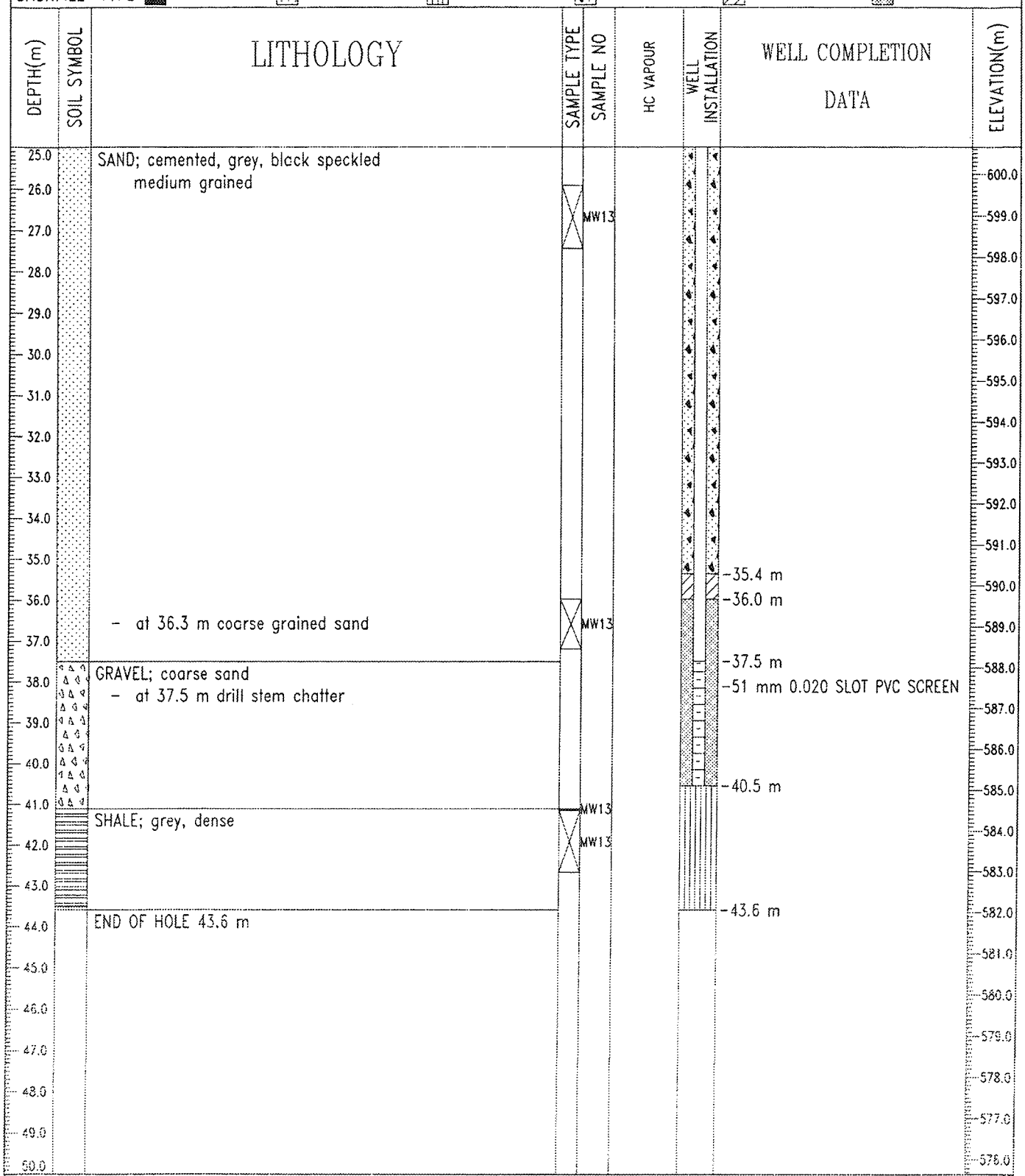
LOGGED BY: H. LOVETT | COMPLETION DEPTH: 43.6 m
REVIEWED BY: D. YOSHISAKA | COMPLETE: 01/02/05
Fig. No: 17094 | Page 1 of 2

05/11/04 02:48PM (FELTON-1)

CLIENT: NCIA	FIELD PERSONNEL: H. LOVETT	BOREHOLE NO: MW-13
PROJECT: BEVERLY CHANNEL INVESTIGATION	DRILLING METHOD: MUD ROTARY	PROJECT NO: 1102-17094/400
LOCATION: FORT SASKATCHEWAN, AB	COORDINATES: E:365292.72 N:5968147.12	ELEVATION: 625.65 (m)

SAMPLE TYPE: SHELBY TUBE | NO RECOVERY | GRAB | SPT | A-CASING | CORE

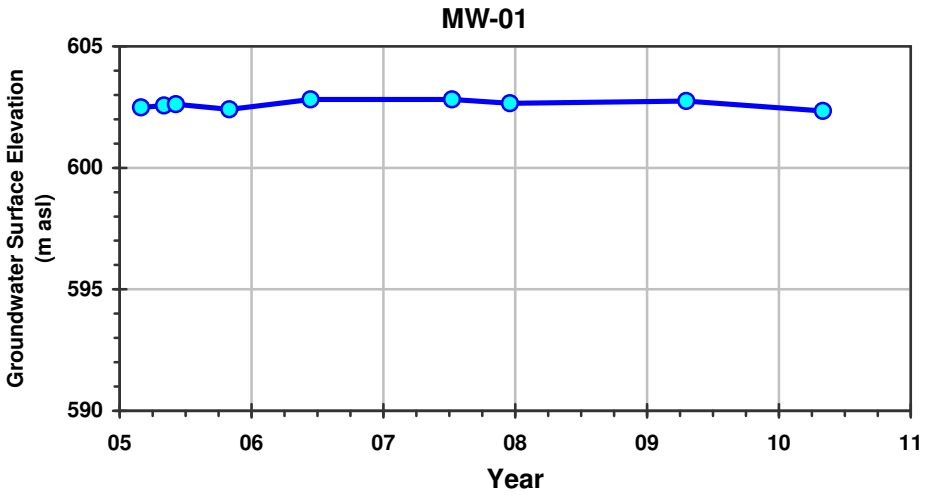
BACKFILL TYPE: BENTONITE | PEA GRAVEL | SLOUGH | GROUT | PELTONITE | SAND

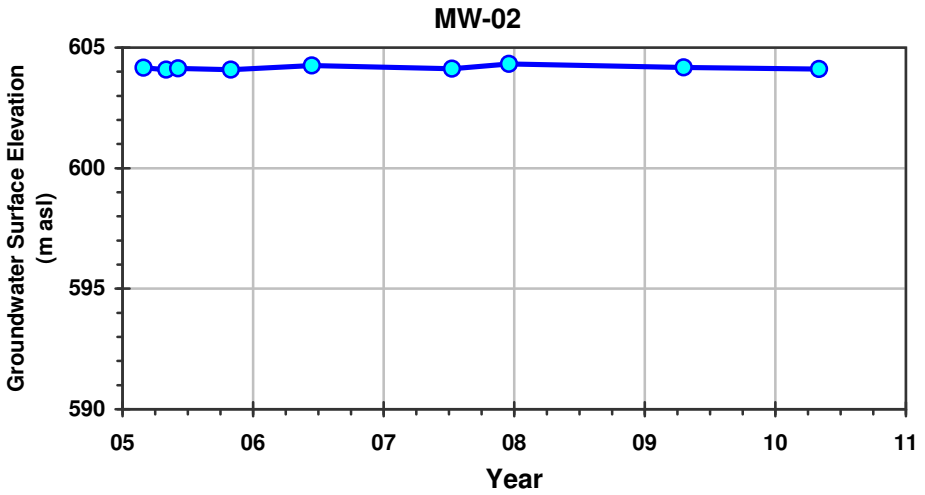


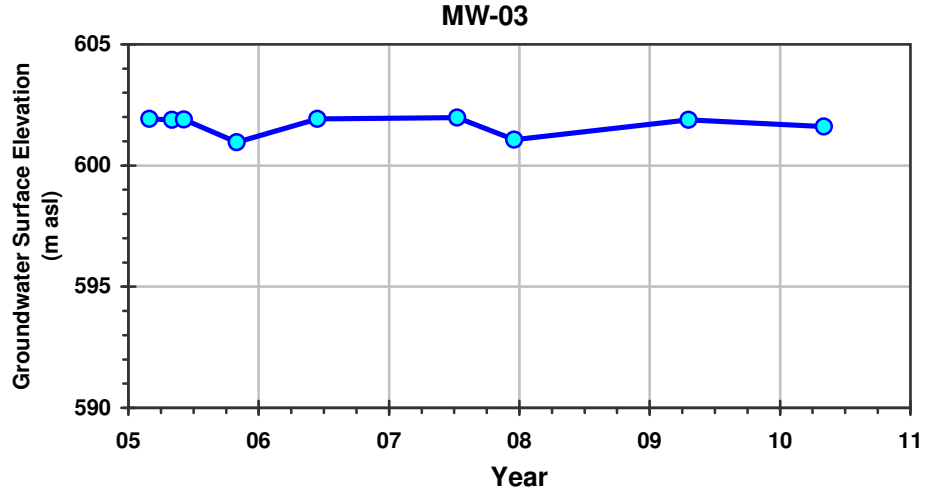
Stantec Consulting Ltd.	LOGGED BY: H. LOVETT	COMPLETION DEPTH: 43.6 m
Edmonton, Alberta	REVIEWED BY: D. YOSHISAKA	COMPLETE: 01/02/05
	Fig. No: 17094	Page 2 of 2

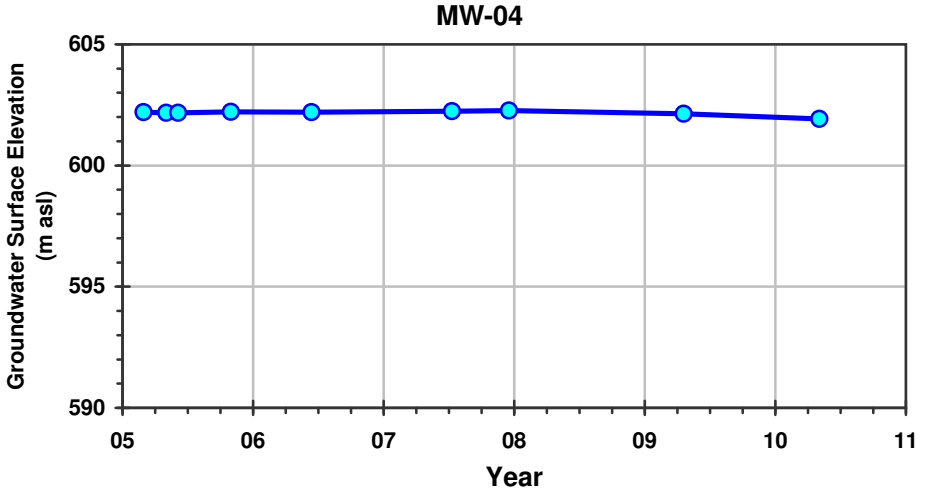
05/11/04 02:48PM (PELTON-1)

Appendix 3 Groundwater Hydrographs









Notes:

- *Filled symbols denote sample values*
- *Unfilled symbols represent dry well elevations*

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2010 GROUNDWATER QUALITY MONITORING
GROUNDWATER HYDROGRAPHS
MONITORING STATIONS: MW-01, MW-02, MW-03, and MW-04

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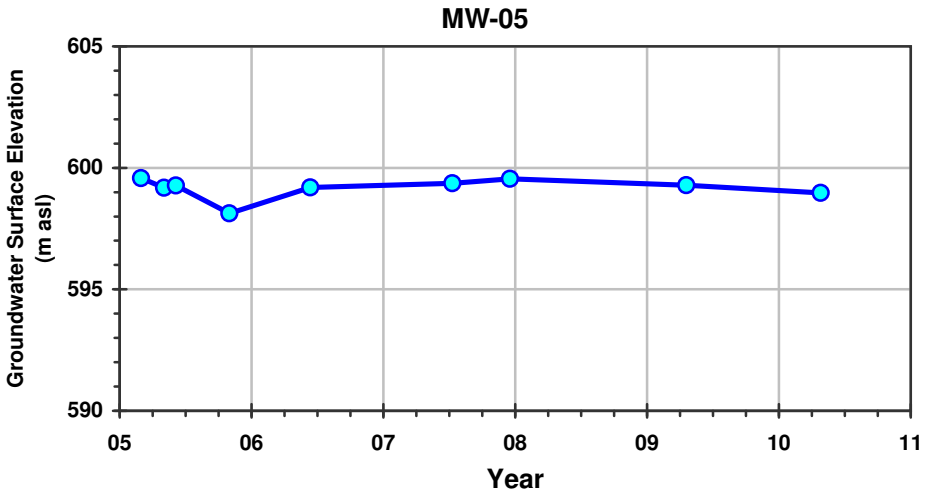
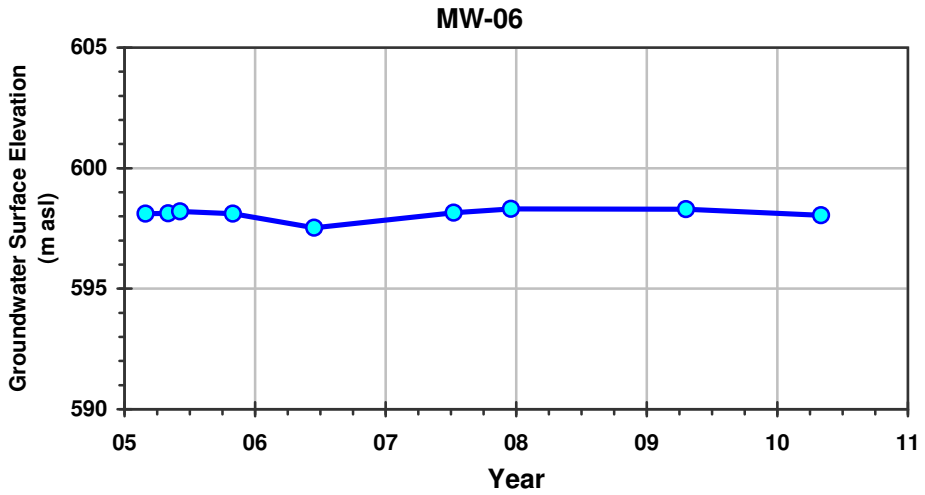
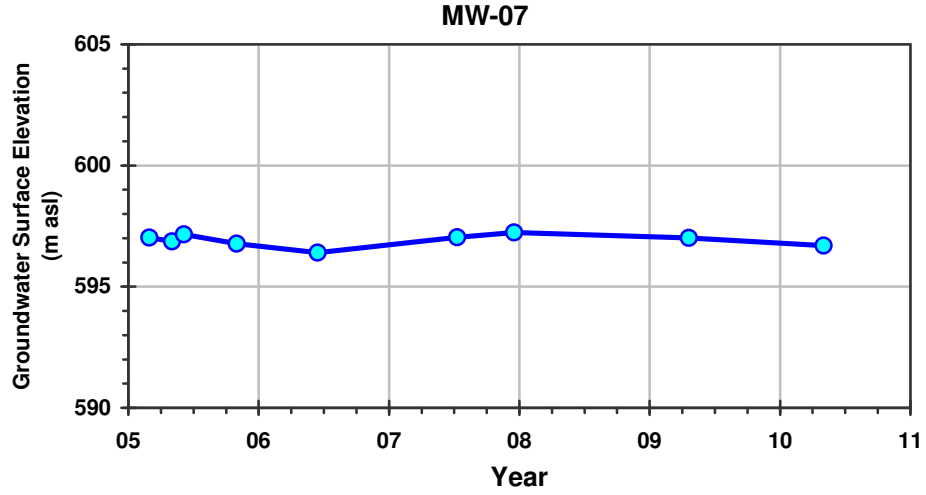
PROJECT NUMBER: **E00100101**

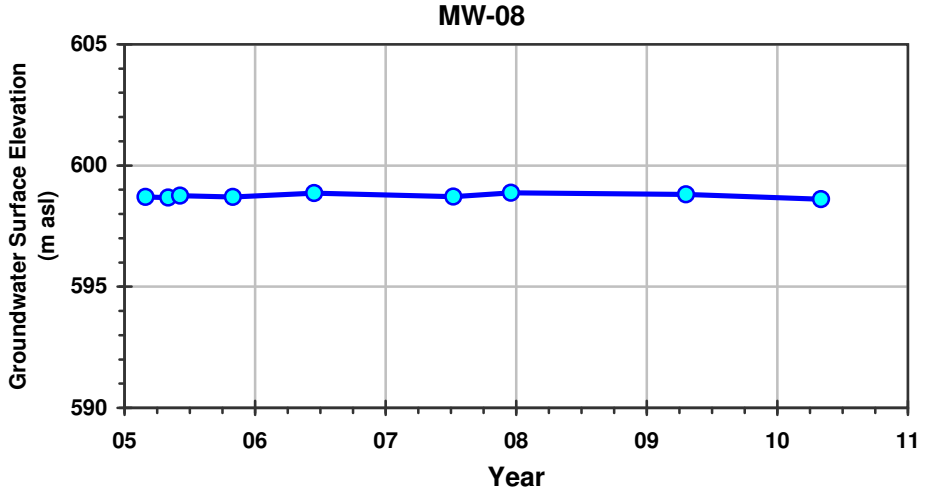
FIGURE: **A3-1**

J:\E001s\E00100101 (NCIA 2010 Beverly Channel GW Monitoring)\12.0_Reports\12.3_Backend\Appendices\Appendix 3 - Groundwater Hydrographs









Notes:

- *Filled symbols denote sample values*
- *Unfilled symbols represent dry well elevations*

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GROUNDWATER HYDROGRAPHS
MONITORING STATIONS: MW-05, MW-06, MW-07, MW-08

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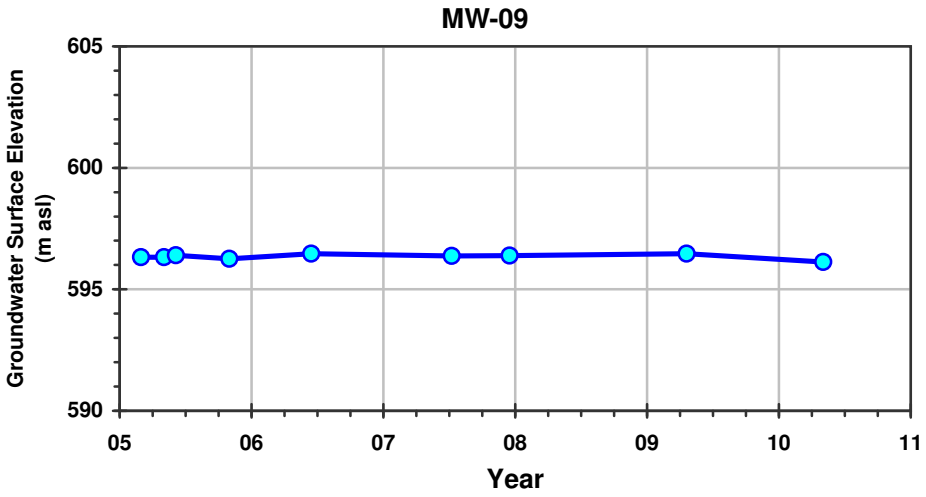
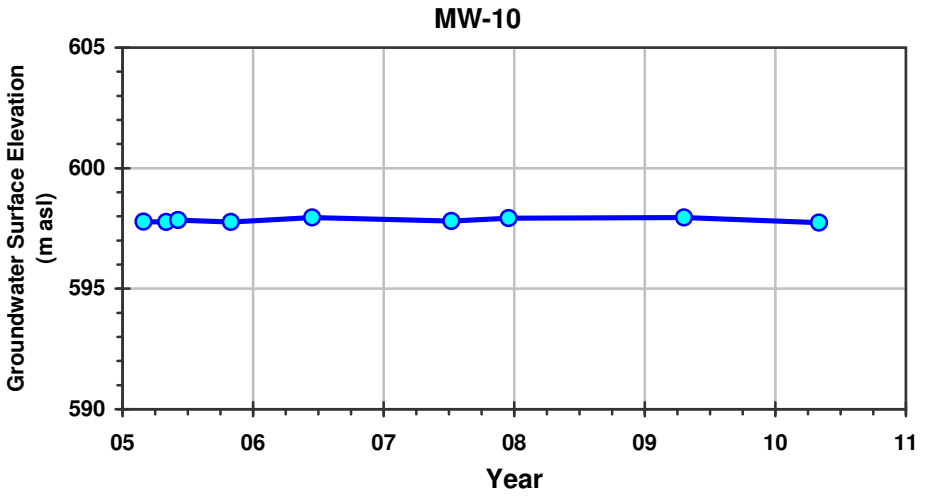
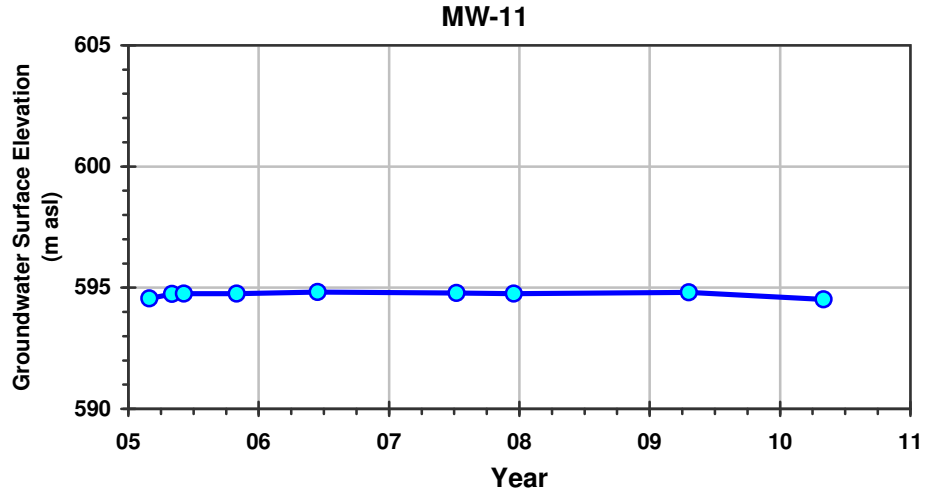
PROJECT NUMBER: **E00100101**

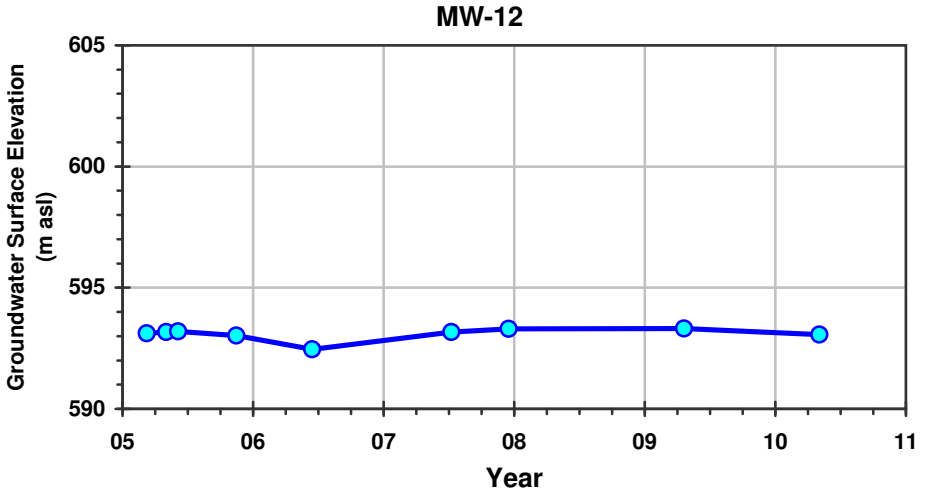
FIGURE: **A3-2**

J:\E001s\E00100101 (NCIA 2010 Beverly Channel GW Monitoring)\12.0_Reports\12.3_Backend\Appendices\Appendix 3 - Groundwater Hydrographs









Notes:

- *Filled symbols denote sample values*
- *Unfilled symbols represent dry well elevations*

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GROUNDWATER HYDROGRAPHS
MONITORING STATIONS: MW-09, MW-10, MW-11, MW-12

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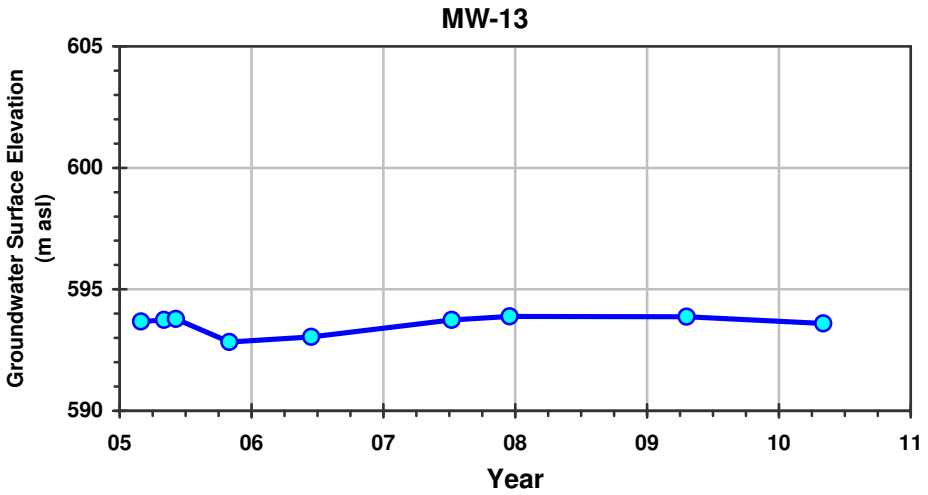
PROJECT NUMBER: **E00100101**

FIGURE: **A3-3**

J:\E001s\E00100101 (NCIA 2010 Beverly Channel GW Monitoring)\12.0_Reports\12.3_Backend\Appendices\Appendix 3 - Groundwater Hydrographs



Notes:

- *Filled symbols denote sample values*
- *Unfilled symbols represent dry well elevations*

Infrastructure & Environment

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
GROUNDWATER HYDROGRAPHS
MONITORING STATION: MW-13

WorleyParsons
resources & energy

09-JUN-10 date	edited by	KS drawn by	app by

PROJECT NUMBER: **E00100101**

FIGURE: **A3-4**

J:\E001s\E00100101 (NCIA 2010 Beverly Channel GW Monitoring)\12.0_Reports\12.3_Backend\Appendices\Appendix 3 - Groundwater Hydrographs

Appendix 4 Laboratory Analytical Data

Certificate of Analysis

WORLEYPARSONS
ATTN: KEN SOMMERSTAD
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6

Report Date: 05-MAY-10 15:09 (MT)
Version: FINAL

Lab Work Order #: L881695 **Date Received:** 29-APR-10

Project P.O. #: NOT SUBMITTED
Job Reference: E00100101
Legal Site Desc:
CofC Numbers: 1004

Other Information:

Comments:

Maureen Olinek
Senior Account Manager

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L881695-1 MW-05							
Sampled By: BD/KS on 29-APR-10 @ 11:15							
Matrix: GROUNDWATER							
BTEX, Styrene & F1-F2							
BTEX, Styrene and F1 (C6-C10)							
Benzene	<0.00050		0.00050	mg/L		03-MAY-10	R1245466
Toluene	<0.00075		0.00075	mg/L		03-MAY-10	R1245466
EthylBenzene	<0.00050		0.00050	mg/L		03-MAY-10	R1245466
o-Xylene	<0.00050		0.00050	mg/L		03-MAY-10	R1245466
m+p-Xylene	<0.00050		0.00050	mg/L		03-MAY-10	R1245466
Styrene	<0.0010		0.0010	mg/L		03-MAY-10	R1245466
F1(C6-C10)	<0.10		0.10	mg/L		03-MAY-10	R1245466
F1-BTEX	<0.10		0.10	mg/L		03-MAY-10	R1245466
Xylenes	<0.0010		0.0010	mg/L		03-MAY-10	R1245466
F2 (>C10-C16)							
F2 (>C10-C16)	<0.25		0.25	mg/L	30-APR-10	30-APR-10	R1246070
Surrogate: 2-Bromobenzotrifluoride	86		N/A	%	30-APR-10	30-APR-10	R1246070
Miscellaneous Parameters							
Ammonia as N, Dissolved	0.234		0.050	mg/L		03-MAY-10	R1246504
Dissolved Organic Carbon	3.3		1.0	mg/L		30-APR-10	R1244881
Fluoride (F)	0.107		0.050	mg/L		30-APR-10	R1246096
Orthophosphate (PO4-P)	<0.010		0.010	mg/L		30-APR-10	R1245682
Phenols (4AAP)	<0.0010		0.0010	mg/L		04-MAY-10	R1247805
Major Ions & Trace Dissolved Metals							
Chloride by IC							
Chloride (Cl)	30.6		0.50	mg/L		30-APR-10	R1246096
Diss. Metals in Water by ICPMS (Low)							
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L		05-MAY-10	R1247793
Antimony (Sb)-Dissolved	0.00052		0.00040	mg/L		05-MAY-10	R1247793
Arsenic (As)-Dissolved	0.00170		0.00040	mg/L		05-MAY-10	R1247793
Barium (Ba)-Dissolved	0.0478		0.0050	mg/L		05-MAY-10	R1247793
Beryllium (Be)-Dissolved	<0.00050		0.00050	mg/L		05-MAY-10	R1247793
Boron (B)-Dissolved	0.064		0.050	mg/L		05-MAY-10	R1247793
Cadmium (Cd)-Dissolved	<0.00010		0.00010	mg/L		05-MAY-10	R1247793
Chromium (Cr)-Dissolved	<0.0050		0.0050	mg/L		05-MAY-10	R1247793
Cobalt (Co)-Dissolved	0.00082		0.00010	mg/L		05-MAY-10	R1247793
Copper (Cu)-Dissolved	<0.0010		0.0010	mg/L		05-MAY-10	R1247793
Lead (Pb)-Dissolved	<0.00010		0.00010	mg/L		05-MAY-10	R1247793
Molybdenum (Mo)-Dissolved	0.00063		0.00010	mg/L		05-MAY-10	R1247793
Nickel (Ni)-Dissolved	0.0039		0.0020	mg/L		05-MAY-10	R1247793
Selenium (Se)-Dissolved	0.00086		0.00040	mg/L		05-MAY-10	R1247793
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L		05-MAY-10	R1247793
Thallium (Tl)-Dissolved	<0.000050		0.000050	mg/L		05-MAY-10	R1247793
Titanium (Ti)-Dissolved	0.00088		0.00030	mg/L		05-MAY-10	R1247793
Uranium (U)-Dissolved	0.00070		0.00010	mg/L		05-MAY-10	R1247793
Vanadium (V)-Dissolved	0.00017		0.00010	mg/L		05-MAY-10	R1247793
Zinc (Zn)-Dissolved	0.0025		0.0020	mg/L		05-MAY-10	R1247793
Diss. Metals in Water by ICPOES (Low)							
Calcium (Ca)-Dissolved	120		0.50	mg/L		04-MAY-10	R1246853
Iron (Fe)-Dissolved	3.39		0.020	mg/L		04-MAY-10	R1246853
Magnesium (Mg)-Dissolved	36.7		0.10	mg/L		04-MAY-10	R1246853
Manganese (Mn)-Dissolved	0.758		0.0050	mg/L		04-MAY-10	R1246853
Sodium (Na)-Dissolved	46.1		0.50	mg/L		04-MAY-10	R1246853
Ion Balance Calculation							
Ion Balance	103			%		04-MAY-10	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L881695-1 MW-05							
Sampled By: BD/KS on 29-APR-10 @ 11:15							
Matrix: GROUNDWATER							
Ion Balance Calculation							
TDS (Calculated)	596			mg/L		04-MAY-10	
Hardness (as CaCO3)	451			mg/L		04-MAY-10	
Mercury (Hg) - Dissolved							
Mercury (Hg)-Dissolved	<0.00010		0.00010	mg/L		05-MAY-10	R1248732
Nitrate as N by IC							
Nitrate (as N)	<0.050		0.050	mg/L		30-APR-10	R1246096
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		03-MAY-10	
Nitrite as N by IC							
Nitrite (as N)	<0.050		0.050	mg/L		30-APR-10	R1246096
Sulfate by IC							
Sulfate (SO4)	144		0.50	mg/L		30-APR-10	R1246096
pH, Conductivity and Total Alkalinity							
pH	7.95		0.10	pH		29-APR-10	R1244722
Conductivity (EC)	969		0.20	uS/cm		29-APR-10	R1244722
Bicarbonate (HCO3)	428		5.0	mg/L		29-APR-10	R1244722
Carbonate (CO3)	<5.0		5.0	mg/L		29-APR-10	R1244722
Hydroxide (OH)	<5.0		5.0	mg/L		29-APR-10	R1244722
Alkalinity, Total (as CaCO3)	351		5.0	mg/L		29-APR-10	R1244722

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L881695-1

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BTXS,F1-ED	Water	BTEX, Styrene and F1 (C6-C10)	EPA 5021/8015&8260 GC-MS & FID
C-DIS-ORG-ED	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
CL-IC-ED	Water	Chloride by IC	APHA 4110 B-ION CHROMATOGRAPHY
F-IC-ED	Water	Fluoride by IC	APHA 4110 B-ION CHROMATOGRAPHY
F2-ED	Water	F2 (>C10-C16)	EPA 3510/CCME PHC CWS-GC-FID
HG-D-CVAA-ED	Water	Mercury (Hg) - Dissolved	EPA 245.7 / EPA 245.1
IONBALANCE-ED	Water	Ion Balance Calculation	APHA 1030E
MET-D-L-ICP-ED	Water	Diss. Metals in Water by ICPOES (Low)	APHA 3120 B-ICP-OES
MET-D-L-MS-ED	Water	Diss. Metals in Water by ICPMS (Low)	SW 846 - 6020-ICPMS
NH4-DIS-ED	Water	Ammonia-N	APHA4500NH3F Colorimetry
NO2+NO3-CALC-ED	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-ED	Water	Nitrite as N by IC	APHA 4110 B-ION CHROMATOGRAPHY
NO3-IC-ED	Water	Nitrate as N by IC	APHA 4110 B-ION CHROMATOGRAPHY
PH/EC/ALK-ED	Water	pH, Conductivity and Total Alkalinity	APHA 4500-H, 2510, 2320
PHENOLS-4AAP-ED	Water	Phenols (4AAP)	AB ENV.06537-COLORIMETRIC
PO4-ED	Water	Orthophosphate (PO4-P)	APHA 4500 P B,E-Auto-Colorimetry
SO4-IC-ED	Water	Sulfate by IC	APHA 4110 B-ION CHROMATOGRAPHY

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

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

Laboratory Definition Code	Laboratory Location
ED	ALS LABORATORY GROUP - EDMONTON, ALBERTA, CANADA

Chain of Custody Numbers:

1004

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mk/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS LABORATORY GROUP SOIL SALINITY CONVERSION

L881695

Lab ID	Sample ID					Lab ID	Sample ID				

"Calculations are as per:
Methods of Analysis for Soils, Plants and Waters
Homer D. Chapman and Parker F. Pratt
University of California, Riverside, Cl.
August, 1961."

ALS Laboratory Group Quality Control Report

Workorder: L881695 Report Date: 05-MAY-10 Page 1 of 10

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTXS,F1-ED	**Water**							
Batch R1245466								
WG1097946-4 DUP		**L881534-4**						
Benzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	03-MAY-10
Toluene		<0.00075	<0.00075	RPD-NA	mg/L	N/A	30	03-MAY-10
EthylBenzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	03-MAY-10
o-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	24	03-MAY-10
m+p-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	24	03-MAY-10
Styrene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	50	03-MAY-10
F1(C6-C10)		0.10	0.11		mg/L	4.4	30	03-MAY-10
WG1097946-2 LCS								
Benzene			104		%		70-130	03-MAY-10
Toluene			108		%		70-130	03-MAY-10
EthylBenzene			107		%		70-130	03-MAY-10
o-Xylene			106		%		70-130	03-MAY-10
m+p-Xylene			108		%		70-130	03-MAY-10
Styrene			109		%		70-130	03-MAY-10
WG1097946-3 LCS								
F1(C6-C10)			124		%		70-130	03-MAY-10
WG1097946-1 MB								
Benzene			<0.00050		mg/L		0.0005	03-MAY-10
Toluene			<0.00075		mg/L		0.00075	03-MAY-10
EthylBenzene			<0.00050		mg/L		0.0005	03-MAY-10
o-Xylene			<0.00050		mg/L		0.0005	03-MAY-10
m+p-Xylene			<0.00050		mg/L		0.0005	03-MAY-10
Styrene			<0.0010		mg/L		0.001	03-MAY-10
F1(C6-C10)			<0.10		mg/L		0.1	03-MAY-10
WG1097946-5 MS		**L881801-5**						
Benzene			89		%		50-150	03-MAY-10
Toluene			107		%		50-150	03-MAY-10
EthylBenzene			100		%		50-150	03-MAY-10
o-Xylene			101		%		50-150	03-MAY-10
m+p-Xylene			100		%		50-150	03-MAY-10
Styrene			102		%		50-150	03-MAY-10
WG1097946-6 MS		**L881801-5**						
F1(C6-C10)			121		%		50-150	03-MAY-10
C-DIS-ORG-ED	**Water**							

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-ED	**Water**							
Batch R1244881								
WG1097429-15 CVS								
Dissolved Organic Carbon			108		%		80-160	30-APR-10
WG1097429-25 CVS								
Dissolved Organic Carbon			116		%		80-160	03-MAY-10
WG1097429-34 CVS								
Dissolved Organic Carbon			97		%		80-160	05-MAY-10
WG1097429-38 CVS								
Dissolved Organic Carbon			97		%		80-160	05-MAY-10
WG1097429-4 CVS								
Dissolved Organic Carbon			134		%		80-160	29-APR-10
WG1097429-30 DUP		**L881626-2**						
Dissolved Organic Carbon		1.1	1.1		mg/L	3.9	20	04-MAY-10
WG1097429-5 DUP		**L879986-2**						
Dissolved Organic Carbon		7.3	7.2		mg/L	2.6	20	30-APR-10
WG1097429-10 LCS								
Dissolved Organic Carbon			101		%		80-120	30-APR-10
WG1097429-11 LCS								
Dissolved Organic Carbon			99		%		80-120	30-APR-10
WG1097429-13 LCS								
Dissolved Organic Carbon			98		%		80-120	30-APR-10
WG1097429-14 LCS								
Dissolved Organic Carbon			102		%		80-120	30-APR-10
WG1097429-2 LCS								
Dissolved Organic Carbon			98		%		80-120	29-APR-10
WG1097429-22 LCS								
Dissolved Organic Carbon			96		%		80-120	03-MAY-10
WG1097429-24 LCS								
Dissolved Organic Carbon			98		%		80-120	03-MAY-10
WG1097429-26 LCS								
Dissolved Organic Carbon			93		%		80-120	04-MAY-10
WG1097429-28 LCS								
Dissolved Organic Carbon			85		%		80-120	04-MAY-10
WG1097429-29 LCS								
Dissolved Organic Carbon			93		%		80-120	04-MAY-10
WG1097429-3 LCS								
Dissolved Organic Carbon			96		%		80-120	29-APR-10
WG1097429-36 LCS								
Dissolved Organic Carbon			91		%		80-120	05-MAY-10

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-ED	**Water**							
Batch R1244881								
WG1097429-37 LCS								
Dissolved Organic Carbon			93		%		80-120	05-MAY-10
WG1097429-8 LCS								
Dissolved Organic Carbon			96		%		80-120	30-APR-10
WG1097429-9 LCS								
Dissolved Organic Carbon			100		%		80-120	30-APR-10
WG1097429-1 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	29-APR-10
WG1097429-12 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	30-APR-10
WG1097429-23 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	03-MAY-10
WG1097429-27 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	04-MAY-10
WG1097429-35 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	05-MAY-10
WG1097429-7 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	03-MAY-10
WG1097429-31 MS		**L881626-2**						
Dissolved Organic Carbon			100		%		70-130	04-MAY-10
WG1097429-6 MS		**L879986-2**						
Dissolved Organic Carbon			102		%		70-130	30-APR-10
CL-IC-ED	**Water**							
Batch R1246096								
WG1098299-3 DUP		**L881420-1**						
Chloride (Cl)		1.93	1.88		mg/L	2.3	20	30-APR-10
WG1098299-5 DUP		**L881744-4**						
Chloride (Cl)		9.79	9.87		mg/L	0.78	20	30-APR-10
WG1098299-7 DUP		**L882096-1**						
Chloride (Cl)		0.92	0.92		mg/L	0.087	20	30-APR-10
WG1098299-2 LCS								
Chloride (Cl)			100		%		85-115	30-APR-10
WG1098299-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	30-APR-10
WG1098299-4 MS		**L881420-1**						
Chloride (Cl)			105		%		75-125	30-APR-10
WG1098299-6 MS		**L881744-4**						
Chloride (Cl)			107		%		75-125	30-APR-10

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
CL-IC-ED	**Water**							
Batch R1246096								
WG1098299-8 MS		**L882096-1**						
Chloride (Cl)			104		%		75-125	30-APR-10
F-IC-ED	**Water**							
Batch R1246096								
WG1098299-3 DUP		**L881420-1**						
Fluoride (F)		1.60	1.63		mg/L	2.3	20	30-APR-10
WG1098299-5 DUP		**L881744-4**						
Fluoride (F)		0.110	0.111		mg/L	0.81	20	30-APR-10
WG1098299-7 DUP		**L882096-1**						
Fluoride (F)		0.092	0.089		mg/L	3.8	20	30-APR-10
WG1098299-2 LCS								
Fluoride (F)			101		%		85-115	30-APR-10
WG1098299-1 MB								
Fluoride (F)			<0.050		mg/L		0.05	30-APR-10
WG1098299-4 MS		**L881420-1**						
Fluoride (F)			103		%		75-125	30-APR-10
WG1098299-6 MS		**L881744-4**						
Fluoride (F)			107		%		75-125	30-APR-10
WG1098299-8 MS		**L882096-1**						
Fluoride (F)			105		%		75-125	30-APR-10
F2-ED	**Water**							
Batch R1246070								
WG1098302-2 LCS								
F2 (>C10-C16)			111		%		65-135	30-APR-10
WG1098302-1 MB								
F2 (>C10-C16)			<0.25		mg/L		0.25	30-APR-10
HG-D-CVAA-ED	**Water**							
Batch R1248732								
WG1099772-2 LCS								
Mercury (Hg)-Dissolved			97		%		80-120	05-MAY-10
WG1099772-3 LCSD		**WG1099772-2**						
Mercury (Hg)-Dissolved		97	98		%	1.7	20	05-MAY-10
WG1099772-1 MB								
Mercury (Hg)-Dissolved			<0.00010		mg/L		0.0001	05-MAY-10
MET-D-L-ICP-ED	**Water**							

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-L-ICP-ED	**Water**							
Batch R1246853								
WG1098604-2 CRM		**EU-H-3_OPTWATER**						
Calcium (Ca)-Dissolved			113		%		80-120	03-MAY-10
Iron (Fe)-Dissolved			107		%		80-120	03-MAY-10
Magnesium (Mg)-Dissolved			112		%		80-120	03-MAY-10
Manganese (Mn)-Dissolved			115		%		80-120	03-MAY-10
Sodium (Na)-Dissolved			113		%		80-120	03-MAY-10
WG1098604-3 DUP		**L881695-1**						
Calcium (Ca)-Dissolved		120	133		mg/L	10	20	04-MAY-10
Iron (Fe)-Dissolved		3.39	3.77		mg/L	11	20	04-MAY-10
Magnesium (Mg)-Dissolved		36.7	41.4		mg/L	12	20	04-MAY-10
Manganese (Mn)-Dissolved		0.758	0.840		mg/L	10	20	04-MAY-10
Sodium (Na)-Dissolved		46.1	50.7		mg/L	9.6	20	04-MAY-10
WG1098604-1 MB								
Calcium (Ca)-Dissolved			<0.20		mg/L		0.2	03-MAY-10
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	03-MAY-10
Magnesium (Mg)-Dissolved			<0.10		mg/L		0.1	03-MAY-10
Manganese (Mn)-Dissolved			<0.0020		mg/L		0.002	03-MAY-10
Sodium (Na)-Dissolved			<0.50		mg/L		0.5	03-MAY-10
MET-D-L-MS-ED	**Water**							
Batch R1247793								
WG1099225-2 CRM		**1643E_WATER**						
Aluminum (Al)-Dissolved			87		%		80-120	04-MAY-10
Antimony (Sb)-Dissolved			95		%		80-120	04-MAY-10
Arsenic (As)-Dissolved			93		%		80-120	04-MAY-10
Barium (Ba)-Dissolved			91		%		80-120	04-MAY-10
Beryllium (Be)-Dissolved			90		%		80-120	04-MAY-10
Boron (B)-Dissolved			87		%		80-120	04-MAY-10
Cadmium (Cd)-Dissolved			97		%		80-120	04-MAY-10
Chromium (Cr)-Dissolved			95		%		80-120	04-MAY-10
Cobalt (Co)-Dissolved			97		%		80-120	04-MAY-10
Copper (Cu)-Dissolved			95		%		80-120	04-MAY-10
Lead (Pb)-Dissolved			93		%		80-120	04-MAY-10
Molybdenum (Mo)-Dissolved			100		%		80-120	04-MAY-10
Nickel (Ni)-Dissolved			98		%		80-120	04-MAY-10
Selenium (Se)-Dissolved			93		%		80-120	04-MAY-10

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-L-MS-ED	**Water**							
Batch R1247793								
WG1099225-2 CRM		**1643E_WATER**						
Thallium (Tl)-Dissolved			94		%		80-120	04-MAY-10
Vanadium (V)-Dissolved			93		%		80-120	04-MAY-10
Zinc (Zn)-Dissolved			92		%		80-120	04-MAY-10
WG1099225-1 MB								
Aluminum (Al)-Dissolved			<0.0050		mg/L		0.005	04-MAY-10
Antimony (Sb)-Dissolved			<0.00040		mg/L		0.0004	04-MAY-10
Arsenic (As)-Dissolved			<0.00040		mg/L		0.0004	04-MAY-10
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	04-MAY-10
Beryllium (Be)-Dissolved			<0.00050		mg/L		0.0005	04-MAY-10
Boron (B)-Dissolved			<0.0020		mg/L		0.002	04-MAY-10
Cadmium (Cd)-Dissolved			<0.000050		mg/L		0.00005	04-MAY-10
Chromium (Cr)-Dissolved			<0.00040		mg/L		0.0004	04-MAY-10
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	04-MAY-10
Copper (Cu)-Dissolved			<0.00060		mg/L		0.0006	04-MAY-10
Lead (Pb)-Dissolved			<0.00010		mg/L		0.0001	04-MAY-10
Molybdenum (Mo)-Dissolved			<0.00010		mg/L		0.0001	04-MAY-10
Nickel (Ni)-Dissolved			<0.00010		mg/L		0.0001	04-MAY-10
Selenium (Se)-Dissolved			<0.00040		mg/L		0.0004	04-MAY-10
Silver (Ag)-Dissolved			<0.00010		mg/L		0.0001	04-MAY-10
Thallium (Tl)-Dissolved			<0.000050		mg/L		0.00005	04-MAY-10
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	04-MAY-10
Uranium (U)-Dissolved			<0.00010		mg/L		0.0001	04-MAY-10
Vanadium (V)-Dissolved			<0.00010		mg/L		0.0001	04-MAY-10
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	04-MAY-10
NH4-DIS-ED	**Water**							
Batch R1246504								
WG1098472-5 DUP		**L881744-1**						
Ammonia as N, Dissolved		0.707	0.707		mg/L	0.085	25	03-MAY-10
NO2-IC-ED	**Water**							
Batch R1246096								
WG1098299-3 DUP		**L881420-1**						
Nitrite (as N)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-APR-10
WG1098299-5 DUP		**L881744-4**						

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-IC-ED	**Water**							
Batch R1246096								
WG1098299-5 DUP		**L881744-4**						
Nitrite (as N)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-APR-10
WG1098299-7 DUP		**L882096-1**						
Nitrite (as N)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-APR-10
WG1098299-2 LCS								
Nitrite (as N)			95		%		85-115	01-MAY-10
WG1098299-1 MB								
Nitrite (as N)			<0.050		mg/L		0.05	30-APR-10
NO3-IC-ED	**Water**							
Batch R1246096								
WG1098299-3 DUP		**L881420-1**						
Nitrate (as N)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-APR-10
WG1098299-5 DUP		**L881744-4**						
Nitrate (as N)		0.592	0.605		mg/L	2.1	20	30-APR-10
WG1098299-7 DUP		**L882096-1**						
Nitrate (as N)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	30-APR-10
WG1098299-2 LCS								
Nitrate (as N)			95		%		85-115	30-APR-10
WG1098299-1 MB								
Nitrate (as N)			<0.050		mg/L		0.05	30-APR-10
WG1098299-4 MS		**L881420-1**						
Nitrate (as N)			90		%		75-125	30-APR-10
WG1098299-6 MS		**L881744-4**						
Nitrate (as N)			100		%		75-125	30-APR-10
WG1098299-8 MS		**L882096-1**						
Nitrate (as N)			91		%		75-125	30-APR-10
PH/EC/ALK-ED	**Water**							
Batch R1244722								
WG1097063-5 DUP		**L881421-1**						
pH		8.56	8.56	J	pH	0.00	0.2	29-APR-10
Conductivity (EC)		1560	1570		uS/cm	0.57	10	29-APR-10
Bicarbonate (HCO3)		812	806		mg/L	0.78	25	29-APR-10
Carbonate (CO3)		31.4	32.2		mg/L	2.6	25	29-APR-10
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	29-APR-10
Alkalinity, Total (as CaCO3)		718	714		mg/L	0.52	6.5	29-APR-10
WG1097063-6 DUP		**L881530-3**						
pH		7.54	7.56	J	pH	0.02	0.2	29-APR-10

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH/EC/ALK-ED	**Water**							
Batch R1244722								
WG1097063-6 DUP		**L881530-3**						
Conductivity (EC)		2330	2330		uS/cm	0.0	10	29-APR-10
Bicarbonate (HCO3)		84.8	86.0		mg/L	1.5	25	29-APR-10
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	29-APR-10
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	29-APR-10
Alkalinity, Total (as CaCO3)		69.5	70.5		mg/L	1.5	6.5	29-APR-10
WG1097063-2 LCS								
Conductivity (EC)			98		%		90-110	29-APR-10
WG1097063-3 LCS								
pH			6.99		pH		6.9-7.1	29-APR-10
WG1097063-4 LCS								
Alkalinity, Total (as CaCO3)			99		%		85-115	29-APR-10
WG1097063-1 MB								
Bicarbonate (HCO3)			<5.0		mg/L		5	29-APR-10
Carbonate (CO3)			<5.0		mg/L		5	29-APR-10
Hydroxide (OH)			<5.0		mg/L		5	29-APR-10
Alkalinity, Total (as CaCO3)			<5.0		mg/L		5	29-APR-10
PHENOLS-4AAP-ED	**Water**							
Batch R1247805								
WG1099363-4 DUP		**L881695-1**						
Phenols (4AAP)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	9.8	04-MAY-10
WG1099363-6 DUP		**L882316-14**						
Phenols (4AAP)		0.0028	0.0027		mg/L	3.6	9.8	04-MAY-10
WG1099363-7 DUP		**L882272-9**						
Phenols (4AAP)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	9.8	04-MAY-10
WG1099363-3 LCS								
Phenols (4AAP)			103		%		85-115	04-MAY-10
WG1099363-2 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	04-MAY-10
WG1099363-5 MS		**L881695-1**						
Phenols (4AAP)			100		%		76-124	04-MAY-10
WG1099363-8 MS		**L882272-18**						
Phenols (4AAP)			98		%		76-124	04-MAY-10
PO4-ED	**Water**							

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PO4-ED	**Water**							
Batch R1245682								
WG1098024-3 DUP		**L881892-1**						
Orthophosphate (PO4-P)		0.754	0.745		mg/L	1.1	20	30-APR-10
WG1098024-2 LCS								
Orthophosphate (PO4-P)			97		%		80-120	30-APR-10
WG1098024-1 MB								
Orthophosphate (PO4-P)			<0.010		mg/L		0.01	30-APR-10
WG1098024-4 MS		**L881892-1**						
Orthophosphate (PO4-P)			77		%		70-130	30-APR-10
SO4-IC-ED	**Water**							
Batch R1246096								
WG1098299-3 DUP		**L881420-1**						
Sulfate (SO4)		47.1	48.6		mg/L	3.0	20	30-APR-10
WG1098299-5 DUP		**L881744-4**						
Sulfate (SO4)		279	283		mg/L	1.4	20	30-APR-10
WG1098299-7 DUP		**L882096-1**						
Sulfate (SO4)		160	162		mg/L	0.85	20	30-APR-10
WG1098299-2 LCS								
Sulfate (SO4)			101		%		85-115	30-APR-10
WG1098299-1 MB								
Sulfate (SO4)			<0.50		mg/L		0.5	30-APR-10
WG1098299-4 MS		**L881420-1**						
Sulfate (SO4)			102		%		75-125	30-APR-10
WG1098299-6 MS		**L881744-4**						
Sulfate (SO4)			N/A	MS-B	%		-	30-APR-10
WG1098299-8 MS		**L882096-1**						
Sulfate (SO4)			86		%		75-125	30-APR-10

ALS Laboratory Group Quality Control Report

Legend:

Limit	99% Confidence Interval (Laboratory Control Limits)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

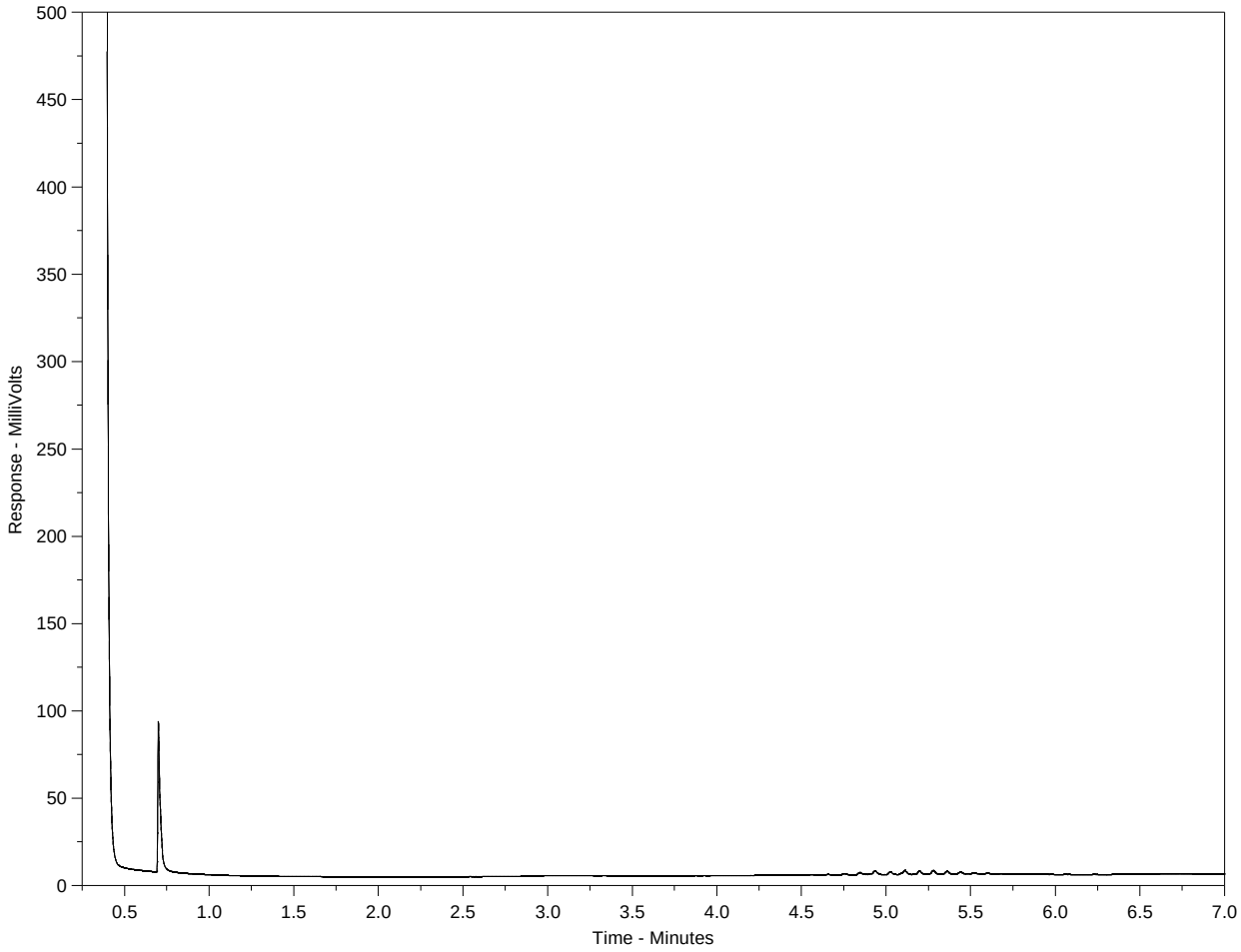
Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Hydrocarbon Distribution Report

ALS Sample ID: **L881695-1**
Client ID: **MW-05**



<-nC10----------nC16----------nC34----------nC50->
<----------Gasoline----------> <----------Heavy Oils---------->
|----------Diesel----------|

The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (December 2007 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # 1004

Page 1 of 1

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	WorleyParsons	☑ Standard ☐ Other	◉ Regular (Default)
Contact:	Ken Sommerstad	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (Specify Date Required → →) Surcharges apply
Address:	Suite 705, 10240 - 124th Street	Email 1: ken.sommerstad@worleyparsons.com	○ Emergency (1 Business Day) - 100% Surcharge
	Edmonton, Alberta, T5N 3W6	Email 2: edm.chemistry@worleyparsons.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	Fax:		
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Company:		Job #: E00100101	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		LSD:	
Phone:	Fax:	Quote #: Q23924	
		ALS Contact: Maureen Olinek	Sampler: BD/KS

Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Routine+PO4+F	BTEX F1, F2	Phenols	DOC	Dissolved Ammonia	Dissolved Metals							Number of Containers
						P	F/P	F/P	F/P							
MW-05			Groundwater	X	X	X	X	X	X							10
~~MW-06~~			~~Groundwater~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~							~~10~~
~~MW-07~~			~~Groundwater~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~							~~10~~
~~MW-08~~			Groundwater	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~	~~X~~							~~10~~

Special Instructions / Regulations / Hazardous Details

Please include all dissolved metals on quote
ABT1

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (lab use only)							
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Ken Sommerstad	29-APR-10	13:05		29-APR-10	13:05	7.2 °C				

GENF 18.02 Front

Certificate of Analysis

WORLEYPARSONS
ATTN: KEN SOMMERSTAD
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6

Report Date: 13-MAY-10 15:55 (MT)
Version: FINAL

Lab Work Order #: L884284 **Date Received:** 07-MAY-10

Project P.O. #: NOT SUBMITTED
Job Reference: E00100101
Legal Site Desc:
CofC Numbers: 1005

Other Information:

Comments:

Maureen Olinek
Senior Account Manager

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884284-1 MW-01							
Sampled By: BD/KS on 05-MAY-10 @ 06:40							
Matrix: GROUNDWATER							
BTEX, Styrene & F1-F2							
BTEX, Styrene and F1 (C6-C10)							
Benzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Toluene	<0.00075		0.00075	mg/L		10-MAY-10	R1250104
EthylBenzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
o-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
m+p-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Styrene	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F1(C6-C10)	<0.10		0.10	mg/L		10-MAY-10	R1250104
F1-BTEX	<0.10		0.10	mg/L		10-MAY-10	R1250104
Xylenes	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F2 (>C10-C16)							
F2 (>C10-C16)	<0.25		0.25	mg/L	10-MAY-10	10-MAY-10	R1252078
Surrogate: 2-Bromobenzotrifluoride	97		N/A	%	10-MAY-10	10-MAY-10	R1252078
Miscellaneous Parameters							
Ammonia as N, Dissolved	0.221		0.050	mg/L		11-MAY-10	R1251690
Dissolved Organic Carbon	3.0		1.0	mg/L		10-MAY-10	R1250265
Fluoride (F)	0.150		0.050	mg/L		08-MAY-10	R1250866
Orthophosphate (PO4-P)	<0.010		0.010	mg/L		10-MAY-10	R1251845
Phenols (4AAP)	<0.0010		0.0010	mg/L		10-MAY-10	R1251445
Major Ions & Trace Dissolved Metals							
Chloride by IC							
Chloride (Cl)	3.46		0.50	mg/L		08-MAY-10	R1250866
Diss. Metals in Water by ICPMS (Low)							
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Antimony (Sb)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Arsenic (As)-Dissolved	0.00095		0.00040	mg/L		11-MAY-10	R1252646
Barium (Ba)-Dissolved	0.132		0.0050	mg/L		11-MAY-10	R1252646
Beryllium (Be)-Dissolved	<0.00050		0.00050	mg/L		11-MAY-10	R1252646
Boron (B)-Dissolved	0.053		0.050	mg/L		11-MAY-10	R1252646
Cadmium (Cd)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Chromium (Cr)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Cobalt (Co)-Dissolved	0.00088		0.00010	mg/L		11-MAY-10	R1252646
Copper (Cu)-Dissolved	<0.0010		0.0010	mg/L		11-MAY-10	R1252646
Lead (Pb)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Molybdenum (Mo)-Dissolved	0.00046		0.00010	mg/L		11-MAY-10	R1252646
Nickel (Ni)-Dissolved	0.0025		0.0020	mg/L		11-MAY-10	R1252646
Selenium (Se)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Thallium (Tl)-Dissolved	<0.000050		0.000050	mg/L		11-MAY-10	R1252646
Titanium (Ti)-Dissolved	0.00081		0.00030	mg/L		11-MAY-10	R1252646
Uranium (U)-Dissolved	0.00209		0.00010	mg/L		11-MAY-10	R1252646
Vanadium (V)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Zinc (Zn)-Dissolved	<0.0020		0.0020	mg/L		11-MAY-10	R1252646
Diss. Metals in Water by ICPOES (Low)							
Calcium (Ca)-Dissolved	98.6		0.50	mg/L		10-MAY-10	R1251293
Iron (Fe)-Dissolved	2.02		0.020	mg/L		10-MAY-10	R1251293
Magnesium (Mg)-Dissolved	28.4		0.10	mg/L		10-MAY-10	R1251293
Manganese (Mn)-Dissolved	0.730		0.0050	mg/L		10-MAY-10	R1251293
Sodium (Na)-Dissolved	38.1		0.50	mg/L		10-MAY-10	R1251293
Ion Balance Calculation							
Ion Balance	102			%		11-MAY-10	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884284-1 MW-01							
Sampled By: BD/KS on 05-MAY-10 @ 06:40							
Matrix: GROUNDWATER							
Ion Balance Calculation							
TDS (Calculated)	456			mg/L		11-MAY-10	
Hardness (as CaCO3)	363			mg/L		11-MAY-10	
Mercury (Hg) - Dissolved							
Mercury (Hg)-Dissolved	<0.00010		0.00010	mg/L		10-MAY-10	R1251386
Nitrate as N by IC							
Nitrate (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		10-MAY-10	
Nitrite as N by IC							
Nitrite (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Sulfate by IC							
Sulfate (SO4)	62.0		0.50	mg/L		08-MAY-10	R1250866
pH, Conductivity and Total Alkalinity							
pH	8.06		0.10	pH		08-MAY-10	R1250112
Conductivity (EC)	762		0.20	uS/cm		08-MAY-10	R1250112
Bicarbonate (HCO3)	453		5.0	mg/L		08-MAY-10	R1250112
Carbonate (CO3)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Hydroxide (OH)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Alkalinity, Total (as CaCO3)	371		5.0	mg/L		08-MAY-10	R1250112
L884284-2 MW-02							
Sampled By: BD/KS on 05-MAY-10 @ 07:35							
Matrix: GROUNDWATER							
BTEX, Styrene & F1-F2							
BTEX, Styrene and F1 (C6-C10)							
Benzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Toluene	<0.00075		0.00075	mg/L		10-MAY-10	R1250104
EthylBenzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
o-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
m+p-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Styrene	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F1(C6-C10)	<0.10		0.10	mg/L		10-MAY-10	R1250104
F1-BTEX	<0.10		0.10	mg/L		10-MAY-10	R1250104
Xylenes	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F2 (>C10-C16)							
F2 (>C10-C16)	<0.25		0.25	mg/L	10-MAY-10	10-MAY-10	R1252078
Surrogate: 2-Bromobenzotrifluoride	95		N/A	%	10-MAY-10	10-MAY-10	R1252078
Miscellaneous Parameters							
Ammonia as N, Dissolved	0.539		0.050	mg/L		11-MAY-10	R1251690
Dissolved Organic Carbon	5.4		1.0	mg/L		10-MAY-10	R1250265
Fluoride (F)	0.094		0.050	mg/L		08-MAY-10	R1250866
Orthophosphate (PO4-P)	<0.010		0.010	mg/L		10-MAY-10	R1251845
Phenols (4AAP)	<0.0010		0.0010	mg/L		10-MAY-10	R1251445
Major Ions & Trace Dissolved Metals							
Chloride by IC							
Chloride (Cl)	11.6		0.50	mg/L		08-MAY-10	R1250866
Diss. Metals in Water by ICPMS (Low)							
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Antimony (Sb)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Arsenic (As)-Dissolved	0.00369		0.00040	mg/L		11-MAY-10	R1252646
Barium (Ba)-Dissolved	0.0544		0.0050	mg/L		11-MAY-10	R1252646
Beryllium (Be)-Dissolved	<0.00050		0.00050	mg/L		11-MAY-10	R1252646

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884284-2 MW-02							
Sampled By: BD/KS on 05-MAY-10 @ 07:35							
Matrix: GROUNDWATER							
Diss. Metals in Water by ICPMS (Low)							
Boron (B)-Dissolved	0.144		0.050	mg/L		11-MAY-10	R1252646
Cadmium (Cd)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Chromium (Cr)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Cobalt (Co)-Dissolved	0.00157		0.00010	mg/L		11-MAY-10	R1252646
Copper (Cu)-Dissolved	<0.0010		0.0010	mg/L		11-MAY-10	R1252646
Lead (Pb)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Molybdenum (Mo)-Dissolved	0.00041		0.00010	mg/L		11-MAY-10	R1252646
Nickel (Ni)-Dissolved	0.0043		0.0020	mg/L		11-MAY-10	R1252646
Selenium (Se)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Thallium (Tl)-Dissolved	<0.000050		0.000050	mg/L		11-MAY-10	R1252646
Titanium (Ti)-Dissolved	0.00104		0.00030	mg/L		11-MAY-10	R1252646
Uranium (U)-Dissolved	0.00139		0.00010	mg/L		11-MAY-10	R1252646
Vanadium (V)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Zinc (Zn)-Dissolved	0.0044		0.0020	mg/L		11-MAY-10	R1252646
Diss. Metals in Water by ICPOES (Low)							
Calcium (Ca)-Dissolved	147		0.50	mg/L		10-MAY-10	R1251293
Iron (Fe)-Dissolved	9.35		0.020	mg/L		10-MAY-10	R1251293
Magnesium (Mg)-Dissolved	54.0		0.10	mg/L		10-MAY-10	R1251293
Manganese (Mn)-Dissolved	0.505		0.0050	mg/L		10-MAY-10	R1251293
Sodium (Na)-Dissolved	87.2		0.50	mg/L		10-MAY-10	R1251293
Ion Balance Calculation							
Ion Balance	100			%		11-MAY-10	
TDS (Calculated)	866			mg/L		11-MAY-10	
Hardness (as CaCO3)	589			mg/L		11-MAY-10	
Mercury (Hg) - Dissolved							
Mercury (Hg)-Dissolved	<0.00010		0.00010	mg/L		10-MAY-10	R1251386
Nitrate as N by IC							
Nitrate (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		10-MAY-10	
Nitrite as N by IC							
Nitrite (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Sulfate by IC							
Sulfate (SO4)	268		0.50	mg/L		08-MAY-10	R1250866
pH, Conductivity and Total Alkalinity							
pH	7.97		0.10	pH		08-MAY-10	R1250112
Conductivity (EC)	1290		0.20	uS/cm		08-MAY-10	R1250112
Bicarbonate (HCO3)	597		5.0	mg/L		08-MAY-10	R1250112
Carbonate (CO3)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Hydroxide (OH)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Alkalinity, Total (as CaCO3)	489		5.0	mg/L		08-MAY-10	R1250112
L884284-3 MW-07							
Sampled By: BD/KS on 05-MAY-10 @ 09:50							
Matrix: GROUNDWATER							
BTEX, Styrene & F1-F2							
BTEX, Styrene and F1 (C6-C10)							
Benzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Toluene	<0.00075		0.00075	mg/L		10-MAY-10	R1250104
EthylBenzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
o-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104

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ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884284-3 MW-07							
Sampled By: BD/KS on 05-MAY-10 @ 09:50							
Matrix: GROUNDWATER							
BTEX, Styrene and F1 (C6-C10)							
m+p-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Styrene	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F1(C6-C10)	<0.10		0.10	mg/L		10-MAY-10	R1250104
F1-BTEX	<0.10		0.10	mg/L		10-MAY-10	R1250104
Xylenes	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F2 (>C10-C16)							
F2 (>C10-C16)	<0.25		0.25	mg/L	10-MAY-10	10-MAY-10	R1252078
Surrogate: 2-Bromobenzotrifluoride	96		N/A	%	10-MAY-10	10-MAY-10	R1252078
Miscellaneous Parameters							
Ammonia as N, Dissolved	2.33		0.050	mg/L		11-MAY-10	R1251690
Dissolved Organic Carbon	5.8		1.0	mg/L		10-MAY-10	R1250265
Fluoride (F)	0.135		0.050	mg/L		08-MAY-10	R1250866
Orthophosphate (PO4-P)	<0.010		0.010	mg/L		10-MAY-10	R1251845
Phenols (4AAP)	<0.0010		0.0010	mg/L		10-MAY-10	R1251445
Major Ions & Trace Dissolved Metals							
Chloride by IC							
Chloride (Cl)	13.2		0.50	mg/L		08-MAY-10	R1250866
Diss. Metals in Water by ICPMS (Low)							
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Antimony (Sb)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Arsenic (As)-Dissolved	0.00361		0.00040	mg/L		11-MAY-10	R1252646
Barium (Ba)-Dissolved	0.0490		0.0050	mg/L		11-MAY-10	R1252646
Beryllium (Be)-Dissolved	<0.00050		0.00050	mg/L		11-MAY-10	R1252646
Boron (B)-Dissolved	0.279		0.050	mg/L		11-MAY-10	R1252646
Cadmium (Cd)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Chromium (Cr)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Cobalt (Co)-Dissolved	0.00128		0.00010	mg/L		11-MAY-10	R1252646
Copper (Cu)-Dissolved	0.0014		0.0010	mg/L		11-MAY-10	R1252646
Lead (Pb)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Molybdenum (Mo)-Dissolved	0.00097		0.00010	mg/L		11-MAY-10	R1252646
Nickel (Ni)-Dissolved	0.0056		0.0020	mg/L		11-MAY-10	R1252646
Selenium (Se)-Dissolved	0.00127		0.00040	mg/L		11-MAY-10	R1252646
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Thallium (Tl)-Dissolved	<0.000050		0.000050	mg/L		11-MAY-10	R1252646
Titanium (Ti)-Dissolved	0.00109		0.00030	mg/L		11-MAY-10	R1252646
Uranium (U)-Dissolved	0.00156		0.00010	mg/L		11-MAY-10	R1252646
Vanadium (V)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Zinc (Zn)-Dissolved	0.0057	RRV	0.0020	mg/L		12-MAY-10	R1253649
Diss. Metals in Water by ICPOES (Low)							
Calcium (Ca)-Dissolved	262		0.50	mg/L		10-MAY-10	R1251293
Iron (Fe)-Dissolved	12.5		0.020	mg/L		10-MAY-10	R1251293
Magnesium (Mg)-Dissolved	93.5		0.10	mg/L		10-MAY-10	R1251293
Manganese (Mn)-Dissolved	1.90		0.0050	mg/L		10-MAY-10	R1251293
Sodium (Na)-Dissolved	274		0.50	mg/L		10-MAY-10	R1251293
Ion Balance Calculation							
Ion Balance	100			%		11-MAY-10	
TDS (Calculated)	2010			mg/L		11-MAY-10	
Hardness (as CaCO3)	1040			mg/L		11-MAY-10	
Mercury (Hg) - Dissolved							
Mercury (Hg)-Dissolved	<0.00010		0.00010	mg/L		10-MAY-10	R1251386
Nitrate as N by IC							

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ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884284-3 MW-07							
Sampled By: BD/KS on 05-MAY-10 @ 09:50							
Matrix: GROUNDWATER							
Nitrate as N by IC							
Nitrate (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		10-MAY-10	
Nitrite as N by IC							
Nitrite (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Sulfate by IC							
Sulfate (SO4)	1040		0.50	mg/L		08-MAY-10	R1250866
pH, Conductivity and Total Alkalinity							
pH	7.90		0.10	pH		08-MAY-10	R1250112
Conductivity (EC)	2600		0.20	uS/cm		08-MAY-10	R1250112
Bicarbonate (HCO3)	657		5.0	mg/L		08-MAY-10	R1250112
Carbonate (CO3)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Hydroxide (OH)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Alkalinity, Total (as CaCO3)	538		5.0	mg/L		08-MAY-10	R1250112
L884284-4 MW-08							
Sampled By: BD/KS on 05-MAY-10 @ 11:40							
Matrix: GROUNDWATER							
BTEX, Styrene & F1-F2							
BTEX, Styrene and F1 (C6-C10)							
Benzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Toluene	<0.00075		0.00075	mg/L		10-MAY-10	R1250104
EthylBenzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
o-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
m+p-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Styrene	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F1(C6-C10)	<0.10		0.10	mg/L		10-MAY-10	R1250104
F1-BTEX	<0.10		0.10	mg/L		10-MAY-10	R1250104
Xylenes	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F2 (>C10-C16)							
F2 (>C10-C16)	<0.25		0.25	mg/L	10-MAY-10	10-MAY-10	R1252078
Surrogate: 2-Bromobenzotrifluoride	97		N/A	%	10-MAY-10	10-MAY-10	R1252078
Miscellaneous Parameters							
Ammonia as N, Dissolved	1.74		0.050	mg/L		11-MAY-10	R1251690
Dissolved Organic Carbon	5.3		1.0	mg/L		10-MAY-10	R1250265
Fluoride (F)	0.130		0.050	mg/L		08-MAY-10	R1250866
Orthophosphate (PO4-P)	<0.010		0.010	mg/L		10-MAY-10	R1251845
Phenols (4AAP)	<0.0010		0.0010	mg/L		10-MAY-10	R1251445
Major Ions & Trace Dissolved Metals							
Chloride by IC							
Chloride (Cl)	1.43		0.50	mg/L		08-MAY-10	R1250866
Diss. Metals in Water by ICPMS (Low)							
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Antimony (Sb)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Arsenic (As)-Dissolved	0.00672		0.00040	mg/L		11-MAY-10	R1252646
Barium (Ba)-Dissolved	0.0675		0.0050	mg/L		11-MAY-10	R1252646
Beryllium (Be)-Dissolved	<0.00050		0.00050	mg/L		11-MAY-10	R1252646
Boron (B)-Dissolved	0.179		0.050	mg/L		11-MAY-10	R1252646
Cadmium (Cd)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Chromium (Cr)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Cobalt (Co)-Dissolved	0.00035		0.00010	mg/L		11-MAY-10	R1252646
Copper (Cu)-Dissolved	<0.0010		0.0010	mg/L		11-MAY-10	R1252646

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ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884284-4 MW-08							
Sampled By: BD/KS on 05-MAY-10 @ 11:40							
Matrix: GROUNDWATER							
Diss. Metals in Water by ICPMS (Low)							
Lead (Pb)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Molybdenum (Mo)-Dissolved	0.00168		0.00010	mg/L		11-MAY-10	R1252646
Nickel (Ni)-Dissolved	0.0027		0.0020	mg/L		11-MAY-10	R1252646
Selenium (Se)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Thallium (Tl)-Dissolved	<0.000050		0.000050	mg/L		11-MAY-10	R1252646
Titanium (Ti)-Dissolved	0.00094		0.00030	mg/L		11-MAY-10	R1252646
Uranium (U)-Dissolved	0.00072		0.00010	mg/L		11-MAY-10	R1252646
Vanadium (V)-Dissolved	0.00017		0.00010	mg/L		11-MAY-10	R1252646
Zinc (Zn)-Dissolved	0.0163	RRVAP	0.0020	mg/L		11-MAY-10	R1252646
Diss. Metals in Water by ICPOES (Low)							
Calcium (Ca)-Dissolved	146		0.50	mg/L		10-MAY-10	R1251293
Iron (Fe)-Dissolved	7.22		0.020	mg/L		10-MAY-10	R1251293
Magnesium (Mg)-Dissolved	43.2		0.10	mg/L		10-MAY-10	R1251293
Manganese (Mn)-Dissolved	0.470		0.0050	mg/L		10-MAY-10	R1251293
Sodium (Na)-Dissolved	122		0.50	mg/L		10-MAY-10	R1251293
Ion Balance Calculation							
Ion Balance	101			%		11-MAY-10	
TDS (Calculated)	927			mg/L		11-MAY-10	
Hardness (as CaCO3)	542			mg/L		11-MAY-10	
Mercury (Hg) - Dissolved							
Mercury (Hg)-Dissolved	<0.00010		0.00010	mg/L		10-MAY-10	R1251386
Nitrate as N by IC							
Nitrate (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		10-MAY-10	
Nitrite as N by IC							
Nitrite (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Sulfate by IC							
Sulfate (SO4)	333		0.50	mg/L		08-MAY-10	R1250866
pH, Conductivity and Total Alkalinity							
pH	8.04		0.10	pH		08-MAY-10	R1250112
Conductivity (EC)	1360		0.20	uS/cm		08-MAY-10	R1250112
Bicarbonate (HCO3)	558		5.0	mg/L		08-MAY-10	R1250112
Carbonate (CO3)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Hydroxide (OH)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Alkalinity, Total (as CaCO3)	458		5.0	mg/L		08-MAY-10	R1250112
L884284-5 MW-11							
Sampled By: BD/KS on 05-MAY-10 @ 14:34							
Matrix: GROUNDWATER							
BTEX, Styrene & F1-F2							
BTEX, Styrene and F1 (C6-C10)							
Benzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Toluene	<0.00075		0.00075	mg/L		10-MAY-10	R1250104
EthylBenzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
o-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
m+p-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Styrene	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F1(C6-C10)	<0.10		0.10	mg/L		10-MAY-10	R1250104
F1-BTEX	<0.10		0.10	mg/L		10-MAY-10	R1250104
Xylenes	<0.0010		0.0010	mg/L		10-MAY-10	R1250104

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ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884284-5 MW-11							
Sampled By: BD/KS on 05-MAY-10 @ 14:34							
Matrix: GROUNDWATER							
F2 (>C10-C16)							
F2 (>C10-C16)	<0.25		0.25	mg/L	10-MAY-10	10-MAY-10	R1252078
Surrogate: 2-Bromobenzotrifluoride	97		N/A	%	10-MAY-10	10-MAY-10	R1252078
Miscellaneous Parameters							
Ammonia as N, Dissolved	1.48		0.050	mg/L		11-MAY-10	R1251690
Dissolved Organic Carbon	6.0		1.0	mg/L		10-MAY-10	R1250265
Fluoride (F)	0.132		0.050	mg/L		08-MAY-10	R1250866
Orthophosphate (PO4-P)	<0.010		0.010	mg/L		10-MAY-10	R1251845
Phenols (4AAP)	<0.0010		0.0010	mg/L		10-MAY-10	R1251445
Major Ions & Trace Dissolved Metals							
Chloride by IC							
Chloride (Cl)	15.2		0.50	mg/L		08-MAY-10	R1250866
Diss. Metals in Water by ICPMS (Low)							
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Antimony (Sb)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Arsenic (As)-Dissolved	0.00259		0.00040	mg/L		11-MAY-10	R1252646
Barium (Ba)-Dissolved	0.0396		0.0050	mg/L		11-MAY-10	R1252646
Beryllium (Be)-Dissolved	<0.00050		0.00050	mg/L		11-MAY-10	R1252646
Boron (B)-Dissolved	0.189		0.050	mg/L		11-MAY-10	R1252646
Cadmium (Cd)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Chromium (Cr)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Cobalt (Co)-Dissolved	0.00047		0.00010	mg/L		11-MAY-10	R1252646
Copper (Cu)-Dissolved	<0.0010		0.0010	mg/L		11-MAY-10	R1252646
Lead (Pb)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Molybdenum (Mo)-Dissolved	0.00072		0.00010	mg/L		11-MAY-10	R1252646
Nickel (Ni)-Dissolved	0.0027		0.0020	mg/L		11-MAY-10	R1252646
Selenium (Se)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Thallium (Tl)-Dissolved	<0.000050		0.000050	mg/L		11-MAY-10	R1252646
Titanium (Ti)-Dissolved	0.00102		0.00030	mg/L		11-MAY-10	R1252646
Uranium (U)-Dissolved	0.00100		0.00010	mg/L		11-MAY-10	R1252646
Vanadium (V)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Zinc (Zn)-Dissolved	0.0023		0.0020	mg/L		11-MAY-10	R1252646
Diss. Metals in Water by ICPOES (Low)							
Calcium (Ca)-Dissolved	144		0.50	mg/L		10-MAY-10	R1251293
Iron (Fe)-Dissolved	7.61		0.020	mg/L		10-MAY-10	R1251293
Magnesium (Mg)-Dissolved	45.9		0.10	mg/L		10-MAY-10	R1251293
Manganese (Mn)-Dissolved	0.663		0.0050	mg/L		10-MAY-10	R1251293
Sodium (Na)-Dissolved	98.1		0.50	mg/L		10-MAY-10	R1251293
Ion Balance Calculation							
Ion Balance	99.1			%		11-MAY-10	
TDS (Calculated)	840			mg/L		11-MAY-10	
Hardness (as CaCO3)	549			mg/L		11-MAY-10	
Mercury (Hg) - Dissolved							
Mercury (Hg)-Dissolved	<0.00010		0.00010	mg/L		10-MAY-10	R1251386
Nitrate as N by IC							
Nitrate (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		10-MAY-10	
Nitrite as N by IC							
Nitrite (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Sulfate by IC							

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884284-5 MW-11							
Sampled By: BD/KS on 05-MAY-10 @ 14:34							
Matrix: GROUNDWATER							
Sulfate by IC							
Sulfate (SO4)	212		0.50	mg/L		08-MAY-10	R1250866
pH, Conductivity and Total Alkalinity							
pH	8.04		0.10	pH		08-MAY-10	R1250112
Conductivity (EC)	1290		0.20	uS/cm		08-MAY-10	R1250112
Bicarbonate (HCO3)	650		5.0	mg/L		08-MAY-10	R1250112
Carbonate (CO3)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Hydroxide (OH)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Alkalinity, Total (as CaCO3)	533		5.0	mg/L		08-MAY-10	R1250112
L884284-6 MW-10							
Sampled By: BD/KS on 05-MAY-10 @ 15:55							
Matrix: GROUNDWATER							
BTEX, Styrene & F1-F2							
BTEX, Styrene and F1 (C6-C10)							
Benzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Toluene	<0.00075		0.00075	mg/L		10-MAY-10	R1250104
EthylBenzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
o-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
m+p-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Styrene	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F1(C6-C10)	<0.10		0.10	mg/L		10-MAY-10	R1250104
F1-BTEX	<0.10		0.10	mg/L		10-MAY-10	R1250104
Xylenes	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F2 (>C10-C16)							
F2 (>C10-C16)	<0.25		0.25	mg/L	10-MAY-10	10-MAY-10	R1252078
Surrogate: 2-Bromobenzotrifluoride	98		N/A	%	10-MAY-10	10-MAY-10	R1252078
Miscellaneous Parameters							
Ammonia as N, Dissolved	1.71		0.050	mg/L		11-MAY-10	R1251690
Dissolved Organic Carbon	5.1		1.0	mg/L		10-MAY-10	R1250265
Fluoride (F)	0.169		0.050	mg/L		08-MAY-10	R1250866
Orthophosphate (PO4-P)	<0.010		0.010	mg/L		10-MAY-10	R1251845
Phenols (4AAP)	<0.0010		0.0010	mg/L		10-MAY-10	R1251445
Major Ions & Trace Dissolved Metals							
Chloride by IC							
Chloride (Cl)	0.73		0.50	mg/L		08-MAY-10	R1250866
Diss. Metals in Water by ICPMS (Low)							
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Antimony (Sb)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Arsenic (As)-Dissolved	0.00459		0.00040	mg/L		11-MAY-10	R1252646
Barium (Ba)-Dissolved	0.0290		0.0050	mg/L		11-MAY-10	R1252646
Beryllium (Be)-Dissolved	<0.00050		0.00050	mg/L		11-MAY-10	R1252646
Boron (B)-Dissolved	0.177		0.050	mg/L		11-MAY-10	R1252646
Cadmium (Cd)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Chromium (Cr)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Cobalt (Co)-Dissolved	0.00044		0.00010	mg/L		11-MAY-10	R1252646
Copper (Cu)-Dissolved	0.0015		0.0010	mg/L		11-MAY-10	R1252646
Lead (Pb)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Molybdenum (Mo)-Dissolved	0.00097		0.00010	mg/L		11-MAY-10	R1252646
Nickel (Ni)-Dissolved	0.0029		0.0020	mg/L		11-MAY-10	R1252646
Selenium (Se)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Thallium (Tl)-Dissolved	<0.000050		0.000050	mg/L		11-MAY-10	R1252646

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884284-6 MW-10							
Sampled By: BD/KS on 05-MAY-10 @ 15:55							
Matrix: GROUNDWATER							
Diss. Metals in Water by ICPMS (Low)							
Titanium (Ti)-Dissolved	0.00083		0.00030	mg/L		11-MAY-10	R1252646
Uranium (U)-Dissolved	0.00115		0.00010	mg/L		11-MAY-10	R1252646
Vanadium (V)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Zinc (Zn)-Dissolved	0.0023		0.0020	mg/L		11-MAY-10	R1252646
Diss. Metals in Water by ICPOES (Low)							
Calcium (Ca)-Dissolved	139		0.50	mg/L		10-MAY-10	R1251293
Iron (Fe)-Dissolved	6.80		0.020	mg/L		10-MAY-10	R1251293
Magnesium (Mg)-Dissolved	39.1		0.10	mg/L		10-MAY-10	R1251293
Manganese (Mn)-Dissolved	0.735		0.0050	mg/L		10-MAY-10	R1251293
Sodium (Na)-Dissolved	124		0.50	mg/L		10-MAY-10	R1251293
Ion Balance Calculation							
Ion Balance	104			%		11-MAY-10	
TDS (Calculated)	847			mg/L		11-MAY-10	
Hardness (as CaCO3)	508			mg/L		11-MAY-10	
Mercury (Hg) - Dissolved							
Mercury (Hg)-Dissolved	<0.00010		0.00010	mg/L		10-MAY-10	R1251386
Nitrate as N by IC							
Nitrate (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		10-MAY-10	
Nitrite as N by IC							
Nitrite (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Sulfate by IC							
Sulfate (SO4)	227		0.50	mg/L		08-MAY-10	R1250866
pH, Conductivity and Total Alkalinity							
pH	8.07		0.10	pH		08-MAY-10	R1250112
Conductivity (EC)	1270		0.20	uS/cm		08-MAY-10	R1250112
Bicarbonate (HCO3)	633		5.0	mg/L		08-MAY-10	R1250112
Carbonate (CO3)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Hydroxide (OH)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Alkalinity, Total (as CaCO3)	519		5.0	mg/L		08-MAY-10	R1250112
L884284-7 DUP I							
Sampled By: BD/KS on 05-MAY-10 @ 12:00							
Matrix: GROUNDWATER							
BTEX, Styrene & F1-F2							
BTEX, Styrene and F1 (C6-C10)							
Benzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Toluene	<0.00075		0.00075	mg/L		10-MAY-10	R1250104
EthylBenzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
o-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
m+p-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Styrene	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F1(C6-C10)	<0.10		0.10	mg/L		10-MAY-10	R1250104
F1-BTEX	<0.10		0.10	mg/L		10-MAY-10	R1250104
Xylenes	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F2 (>C10-C16)							
F2 (>C10-C16)	<0.25		0.25	mg/L	10-MAY-10	10-MAY-10	R1252078
Surrogate: 2-Bromobenzotrifluoride	97		N/A	%	10-MAY-10	10-MAY-10	R1252078
Miscellaneous Parameters							
Ammonia as N, Dissolved	<0.050		0.050	mg/L		11-MAY-10	R1251690
Dissolved Organic Carbon	<1.0		1.0	mg/L		10-MAY-10	R1250265

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884284-7 DUP I							
Sampled By: BD/KS on 05-MAY-10 @ 12:00							
Matrix: GROUNDWATER							
Fluoride (F)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Orthophosphate (PO4-P)	<0.010		0.010	mg/L		10-MAY-10	R1251845
Phenols (4AAP)	<0.0010		0.0010	mg/L		10-MAY-10	R1251445
Major Ions & Trace Dissolved Metals							
Chloride by IC							
Chloride (Cl)	<0.50		0.50	mg/L		08-MAY-10	R1250866
Diss. Metals in Water by ICPMS (Low)							
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Antimony (Sb)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Arsenic (As)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Barium (Ba)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Beryllium (Be)-Dissolved	<0.00050		0.00050	mg/L		11-MAY-10	R1252646
Boron (B)-Dissolved	<0.050		0.050	mg/L		11-MAY-10	R1252646
Cadmium (Cd)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Chromium (Cr)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Cobalt (Co)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Copper (Cu)-Dissolved	<0.0010		0.0010	mg/L		11-MAY-10	R1252646
Lead (Pb)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Molybdenum (Mo)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Nickel (Ni)-Dissolved	<0.0020		0.0020	mg/L		11-MAY-10	R1252646
Selenium (Se)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Thallium (Tl)-Dissolved	<0.000050		0.000050	mg/L		11-MAY-10	R1252646
Titanium (Ti)-Dissolved	<0.00030		0.00030	mg/L		11-MAY-10	R1252646
Uranium (U)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Vanadium (V)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Zinc (Zn)-Dissolved	<0.0020		0.0020	mg/L		11-MAY-10	R1252646
Diss. Metals in Water by ICPOES (Low)							
Calcium (Ca)-Dissolved	<0.50		0.50	mg/L		10-MAY-10	R1251293
Iron (Fe)-Dissolved	<0.020		0.020	mg/L		10-MAY-10	R1251293
Magnesium (Mg)-Dissolved	<0.10		0.10	mg/L		10-MAY-10	R1251293
Manganese (Mn)-Dissolved	<0.0050		0.0050	mg/L		10-MAY-10	R1251293
Sodium (Na)-Dissolved	<0.50		0.50	mg/L		10-MAY-10	R1251293
Ion Balance Calculation							
Ion Balance	Low TDS			%		12-MAY-10	
TDS (Calculated)	<1.0			mg/L		12-MAY-10	
Hardness (as CaCO3)	<1.0			mg/L		12-MAY-10	
Mercury (Hg) - Dissolved							
Mercury (Hg)-Dissolved	<0.00010		0.00010	mg/L		10-MAY-10	R1251386
Nitrate as N by IC							
Nitrate (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		10-MAY-10	
Nitrite as N by IC							
Nitrite (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Sulfate by IC							
Sulfate (SO4)	<0.50		0.50	mg/L		08-MAY-10	R1250866
pH, Conductivity and Total Alkalinity							
pH	6.06		0.10	pH		07-MAY-10	R1250112
Conductivity (EC)	1.07		0.20	uS/cm		07-MAY-10	R1250112
Bicarbonate (HCO3)	<5.0		5.0	mg/L		07-MAY-10	R1250112
Carbonate (CO3)	<5.0		5.0	mg/L		07-MAY-10	R1250112
Hydroxide (OH)	<5.0		5.0	mg/L		07-MAY-10	R1250112

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884284-7 DUP I Sampled By: BD/KS on 05-MAY-10 @ 12:00 Matrix: GROUNDWATER							
pH, Conductivity and Total Alkalinity							
Alkalinity, Total (as CaCO3)	<5.0		5.0	mg/L		07-MAY-10	R1250112

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L884284-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sulfate (SO4)	MS-B	L884284-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Nitrate (as N)	MS-B	L884284-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Orthophosphate (PO4-P)	MS-B	L884284-1, -2, -3, -4, -5, -6, -7

Sample Parameter Qualifier Key:

Qualifier	Description
E	Matrix Spike recovery outside ALS DQO due to analyte background in sample.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis
RRVAP	Reported Result Verified by Alternate Process

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BTXS,F1-ED	Water	BTEX, Styrene and F1 (C6-C10)	EPA 5021/8015&8260 GC-MS & FID
C-DIS-ORG-ED	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
CL-IC-ED	Water	Chloride by IC	APHA 4110 B-ION CHROMATOGRAPHY
F-IC-ED	Water	Fluoride by IC	APHA 4110 B-ION CHROMATOGRAPHY
F2-ED	Water	F2 (>C10-C16)	EPA 3510/CCME PHC CWS-GC-FID
HG-D-CVAA-ED	Water	Mercury (Hg) - Dissolved	EPA 245.7 / EPA 245.1
IONBALANCE-ED	Water	Ion Balance Calculation	APHA 1030E
MET-D-L-ICP-ED	Water	Diss. Metals in Water by ICPOES (Low)	APHA 3120 B-ICP-OES
MET-D-L-MS-ED	Water	Diss. Metals in Water by ICPMS (Low)	SW 846 - 6020-ICPMS
NH4-DIS-ED	Water	Ammonia-N	APHA4500NH3F Colorimetry
NO2+NO3-CALC-ED	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-ED	Water	Nitrite as N by IC	APHA 4110 B-ION CHROMATOGRAPHY
NO3-IC-ED	Water	Nitrate as N by IC	APHA 4110 B-ION CHROMATOGRAPHY
PH/EC/ALK-ED	Water	pH, Conductivity and Total Alkalinity	APHA 4500-H, 2510, 2320
PHENOLS-4AAP-ED	Water	Phenols (4AAP)	AB ENV.06537-COLORIMETRIC
PO4-ED	Water	Orthophosphate (PO4-P)	APHA 4500 P B,E-Auto-Colorimetry
SO4-IC-ED	Water	Sulfate by IC	APHA 4110 B-ION CHROMATOGRAPHY

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

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

Laboratory Definition Code	Laboratory Location
ED	ALS LABORATORY GROUP - EDMONTON, ALBERTA, CANADA

Chain of Custody Numbers:

1005

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mk/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS LABORATORY GROUP SOIL SALINITY CONVERSION

L884284

Lab ID	Sample ID					Lab ID	Sample ID				

"Calculations are as per:
Methods of Analysis for Soils, Plants and Waters
Homer D. Chapman and Parker F. Pratt
University of California, Riverside, Cl.
August, 1961."

ALS Laboratory Group Quality Control Report

Workorder: L884284 Report Date: 09-JUN-10 Page 1 of 16

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTXS,F1-ED	**Water**							
Batch R1250104								
WG1101423-4 DUP		**L884284-7**						
Benzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	10-MAY-10
Toluene		<0.00075	<0.00075	RPD-NA	mg/L	N/A	30	10-MAY-10
EthylBenzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	10-MAY-10
o-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	24	10-MAY-10
m+p-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	24	10-MAY-10
Styrene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	50	10-MAY-10
F1(C6-C10)		<0.10	<0.10	RPD-NA	mg/L	N/A	30	10-MAY-10
WG1101423-2 LCS								
Benzene			117		%		70-130	10-MAY-10
Toluene			103		%		70-130	10-MAY-10
EthylBenzene			108		%		70-130	10-MAY-10
o-Xylene			106		%		70-130	10-MAY-10
m+p-Xylene			109		%		70-130	10-MAY-10
Styrene			92		%		70-130	10-MAY-10
WG1101423-3 LCS								
F1(C6-C10)			117		%		70-130	10-MAY-10
WG1101423-1 MB								
Benzene			<0.00050		mg/L		0.0005	10-MAY-10
Toluene			<0.00075		mg/L		0.00075	10-MAY-10
EthylBenzene			<0.00050		mg/L		0.0005	10-MAY-10
o-Xylene			<0.00050		mg/L		0.0005	10-MAY-10
m+p-Xylene			<0.00050		mg/L		0.0005	10-MAY-10
Styrene			<0.0010		mg/L		0.001	10-MAY-10
F1(C6-C10)			<0.10		mg/L		0.1	10-MAY-10
WG1101423-5 MS		**L884328-4**						
Benzene			107		%		50-150	10-MAY-10
Toluene			100		%		50-150	10-MAY-10
EthylBenzene			98		%		50-150	10-MAY-10
o-Xylene			100		%		50-150	10-MAY-10
m+p-Xylene			99		%		50-150	10-MAY-10
Styrene			94		%		50-150	10-MAY-10
WG1101423-6 MS		**L884328-4**						
F1(C6-C10)			119		%		50-150	10-MAY-10
C-DIS-ORG-ED	**Water**							

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-ED	**Water**							
Batch R1250265								
WG1101087-12 CVS								
Dissolved Organic Carbon			104		%		80-160	07-MAY-10
WG1101087-16 CVS								
Dissolved Organic Carbon			96		%		80-160	10-MAY-10
WG1101087-21 CVS								
Dissolved Organic Carbon			93		%		80-160	10-MAY-10
WG1101087-4 CVS								
Dissolved Organic Carbon			111		%		80-160	07-MAY-10
WG1101087-17 DUP		**L884284-7**						
Dissolved Organic Carbon		<1.0	<1.0	RPD-NA	mg/L	N/A	20	10-MAY-10
WG1101087-19 DUP		**L884115-14**						
Dissolved Organic Carbon		19.4	19.4		mg/L	0.15	20	10-MAY-10
WG1101087-10 LCS								
Dissolved Organic Carbon			90		%		80-120	07-MAY-10
WG1101087-11 LCS								
Dissolved Organic Carbon			104		%		80-120	07-MAY-10
WG1101087-14 LCS								
Dissolved Organic Carbon			91		%		80-120	10-MAY-10
WG1101087-15 LCS								
Dissolved Organic Carbon			89		%		80-120	10-MAY-10
WG1101087-2 LCS								
Dissolved Organic Carbon			97		%		80-120	07-MAY-10
WG1101087-23 LCS								
Dissolved Organic Carbon			91		%		80-120	11-MAY-10
WG1101087-24 LCS								
Dissolved Organic Carbon			88		%		80-120	10-MAY-10
WG1101087-3 LCS								
Dissolved Organic Carbon			113		%		80-120	07-MAY-10
WG1101087-1 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	07-MAY-10
WG1101087-13 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	10-MAY-10
WG1101087-22 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	10-MAY-10
WG1101087-9 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	07-MAY-10
WG1101087-18 MS		**L884284-7**						
Dissolved Organic Carbon			103		%		70-130	10-MAY-10

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-ED	**Water**							
Batch R1250265								
WG1101087-20 MS		**L884115-14**						
Dissolved Organic Carbon			99		%		70-130	10-MAY-10
CL-IC-ED	**Water**							
Batch R1250866								
WG1101366-3 DUP		**L884245-20**						
Chloride (Cl)		2.62	2.62		mg/L	0.12	20	08-MAY-10
WG1101366-5 DUP		**L884286-2**						
Chloride (Cl)		5.57	5.62		mg/L	0.76	20	08-MAY-10
WG1101366-7 DUP		**L884423-7**						
Chloride (Cl)		48.7	48.9		mg/L	0.23	20	08-MAY-10
WG1101366-2 LCS								
Chloride (Cl)			104		%		85-115	08-MAY-10
WG1101366-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	08-MAY-10
WG1101366-4 MS		**L884245-20**						
Chloride (Cl)			109		%		75-125	08-MAY-10
WG1101366-6 MS		**L884286-2**						
Chloride (Cl)			107		%		75-125	08-MAY-10
WG1101366-8 MS		**L884423-7**						
Chloride (Cl)			107		%		75-125	08-MAY-10
F-IC-ED	**Water**							
Batch R1250866								
WG1101366-5 DUP		**L884286-2**						
Fluoride (F)		0.251	0.245		mg/L	2.3	20	08-MAY-10
WG1101366-7 DUP		**L884423-7**						
Fluoride (F)		0.381	0.389		mg/L	2.1	20	08-MAY-10
WG1101366-2 LCS								
Fluoride (F)			107		%		85-115	08-MAY-10
WG1101366-1 MB								
Fluoride (F)			<0.050		mg/L		0.05	08-MAY-10
WG1101366-6 MS		**L884286-2**						
Fluoride (F)			105		%		75-125	08-MAY-10
WG1101366-8 MS		**L884423-7**						
Fluoride (F)			96		%		75-125	08-MAY-10
F2-ED	**Water**							

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EDMONTON AB T5N 3W6
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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-ED	**Water**							
Batch R1252078								
WG1102214-2 LCS								
F2 (>C10-C16)			98		%		65-135	10-MAY-10
WG1102214-1 MB								
F2 (>C10-C16)			<0.25		mg/L		0.25	10-MAY-10
WG1102214-3 MS		**L884284-3**						
F2 (>C10-C16)			97		%		50-150	10-MAY-10
WG1102214-4 MS		**L884423-2**						
F2 (>C10-C16)			95		%		50-150	10-MAY-10
HG-D-CVAA-ED	**Water**							
Batch R1251386								
WG1101760-4 DUP		**L881912-1**						
Mercury (Hg)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-MAY-10
WG1101760-2 LCS								
Mercury (Hg)-Dissolved			104		%		80-120	10-MAY-10
WG1101760-3 LCSD		**WG1101760-2**						
Mercury (Hg)-Dissolved		104	100		%	4.0	20	10-MAY-10
WG1101760-1 MB								
Mercury (Hg)-Dissolved			<0.00010		mg/L		0.0001	10-MAY-10
WG1101760-5 MS		**L881912-1**						
Mercury (Hg)-Dissolved			106		%		70-130	10-MAY-10
MET-D-L-ICP-ED	**Water**							
Batch R1251293								
WG1101712-2 CRM		**EU-H-3_OPTWATER**						
Calcium (Ca)-Dissolved			104		%		80-120	11-MAY-10
Iron (Fe)-Dissolved			96		%		80-120	11-MAY-10
Magnesium (Mg)-Dissolved			102		%		80-120	11-MAY-10
Manganese (Mn)-Dissolved			103		%		80-120	11-MAY-10
Sodium (Na)-Dissolved			97		%		80-120	11-MAY-10
WG1101712-5 DUP		**L884286-7**						
Calcium (Ca)-Dissolved		93.1	94.1		mg/L	1.0	20	10-MAY-10
Iron (Fe)-Dissolved		2.03	2.04		mg/L	0.19	20	10-MAY-10
Magnesium (Mg)-Dissolved		27.6	27.5		mg/L	0.28	20	10-MAY-10
Manganese (Mn)-Dissolved		0.832	0.834		mg/L	0.32	20	10-MAY-10
Sodium (Na)-Dissolved		246	245		mg/L	0.42	20	10-MAY-10
WG1101712-1 MB								
Calcium (Ca)-Dissolved			<0.20		mg/L		0.2	10-MAY-10
							0.01	

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Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-L-ICP-ED	**Water**							
Batch R1251293								
WG1101712-1 MB								
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	10-MAY-10
Magnesium (Mg)-Dissolved			<0.10		mg/L		0.1	10-MAY-10
Manganese (Mn)-Dissolved			<0.0020		mg/L		0.002	10-MAY-10
Sodium (Na)-Dissolved			<0.50		mg/L		0.5	10-MAY-10
WG1101712-6 MS		**L884286-7**						
Calcium (Ca)-Dissolved			73		%		70-130	10-MAY-10
Iron (Fe)-Dissolved			104		%		70-130	10-MAY-10
Magnesium (Mg)-Dissolved			102		%		70-130	10-MAY-10
Manganese (Mn)-Dissolved			100		%		70-130	10-MAY-10
Sodium (Na)-Dissolved			80		%		70-130	10-MAY-10
MET-D-L-MS-ED	**Water**							
Batch R1252646								
WG1102315-2 CRM		**1643E_WATER**						
Aluminum (Al)-Dissolved			99		%		80-120	11-MAY-10
Antimony (Sb)-Dissolved			98		%		80-120	11-MAY-10
Arsenic (As)-Dissolved			94		%		80-120	11-MAY-10
Barium (Ba)-Dissolved			89		%		80-120	11-MAY-10
Beryllium (Be)-Dissolved			92		%		80-120	11-MAY-10
Boron (B)-Dissolved			98		%		80-120	11-MAY-10
Cadmium (Cd)-Dissolved			95		%		80-120	11-MAY-10
Chromium (Cr)-Dissolved			96		%		80-120	11-MAY-10
Cobalt (Co)-Dissolved			97		%		80-120	11-MAY-10
Copper (Cu)-Dissolved			97		%		80-120	11-MAY-10
Lead (Pb)-Dissolved			95		%		80-120	11-MAY-10
Molybdenum (Mo)-Dissolved			99		%		80-120	11-MAY-10
Nickel (Ni)-Dissolved			97		%		80-120	11-MAY-10
Selenium (Se)-Dissolved			92		%		80-120	11-MAY-10
Thallium (Tl)-Dissolved			96		%		80-120	11-MAY-10
Vanadium (V)-Dissolved			94		%		80-120	11-MAY-10
Zinc (Zn)-Dissolved			93		%		80-120	11-MAY-10
WG1102315-3 DUP		**L884286-1**						
Aluminum (Al)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	11-MAY-10
Antimony (Sb)-Dissolved		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	11-MAY-10
Arsenic (As)-Dissolved		0.00154	0.00158		mg/L	2.9	20	11-MAY-10

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EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-L-MS-ED	**Water**							
Batch R1252646								
WG1102315-3 DUP		**L884286-1**						
Barium (Ba)-Dissolved		0.0380	0.0381		mg/L	0.34	20	11-MAY-10
Beryllium (Be)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	11-MAY-10
Boron (B)-Dissolved		0.116	0.118		mg/L	1.4	20	11-MAY-10
Cadmium (Cd)-Dissolved		<0.00010	<0.000050	RPD-NA	mg/L	N/A	20	11-MAY-10
Chromium (Cr)-Dissolved		<0.0050	0.00114		mg/L	8.7	20	11-MAY-10
Cobalt (Co)-Dissolved		0.00076	0.00077		mg/L	1.3	20	11-MAY-10
Copper (Cu)-Dissolved		<0.0010	<0.00060	RPD-NA	mg/L	N/A	20	11-MAY-10
Lead (Pb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-MAY-10
Molybdenum (Mo)-Dissolved		0.00079	0.00074		mg/L	5.9	20	11-MAY-10
Nickel (Ni)-Dissolved		0.0027	0.00251		mg/L	7.7	20	11-MAY-10
Selenium (Se)-Dissolved		<0.00040	0.00049	RPD-NA	mg/L	N/A	20	11-MAY-10
Silver (Ag)-Dissolved		<0.00010	0.00039		mg/L	19	20	11-MAY-10
Thallium (Tl)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-MAY-10
Titanium (Ti)-Dissolved		0.00079	0.00094		mg/L	17	20	11-MAY-10
Uranium (U)-Dissolved		0.00056	0.00055		mg/L	1.8	20	11-MAY-10
Vanadium (V)-Dissolved		0.00036	0.00031		mg/L	15	20	11-MAY-10
Zinc (Zn)-Dissolved		<0.0020	<0.0010	RPD-NA	mg/L	N/A	20	11-MAY-10
WG1102315-5 DUP		**L884286-5**						
Aluminum (Al)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	11-MAY-10
Antimony (Sb)-Dissolved		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	11-MAY-10
Arsenic (As)-Dissolved		0.00162	0.00162		mg/L	0.49	20	11-MAY-10
Barium (Ba)-Dissolved		0.407	0.401		mg/L	1.4	20	11-MAY-10
Beryllium (Be)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	11-MAY-10
Boron (B)-Dissolved		0.254	0.248		mg/L	2.4	20	11-MAY-10
Cadmium (Cd)-Dissolved		<0.00010	<0.000050	RPD-NA	mg/L	N/A	20	11-MAY-10
Chromium (Cr)-Dissolved		<0.0050	0.00043		mg/L	5.5	20	11-MAY-10
Cobalt (Co)-Dissolved		0.00092	0.00090		mg/L	1.6	20	11-MAY-10
Copper (Cu)-Dissolved		<0.0010	<0.00060	RPD-NA	mg/L	N/A	20	11-MAY-10
Lead (Pb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-MAY-10
Molybdenum (Mo)-Dissolved		0.00219	0.00220		mg/L	0.78	20	11-MAY-10
Nickel (Ni)-Dissolved		0.0021	0.00207		mg/L	2.0	20	11-MAY-10
Selenium (Se)-Dissolved		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	11-MAY-10
Silver (Ag)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-MAY-10

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705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-L-MS-ED	**Water**							
Batch R1252646								
WG1102315-5 DUP		**L884286-5**						
Thallium (Tl)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-MAY-10
Titanium (Ti)-Dissolved		0.00070	0.00069		mg/L	1.7	20	11-MAY-10
Uranium (U)-Dissolved		0.00069	0.00067		mg/L	3.0	20	11-MAY-10
Vanadium (V)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-MAY-10
Zinc (Zn)-Dissolved		<0.0020	0.0015		mg/L	0.61	20	11-MAY-10
WG1102315-7 DUP		**L882699-2**						
Aluminum (Al)-Dissolved		0.109	0.110		mg/L	0.13	20	11-MAY-10
Antimony (Sb)-Dissolved		<0.00080	<0.00040	RPD-NA	mg/L	N/A	20	11-MAY-10
Arsenic (As)-Dissolved		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	11-MAY-10
Barium (Ba)-Dissolved		0.0124	0.0124		mg/L	0.23	20	11-MAY-10
Beryllium (Be)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	11-MAY-10
Boron (B)-Dissolved		0.0605	0.0610		mg/L	0.88	20	11-MAY-10
Cadmium (Cd)-Dissolved		<0.00010	<0.000050	RPD-NA	mg/L	N/A	20	11-MAY-10
Chromium (Cr)-Dissolved		0.00050	0.00052		mg/L	4.1	20	11-MAY-10
Cobalt (Co)-Dissolved		0.00088	0.00087		mg/L	0.80	20	11-MAY-10
Copper (Cu)-Dissolved		0.00793	0.00804		mg/L	1.4	20	11-MAY-10
Lead (Pb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-MAY-10
Molybdenum (Mo)-Dissolved		0.00300	0.00312		mg/L	3.8	20	11-MAY-10
Nickel (Ni)-Dissolved		0.00736	0.00743		mg/L	0.93	20	11-MAY-10
Selenium (Se)-Dissolved		N/A	<0.00040	RPD-NA	mg/L	N/A	20	11-MAY-10
Silver (Ag)-Dissolved		<0.00020	<0.00010	RPD-NA	mg/L	N/A	20	11-MAY-10
Thallium (Tl)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-MAY-10
Titanium (Ti)-Dissolved		0.00141	0.00135		mg/L	4.0	20	11-MAY-10
Uranium (U)-Dissolved		0.00049	0.00050		mg/L	1.4	20	11-MAY-10
Vanadium (V)-Dissolved		0.00033	0.00033		mg/L	1.8	20	11-MAY-10
Zinc (Zn)-Dissolved		0.0056	0.0059		mg/L	0.91	20	11-MAY-10
WG1102315-1 MB								
Aluminum (Al)-Dissolved			<0.0050		mg/L		0.005	11-MAY-10
Antimony (Sb)-Dissolved			<0.00040		mg/L		0.0004	11-MAY-10
Arsenic (As)-Dissolved			<0.00040		mg/L		0.0004	11-MAY-10
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	11-MAY-10
Beryllium (Be)-Dissolved			<0.00050		mg/L		0.0005	11-MAY-10
Boron (B)-Dissolved			<0.0020		mg/L		0.002	11-MAY-10

ALS Laboratory Group Quality Control Report

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705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-L-MS-ED	**Water**							
Batch R1252646								
WG1102315-1 MB								
Cadmium (Cd)-Dissolved			<0.000050		mg/L		0.00005	11-MAY-10
Chromium (Cr)-Dissolved			<0.00040		mg/L		0.0004	11-MAY-10
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	11-MAY-10
Copper (Cu)-Dissolved			<0.00060		mg/L		0.0006	11-MAY-10
Lead (Pb)-Dissolved			<0.00010		mg/L		0.0001	11-MAY-10
Molybdenum (Mo)-Dissolved			<0.00010		mg/L		0.0001	11-MAY-10
Nickel (Ni)-Dissolved			<0.00010		mg/L		0.0001	11-MAY-10
Selenium (Se)-Dissolved			<0.00040		mg/L		0.0004	11-MAY-10
Silver (Ag)-Dissolved			<0.00010		mg/L		0.0001	11-MAY-10
Thallium (Tl)-Dissolved			<0.000050		mg/L		0.00005	11-MAY-10
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	11-MAY-10
Uranium (U)-Dissolved			<0.00010		mg/L		0.0001	11-MAY-10
Vanadium (V)-Dissolved			<0.00010		mg/L		0.0001	11-MAY-10
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	11-MAY-10
WG1102315-4 MS		**L884286-1**						
Aluminum (Al)-Dissolved			100		%		70-130	11-MAY-10
Antimony (Sb)-Dissolved			98		%		70-130	11-MAY-10
Arsenic (As)-Dissolved			104		%		70-130	11-MAY-10
Barium (Ba)-Dissolved			100		%		70-130	11-MAY-10
Beryllium (Be)-Dissolved			101		%		70-130	11-MAY-10
Boron (B)-Dissolved			102		%		70-130	11-MAY-10
Cadmium (Cd)-Dissolved			101		%		70-130	11-MAY-10
Chromium (Cr)-Dissolved			101		%		70-130	11-MAY-10
Cobalt (Co)-Dissolved			104		%		70-130	11-MAY-10
Copper (Cu)-Dissolved			101		%		70-130	11-MAY-10
Lead (Pb)-Dissolved			97		%		70-130	11-MAY-10
Molybdenum (Mo)-Dissolved			108		%		70-130	11-MAY-10
Nickel (Ni)-Dissolved			103		%		70-130	11-MAY-10
Selenium (Se)-Dissolved			108		%		70-130	11-MAY-10
Silver (Ag)-Dissolved			91		%		70-130	11-MAY-10
Thallium (Tl)-Dissolved			98		%		70-130	11-MAY-10
Titanium (Ti)-Dissolved			100		%		70-130	11-MAY-10
Uranium (U)-Dissolved			96		%		70-130	11-MAY-10
Vanadium (V)-Dissolved			101		%		70-130	11-MAY-10

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-L-MS-ED	**Water**							
Batch R1252646								
WG1102315-4 MS		**L884286-1**						
Zinc (Zn)-Dissolved			100		%		70-130	11-MAY-10
WG1102315-6 MS		**L884286-5**						
Aluminum (Al)-Dissolved			102		%		70-130	11-MAY-10
Antimony (Sb)-Dissolved			98		%		70-130	11-MAY-10
Arsenic (As)-Dissolved			112		%		70-130	11-MAY-10
Barium (Ba)-Dissolved			109		%		70-130	11-MAY-10
Beryllium (Be)-Dissolved			102		%		70-130	11-MAY-10
Boron (B)-Dissolved			102		%		70-130	11-MAY-10
Cadmium (Cd)-Dissolved			107		%		70-130	11-MAY-10
Chromium (Cr)-Dissolved			107		%		70-130	11-MAY-10
Cobalt (Co)-Dissolved			111		%		70-130	11-MAY-10
Copper (Cu)-Dissolved			110		%		70-130	11-MAY-10
Lead (Pb)-Dissolved			99		%		70-130	11-MAY-10
Molybdenum (Mo)-Dissolved			101		%		70-130	11-MAY-10
Nickel (Ni)-Dissolved			111		%		70-130	11-MAY-10
Selenium (Se)-Dissolved			117		%		70-130	11-MAY-10
Silver (Ag)-Dissolved			102		%		70-130	11-MAY-10
Thallium (Tl)-Dissolved			100		%		70-130	11-MAY-10
Titanium (Ti)-Dissolved			102		%		70-130	11-MAY-10
Uranium (U)-Dissolved			96		%		70-130	11-MAY-10
Vanadium (V)-Dissolved			107		%		70-130	11-MAY-10
Zinc (Zn)-Dissolved			110		%		70-130	11-MAY-10
WG1102315-8 MS		**L882699-2**						
Aluminum (Al)-Dissolved			97		%		70-130	11-MAY-10
Antimony (Sb)-Dissolved			98		%		70-130	11-MAY-10
Arsenic (As)-Dissolved			101		%		70-130	11-MAY-10
Barium (Ba)-Dissolved			99		%		70-130	11-MAY-10
Beryllium (Be)-Dissolved			103		%		70-130	11-MAY-10
Boron (B)-Dissolved			104		%		70-130	11-MAY-10
Cadmium (Cd)-Dissolved			100		%		70-130	11-MAY-10
Chromium (Cr)-Dissolved			98		%		70-130	11-MAY-10
Cobalt (Co)-Dissolved			102		%		70-130	11-MAY-10
Copper (Cu)-Dissolved			100		%		70-130	11-MAY-10
Lead (Pb)-Dissolved			101		%		70-130	11-MAY-10

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-L-MS-ED	**Water**							
Batch R1252646								
WG1102315-8 MS		**L882699-2**						
Molybdenum (Mo)-Dissolved			102		%		70-130	11-MAY-10
Nickel (Ni)-Dissolved			101		%		70-130	11-MAY-10
Selenium (Se)-Dissolved			101		%		70-130	11-MAY-10
Silver (Ag)-Dissolved			98		%		70-130	11-MAY-10
Thallium (Tl)-Dissolved			101		%		70-130	11-MAY-10
Titanium (Ti)-Dissolved			99		%		70-130	11-MAY-10
Uranium (U)-Dissolved			101		%		70-130	11-MAY-10
Vanadium (V)-Dissolved			98		%		70-130	11-MAY-10
Zinc (Zn)-Dissolved			101		%		70-130	11-MAY-10
Batch R1253649								
WG1102893-2 CRM		**1643E_WATER**						
Zinc (Zn)-Dissolved			97		%		80-120	12-MAY-10
WG1102893-3 DUP		**L884530-19**						
Zinc (Zn)-Dissolved		<0.0020	0.0017		mg/L	18	20	12-MAY-10
WG1102893-7 DUP		**L884115-14**						
Zinc (Zn)-Dissolved		0.0070	0.0074		mg/L	5.6	20	12-MAY-10
WG1102893-1 MB								
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-MAY-10
WG1102893-4 MS		**L884530-19**						
Zinc (Zn)-Dissolved			97		%		70-130	12-MAY-10
WG1102893-8 MS		**L884115-14**						
Zinc (Zn)-Dissolved			90		%		70-130	12-MAY-10
NH4-DIS-ED	**Water**							
Batch R1251690								
WG1102079-5 DUP		**L883773-3**						
Ammonia as N, Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	25	11-MAY-10
WG1102079-6 DUP		**L884286-7**						
Ammonia as N, Dissolved		2.00	2.00		mg/L	0.0	25	11-MAY-10
NO2-IC-ED	**Water**							
Batch R1250866								
WG1101366-3 DUP		**L884245-20**						
Nitrite (as N)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-MAY-10
WG1101366-5 DUP		**L884286-2**						
Nitrite (as N)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-MAY-10
WG1101366-7 DUP		**L884423-7**						
Nitrite (as N)		0.080	0.092					

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-IC-ED	**Water**							
Batch R1250866								
WG1101366-7 DUP		**L884423-7**						
Nitrite (as N)		0.080	0.092		mg/L	14	20	08-MAY-10
WG1101366-2 LCS								
Nitrite (as N)			99		%		85-115	08-MAY-10
WG1101366-1 MB								
Nitrite (as N)			<0.050		mg/L		0.05	08-MAY-10
WG1101366-4 MS		**L884245-20**						
Nitrite (as N)			93		%		75-125	08-MAY-10
WG1101366-6 MS		**L884286-2**						
Nitrite (as N)			90		%		75-125	08-MAY-10
WG1101366-8 MS		**L884423-7**						
Nitrite (as N)			97		%		75-125	08-MAY-10
NO3-IC-ED	**Water**							
Batch R1250866								
WG1101366-3 DUP		**L884245-20**						
Nitrate (as N)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-MAY-10
WG1101366-5 DUP		**L884286-2**						
Nitrate (as N)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-MAY-10
WG1101366-7 DUP		**L884423-7**						
Nitrate (as N)		8.07	8.08		mg/L	0.090	20	08-MAY-10
WG1101366-2 LCS								
Nitrate (as N)			98		%		85-115	08-MAY-10
WG1101366-1 MB								
Nitrate (as N)			<0.050		mg/L		0.05	08-MAY-10
WG1101366-4 MS		**L884245-20**						
Nitrate (as N)			94		%		75-125	08-MAY-10
WG1101366-6 MS		**L884286-2**						
Nitrate (as N)			93		%		75-125	08-MAY-10
WG1101366-8 MS		**L884423-7**						
Nitrate (as N)			N/A	MS-B	%		-	08-MAY-10
PH/EC/ALK-ED	**Water**							
Batch R1250112								
WG1100863-5 DUP		**L883915-3**						
pH		7.81	7.79	J	pH	0.02	0.2	07-MAY-10
Conductivity (EC)		116	116		uS/cm	0.17	10	07-MAY-10
Bicarbonate (HCO3)		70.5	71.4		mg/L	1.2	25	07-MAY-10
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	07-MAY-10

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH/EC/ALK-ED	**Water**							
Batch R1250112								
WG1100863-5 DUP		**L883915-3**						
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	07-MAY-10
Alkalinity, Total (as CaCO3)		57.8	58.5		mg/L	1.2	6.5	07-MAY-10
WG1100863-6 DUP		**L884227-3**						
pH		7.25	7.18	J	pH	0.07	0.2	07-MAY-10
Conductivity (EC)		1160	1170		uS/cm	0.34	10	07-MAY-10
Bicarbonate (HCO3)		431	438		mg/L	1.6	25	07-MAY-10
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	07-MAY-10
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	07-MAY-10
Alkalinity, Total (as CaCO3)		353	359		mg/L	1.6	6.5	07-MAY-10
WG1100863-7 DUP		**L884245-23**						
pH		8.00	8.01	J	pH	0.01	0.2	07-MAY-10
Conductivity (EC)		936	934		uS/cm	0.21	10	07-MAY-10
Bicarbonate (HCO3)		555	556		mg/L	0.17	25	07-MAY-10
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	07-MAY-10
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	07-MAY-10
Alkalinity, Total (as CaCO3)		455	456		mg/L	0.17	6.5	07-MAY-10
WG1100863-8 DUP		**L884286-7**						
pH		8.17	8.19	J	pH	0.01	0.2	08-MAY-10
Conductivity (EC)		1540	1540		uS/cm	0.0	10	08-MAY-10
Bicarbonate (HCO3)		641	642		mg/L	0.17	25	08-MAY-10
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	08-MAY-10
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	08-MAY-10
Alkalinity, Total (as CaCO3)		526	526		mg/L	0.17	6.5	08-MAY-10
WG1100863-2 LCS								
Conductivity (EC)			100		%		90-110	07-MAY-10
WG1100863-3 LCS								
pH			7.00		pH		6.9-7.1	07-MAY-10
WG1100863-4 LCS								
Alkalinity, Total (as CaCO3)			100		%		85-115	07-MAY-10
WG1100863-1 MB								
Bicarbonate (HCO3)			<5.0		mg/L		5	07-MAY-10
Carbonate (CO3)			<5.0		mg/L		5	07-MAY-10
Hydroxide (OH)			<5.0		mg/L		5	07-MAY-10
Alkalinity, Total (as CaCO3)			<5.0		mg/L		5	07-MAY-10

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PHENOLS-4AAP-ED	**Water**							
Batch R1251445								
WG1101996-4 DUP		**L884115-7**						
Phenols (4AAP)		0.0031	0.0033		mg/L	6.3	9.8	10-MAY-10
WG1101996-5 DUP		**L884115-14**						
Phenols (4AAP)		0.0022	0.0022		mg/L	0.0	9.8	10-MAY-10
WG1101996-7 DUP		**L884284-7**						
Phenols (4AAP)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	9.8	10-MAY-10
WG1101996-3 LCS								
Phenols (4AAP)			108		%		85-115	10-MAY-10
WG1101996-2 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	10-MAY-10
WG1101996-6 MS		**L884115-14**						
Phenols (4AAP)			91		%		76-124	10-MAY-10
PO4-ED	**Water**							
Batch R1251845								
WG1102292-3 DUP		**L884596-1**						
Orthophosphate (PO4-P)		0.911	0.918		mg/L	0.82	20	10-MAY-10
WG1102292-5 DUP		**L884284-4**						
Orthophosphate (PO4-P)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	10-MAY-10
WG1102292-2 LCS								
Orthophosphate (PO4-P)			97		%		80-120	10-MAY-10
WG1102292-1 MB								
Orthophosphate (PO4-P)			<0.010		mg/L		0.01	10-MAY-10
WG1102292-4 MS		**L884596-1**						
Orthophosphate (PO4-P)			N/A	MS-B	%		-	10-MAY-10
WG1102292-6 MS		**L884284-4**						
Orthophosphate (PO4-P)			93		%		70-130	10-MAY-10
SO4-IC-ED	**Water**							
Batch R1250866								
WG1101366-3 DUP		**L884245-20**						
Sulfate (SO4)		90.5	90.3		mg/L	0.22	20	08-MAY-10
WG1101366-5 DUP		**L884286-2**						
Sulfate (SO4)		342	347		mg/L	1.3	20	08-MAY-10
WG1101366-7 DUP		**L884423-7**						
Sulfate (SO4)		677	680		mg/L	0.57	20	08-MAY-10
WG1101366-2 LCS								
Sulfate (SO4)			104		%		85-115	08-MAY-10
WG1101366-1 MB								
Sulfate (SO4)			<0.50		mg/L		0.5	08-MAY-10

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-ED	**Water**							
Batch R1250866								
WG1101366-4 MS		**L884245-20**						
Sulfate (SO4)			105		%		75-125	08-MAY-10
WG1101366-6 MS		**L884286-2**						
Sulfate (SO4)			N/A	MS-B	%		-	08-MAY-10
WG1101366-8 MS		**L884423-7**						
Sulfate (SO4)			N/A	MS-B	%		-	08-MAY-10

Legend:

Limit	99% Confidence Interval (Laboratory Control Limits)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

ALS Laboratory Group Quality Control Report

Hold Time Exceedances:

ALS Product Description	Sample ID	Sampling Date	Date Processed	Rec. HT	Actual HT	Units	Qualifier
Leachable Anions & Nutrients							
Orthophosphate (PO4-P)							
	1	05-MAY-10 06:40	10-MAY-10 16:32	48	130	hours	EHTR
	2	05-MAY-10 07:35	10-MAY-10 16:32	48	129	hours	EHTR
	3	05-MAY-10 09:50	10-MAY-10 16:32	48	127	hours	EHTR
	4	05-MAY-10 11:40	10-MAY-10 16:38	48	125	hours	EHTR
	5	05-MAY-10 14:34	10-MAY-10 16:38	48	122	hours	EHTL
	6	05-MAY-10 15:55	10-MAY-10 16:38	48	121	hours	EHTL
	7	05-MAY-10 12:00	10-MAY-10 16:38	48	125	hours	EHTR
Anions and Nutrients							
Nitrate as N by IC							
	1	05-MAY-10 06:40	08-MAY-10 07:50	48	73	hours	EHTR
	2	05-MAY-10 07:35	08-MAY-10 07:50	48	72	hours	EHTR
	3	05-MAY-10 09:50	08-MAY-10 07:50	48	70	hours	EHTR
	4	05-MAY-10 11:40	08-MAY-10 07:50	48	68	hours	EHTR
	5	05-MAY-10 14:34	08-MAY-10 07:50	48	65	hours	EHTL
	6	05-MAY-10 15:55	08-MAY-10 07:50	48	64	hours	EHTL
	7	05-MAY-10 12:00	08-MAY-10 07:50	48	68	hours	EHTR
Nitrite as N by IC							
	1	05-MAY-10 06:40	08-MAY-10 07:50	48	73	hours	EHTR
	2	05-MAY-10 07:35	08-MAY-10 07:50	48	72	hours	EHTR
	3	05-MAY-10 09:50	08-MAY-10 07:50	48	70	hours	EHTR
	4	05-MAY-10 11:40	08-MAY-10 07:50	48	68	hours	EHTR
	5	05-MAY-10 14:34	08-MAY-10 07:50	48	65	hours	EHTL
	6	05-MAY-10 15:55	08-MAY-10 07:50	48	64	hours	EHTL
	7	05-MAY-10 12:00	08-MAY-10 07:50	48	68	hours	EHTR

Legend & Qualifier Definitions:

EHTR-FM:	Exceeded ALS recommended hold time prior to sample receipt. Field Measurement recommended.
EHTR:	Exceeded ALS recommended hold time prior to sample receipt.
EHTL:	Exceeded ALS recommended hold time prior to analysis. Sample was received less than 24 hours prior to expiry.
EHT:	Exceeded ALS recommended hold time prior to analysis.
Rec. HT:	ALS recommended hold time (see units).

Notes*:
Where actual sampling date is not provided to ALS, the date (& time) of receipt is used for calculation purposes.
Where actual sampling time is not provided to ALS, the earlier of 12 noon on the sampling date or the time (& date) of receipt is used for calculation purposes. Samples for L884284 were received on 07-MAY-10 12:18.

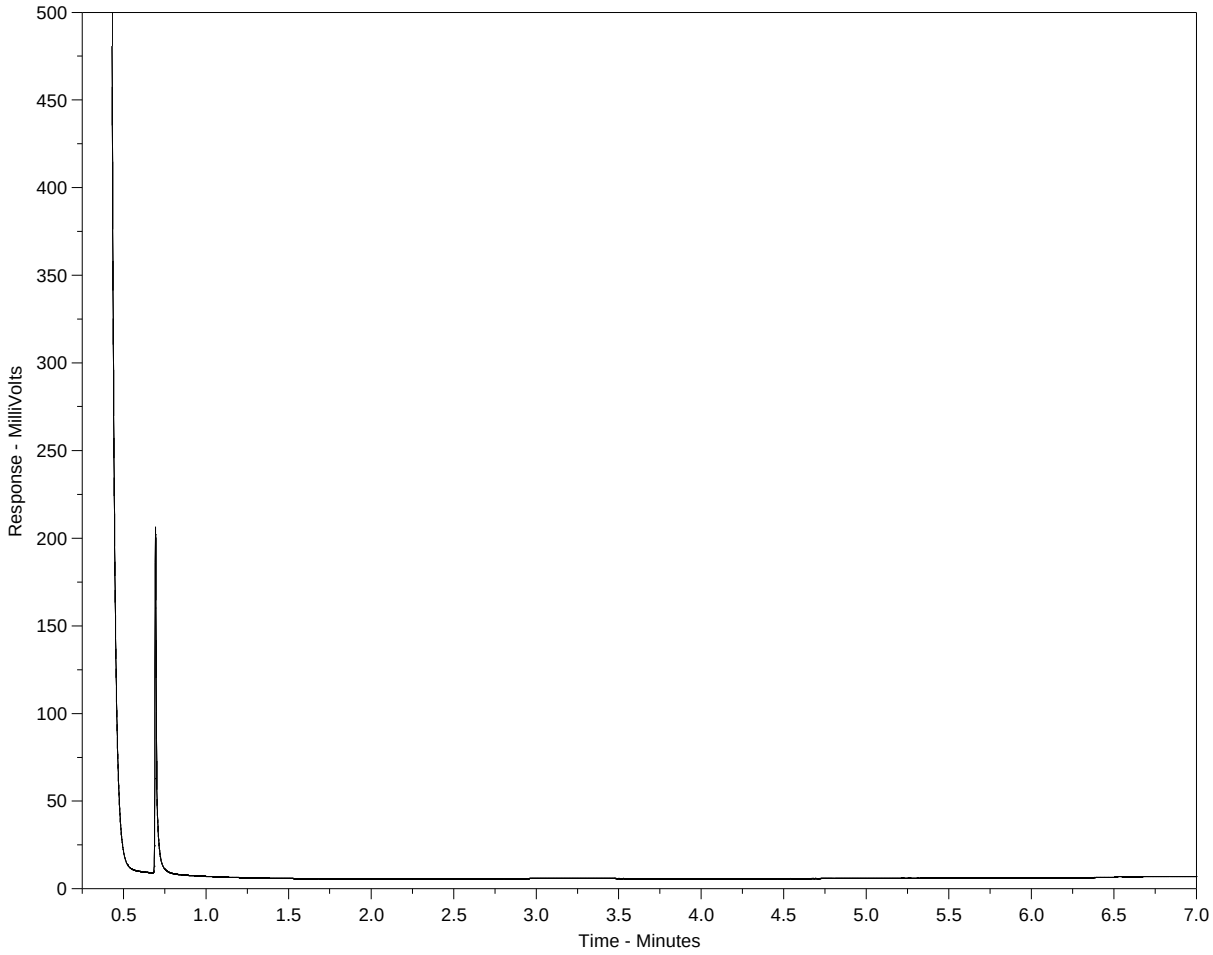
ALS recommended hold times may vary by province. They are assigned to meet known provincial and/or federal government requirements. In the absence of regulatory hold times, ALS establishes recommendations based on guidelines published by the US EPA, APHA Standard Methods, or Environment Canada (where available). For more information, please contact ALS.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Hydrocarbon Distribution Report

ALS Sample ID: **L884284-1**
Client ID: **MW-01**



<nC10----------nC16----------nC34----------nC50->
<----------Gasoline----------> <----------Heavy Oils---------->
|----------Diesel----------|

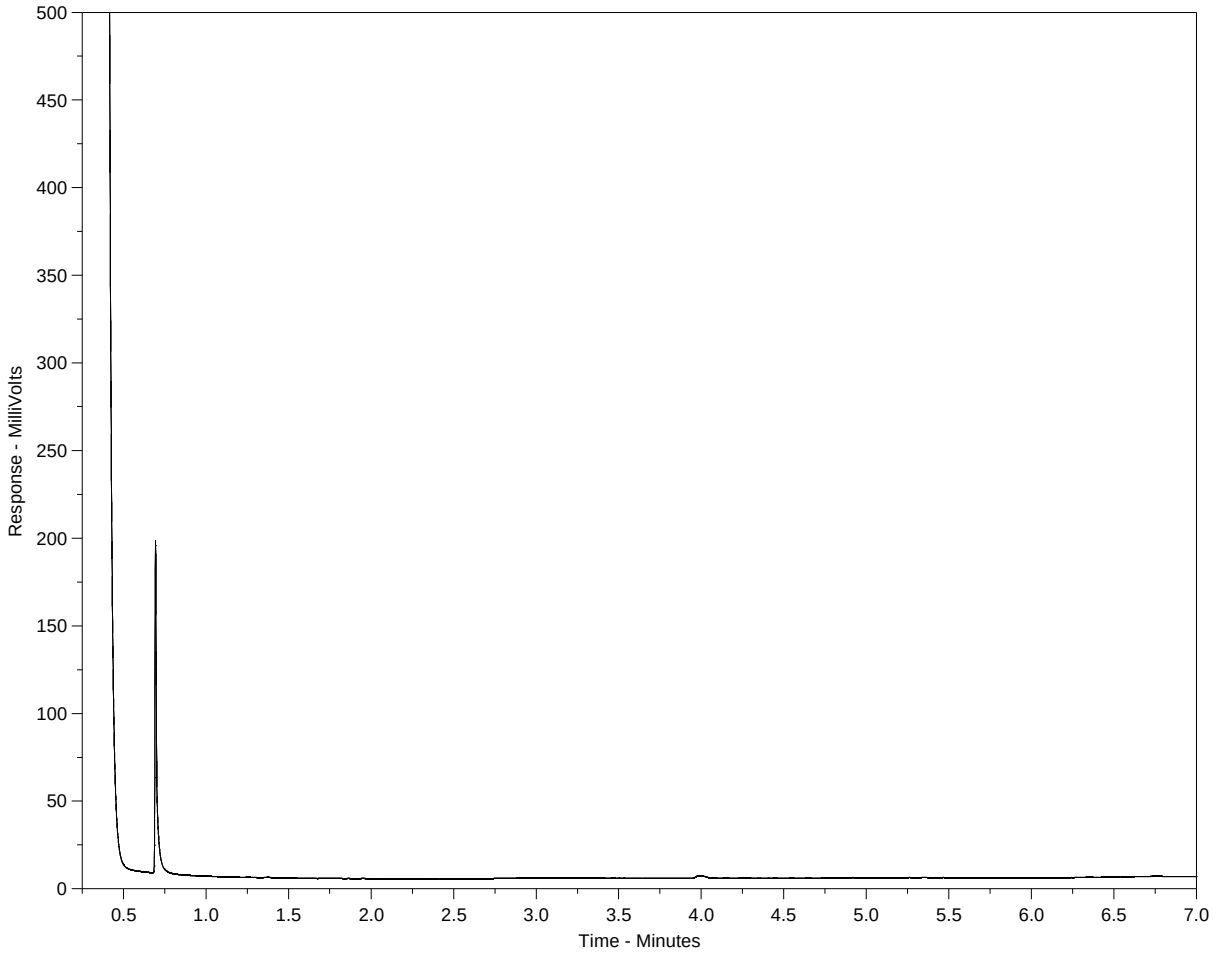
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (December 2007 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: **L884284-2**
Client ID: **MW-02**



<nC10----------nC16----------nC34----------nC50->
<----------Gasoline----------> <----------Heavy Oils---------->
|----------Diesel----------|

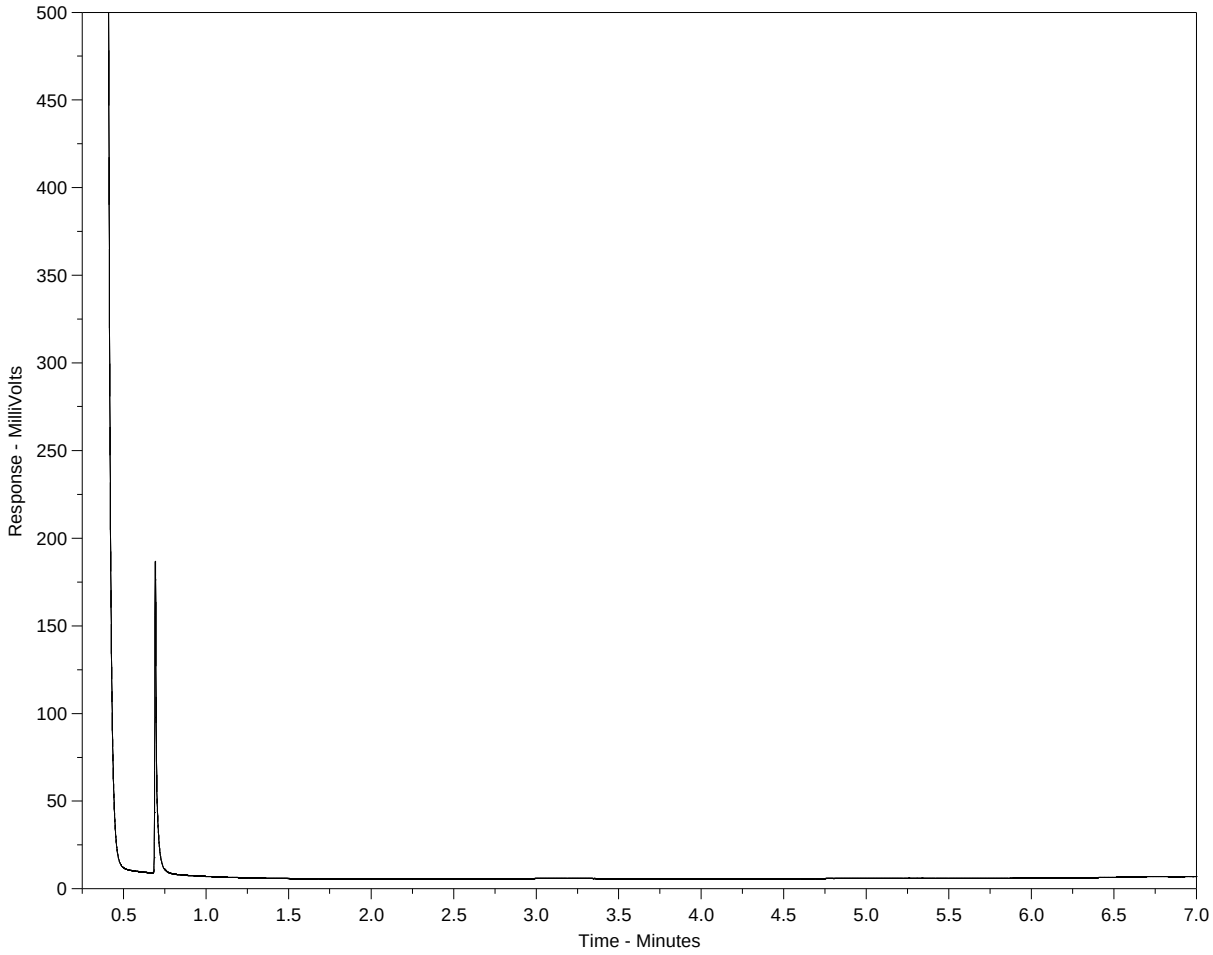
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (December 2007 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: **L884284-3**
Client ID: **MW-07**



<nC10----------nC16----------nC34----------nC50->
<----------Gasoline----------> <----------Heavy Oils---------->
|----------Diesel----------|

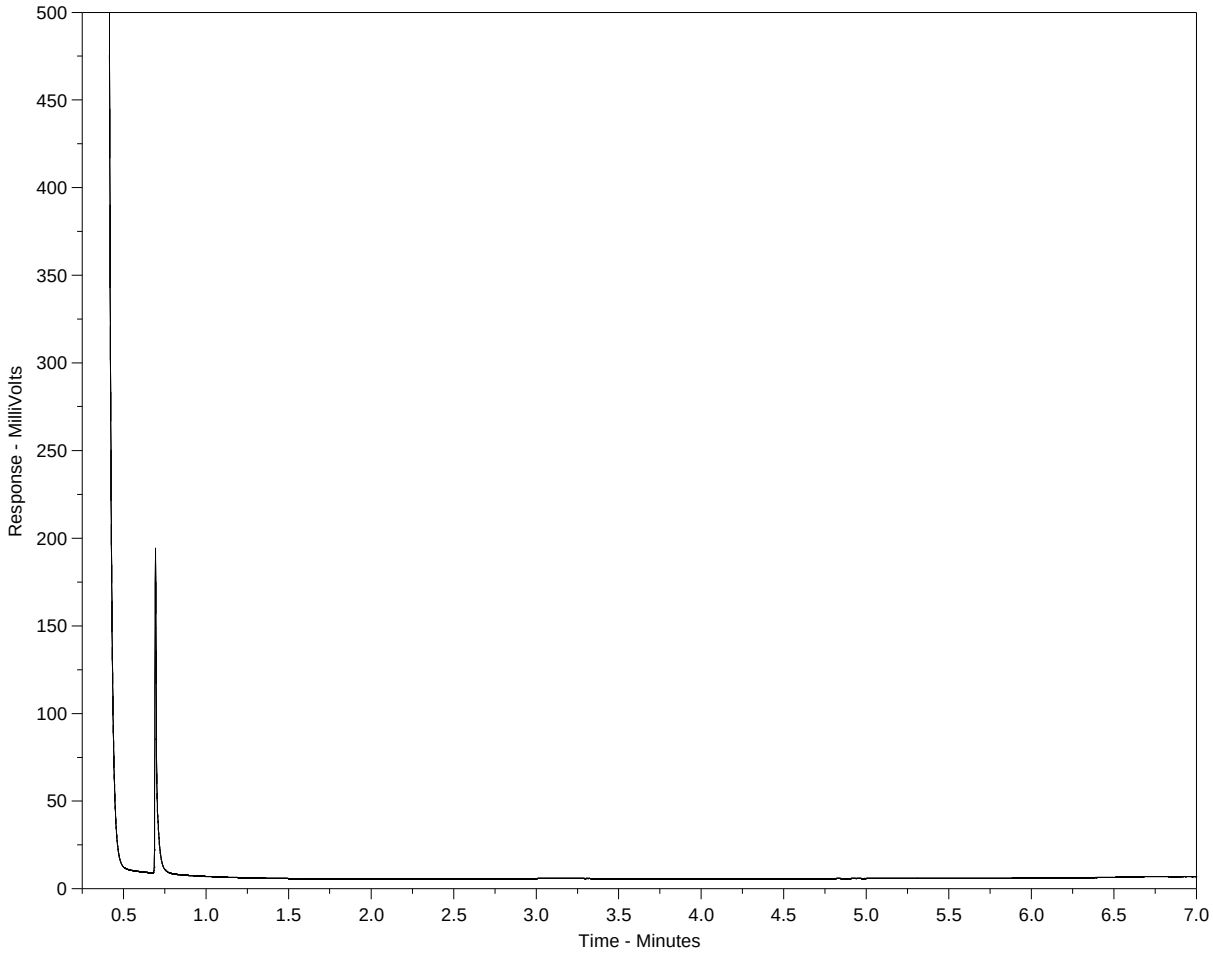
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (December 2007 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: **L884284-4**
Client ID: **MW-08**



<nC10----------nC16----------nC34----------nC50->
<----------Gasoline----------> <----------Heavy Oils---------->
|----------Diesel----------|

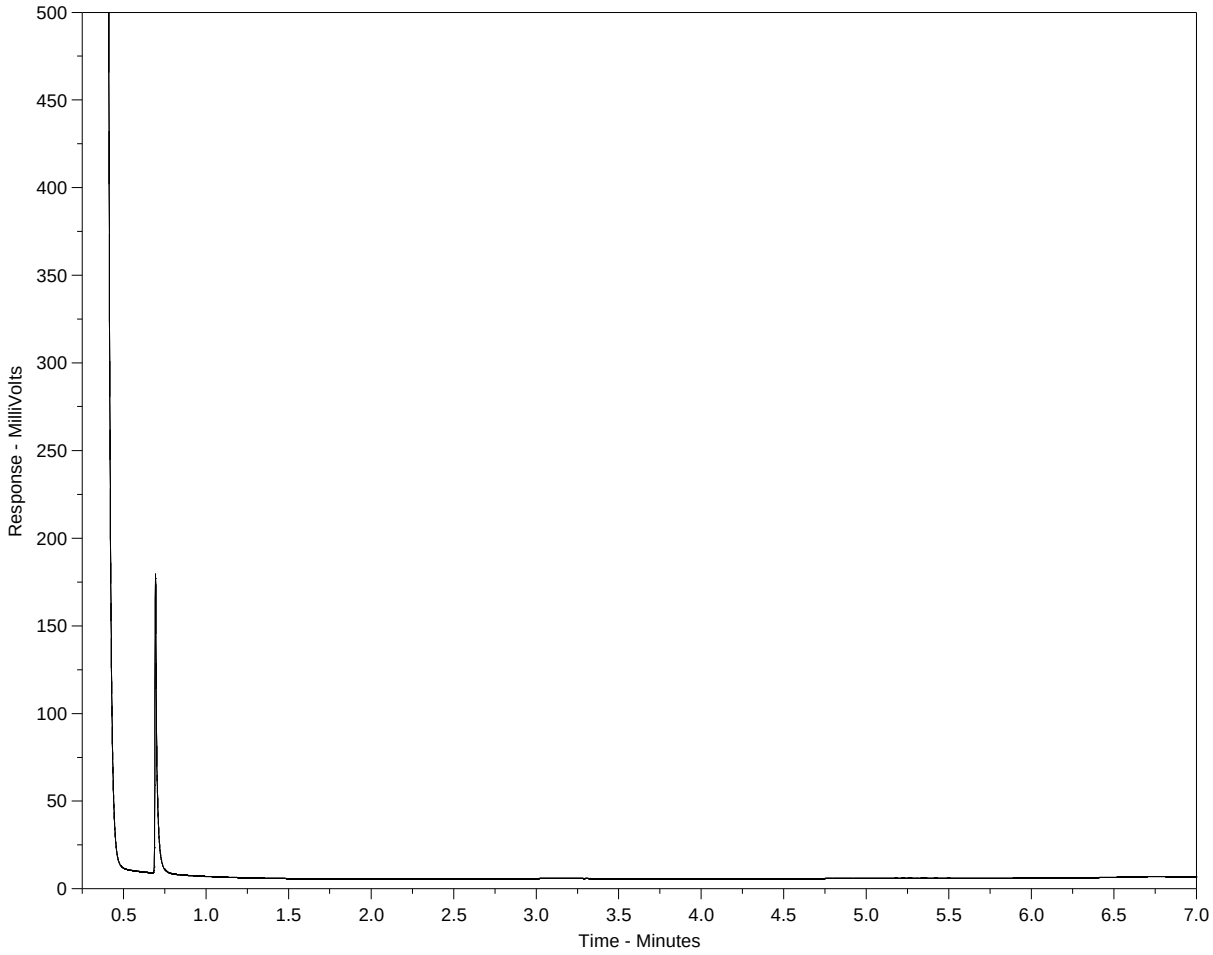
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (December 2007 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: **L884284-5**
Client ID: **MW-11**



<nC10----------nC16----------nC34----------nC50->
<----------Gasoline----------> <----------Heavy Oils---------->
|----------Diesel----------|

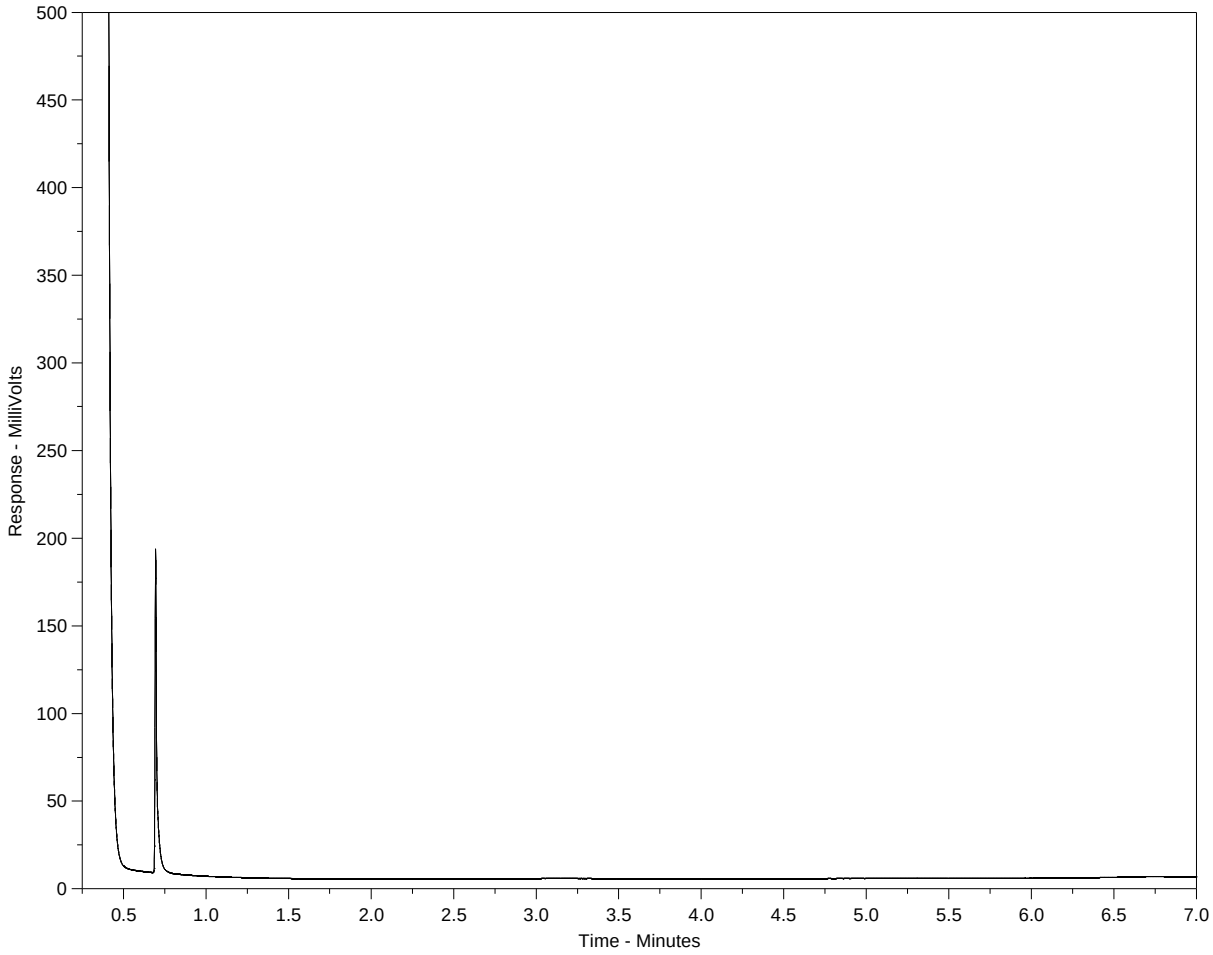
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (December 2007 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: **L884284-6**
Client ID: **MW-10**



<nC10----------nC16----------nC34----------nC50->
<----------Gasoline----------> <----------Heavy Oils---------->
|----------Diesel----------|

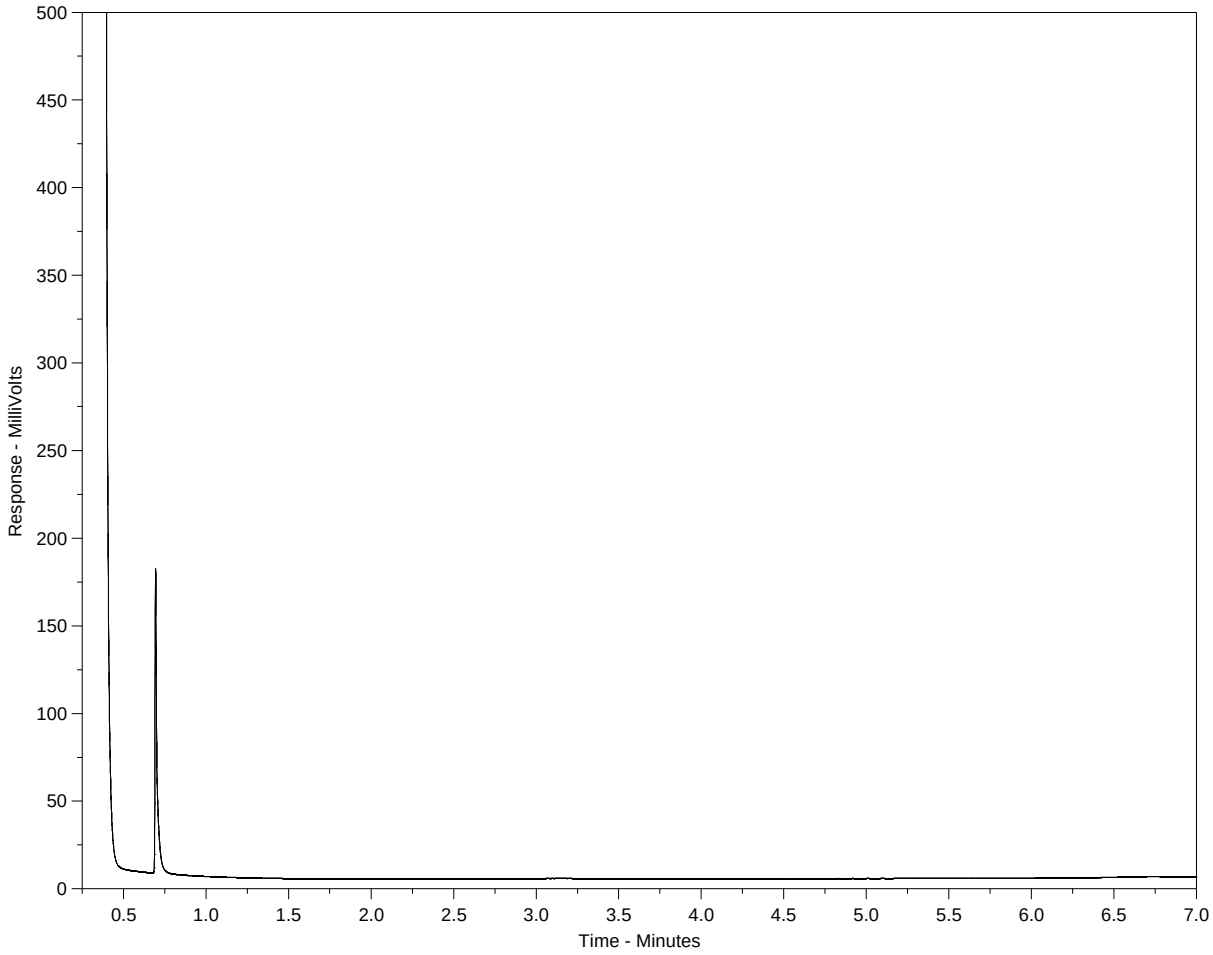
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (December 2007 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: **L884284-7**
Client ID: **DUP I**



<nC10----------nC16----------nC34----------nC50->
<----------Gasoline----------> <----------Heavy Oils---------->
|----------Diesel----------|

The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (December 2007 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

01005

COC # 1005

Page 1 of 2

Report To		Report Format / Distribution	Service Requested (Rush for routine analysis subject to availability)
Company:	WorleyParsons	☑ Standard ☐ Other	◉ Regular (Default)
Contact:	Ken Sommerstad	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (Specify Date Required → →) Surcharges apply
Address:	Suite 705, 10240 - 124th Street	Email 1: ken.sommerstad@worleyparsons.com	○ Emergency (1 Business Day) - 100% Surcharge
	Edmonton, Alberta, T5N 3W6	Email 2: edm.chemistry@worleyparsons.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	Fax:		
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information	Analysis Request
Company:		Job #: E00100101	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:	
Address:		LSD:	
Phone:	Fax:	Quote #: Q23924	
		ALS Contact: Maureen Olinek	Sampler: BD/KS

Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Routine+PO4+F	BTEX F1, F2	Phenols	DOC	Dissolved Ammonia	Dissolved Metals							Number of Containers
						P	F/P	F/P	F/P							
MW-01	05-May-10	6:40	Groundwater	X	X	X	X	X	X							10
MW-02	05-May-10	7:35	Groundwater	X	X	X	X	X	X							10
MW-07	05-May-10	9:50	Groundwater	X	X	X	X	X	X							10
MW-08	05-May-10	11:40	Groundwater	X	X	X	X	X	X							10

Special Instructions / Regulations / Hazardous Details

Please include all dissolved metals on quote
ABT1

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (ALS use only)				SHIPMENT VERIFICATION (ALS use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Ken Sommerstad	07-May-10	12:17	RS	7-MAY-10	12:18	9.3 °C				

GENF 18.02 Front

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
www.alsglobal.com

COC # 1005

Page 2 of 2

Report To		Report Format / Distribution				Service Requested (Rush for routine analysis subject to availability)
Company:	WorleyParsons	☑ Standard	☐ Other			◉ Regular (Default)
Contact:	Ken Sommerstad	☑ PDF	☑ Excel	☑ Digital	☐ Fax	○ Priority (Specify Date Required → →) Surcharges apply
Address:	Suite 705, 10240 - 124th Street	Email 1:	ken.sommerstad@worleyparsons.com			○ Emergency (1 Business Day) - 100% Surcharge
	Edmonton, Alberta, T5N 3W6	Email 2:	edm.chemistry@worleyparsons.com			○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	Fax:					
Invoice To	Same as Report ? ☑ Yes ☐ No	Client / Project Information				Analysis Request
Company:		Job #:	E00100101			Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:				
Address:		LSD:				
Phone:	Fax:	Quote #:	Q23924			
		ALS Contact:	Maureen Olinek	Sampler:	BD/KS	

Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Routine+PO4+F	BTEX F1, F2	Phenols	DOC	Dissolved Ammonia	Dissolved Metals	Number of Containers
						P	F/P	F/P	F/P	
MW-11	05-May-10	14:34	Groundwater	X	X	X	X	X	X	10
MW-10	05-May-10	15:55	Groundwater	X	X	X	X	X	X	10
DUP I	05-May-10	12:00	Groundwater	X	X	X	X	X	X	10

Special Instructions / Regulations / Hazardous Details

Please include all dissolved metals on quote
ABT1

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (ALS use only)				SHIPMENT VERIFICATION (ALS use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Ken Sommerstad	07-May-10	12:17				°C				

Certificate of Analysis

WORLEYPARSONS
ATTN: KEN SOMMERSTAD
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6

Report Date: 14-MAY-10 10:35 (MT)
Version: FINAL

Lab Work Order #: L884286 **Date Received:** 07-MAY-10

Project P.O. #: NOT SUBMITTED
Job Reference: E00100101
Legal Site Desc:
CofC Numbers: 1006

Other Information:

Comments:

Maureen Olinek
Senior Account Manager

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884286-1 MW-03							
Sampled By: BD/KS on 06-MAY-10 @ 08:00							
Matrix: GROUNDWATER							
BTEX, Styrene & F1-F2							
BTEX, Styrene and F1 (C6-C10)							
Benzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Toluene	<0.00075		0.00075	mg/L		10-MAY-10	R1250104
EthylBenzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
o-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
m+p-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Styrene	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F1(C6-C10)	<0.10		0.10	mg/L		10-MAY-10	R1250104
F1-BTEX	<0.10		0.10	mg/L		10-MAY-10	R1250104
Xylenes	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F2 (>C10-C16)							
F2 (>C10-C16)	<0.25		0.25	mg/L	10-MAY-10	10-MAY-10	R1252078
Surrogate: 2-Bromobenzotrifluoride	97		N/A	%	10-MAY-10	10-MAY-10	R1252078
Miscellaneous Parameters							
Ammonia as N, Dissolved	0.339		0.050	mg/L		11-MAY-10	R1251690
Dissolved Organic Carbon	5.3		1.0	mg/L		10-MAY-10	R1250265
Fluoride (F)	0.117		0.050	mg/L		08-MAY-10	R1250866
Orthophosphate (PO4-P)	<0.010		0.010	mg/L		10-MAY-10	R1251845
Phenols (4AAP)	<0.0010		0.0010	mg/L		10-MAY-10	R1251445
Major Ions & Trace Dissolved Metals							
Chloride by IC							
Chloride (Cl)	44.3		0.50	mg/L		08-MAY-10	R1250866
Diss. Metals in Water by ICPMS (Low)							
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Antimony (Sb)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Arsenic (As)-Dissolved	0.00154		0.00040	mg/L		11-MAY-10	R1252646
Barium (Ba)-Dissolved	0.0380		0.0050	mg/L		11-MAY-10	R1252646
Beryllium (Be)-Dissolved	<0.00050		0.00050	mg/L		11-MAY-10	R1252646
Boron (B)-Dissolved	0.116		0.050	mg/L		11-MAY-10	R1252646
Cadmium (Cd)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Chromium (Cr)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Cobalt (Co)-Dissolved	0.00076		0.00010	mg/L		11-MAY-10	R1252646
Copper (Cu)-Dissolved	<0.0010		0.0010	mg/L		11-MAY-10	R1252646
Lead (Pb)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Molybdenum (Mo)-Dissolved	0.00079		0.00010	mg/L		11-MAY-10	R1252646
Nickel (Ni)-Dissolved	0.0027		0.0020	mg/L		11-MAY-10	R1252646
Selenium (Se)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L		12-MAY-10	R1253649
Thallium (Tl)-Dissolved	<0.000050		0.000050	mg/L		11-MAY-10	R1252646
Titanium (Ti)-Dissolved	0.00079		0.00030	mg/L		11-MAY-10	R1252646
Uranium (U)-Dissolved	0.00056		0.00010	mg/L		11-MAY-10	R1252646
Vanadium (V)-Dissolved	0.00036		0.00010	mg/L		11-MAY-10	R1252646
Zinc (Zn)-Dissolved	<0.0020		0.0020	mg/L		11-MAY-10	R1252646
Diss. Metals in Water by ICPOES (Low)							
Calcium (Ca)-Dissolved	104		0.50	mg/L		10-MAY-10	R1251293
Iron (Fe)-Dissolved	5.23		0.020	mg/L		10-MAY-10	R1251293
Magnesium (Mg)-Dissolved	36.8		0.10	mg/L		10-MAY-10	R1251293
Manganese (Mn)-Dissolved	0.253		0.0050	mg/L		10-MAY-10	R1251293
Sodium (Na)-Dissolved	52.3		0.50	mg/L		10-MAY-10	R1251293
Ion Balance Calculation							
Ion Balance	96.4			%		11-MAY-10	

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884286-1 MW-03							
Sampled By: BD/KS on 06-MAY-10 @ 08:00							
Matrix: GROUNDWATER							
Ion Balance Calculation							
TDS (Calculated)	579			mg/L		11-MAY-10	
Hardness (as CaCO3)	411			mg/L		11-MAY-10	
Mercury (Hg) - Dissolved							
Mercury (Hg)-Dissolved	<0.00010		0.00010	mg/L		10-MAY-10	R1251386
Nitrate as N by IC							
Nitrate (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		10-MAY-10	
Nitrite as N by IC							
Nitrite (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Sulfate by IC							
Sulfate (SO4)	124		0.50	mg/L		08-MAY-10	R1250866
pH, Conductivity and Total Alkalinity							
pH	8.03		0.10	pH		08-MAY-10	R1250112
Conductivity (EC)	967		0.20	uS/cm		08-MAY-10	R1250112
Bicarbonate (HCO3)	435		5.0	mg/L		08-MAY-10	R1250112
Carbonate (CO3)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Hydroxide (OH)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Alkalinity, Total (as CaCO3)	357		5.0	mg/L		08-MAY-10	R1250112
L884286-2 MW-09							
Sampled By: BD/KS on 06-MAY-10 @ 09:15							
Matrix: GROUNDWATER							
BTEX, Styrene & F1-F2							
BTEX, Styrene and F1 (C6-C10)							
Benzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Toluene	<0.00075		0.00075	mg/L		10-MAY-10	R1250104
EthylBenzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
o-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
m+p-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Styrene	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F1(C6-C10)	<0.10		0.10	mg/L		10-MAY-10	R1250104
F1-BTEX	<0.10		0.10	mg/L		10-MAY-10	R1250104
Xylenes	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F2 (>C10-C16)							
F2 (>C10-C16)	<0.25		0.25	mg/L	10-MAY-10	10-MAY-10	R1252078
Surrogate: 2-Bromobenzotrifluoride	96		N/A	%	10-MAY-10	10-MAY-10	R1252078
Miscellaneous Parameters							
Ammonia as N, Dissolved	2.02		0.050	mg/L		11-MAY-10	R1251690
Dissolved Organic Carbon	5.6		1.0	mg/L		10-MAY-10	R1250265
Fluoride (F)	0.251		0.050	mg/L		08-MAY-10	R1250866
Orthophosphate (PO4-P)	<0.010		0.010	mg/L		10-MAY-10	R1251845
Phenols (4AAP)	<0.0010		0.0010	mg/L		10-MAY-10	R1251445
Major Ions & Trace Dissolved Metals							
Chloride by IC							
Chloride (Cl)	5.57		0.50	mg/L		08-MAY-10	R1250866
Diss. Metals in Water by ICPMS (Low)							
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Antimony (Sb)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Arsenic (As)-Dissolved	0.00255		0.00040	mg/L		11-MAY-10	R1252646
Barium (Ba)-Dissolved	0.0250		0.0050	mg/L		11-MAY-10	R1252646
Beryllium (Be)-Dissolved	<0.00050		0.00050	mg/L		11-MAY-10	R1252646

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884286-2 MW-09							
Sampled By: BD/KS on 06-MAY-10 @ 09:15							
Matrix: GROUNDWATER							
Diss. Metals in Water by ICPMS (Low)							
Boron (B)-Dissolved	0.267		0.050	mg/L		11-MAY-10	R1252646
Cadmium (Cd)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Chromium (Cr)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Cobalt (Co)-Dissolved	0.00085		0.00010	mg/L		11-MAY-10	R1252646
Copper (Cu)-Dissolved	<0.0010		0.0010	mg/L		11-MAY-10	R1252646
Lead (Pb)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Molybdenum (Mo)-Dissolved	0.00158		0.00010	mg/L		11-MAY-10	R1252646
Nickel (Ni)-Dissolved	0.0027		0.0020	mg/L		11-MAY-10	R1252646
Selenium (Se)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Thallium (Tl)-Dissolved	<0.000050		0.000050	mg/L		11-MAY-10	R1252646
Titanium (Ti)-Dissolved	0.00078		0.00030	mg/L		11-MAY-10	R1252646
Uranium (U)-Dissolved	0.00121		0.00010	mg/L		11-MAY-10	R1252646
Vanadium (V)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Zinc (Zn)-Dissolved	<0.0020		0.0020	mg/L		11-MAY-10	R1252646
Diss. Metals in Water by ICPOES (Low)							
Calcium (Ca)-Dissolved	93.1		0.50	mg/L		10-MAY-10	R1251293
Iron (Fe)-Dissolved	2.04		0.020	mg/L		10-MAY-10	R1251293
Magnesium (Mg)-Dissolved	27.8		0.10	mg/L		10-MAY-10	R1251293
Manganese (Mn)-Dissolved	0.828		0.0050	mg/L		10-MAY-10	R1251293
Sodium (Na)-Dissolved	240		0.50	mg/L		10-MAY-10	R1251293
Ion Balance Calculation							
Ion Balance	98.4			%		11-MAY-10	
TDS (Calculated)	1030			mg/L		11-MAY-10	
Hardness (as CaCO3)	347			mg/L		11-MAY-10	
Mercury (Hg) - Dissolved							
Mercury (Hg)-Dissolved	<0.00010		0.00010	mg/L		10-MAY-10	R1251386
Nitrate as N by IC							
Nitrate (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		10-MAY-10	
Nitrite as N by IC							
Nitrite (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Sulfate by IC							
Sulfate (SO4)	342		0.50	mg/L		08-MAY-10	R1250866
pH, Conductivity and Total Alkalinity							
pH	8.17		0.10	pH		08-MAY-10	R1250112
Conductivity (EC)	1540		0.20	uS/cm		08-MAY-10	R1250112
Bicarbonate (HCO3)	639		5.0	mg/L		08-MAY-10	R1250112
Carbonate (CO3)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Hydroxide (OH)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Alkalinity, Total (as CaCO3)	524		5.0	mg/L		08-MAY-10	R1250112
L884286-3 MW-06							
Sampled By: BD/KS on 06-MAY-10 @ 10:30							
Matrix: GROUNDWATER							
BTEX, Styrene & F1-F2							
BTEX, Styrene and F1 (C6-C10)							
Benzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Toluene	<0.00075		0.00075	mg/L		10-MAY-10	R1250104
EthylBenzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
o-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884286-3 MW-06							
Sampled By: BD/KS on 06-MAY-10 @ 10:30							
Matrix: GROUNDWATER							
BTEX, Styrene and F1 (C6-C10)							
m+p-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Styrene	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F1(C6-C10)	<0.10		0.10	mg/L		10-MAY-10	R1250104
F1-BTEX	<0.10		0.10	mg/L		10-MAY-10	R1250104
Xylenes	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F2 (>C10-C16)							
F2 (>C10-C16)	<0.25		0.25	mg/L	10-MAY-10	10-MAY-10	R1252078
Surrogate: 2-Bromobenzotrifluoride	100		N/A	%	10-MAY-10	10-MAY-10	R1252078
Miscellaneous Parameters							
Ammonia as N, Dissolved	1.88		0.050	mg/L		11-MAY-10	R1251690
Dissolved Organic Carbon	6.7		1.0	mg/L		10-MAY-10	R1250265
Fluoride (F)	0.173		0.050	mg/L		08-MAY-10	R1250866
Orthophosphate (PO4-P)	<0.010		0.010	mg/L		10-MAY-10	R1251845
Phenols (4AAP)	<0.0010		0.0010	mg/L		10-MAY-10	R1251445
Major Ions & Trace Dissolved Metals							
Chloride by IC							
Chloride (Cl)	8.45		0.50	mg/L		08-MAY-10	R1250866
Diss. Metals in Water by ICPMS (Low)							
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Antimony (Sb)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Arsenic (As)-Dissolved	0.00507		0.00040	mg/L		11-MAY-10	R1252646
Barium (Ba)-Dissolved	0.0353		0.0050	mg/L		11-MAY-10	R1252646
Beryllium (Be)-Dissolved	<0.00050		0.00050	mg/L		11-MAY-10	R1252646
Boron (B)-Dissolved	0.150		0.050	mg/L		11-MAY-10	R1252646
Cadmium (Cd)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Chromium (Cr)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Cobalt (Co)-Dissolved	0.00052		0.00010	mg/L		11-MAY-10	R1252646
Copper (Cu)-Dissolved	0.0012		0.0010	mg/L		11-MAY-10	R1252646
Lead (Pb)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Molybdenum (Mo)-Dissolved	0.00094		0.00010	mg/L		11-MAY-10	R1252646
Nickel (Ni)-Dissolved	0.0039		0.0020	mg/L		11-MAY-10	R1252646
Selenium (Se)-Dissolved	0.00041		0.00040	mg/L		11-MAY-10	R1252646
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Thallium (Tl)-Dissolved	<0.000050		0.000050	mg/L		11-MAY-10	R1252646
Titanium (Ti)-Dissolved	0.00125		0.00030	mg/L		11-MAY-10	R1252646
Uranium (U)-Dissolved	0.00146		0.00010	mg/L		11-MAY-10	R1252646
Vanadium (V)-Dissolved	0.00016		0.00010	mg/L		11-MAY-10	R1252646
Zinc (Zn)-Dissolved	0.0063	RRV	0.0020	mg/L		12-MAY-10	R1253649
Diss. Metals in Water by ICPOES (Low)							
Calcium (Ca)-Dissolved	156		0.50	mg/L		10-MAY-10	R1251293
Iron (Fe)-Dissolved	5.38		0.020	mg/L		10-MAY-10	R1251293
Magnesium (Mg)-Dissolved	57.1		0.10	mg/L		10-MAY-10	R1251293
Manganese (Mn)-Dissolved	1.39		0.0050	mg/L		10-MAY-10	R1251293
Sodium (Na)-Dissolved	194		0.50	mg/L		10-MAY-10	R1251293
Ion Balance Calculation							
Ion Balance	98.8			%		11-MAY-10	
TDS (Calculated)	1250			mg/L		11-MAY-10	
Hardness (as CaCO3)	625			mg/L		11-MAY-10	
Mercury (Hg) - Dissolved							
Mercury (Hg)-Dissolved	<0.00010		0.00010	mg/L		10-MAY-10	R1251386
Nitrate as N by IC							

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Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884286-3 MW-06							
Sampled By: BD/KS on 06-MAY-10 @ 10:30							
Matrix: GROUNDWATER							
Nitrate as N by IC							
Nitrate (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		10-MAY-10	
Nitrite as N by IC							
Nitrite (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Sulfate by IC							
Sulfate (SO4)	520		0.50	mg/L		08-MAY-10	R1250866
pH, Conductivity and Total Alkalinity							
pH	8.06		0.10	pH		08-MAY-10	R1250112
Conductivity (EC)	1770		0.20	uS/cm		08-MAY-10	R1250112
Bicarbonate (HCO3)	626		5.0	mg/L		08-MAY-10	R1250112
Carbonate (CO3)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Hydroxide (OH)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Alkalinity, Total (as CaCO3)	513		5.0	mg/L		08-MAY-10	R1250112
L884286-4 MW-12							
Sampled By: BD/KS on 06-MAY-10 @ 12:00							
Matrix: GROUNDWATER							
BTEX, Styrene & F1-F2							
BTEX, Styrene and F1 (C6-C10)							
Benzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Toluene	<0.00075		0.00075	mg/L		10-MAY-10	R1250104
EthylBenzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
o-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
m+p-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Styrene	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F1(C6-C10)	<0.10		0.10	mg/L		10-MAY-10	R1250104
F1-BTEX	<0.10		0.10	mg/L		10-MAY-10	R1250104
Xylenes	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F2 (>C10-C16)							
F2 (>C10-C16)	<0.25		0.25	mg/L	10-MAY-10	10-MAY-10	R1252078
Surrogate: 2-Bromobenzotrifluoride	104		N/A	%	10-MAY-10	10-MAY-10	R1252078
Miscellaneous Parameters							
Ammonia as N, Dissolved	1.32		0.050	mg/L		11-MAY-10	R1251690
Dissolved Organic Carbon	10.5		1.0	mg/L		10-MAY-10	R1250265
Fluoride (F)	0.114		0.050	mg/L		08-MAY-10	R1250866
Orthophosphate (PO4-P)	<0.010		0.010	mg/L		10-MAY-10	R1251845
Phenols (4AAP)	<0.0010		0.0010	mg/L		10-MAY-10	R1251445
Major Ions & Trace Dissolved Metals							
Chloride by IC							
Chloride (Cl)	7.05		0.50	mg/L		08-MAY-10	R1250866
Diss. Metals in Water by ICPMS (Low)							
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Antimony (Sb)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Arsenic (As)-Dissolved	0.00285		0.00040	mg/L		11-MAY-10	R1252646
Barium (Ba)-Dissolved	0.143		0.0050	mg/L		11-MAY-10	R1252646
Beryllium (Be)-Dissolved	<0.00050		0.00050	mg/L		11-MAY-10	R1252646
Boron (B)-Dissolved	0.242		0.050	mg/L		11-MAY-10	R1252646
Cadmium (Cd)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Chromium (Cr)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Cobalt (Co)-Dissolved	0.00065		0.00010	mg/L		11-MAY-10	R1252646
Copper (Cu)-Dissolved	<0.0010		0.0010	mg/L		11-MAY-10	R1252646

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ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884286-4 MW-12							
Sampled By: BD/KS on 06-MAY-10 @ 12:00							
Matrix: GROUNDWATER							
Diss. Metals in Water by ICPMS (Low)							
Lead (Pb)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Molybdenum (Mo)-Dissolved	0.00115		0.00010	mg/L		11-MAY-10	R1252646
Nickel (Ni)-Dissolved	0.0022		0.0020	mg/L		11-MAY-10	R1252646
Selenium (Se)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Thallium (Tl)-Dissolved	<0.000050		0.000050	mg/L		11-MAY-10	R1252646
Titanium (Ti)-Dissolved	0.00081		0.00030	mg/L		11-MAY-10	R1252646
Uranium (U)-Dissolved	0.00083		0.00010	mg/L		11-MAY-10	R1252646
Vanadium (V)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Zinc (Zn)-Dissolved	<0.0020		0.0020	mg/L		11-MAY-10	R1252646
Diss. Metals in Water by ICPOES (Low)							
Calcium (Ca)-Dissolved	96.4		0.50	mg/L		10-MAY-10	R1251293
Iron (Fe)-Dissolved	4.24		0.020	mg/L		10-MAY-10	R1251293
Magnesium (Mg)-Dissolved	30.2		0.10	mg/L		10-MAY-10	R1251293
Manganese (Mn)-Dissolved	0.456		0.0050	mg/L		10-MAY-10	R1251293
Sodium (Na)-Dissolved	109		0.50	mg/L		10-MAY-10	R1251293
Ion Balance Calculation							
Ion Balance	100			%		11-MAY-10	
TDS (Calculated)	623			mg/L		11-MAY-10	
Hardness (as CaCO3)	365			mg/L		11-MAY-10	
Mercury (Hg) - Dissolved							
Mercury (Hg)-Dissolved	<0.00010		0.00010	mg/L		10-MAY-10	R1251386
Nitrate as N by IC							
Nitrate (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		10-MAY-10	
Nitrite as N by IC							
Nitrite (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Sulfate by IC							
Sulfate (SO4)	46.8		0.50	mg/L		08-MAY-10	R1250866
pH, Conductivity and Total Alkalinity							
pH	8.13		0.10	pH		08-MAY-10	R1250112
Conductivity (EC)	1030		0.20	uS/cm		08-MAY-10	R1250112
Bicarbonate (HCO3)	667		5.0	mg/L		08-MAY-10	R1250112
Carbonate (CO3)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Hydroxide (OH)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Alkalinity, Total (as CaCO3)	547		5.0	mg/L		08-MAY-10	R1250112
L884286-5 MW-13							
Sampled By: BD/KS on 06-MAY-10 @ 13:15							
Matrix: GROUNDWATER							
BTEX, Styrene & F1-F2							
BTEX, Styrene and F1 (C6-C10)							
Benzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Toluene	<0.00075		0.00075	mg/L		10-MAY-10	R1250104
EthylBenzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
o-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
m+p-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Styrene	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F1(C6-C10)	<0.10		0.10	mg/L		10-MAY-10	R1250104
F1-BTEX	<0.10		0.10	mg/L		10-MAY-10	R1250104
Xylenes	<0.0010		0.0010	mg/L		10-MAY-10	R1250104

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ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884286-5 MW-13							
Sampled By: BD/KS on 06-MAY-10 @ 13:15							
Matrix: GROUNDWATER							
F2 (>C10-C16)							
F2 (>C10-C16)	<0.25		0.25	mg/L	10-MAY-10	10-MAY-10	R1252078
Surrogate: 2-Bromobenzotrifluoride	98		N/A	%	10-MAY-10	10-MAY-10	R1252078
Miscellaneous Parameters							
Ammonia as N, Dissolved	1.30		0.050	mg/L		11-MAY-10	R1251690
Dissolved Organic Carbon	4.1		1.0	mg/L		10-MAY-10	R1250265
Fluoride (F)	0.160		0.050	mg/L		08-MAY-10	R1250866
Orthophosphate (PO4-P)	<0.010		0.010	mg/L		10-MAY-10	R1251845
Phenols (4AAP)	<0.0010		0.0010	mg/L		10-MAY-10	R1251445
Major Ions & Trace Dissolved Metals							
Chloride by IC							
Chloride (Cl)	2.15		0.50	mg/L		08-MAY-10	R1250866
Diss. Metals in Water by ICPMS (Low)							
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Antimony (Sb)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Arsenic (As)-Dissolved	0.00162		0.00040	mg/L		11-MAY-10	R1252646
Barium (Ba)-Dissolved	0.407		0.0050	mg/L		11-MAY-10	R1252646
Beryllium (Be)-Dissolved	<0.00050		0.00050	mg/L		11-MAY-10	R1252646
Boron (B)-Dissolved	0.254		0.050	mg/L		11-MAY-10	R1252646
Cadmium (Cd)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Chromium (Cr)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Cobalt (Co)-Dissolved	0.00092		0.00010	mg/L		11-MAY-10	R1252646
Copper (Cu)-Dissolved	<0.0010		0.0010	mg/L		11-MAY-10	R1252646
Lead (Pb)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Molybdenum (Mo)-Dissolved	0.00219		0.00010	mg/L		11-MAY-10	R1252646
Nickel (Ni)-Dissolved	0.0021		0.0020	mg/L		11-MAY-10	R1252646
Selenium (Se)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Thallium (Tl)-Dissolved	<0.000050		0.000050	mg/L		11-MAY-10	R1252646
Titanium (Ti)-Dissolved	0.00070		0.00030	mg/L		11-MAY-10	R1252646
Uranium (U)-Dissolved	0.00069		0.00010	mg/L		11-MAY-10	R1252646
Vanadium (V)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Zinc (Zn)-Dissolved	<0.0020		0.0020	mg/L		11-MAY-10	R1252646
Diss. Metals in Water by ICPOES (Low)							
Calcium (Ca)-Dissolved	50.0		0.50	mg/L		10-MAY-10	R1251293
Iron (Fe)-Dissolved	1.45		0.020	mg/L		10-MAY-10	R1251293
Magnesium (Mg)-Dissolved	16.4		0.10	mg/L		10-MAY-10	R1251293
Manganese (Mn)-Dissolved	0.249		0.0050	mg/L		10-MAY-10	R1251293
Sodium (Na)-Dissolved	110		0.50	mg/L		10-MAY-10	R1251293
Ion Balance Calculation							
Ion Balance	97.5			%		11-MAY-10	
TDS (Calculated)	453			mg/L		11-MAY-10	
Hardness (as CaCO3)	192			mg/L		11-MAY-10	
Mercury (Hg) - Dissolved							
Mercury (Hg)-Dissolved	<0.00010		0.00010	mg/L		10-MAY-10	R1251386
Nitrate as N by IC							
Nitrate (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		10-MAY-10	
Nitrite as N by IC							
Nitrite (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Sulfate by IC							

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ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884286-5 MW-13							
Sampled By: BD/KS on 06-MAY-10 @ 13:15							
Matrix: GROUNDWATER							
Sulfate by IC							
Sulfate (SO4)	9.54		0.50	mg/L		08-MAY-10	R1250866
pH, Conductivity and Total Alkalinity							
pH	8.22		0.10	pH		08-MAY-10	R1250112
Conductivity (EC)	776		0.20	uS/cm		08-MAY-10	R1250112
Bicarbonate (HCO3)	530		5.0	mg/L		08-MAY-10	R1250112
Carbonate (CO3)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Hydroxide (OH)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Alkalinity, Total (as CaCO3)	435		5.0	mg/L		08-MAY-10	R1250112
L884286-6 MW-04							
Sampled By: BD/KS on 06-MAY-10 @ 15:40							
Matrix: GROUNDWATER							
BTEX, Styrene & F1-F2							
BTEX, Styrene and F1 (C6-C10)							
Benzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Toluene	<0.00075		0.00075	mg/L		10-MAY-10	R1250104
EthylBenzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
o-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
m+p-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Styrene	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F1(C6-C10)	<0.10		0.10	mg/L		10-MAY-10	R1250104
F1-BTEX	<0.10		0.10	mg/L		10-MAY-10	R1250104
Xylenes	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F2 (>C10-C16)							
F2 (>C10-C16)	<0.25		0.25	mg/L	10-MAY-10	10-MAY-10	R1252078
Surrogate: 2-Bromobenzotrifluoride	96		N/A	%	10-MAY-10	10-MAY-10	R1252078
Miscellaneous Parameters							
Ammonia as N, Dissolved	<0.050		0.050	mg/L		11-MAY-10	R1251690
Dissolved Organic Carbon	3.0		1.0	mg/L		10-MAY-10	R1250265
Fluoride (F)	0.129		0.050	mg/L		08-MAY-10	R1250866
Orthophosphate (PO4-P)	<0.010		0.010	mg/L		10-MAY-10	R1251845
Phenols (4AAP)	<0.0010		0.0010	mg/L		10-MAY-10	R1251445
Major Ions & Trace Dissolved Metals							
Chloride by IC							
Chloride (Cl)	131		0.50	mg/L		08-MAY-10	R1250866
Diss. Metals in Water by ICPMS (Low)							
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Antimony (Sb)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Arsenic (As)-Dissolved	0.00117		0.00040	mg/L		11-MAY-10	R1252646
Barium (Ba)-Dissolved	0.0843		0.0050	mg/L		11-MAY-10	R1252646
Beryllium (Be)-Dissolved	<0.00050		0.00050	mg/L		11-MAY-10	R1252646
Boron (B)-Dissolved	0.098		0.050	mg/L		11-MAY-10	R1252646
Cadmium (Cd)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Chromium (Cr)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Cobalt (Co)-Dissolved	0.00054		0.00010	mg/L		11-MAY-10	R1252646
Copper (Cu)-Dissolved	<0.0010		0.0010	mg/L		11-MAY-10	R1252646
Lead (Pb)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Molybdenum (Mo)-Dissolved	0.00038		0.00010	mg/L		11-MAY-10	R1252646
Nickel (Ni)-Dissolved	0.0047		0.0020	mg/L		11-MAY-10	R1252646
Selenium (Se)-Dissolved	0.00106		0.00040	mg/L		11-MAY-10	R1252646
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Thallium (Tl)-Dissolved	<0.000050		0.000050	mg/L		11-MAY-10	R1252646

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884286-6 MW-04							
Sampled By: BD/KS on 06-MAY-10 @ 15:40							
Matrix: GROUNDWATER							
Diss. Metals in Water by ICPMS (Low)							
Titanium (Ti)-Dissolved	0.00046		0.00030	mg/L		11-MAY-10	R1252646
Uranium (U)-Dissolved	0.00284		0.00010	mg/L		11-MAY-10	R1252646
Vanadium (V)-Dissolved	0.00072		0.00010	mg/L		11-MAY-10	R1252646
Zinc (Zn)-Dissolved	<0.0020		0.0020	mg/L		11-MAY-10	R1252646
Diss. Metals in Water by ICPOES (Low)							
Calcium (Ca)-Dissolved	152		0.50	mg/L		10-MAY-10	R1251293
Iron (Fe)-Dissolved	0.078		0.020	mg/L		10-MAY-10	R1251293
Magnesium (Mg)-Dissolved	44.0		0.10	mg/L		10-MAY-10	R1251293
Manganese (Mn)-Dissolved	0.258		0.0050	mg/L		10-MAY-10	R1251293
Sodium (Na)-Dissolved	63.4		0.50	mg/L		10-MAY-10	R1251293
Ion Balance Calculation							
Ion Balance	107			%		11-MAY-10	
TDS (Calculated)	724			mg/L		11-MAY-10	
Hardness (as CaCO3)	561			mg/L		11-MAY-10	
Mercury (Hg) - Dissolved							
Mercury (Hg)-Dissolved	<0.00010		0.00010	mg/L		10-MAY-10	R1251386
Nitrate as N by IC							
Nitrate (as N)	0.090		0.050	mg/L		08-MAY-10	R1250866
Nitrate+Nitrite							
Nitrate and Nitrite as N	0.090		0.071	mg/L		10-MAY-10	
Nitrite as N by IC							
Nitrite (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Sulfate by IC							
Sulfate (SO4)	92.1		0.50	mg/L		08-MAY-10	R1250866
pH, Conductivity and Total Alkalinity							
pH	8.01		0.10	pH		07-MAY-10	R1250112
Conductivity (EC)	1220		0.20	uS/cm		07-MAY-10	R1250112
Bicarbonate (HCO3)	470		5.0	mg/L		07-MAY-10	R1250112
Carbonate (CO3)	<5.0		5.0	mg/L		07-MAY-10	R1250112
Hydroxide (OH)	<5.0		5.0	mg/L		07-MAY-10	R1250112
Alkalinity, Total (as CaCO3)	385		5.0	mg/L		07-MAY-10	R1250112
L884286-7 DUP II							
Sampled By: BD/KS on 06-MAY-10 @ 12:00							
Matrix: GROUNDWATER							
BTEX, Styrene & F1-F2							
BTEX, Styrene and F1 (C6-C10)							
Benzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Toluene	<0.00075		0.00075	mg/L		10-MAY-10	R1250104
EthylBenzene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
o-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
m+p-Xylene	<0.00050		0.00050	mg/L		10-MAY-10	R1250104
Styrene	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F1(C6-C10)	<0.10		0.10	mg/L		10-MAY-10	R1250104
F1-BTEX	<0.10		0.10	mg/L		10-MAY-10	R1250104
Xylenes	<0.0010		0.0010	mg/L		10-MAY-10	R1250104
F2 (>C10-C16)							
F2 (>C10-C16)	<0.25		0.25	mg/L	10-MAY-10	10-MAY-10	R1252078
Surrogate: 2-Bromobenzotrifluoride	98		N/A	%	10-MAY-10	10-MAY-10	R1252078
Miscellaneous Parameters							
Ammonia as N, Dissolved	2.00		0.050	mg/L		11-MAY-10	R1251690
Dissolved Organic Carbon	5.5		1.0	mg/L		10-MAY-10	R1250265

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884286-7 DUP II							
Sampled By: BD/KS on 06-MAY-10 @ 12:00							
Matrix: GROUNDWATER							
Fluoride (F)	0.243		0.050	mg/L		08-MAY-10	R1250866
Orthophosphate (PO4-P)	<0.010		0.010	mg/L		10-MAY-10	R1251845
Phenols (4AAP)	<0.0010		0.0010	mg/L		10-MAY-10	R1251445
Major Ions & Trace Dissolved Metals							
Chloride by IC							
Chloride (Cl)	5.63		0.50	mg/L		08-MAY-10	R1250866
Diss. Metals in Water by ICPMS (Low)							
Aluminum (Al)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Antimony (Sb)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Arsenic (As)-Dissolved	0.00257		0.00040	mg/L		11-MAY-10	R1252646
Barium (Ba)-Dissolved	0.0247		0.0050	mg/L		11-MAY-10	R1252646
Beryllium (Be)-Dissolved	<0.00050		0.00050	mg/L		11-MAY-10	R1252646
Boron (B)-Dissolved	0.261		0.050	mg/L		11-MAY-10	R1252646
Cadmium (Cd)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Chromium (Cr)-Dissolved	<0.0050		0.0050	mg/L		11-MAY-10	R1252646
Cobalt (Co)-Dissolved	0.00086		0.00010	mg/L		11-MAY-10	R1252646
Copper (Cu)-Dissolved	<0.0010		0.0010	mg/L		11-MAY-10	R1252646
Lead (Pb)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Molybdenum (Mo)-Dissolved	0.00154		0.00010	mg/L		11-MAY-10	R1252646
Nickel (Ni)-Dissolved	0.0027		0.0020	mg/L		11-MAY-10	R1252646
Selenium (Se)-Dissolved	<0.00040		0.00040	mg/L		11-MAY-10	R1252646
Silver (Ag)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Thallium (Tl)-Dissolved	<0.000050		0.000050	mg/L		11-MAY-10	R1252646
Titanium (Ti)-Dissolved	0.00077		0.00030	mg/L		11-MAY-10	R1252646
Uranium (U)-Dissolved	0.00120		0.00010	mg/L		11-MAY-10	R1252646
Vanadium (V)-Dissolved	<0.00010		0.00010	mg/L		11-MAY-10	R1252646
Zinc (Zn)-Dissolved	0.0020		0.0020	mg/L		11-MAY-10	R1252646
Diss. Metals in Water by ICPOES (Low)							
Calcium (Ca)-Dissolved	93.1		0.50	mg/L		10-MAY-10	R1251293
Iron (Fe)-Dissolved	2.03		0.020	mg/L		10-MAY-10	R1251293
Magnesium (Mg)-Dissolved	27.6		0.10	mg/L		10-MAY-10	R1251293
Manganese (Mn)-Dissolved	0.832		0.0050	mg/L		10-MAY-10	R1251293
Sodium (Na)-Dissolved	246		0.50	mg/L		10-MAY-10	R1251293
Ion Balance Calculation							
Ion Balance	99.2			%		11-MAY-10	
TDS (Calculated)	1040			mg/L		11-MAY-10	
Hardness (as CaCO3)	346			mg/L		11-MAY-10	
Mercury (Hg) - Dissolved							
Mercury (Hg)-Dissolved	<0.00010		0.00010	mg/L		10-MAY-10	R1251386
Nitrate as N by IC							
Nitrate (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Nitrate+Nitrite							
Nitrate and Nitrite as N	<0.071		0.071	mg/L		10-MAY-10	
Nitrite as N by IC							
Nitrite (as N)	<0.050		0.050	mg/L		08-MAY-10	R1250866
Sulfate by IC							
Sulfate (SO4)	345		0.50	mg/L		08-MAY-10	R1250866
pH, Conductivity and Total Alkalinity							
pH	8.17		0.10	pH		08-MAY-10	R1250112
Conductivity (EC)	1540		0.20	uS/cm		08-MAY-10	R1250112
Bicarbonate (HCO3)	641		5.0	mg/L		08-MAY-10	R1250112
Carbonate (CO3)	<5.0		5.0	mg/L		08-MAY-10	R1250112
Hydroxide (OH)	<5.0		5.0	mg/L		08-MAY-10	R1250112

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

ALS LABORATORY GROUP ANALYTICAL REPORT

Sample Details/Parameters	Result	Qualifier*	D.L.	Units	Extracted	Analyzed	Batch
L884286-7 DUP II Sampled By: BD/KS on 06-MAY-10 @ 12:00 Matrix: GROUNDWATER							
pH, Conductivity and Total Alkalinity							
Alkalinity, Total (as CaCO3)	526		5.0	mg/L		08-MAY-10	R1250112

* Refer to Referenced Information for Qualifiers (if any) and Methodology.

Reference Information

QC Samples with Qualifiers & Comments:

QC Type Description	Parameter	Qualifier	Applies to Sample Number(s)
Matrix Spike	Sulfate (SO4)	MS-B	L884286-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Sulfate (SO4)	MS-B	L884286-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Nitrate (as N)	MS-B	L884286-1, -2, -3, -4, -5, -6, -7
Matrix Spike	Orthophosphate (PO4-P)	MS-B	L884286-1, -2, -3, -4, -5, -6, -7

Sample Parameter Qualifier Key:

Qualifier	Description
E	Matrix Spike recovery outside ALS DQO due to analyte background in sample.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RRV	Reported Result Verified By Repeat Analysis

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**
BTXS,F1-ED	Water	BTEX, Styrene and F1 (C6-C10)	EPA 5021/8015&8260 GC-MS & FID
C-DIS-ORG-ED	Water	Dissolved Organic Carbon	APHA 5310 B-Instrumental
CL-IC-ED	Water	Chloride by IC	APHA 4110 B-ION CHROMATOGRAPHY
F-IC-ED	Water	Fluoride by IC	APHA 4110 B-ION CHROMATOGRAPHY
F2-ED	Water	F2 (>C10-C16)	EPA 3510/CCME PHC CWS-GC-FID
HG-D-CVAA-ED	Water	Mercury (Hg) - Dissolved	EPA 245.7 / EPA 245.1
IONBALANCE-ED	Water	Ion Balance Calculation	APHA 1030E
MET-D-L-ICP-ED	Water	Diss. Metals in Water by ICPOES (Low)	APHA 3120 B-ICP-OES
MET-D-L-MS-ED	Water	Diss. Metals in Water by ICPMS (Low)	SW 846 - 6020-ICPMS
NH4-DIS-ED	Water	Ammonia-N	APHA4500NH3F Colorimetry
NO2+NO3-CALC-ED	Water	Nitrate+Nitrite	CALCULATION
NO2-IC-ED	Water	Nitrite as N by IC	APHA 4110 B-ION CHROMATOGRAPHY
NO3-IC-ED	Water	Nitrate as N by IC	APHA 4110 B-ION CHROMATOGRAPHY
PH/EC/ALK-ED	Water	pH, Conductivity and Total Alkalinity	APHA 4500-H, 2510, 2320
PHENOLS-4AAP-ED	Water	Phenols (4AAP)	AB ENV.06537-COLORIMETRIC
PO4-ED	Water	Orthophosphate (PO4-P)	APHA 4500 P B,E-Auto-Colorimetry
SO4-IC-ED	Water	Sulfate by IC	APHA 4110 B-ION CHROMATOGRAPHY

** ALS test methods may incorporate modifications from specified reference methods to improve performance.

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

Laboratory Definition Code	Laboratory Location
ED	ALS LABORATORY GROUP - EDMONTON, ALBERTA, CANADA

Chain of Custody Numbers:

1006

Reference Information

Test Method References:

ALS Test Code	Matrix	Test Description	Method Reference**

GLOSSARY OF REPORT TERMS

Surrogates are compounds that are similar in behaviour to target analyte(s), but that do not normally occur in environmental samples. For applicable tests, surrogates are added to samples prior to analysis as a check on recovery. In reports that display the D.L. column, laboratory objectives for surrogates are listed there.
mg/kg - milligrams per kilogram based on dry weight of sample
mk/kg wwt - milligrams per kilogram based on wet weight of sample
mg/kg lwt - milligrams per kilogram based on lipid-adjusted weight
mg/L - unit of concentration based on volume, parts per million.
< - Less than.
D.L. - The reporting limit.
N/A - Result not available. Refer to qualifier code and definition for explanation.

Test results reported relate only to the samples as received by the laboratory.
UNLESS OTHERWISE STATED, ALL SAMPLES WERE RECEIVED IN ACCEPTABLE CONDITION.
Analytical results in unsigned test reports with the DRAFT watermark are subject to change, pending final QC review.

ALS LABORATORY GROUP SOIL SALINITY CONVERSION

L884286

Lab ID	Sample ID					Lab ID	Sample ID				

"Calculations are as per:
Methods of Analysis for Soils, Plants and Waters
Homer D. Chapman and Parker F. Pratt
University of California, Riverside, Cl.
August, 1961."

ALS Laboratory Group Quality Control Report

Workorder: L884286 Report Date: 14-MAY-10

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
BTXS,F1-ED	**Water**							
Batch R1250104								
WG1101423-4 DUP		**L884284-7**						
Benzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	10-MAY-10
Toluene		<0.00075	<0.00075	RPD-NA	mg/L	N/A	30	10-MAY-10
EthylBenzene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	30	10-MAY-10
o-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	24	10-MAY-10
m+p-Xylene		<0.00050	<0.00050	RPD-NA	mg/L	N/A	24	10-MAY-10
Styrene		<0.0010	<0.0010	RPD-NA	mg/L	N/A	50	10-MAY-10
F1(C6-C10)		<0.10	<0.10	RPD-NA	mg/L	N/A	30	10-MAY-10
WG1101423-2 LCS								
Benzene			117		%		70-130	10-MAY-10
Toluene			103		%		70-130	10-MAY-10
EthylBenzene			108		%		70-130	10-MAY-10
o-Xylene			106		%		70-130	10-MAY-10
m+p-Xylene			109		%		70-130	10-MAY-10
Styrene			92		%		70-130	10-MAY-10
WG1101423-3 LCS								
F1(C6-C10)			117		%		70-130	10-MAY-10
WG1101423-1 MB								
Benzene			<0.00050		mg/L		0.0005	10-MAY-10
Toluene			<0.00075		mg/L		0.00075	10-MAY-10
EthylBenzene			<0.00050		mg/L		0.0005	10-MAY-10
o-Xylene			<0.00050		mg/L		0.0005	10-MAY-10
m+p-Xylene			<0.00050		mg/L		0.0005	10-MAY-10
Styrene			<0.0010		mg/L		0.001	10-MAY-10
F1(C6-C10)			<0.10		mg/L		0.1	10-MAY-10
WG1101423-5 MS		**L884328-4**						
Benzene			107		%		50-150	10-MAY-10
Toluene			100		%		50-150	10-MAY-10
EthylBenzene			98		%		50-150	10-MAY-10
o-Xylene			100		%		50-150	10-MAY-10
m+p-Xylene			99		%		50-150	10-MAY-10
Styrene			94		%		50-150	10-MAY-10
WG1101423-6 MS		**L884328-4**						
F1(C6-C10)			119		%		50-150	10-MAY-10
C-DIS-ORG-ED	**Water**							

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-ED	**Water**							
Batch R1250265								
WG1101087-12 CVS								
Dissolved Organic Carbon			104		%		80-160	07-MAY-10
WG1101087-16 CVS								
Dissolved Organic Carbon			96		%		80-160	10-MAY-10
WG1101087-21 CVS								
Dissolved Organic Carbon			93		%		80-160	10-MAY-10
WG1101087-4 CVS								
Dissolved Organic Carbon			111		%		80-160	07-MAY-10
WG1101087-17 DUP		**L884284-7**						
Dissolved Organic Carbon		<1.0	<1.0	RPD-NA	mg/L	N/A	20	10-MAY-10
WG1101087-19 DUP		**L884115-14**						
Dissolved Organic Carbon		19.4	19.4		mg/L	0.15	20	10-MAY-10
WG1101087-10 LCS								
Dissolved Organic Carbon			90		%		80-120	07-MAY-10
WG1101087-11 LCS								
Dissolved Organic Carbon			104		%		80-120	07-MAY-10
WG1101087-14 LCS								
Dissolved Organic Carbon			91		%		80-120	10-MAY-10
WG1101087-15 LCS								
Dissolved Organic Carbon			89		%		80-120	10-MAY-10
WG1101087-2 LCS								
Dissolved Organic Carbon			97		%		80-120	07-MAY-10
WG1101087-23 LCS								
Dissolved Organic Carbon			91		%		80-120	11-MAY-10
WG1101087-24 LCS								
Dissolved Organic Carbon			88		%		80-120	10-MAY-10
WG1101087-3 LCS								
Dissolved Organic Carbon			113		%		80-120	07-MAY-10
WG1101087-1 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	07-MAY-10
WG1101087-13 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	10-MAY-10
WG1101087-22 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	10-MAY-10
WG1101087-9 MB								
Dissolved Organic Carbon			<1.0		mg/L		1	07-MAY-10
WG1101087-18 MS		**L884284-7**						
Dissolved Organic Carbon			103		%		70-130	10-MAY-10

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
C-DIS-ORG-ED	**Water**							
Batch R1250265								
WG1101087-20 MS		**L884115-14**						
Dissolved Organic Carbon			99		%		70-130	10-MAY-10
CL-IC-ED	**Water**							
Batch R1250866								
WG1101366-3 DUP		**L884245-20**						
Chloride (Cl)		2.62	2.62		mg/L	0.12	20	08-MAY-10
WG1101366-5 DUP		**L884286-2**						
Chloride (Cl)		5.57	5.62		mg/L	0.76	20	08-MAY-10
WG1101366-7 DUP		**L884423-7**						
Chloride (Cl)		48.7	48.9		mg/L	0.23	20	08-MAY-10
WG1101366-2 LCS								
Chloride (Cl)			104		%		85-115	08-MAY-10
WG1101366-1 MB								
Chloride (Cl)			<0.50		mg/L		0.5	08-MAY-10
WG1101366-4 MS		**L884245-20**						
Chloride (Cl)			109		%		75-125	08-MAY-10
WG1101366-6 MS		**L884286-2**						
Chloride (Cl)			107		%		75-125	08-MAY-10
WG1101366-8 MS		**L884423-7**						
Chloride (Cl)			107		%		75-125	08-MAY-10
F-IC-ED	**Water**							
Batch R1250866								
WG1101366-5 DUP		**L884286-2**						
Fluoride (F)		0.251	0.245		mg/L	2.3	20	08-MAY-10
WG1101366-7 DUP		**L884423-7**						
Fluoride (F)		0.381	0.389		mg/L	2.1	20	08-MAY-10
WG1101366-2 LCS								
Fluoride (F)			107		%		85-115	08-MAY-10
WG1101366-1 MB								
Fluoride (F)			<0.050		mg/L		0.05	08-MAY-10
WG1101366-6 MS		**L884286-2**						
Fluoride (F)			105		%		75-125	08-MAY-10
WG1101366-8 MS		**L884423-7**						
Fluoride (F)			96		%		75-125	08-MAY-10
F2-ED	**Water**							

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
F2-ED	**Water**							
Batch R1252078								
WG1102214-2 LCS								
F2 (>C10-C16)			98		%		65-135	10-MAY-10
WG1102214-1 MB								
F2 (>C10-C16)			<0.25		mg/L		0.25	10-MAY-10
WG1102214-3 MS		**L884284-3**						
F2 (>C10-C16)			97		%		50-150	10-MAY-10
WG1102214-4 MS		**L884423-2**						
F2 (>C10-C16)			95		%		50-150	10-MAY-10
HG-D-CVAA-ED	**Water**							
Batch R1251386								
WG1101760-4 DUP		**L881912-1**						
Mercury (Hg)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	10-MAY-10
WG1101760-2 LCS								
Mercury (Hg)-Dissolved			104		%		80-120	10-MAY-10
WG1101760-3 LCSD		**WG1101760-2**						
Mercury (Hg)-Dissolved		104	100		%	4.0	20	10-MAY-10
WG1101760-1 MB								
Mercury (Hg)-Dissolved			<0.00010		mg/L		0.0001	10-MAY-10
WG1101760-5 MS		**L881912-1**						
Mercury (Hg)-Dissolved			106		%		70-130	10-MAY-10
MET-D-L-ICP-ED	**Water**							
Batch R1251293								
WG1101712-2 CRM		**EU-H-3_OPTWATER**						
Calcium (Ca)-Dissolved			104		%		80-120	11-MAY-10
Iron (Fe)-Dissolved			96		%		80-120	11-MAY-10
Magnesium (Mg)-Dissolved			102		%		80-120	11-MAY-10
Manganese (Mn)-Dissolved			103		%		80-120	11-MAY-10
Sodium (Na)-Dissolved			97		%		80-120	11-MAY-10
WG1101712-5 DUP		**L884286-7**						
Calcium (Ca)-Dissolved		93.1	94.1		mg/L	1.0	20	10-MAY-10
Iron (Fe)-Dissolved		2.03	2.04		mg/L	0.19	20	10-MAY-10
Magnesium (Mg)-Dissolved		27.6	27.5		mg/L	0.28	20	10-MAY-10
Manganese (Mn)-Dissolved		0.832	0.834		mg/L	0.32	20	10-MAY-10
Sodium (Na)-Dissolved		246	245		mg/L	0.42	20	10-MAY-10
WG1101712-1 MB								
Calcium (Ca)-Dissolved			<0.20		mg/L		0.2	10-MAY-10
							0.01	

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-L-ICP-ED	**Water**							
Batch R1251293								
WG1101712-1 MB								
Iron (Fe)-Dissolved			<0.010		mg/L		0.01	10-MAY-10
Magnesium (Mg)-Dissolved			<0.10		mg/L		0.1	10-MAY-10
Manganese (Mn)-Dissolved			<0.0020		mg/L		0.002	10-MAY-10
Sodium (Na)-Dissolved			<0.50		mg/L		0.5	10-MAY-10
WG1101712-6 MS		**L884286-7**						
Calcium (Ca)-Dissolved			73		%		70-130	10-MAY-10
Iron (Fe)-Dissolved			104		%		70-130	10-MAY-10
Magnesium (Mg)-Dissolved			102		%		70-130	10-MAY-10
Manganese (Mn)-Dissolved			100		%		70-130	10-MAY-10
Sodium (Na)-Dissolved			80		%		70-130	10-MAY-10
MET-D-L-MS-ED	**Water**							
Batch R1252646								
WG1102315-2 CRM		**1643E_WATER**						
Aluminum (Al)-Dissolved			99		%		80-120	11-MAY-10
Antimony (Sb)-Dissolved			98		%		80-120	11-MAY-10
Arsenic (As)-Dissolved			94		%		80-120	11-MAY-10
Barium (Ba)-Dissolved			89		%		80-120	11-MAY-10
Beryllium (Be)-Dissolved			92		%		80-120	11-MAY-10
Boron (B)-Dissolved			98		%		80-120	11-MAY-10
Cadmium (Cd)-Dissolved			95		%		80-120	11-MAY-10
Chromium (Cr)-Dissolved			96		%		80-120	11-MAY-10
Cobalt (Co)-Dissolved			97		%		80-120	11-MAY-10
Copper (Cu)-Dissolved			97		%		80-120	11-MAY-10
Lead (Pb)-Dissolved			95		%		80-120	11-MAY-10
Molybdenum (Mo)-Dissolved			99		%		80-120	11-MAY-10
Nickel (Ni)-Dissolved			97		%		80-120	11-MAY-10
Selenium (Se)-Dissolved			92		%		80-120	11-MAY-10
Thallium (Tl)-Dissolved			96		%		80-120	11-MAY-10
Vanadium (V)-Dissolved			94		%		80-120	11-MAY-10
Zinc (Zn)-Dissolved			93		%		80-120	11-MAY-10
WG1102315-3 DUP		**L884286-1**						
Aluminum (Al)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	11-MAY-10
Antimony (Sb)-Dissolved		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	11-MAY-10
Arsenic (As)-Dissolved		0.00154	0.00158		mg/L	2.9	20	11-MAY-10

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-L-MS-ED	**Water**							
Batch R1252646								
WG1102315-3 DUP		**L884286-1**						
Barium (Ba)-Dissolved		0.0380	0.0381		mg/L	0.34	20	11-MAY-10
Beryllium (Be)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	11-MAY-10
Boron (B)-Dissolved		0.116	0.118		mg/L	1.4	20	11-MAY-10
Cadmium (Cd)-Dissolved		<0.00010	<0.000050	RPD-NA	mg/L	N/A	20	11-MAY-10
Chromium (Cr)-Dissolved		<0.0050	0.00114		mg/L	8.7	20	11-MAY-10
Cobalt (Co)-Dissolved		0.00076	0.00077		mg/L	1.3	20	11-MAY-10
Copper (Cu)-Dissolved		<0.0010	<0.00060	RPD-NA	mg/L	N/A	20	11-MAY-10
Lead (Pb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-MAY-10
Molybdenum (Mo)-Dissolved		0.00079	0.00074		mg/L	5.9	20	11-MAY-10
Nickel (Ni)-Dissolved		0.0027	0.00251		mg/L	7.7	20	11-MAY-10
Selenium (Se)-Dissolved		<0.00040	0.00049	RPD-NA	mg/L	N/A	20	11-MAY-10
Silver (Ag)-Dissolved		<0.00010	0.00039		mg/L	19	20	11-MAY-10
Thallium (Tl)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-MAY-10
Titanium (Ti)-Dissolved		0.00079	0.00094		mg/L	17	20	11-MAY-10
Uranium (U)-Dissolved		0.00056	0.00055		mg/L	1.8	20	11-MAY-10
Vanadium (V)-Dissolved		0.00036	0.00031		mg/L	15	20	11-MAY-10
Zinc (Zn)-Dissolved		<0.0020	<0.0010	RPD-NA	mg/L	N/A	20	11-MAY-10
WG1102315-5 DUP		**L884286-5**						
Aluminum (Al)-Dissolved		<0.0050	<0.0050	RPD-NA	mg/L	N/A	20	11-MAY-10
Antimony (Sb)-Dissolved		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	11-MAY-10
Arsenic (As)-Dissolved		0.00162	0.00162		mg/L	0.49	20	11-MAY-10
Barium (Ba)-Dissolved		0.407	0.401		mg/L	1.4	20	11-MAY-10
Beryllium (Be)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	11-MAY-10
Boron (B)-Dissolved		0.254	0.248		mg/L	2.4	20	11-MAY-10
Cadmium (Cd)-Dissolved		<0.00010	<0.000050	RPD-NA	mg/L	N/A	20	11-MAY-10
Chromium (Cr)-Dissolved		<0.0050	0.00043		mg/L	5.5	20	11-MAY-10
Cobalt (Co)-Dissolved		0.00092	0.00090		mg/L	1.6	20	11-MAY-10
Copper (Cu)-Dissolved		<0.0010	<0.00060	RPD-NA	mg/L	N/A	20	11-MAY-10
Lead (Pb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-MAY-10
Molybdenum (Mo)-Dissolved		0.00219	0.00220		mg/L	0.78	20	11-MAY-10
Nickel (Ni)-Dissolved		0.0021	0.00207		mg/L	2.0	20	11-MAY-10
Selenium (Se)-Dissolved		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	11-MAY-10
Silver (Ag)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-MAY-10

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-L-MS-ED	**Water**							
Batch R1252646								
WG1102315-5 DUP		**L884286-5**						
Thallium (Tl)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-MAY-10
Titanium (Ti)-Dissolved		0.00070	0.00069		mg/L	1.7	20	11-MAY-10
Uranium (U)-Dissolved		0.00069	0.00067		mg/L	3.0	20	11-MAY-10
Vanadium (V)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-MAY-10
Zinc (Zn)-Dissolved		<0.0020	0.0015		mg/L	0.61	20	11-MAY-10
WG1102315-7 DUP		**L882699-2**						
Aluminum (Al)-Dissolved		0.109	0.110		mg/L	0.13	20	11-MAY-10
Antimony (Sb)-Dissolved		<0.00080	<0.00040	RPD-NA	mg/L	N/A	20	11-MAY-10
Arsenic (As)-Dissolved		<0.00040	<0.00040	RPD-NA	mg/L	N/A	20	11-MAY-10
Barium (Ba)-Dissolved		0.0124	0.0124		mg/L	0.23	20	11-MAY-10
Beryllium (Be)-Dissolved		<0.00050	<0.00050	RPD-NA	mg/L	N/A	20	11-MAY-10
Boron (B)-Dissolved		0.0605	0.0610		mg/L	0.88	20	11-MAY-10
Cadmium (Cd)-Dissolved		<0.00010	<0.000050	RPD-NA	mg/L	N/A	20	11-MAY-10
Chromium (Cr)-Dissolved		0.00050	0.00052		mg/L	4.1	20	11-MAY-10
Cobalt (Co)-Dissolved		0.00088	0.00087		mg/L	0.80	20	11-MAY-10
Copper (Cu)-Dissolved		0.00793	0.00804		mg/L	1.4	20	11-MAY-10
Lead (Pb)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	11-MAY-10
Molybdenum (Mo)-Dissolved		0.00300	0.00312		mg/L	3.8	20	11-MAY-10
Nickel (Ni)-Dissolved		0.00736	0.00743		mg/L	0.93	20	11-MAY-10
Selenium (Se)-Dissolved		N/A	<0.00040	RPD-NA	mg/L	N/A	20	11-MAY-10
Silver (Ag)-Dissolved		<0.00020	<0.00010	RPD-NA	mg/L	N/A	20	11-MAY-10
Thallium (Tl)-Dissolved		<0.000050	<0.000050	RPD-NA	mg/L	N/A	20	11-MAY-10
Titanium (Ti)-Dissolved		0.00141	0.00135		mg/L	4.0	20	11-MAY-10
Uranium (U)-Dissolved		0.00049	0.00050		mg/L	1.4	20	11-MAY-10
Vanadium (V)-Dissolved		0.00033	0.00033		mg/L	1.8	20	11-MAY-10
Zinc (Zn)-Dissolved		0.0056	0.0059		mg/L	0.91	20	11-MAY-10
WG1102315-1 MB								
Aluminum (Al)-Dissolved			<0.0050		mg/L		0.005	11-MAY-10
Antimony (Sb)-Dissolved			<0.00040		mg/L		0.0004	11-MAY-10
Arsenic (As)-Dissolved			<0.00040		mg/L		0.0004	11-MAY-10
Barium (Ba)-Dissolved			<0.00010		mg/L		0.0001	11-MAY-10
Beryllium (Be)-Dissolved			<0.00050		mg/L		0.0005	11-MAY-10
Boron (B)-Dissolved			<0.0020		mg/L		0.002	11-MAY-10

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-L-MS-ED	**Water**							
Batch R1252646								
WG1102315-1 MB								
Cadmium (Cd)-Dissolved			<0.000050		mg/L		0.00005	11-MAY-10
Chromium (Cr)-Dissolved			<0.00040		mg/L		0.0004	11-MAY-10
Cobalt (Co)-Dissolved			<0.00010		mg/L		0.0001	11-MAY-10
Copper (Cu)-Dissolved			<0.00060		mg/L		0.0006	11-MAY-10
Lead (Pb)-Dissolved			<0.00010		mg/L		0.0001	11-MAY-10
Molybdenum (Mo)-Dissolved			<0.00010		mg/L		0.0001	11-MAY-10
Nickel (Ni)-Dissolved			<0.00010		mg/L		0.0001	11-MAY-10
Selenium (Se)-Dissolved			<0.00040		mg/L		0.0004	11-MAY-10
Silver (Ag)-Dissolved			<0.00010		mg/L		0.0001	11-MAY-10
Thallium (Tl)-Dissolved			<0.000050		mg/L		0.00005	11-MAY-10
Titanium (Ti)-Dissolved			<0.00030		mg/L		0.0003	11-MAY-10
Uranium (U)-Dissolved			<0.00010		mg/L		0.0001	11-MAY-10
Vanadium (V)-Dissolved			<0.00010		mg/L		0.0001	11-MAY-10
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	11-MAY-10
WG1102315-4 MS		**L884286-1**						
Aluminum (Al)-Dissolved			100		%		70-130	11-MAY-10
Antimony (Sb)-Dissolved			98		%		70-130	11-MAY-10
Arsenic (As)-Dissolved			104		%		70-130	11-MAY-10
Barium (Ba)-Dissolved			100		%		70-130	11-MAY-10
Beryllium (Be)-Dissolved			101		%		70-130	11-MAY-10
Boron (B)-Dissolved			102		%		70-130	11-MAY-10
Cadmium (Cd)-Dissolved			101		%		70-130	11-MAY-10
Chromium (Cr)-Dissolved			101		%		70-130	11-MAY-10
Cobalt (Co)-Dissolved			104		%		70-130	11-MAY-10
Copper (Cu)-Dissolved			101		%		70-130	11-MAY-10
Lead (Pb)-Dissolved			97		%		70-130	11-MAY-10
Molybdenum (Mo)-Dissolved			108		%		70-130	11-MAY-10
Nickel (Ni)-Dissolved			103		%		70-130	11-MAY-10
Selenium (Se)-Dissolved			108		%		70-130	11-MAY-10
Silver (Ag)-Dissolved			91		%		70-130	11-MAY-10
Thallium (Tl)-Dissolved			98		%		70-130	11-MAY-10
Titanium (Ti)-Dissolved			100		%		70-130	11-MAY-10
Uranium (U)-Dissolved			96		%		70-130	11-MAY-10
Vanadium (V)-Dissolved			101		%		70-130	11-MAY-10

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-L-MS-ED	**Water**							
Batch R1252646								
WG1102315-4 MS		**L884286-1**						
Zinc (Zn)-Dissolved			100		%		70-130	11-MAY-10
WG1102315-6 MS		**L884286-5**						
Aluminum (Al)-Dissolved			102		%		70-130	11-MAY-10
Antimony (Sb)-Dissolved			98		%		70-130	11-MAY-10
Arsenic (As)-Dissolved			112		%		70-130	11-MAY-10
Barium (Ba)-Dissolved			109		%		70-130	11-MAY-10
Beryllium (Be)-Dissolved			102		%		70-130	11-MAY-10
Boron (B)-Dissolved			102		%		70-130	11-MAY-10
Cadmium (Cd)-Dissolved			107		%		70-130	11-MAY-10
Chromium (Cr)-Dissolved			107		%		70-130	11-MAY-10
Cobalt (Co)-Dissolved			111		%		70-130	11-MAY-10
Copper (Cu)-Dissolved			110		%		70-130	11-MAY-10
Lead (Pb)-Dissolved			99		%		70-130	11-MAY-10
Molybdenum (Mo)-Dissolved			101		%		70-130	11-MAY-10
Nickel (Ni)-Dissolved			111		%		70-130	11-MAY-10
Selenium (Se)-Dissolved			117		%		70-130	11-MAY-10
Silver (Ag)-Dissolved			102		%		70-130	11-MAY-10
Thallium (Tl)-Dissolved			100		%		70-130	11-MAY-10
Titanium (Ti)-Dissolved			102		%		70-130	11-MAY-10
Uranium (U)-Dissolved			96		%		70-130	11-MAY-10
Vanadium (V)-Dissolved			107		%		70-130	11-MAY-10
Zinc (Zn)-Dissolved			110		%		70-130	11-MAY-10
WG1102315-8 MS		**L882699-2**						
Aluminum (Al)-Dissolved			97		%		70-130	11-MAY-10
Antimony (Sb)-Dissolved			98		%		70-130	11-MAY-10
Arsenic (As)-Dissolved			101		%		70-130	11-MAY-10
Barium (Ba)-Dissolved			99		%		70-130	11-MAY-10
Beryllium (Be)-Dissolved			103		%		70-130	11-MAY-10
Boron (B)-Dissolved			104		%		70-130	11-MAY-10
Cadmium (Cd)-Dissolved			100		%		70-130	11-MAY-10
Chromium (Cr)-Dissolved			98		%		70-130	11-MAY-10
Cobalt (Co)-Dissolved			102		%		70-130	11-MAY-10
Copper (Cu)-Dissolved			100		%		70-130	11-MAY-10
Lead (Pb)-Dissolved			101		%		70-130	11-MAY-10

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
MET-D-L-MS-ED	**Water**							
Batch R1252646								
WG1102315-8 MS		**L882699-2**						
Molybdenum (Mo)-Dissolved			102		%		70-130	11-MAY-10
Nickel (Ni)-Dissolved			101		%		70-130	11-MAY-10
Selenium (Se)-Dissolved			101		%		70-130	11-MAY-10
Silver (Ag)-Dissolved			98		%		70-130	11-MAY-10
Thallium (Tl)-Dissolved			101		%		70-130	11-MAY-10
Titanium (Ti)-Dissolved			99		%		70-130	11-MAY-10
Uranium (U)-Dissolved			101		%		70-130	11-MAY-10
Vanadium (V)-Dissolved			98		%		70-130	11-MAY-10
Zinc (Zn)-Dissolved			101		%		70-130	11-MAY-10
Batch R1253649								
WG1102893-2 CRM		**1643E_WATER**						
Zinc (Zn)-Dissolved			97		%		80-120	12-MAY-10
WG1102893-3 DUP		**L884530-19**						
Silver (Ag)-Dissolved		<0.00010	<0.00010	RPD-NA	mg/L	N/A	20	12-MAY-10
Zinc (Zn)-Dissolved		<0.0020	0.0017		mg/L	18	20	12-MAY-10
WG1102893-7 DUP		**L884115-14**						
Silver (Ag)-Dissolved		N/A	0.00017	J	mg/L	0.00004	0.0002	12-MAY-10
Zinc (Zn)-Dissolved		0.0070	0.0074		mg/L	5.6	20	12-MAY-10
WG1102893-1 MB								
Silver (Ag)-Dissolved			<0.00010		mg/L		0.0001	12-MAY-10
Zinc (Zn)-Dissolved			<0.0010		mg/L		0.001	12-MAY-10
WG1102893-4 MS		**L884530-19**						
Silver (Ag)-Dissolved			93		%		70-130	12-MAY-10
Zinc (Zn)-Dissolved			97		%		70-130	12-MAY-10
WG1102893-8 MS		**L884115-14**						
Silver (Ag)-Dissolved			91		%		70-130	12-MAY-10
Zinc (Zn)-Dissolved			90		%		70-130	12-MAY-10
NH4-DIS-ED	**Water**							
Batch R1251690								
WG1102079-5 DUP		**L883773-3**						
Ammonia as N, Dissolved		<0.050	<0.050	RPD-NA	mg/L	N/A	25	11-MAY-10
WG1102079-6 DUP		**L884286-7**						
Ammonia as N, Dissolved		2.00	2.00		mg/L	0.0	25	11-MAY-10
NO2-IC-ED	**Water**							

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
NO2-IC-ED	**Water**							
Batch R1250866								
WG1101366-3 DUP		**L884245-20**						
Nitrite (as N)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-MAY-10
WG1101366-5 DUP		**L884286-2**						
Nitrite (as N)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-MAY-10
WG1101366-7 DUP		**L884423-7**						
Nitrite (as N)		0.080	0.092		mg/L	14	20	08-MAY-10
WG1101366-2 LCS								
Nitrite (as N)			99		%		85-115	08-MAY-10
WG1101366-1 MB								
Nitrite (as N)			<0.050		mg/L		0.05	08-MAY-10
WG1101366-4 MS		**L884245-20**						
Nitrite (as N)			93		%		75-125	08-MAY-10
WG1101366-6 MS		**L884286-2**						
Nitrite (as N)			90		%		75-125	08-MAY-10
WG1101366-8 MS		**L884423-7**						
Nitrite (as N)			97		%		75-125	08-MAY-10
NO3-IC-ED	**Water**							
Batch R1250866								
WG1101366-3 DUP		**L884245-20**						
Nitrate (as N)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-MAY-10
WG1101366-5 DUP		**L884286-2**						
Nitrate (as N)		<0.050	<0.050	RPD-NA	mg/L	N/A	20	08-MAY-10
WG1101366-7 DUP		**L884423-7**						
Nitrate (as N)		8.07	8.08		mg/L	0.090	20	08-MAY-10
WG1101366-2 LCS								
Nitrate (as N)			98		%		85-115	08-MAY-10
WG1101366-1 MB								
Nitrate (as N)			<0.050		mg/L		0.05	08-MAY-10
WG1101366-4 MS		**L884245-20**						
Nitrate (as N)			94		%		75-125	08-MAY-10
WG1101366-6 MS		**L884286-2**						
Nitrate (as N)			93		%		75-125	08-MAY-10
WG1101366-8 MS		**L884423-7**						
Nitrate (as N)			N/A	MS-B	%		-	08-MAY-10
PH/EC/ALK-ED	**Water**							

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH/EC/ALK-ED	**Water**							
Batch R1250112								
WG1100863-5 DUP		**L883915-3**						
pH		7.81	7.79	J	pH	0.02	0.2	07-MAY-10
Conductivity (EC)		116	116		uS/cm	0.17	10	07-MAY-10
Bicarbonate (HCO3)		70.5	71.4		mg/L	1.2	25	07-MAY-10
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	07-MAY-10
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	07-MAY-10
Alkalinity, Total (as CaCO3)		57.8	58.5		mg/L	1.2	6.5	07-MAY-10
WG1100863-6 DUP		**L884227-3**						
pH		7.25	7.18	J	pH	0.07	0.2	07-MAY-10
Conductivity (EC)		1160	1170		uS/cm	0.34	10	07-MAY-10
Bicarbonate (HCO3)		431	438		mg/L	1.6	25	07-MAY-10
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	07-MAY-10
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	07-MAY-10
Alkalinity, Total (as CaCO3)		353	359		mg/L	1.6	6.5	07-MAY-10
WG1100863-7 DUP		**L884245-23**						
pH		8.00	8.01	J	pH	0.01	0.2	07-MAY-10
Conductivity (EC)		936	934		uS/cm	0.21	10	07-MAY-10
Bicarbonate (HCO3)		555	556		mg/L	0.17	25	07-MAY-10
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	07-MAY-10
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	07-MAY-10
Alkalinity, Total (as CaCO3)		455	456		mg/L	0.17	6.5	07-MAY-10
WG1100863-8 DUP		**L884286-7**						
pH		8.17	8.19	J	pH	0.01	0.2	08-MAY-10
Conductivity (EC)		1540	1540		uS/cm	0.0	10	08-MAY-10
Bicarbonate (HCO3)		641	642		mg/L	0.17	25	08-MAY-10
Carbonate (CO3)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	08-MAY-10
Hydroxide (OH)		<5.0	<5.0	RPD-NA	mg/L	N/A	25	08-MAY-10
Alkalinity, Total (as CaCO3)		526	526		mg/L	0.17	6.5	08-MAY-10
WG1100863-2 LCS								
Conductivity (EC)			100		%		90-110	07-MAY-10
WG1100863-3 LCS								
pH			7.00		pH		6.9-7.1	07-MAY-10
WG1100863-4 LCS								
Alkalinity, Total (as CaCO3)			100		%		85-115	07-MAY-10
WG1100863-1 MB								

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
PH/EC/ALK-ED	**Water**							
Batch R1250112								
WG1100863-1 MB								
Bicarbonate (HCO3)			<5.0		mg/L		5	07-MAY-10
Carbonate (CO3)			<5.0		mg/L		5	07-MAY-10
Hydroxide (OH)			<5.0		mg/L		5	07-MAY-10
Alkalinity, Total (as CaCO3)			<5.0		mg/L		5	07-MAY-10
PHENOLS-4AAP-ED	**Water**							
Batch R1251445								
WG1101996-4 DUP		**L884115-7**						
Phenols (4AAP)		0.0031	0.0033		mg/L	6.3	9.8	10-MAY-10
WG1101996-5 DUP		**L884115-14**						
Phenols (4AAP)		0.0022	0.0022		mg/L	0.0	9.8	10-MAY-10
WG1101996-7 DUP		**L884284-7**						
Phenols (4AAP)		<0.0010	<0.0010	RPD-NA	mg/L	N/A	9.8	10-MAY-10
WG1101996-3 LCS								
Phenols (4AAP)			108		%		85-115	10-MAY-10
WG1101996-2 MB								
Phenols (4AAP)			<0.0010		mg/L		0.001	10-MAY-10
WG1101996-6 MS		**L884115-14**						
Phenols (4AAP)			91		%		76-124	10-MAY-10
PO4-ED	**Water**							
Batch R1251845								
WG1102292-3 DUP		**L884596-1**						
Orthophosphate (PO4-P)		0.911	0.918		mg/L	0.82	20	10-MAY-10
WG1102292-5 DUP		**L884284-4**						
Orthophosphate (PO4-P)		<0.010	<0.010	RPD-NA	mg/L	N/A	20	10-MAY-10
WG1102292-2 LCS								
Orthophosphate (PO4-P)			97		%		80-120	10-MAY-10
WG1102292-1 MB								
Orthophosphate (PO4-P)			<0.010		mg/L		0.01	10-MAY-10
WG1102292-4 MS		**L884596-1**						
Orthophosphate (PO4-P)			N/A	MS-B	%		-	10-MAY-10
WG1102292-6 MS		**L884284-4**						
Orthophosphate (PO4-P)			93		%		70-130	10-MAY-10
SO4-IC-ED	**Water**							

ALS Laboratory Group Quality Control Report

Client: WORLEYPARSONS
705 - 10240 124 ST NW
EDMONTON AB T5N 3W6
Contact: KEN SOMMERSTAD

Test	Matrix	Reference	Result	Qualifier	Units	RPD	Limit	Analyzed
SO4-IC-ED	**Water**							
Batch R1250866								
WG1101366-3 DUP		**L884245-20**						
Sulfate (SO4)		90.5	90.3		mg/L	0.22	20	08-MAY-10
WG1101366-5 DUP		**L884286-2**						
Sulfate (SO4)		342	347		mg/L	1.3	20	08-MAY-10
WG1101366-7 DUP		**L884423-7**						
Sulfate (SO4)		677	680		mg/L	0.57	20	08-MAY-10
WG1101366-2 LCS								
Sulfate (SO4)			104		%		85-115	08-MAY-10
WG1101366-1 MB								
Sulfate (SO4)			<0.50		mg/L		0.5	08-MAY-10
WG1101366-4 MS		**L884245-20**						
Sulfate (SO4)			105		%		75-125	08-MAY-10
WG1101366-6 MS		**L884286-2**						
Sulfate (SO4)			N/A	MS-B	%		-	08-MAY-10
WG1101366-8 MS		**L884423-7**						
Sulfate (SO4)			N/A	MS-B	%		-	08-MAY-10

ALS Laboratory Group Quality Control Report

Legend:

Limit	99% Confidence Interval (Laboratory Control Limits)
DUP	Duplicate
RPD	Relative Percent Difference
N/A	Not Available
LCS	Laboratory Control Sample
SRM	Standard Reference Material
MS	Matrix Spike
MSD	Matrix Spike Duplicate
ADE	Average Desorption Efficiency
MB	Method Blank
IRM	Internal Reference Material
CRM	Certified Reference Material
CCV	Continuing Calibration Verification
CVS	Calibration Verification Standard
LCSD	Laboratory Control Sample Duplicate

Sample Parameter Qualifier Definitions:

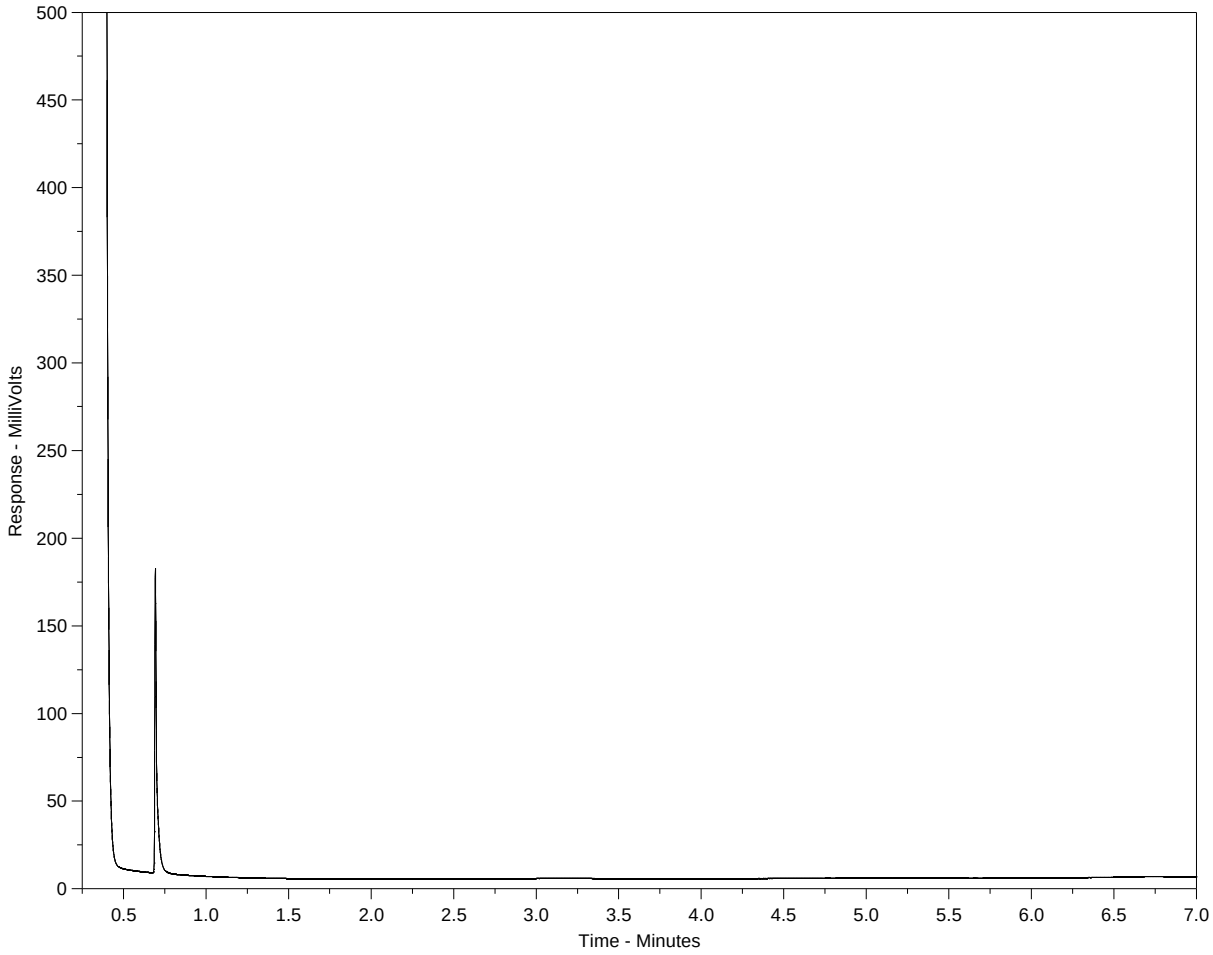
Qualifier	Description
J	Duplicate results and limits are expressed in terms of absolute difference.
MS-B	Matrix Spike recovery could not be accurately calculated due to high analyte background in sample.
RPD-NA	Relative Percent Difference Not Available due to result(s) being less than detection limit.

The ALS Quality Control Report is provided to ALS clients upon request. ALS includes comprehensive QC checks with every analysis to ensure our high standards of quality are met. Each QC result has a known or expected target value, which is compared against pre-determined data quality objectives to provide confidence in the accuracy of associated test results.

Please note that this report may contain QC results from anonymous Sample Duplicates and Matrix Spikes that do not originate from this Work Order.

Hydrocarbon Distribution Report

ALS Sample ID: **L884286-1**
Client ID: **MW-03**



<nC10----------nC16----------nC34----------nC50->
<----------Gasoline----------> <----------Heavy Oils---------->
|----------Diesel----------|

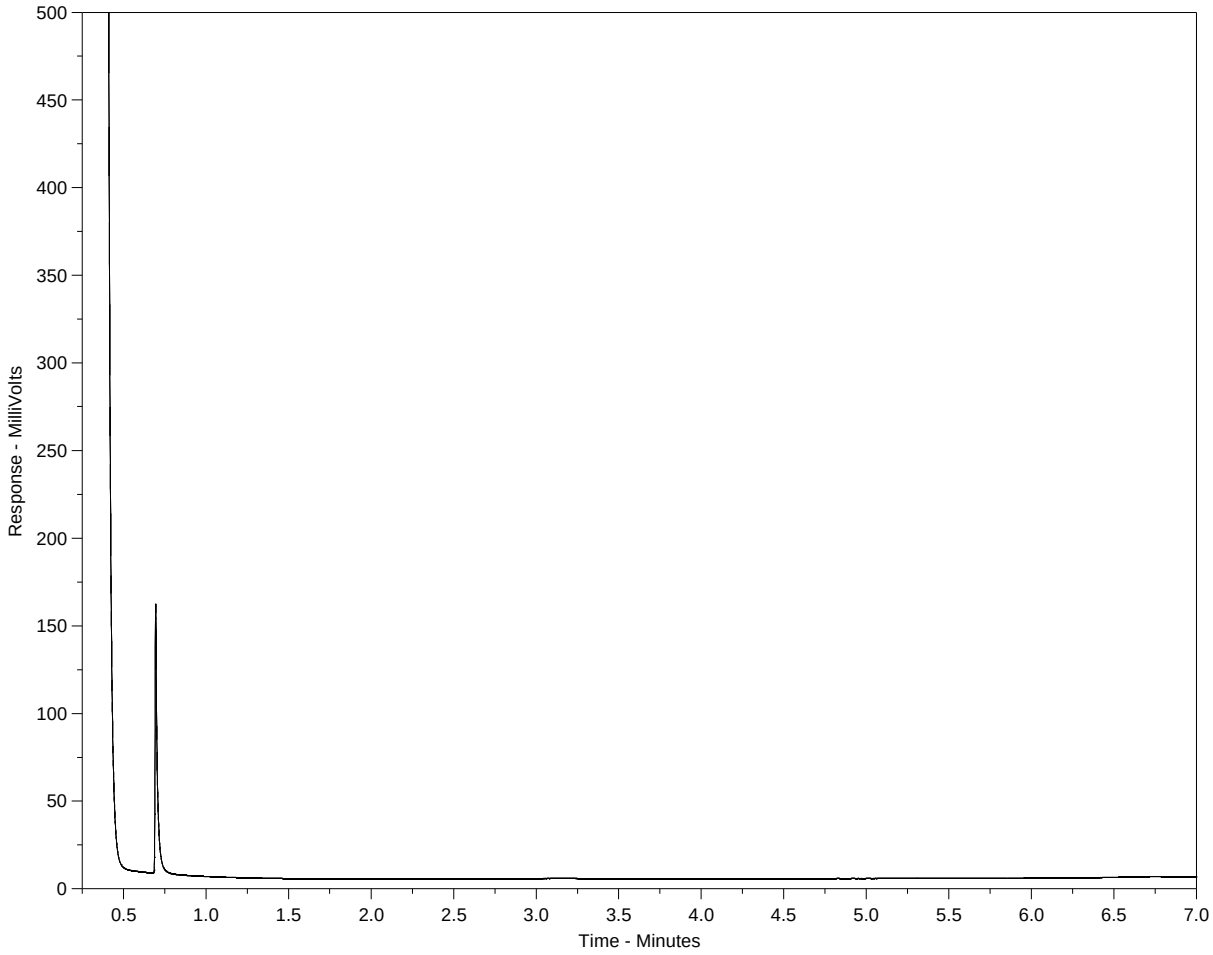
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (December 2007 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: **L884286-2**
Client ID: **MW-09**



<nC10----------nC16----------nC34----------nC50->
<----------Gasoline----------> <----------Heavy Oils---------->
|----------Diesel----------|

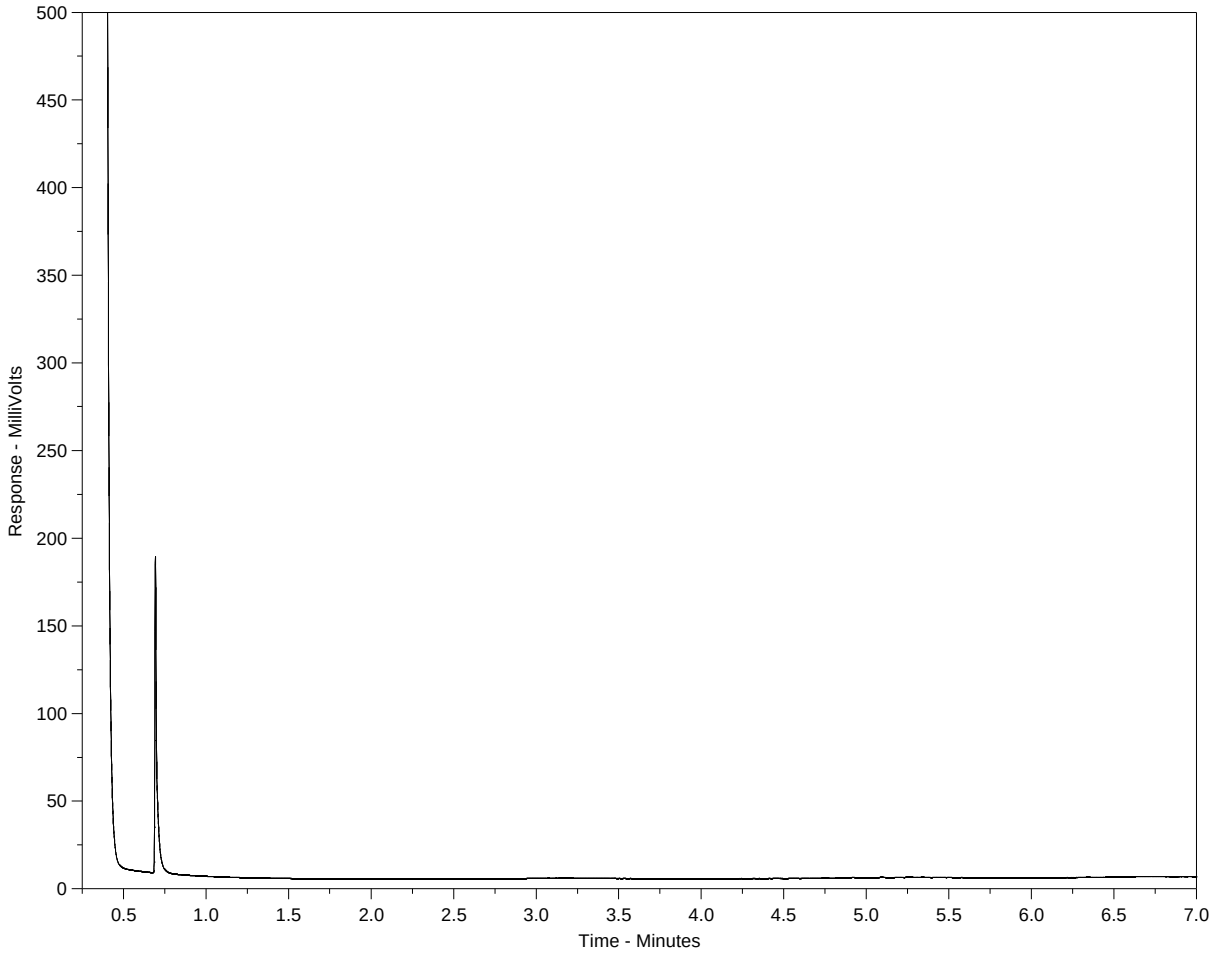
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (December 2007 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: **L884286-3**
Client ID: **MW-06**



<nC10----------nC16----------nC34----------nC50->
<----------Gasoline----------> <----------Heavy Oils---------->
|----------Diesel----------|

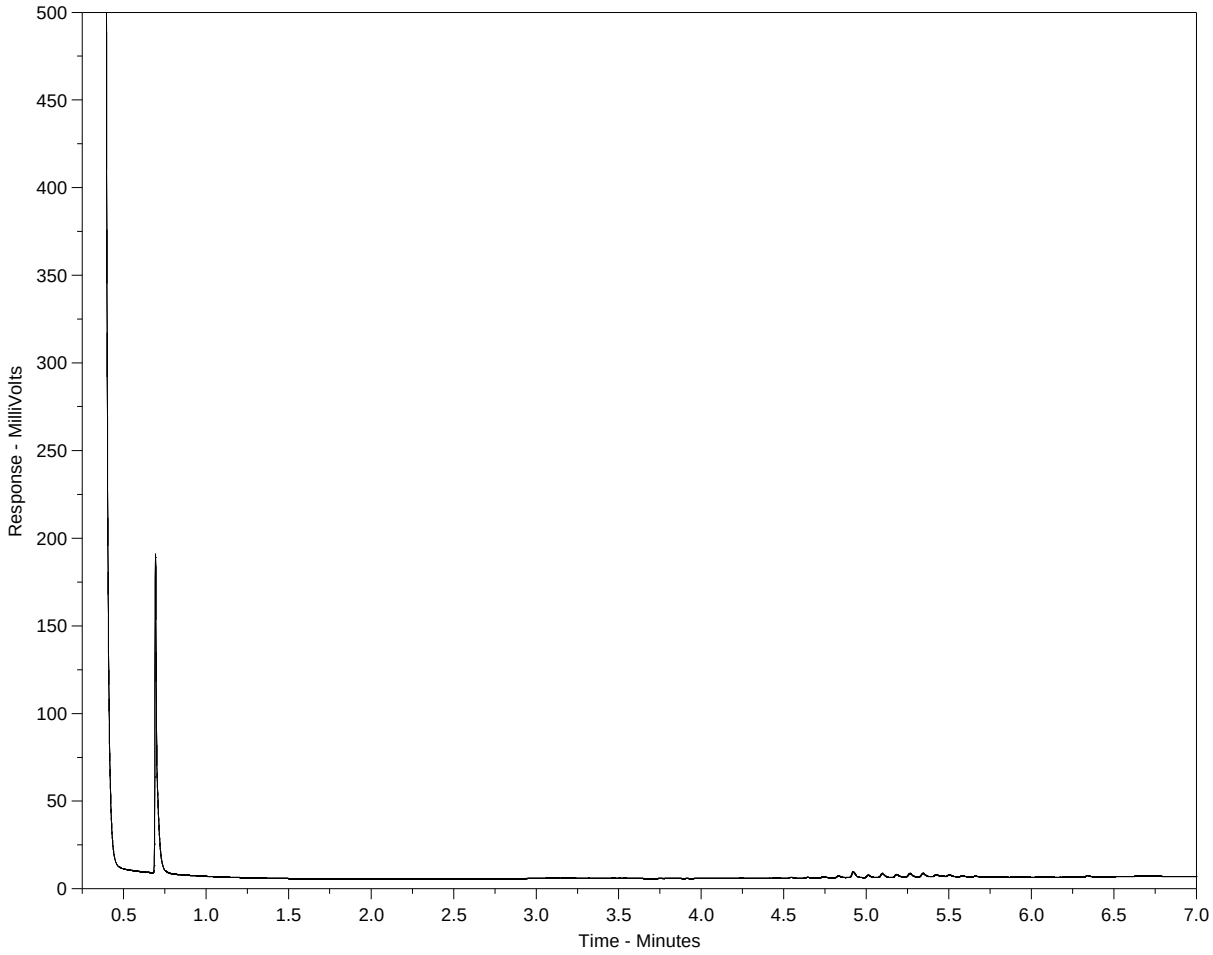
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (December 2007 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: **L884286-4**
Client ID: **MW-12**



<nC10----------nC16----------nC34----------nC50->
<----------Gasoline----------> <----------Heavy Oils---------->
|----------Diesel----------|

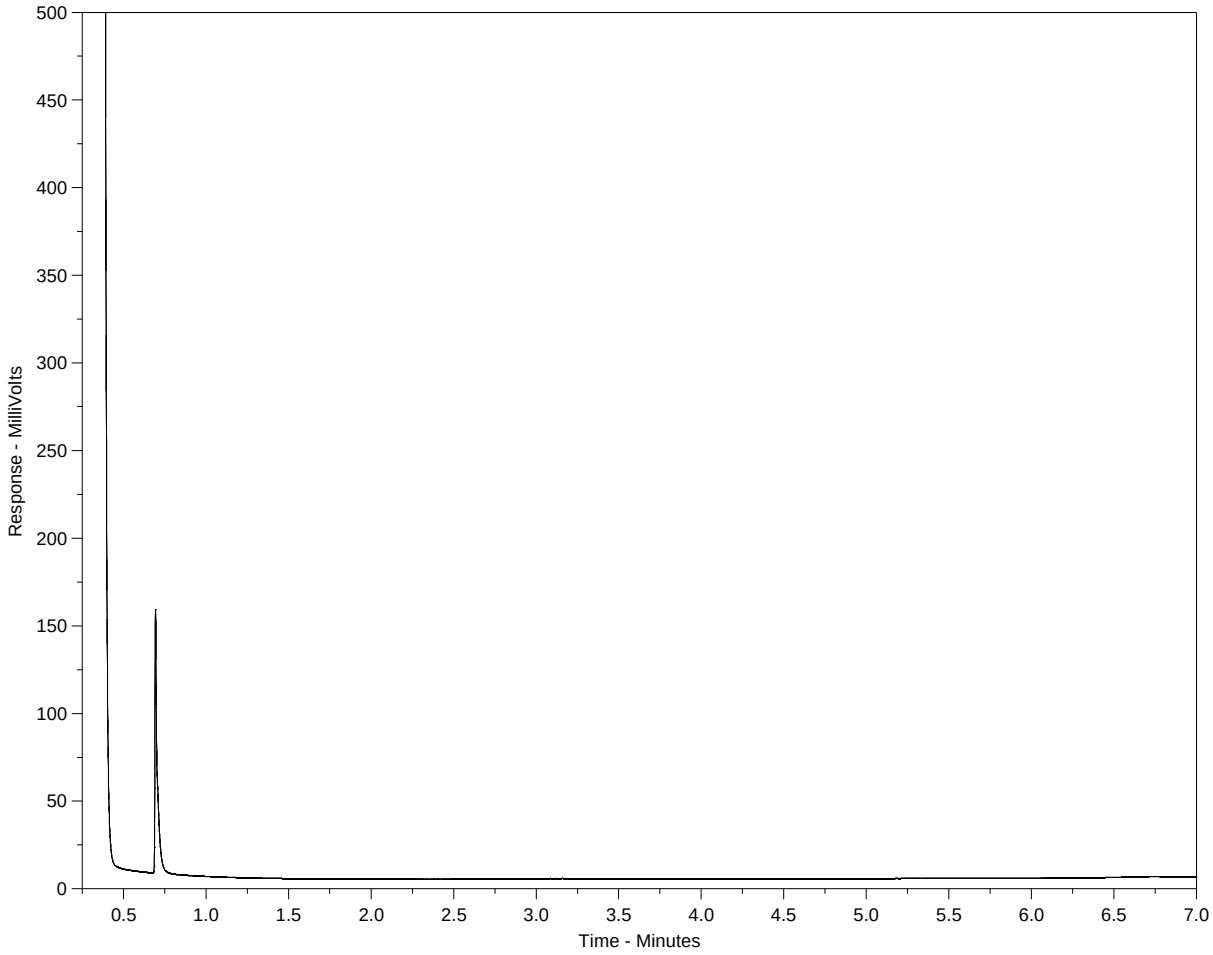
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (December 2007 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: **L884286-5**
Client ID: **MW-13**



<nC10----------nC16----------nC34----------nC50->
<----------Gasoline----------> <----------Heavy Oils---------->
|----------Diesel----------|

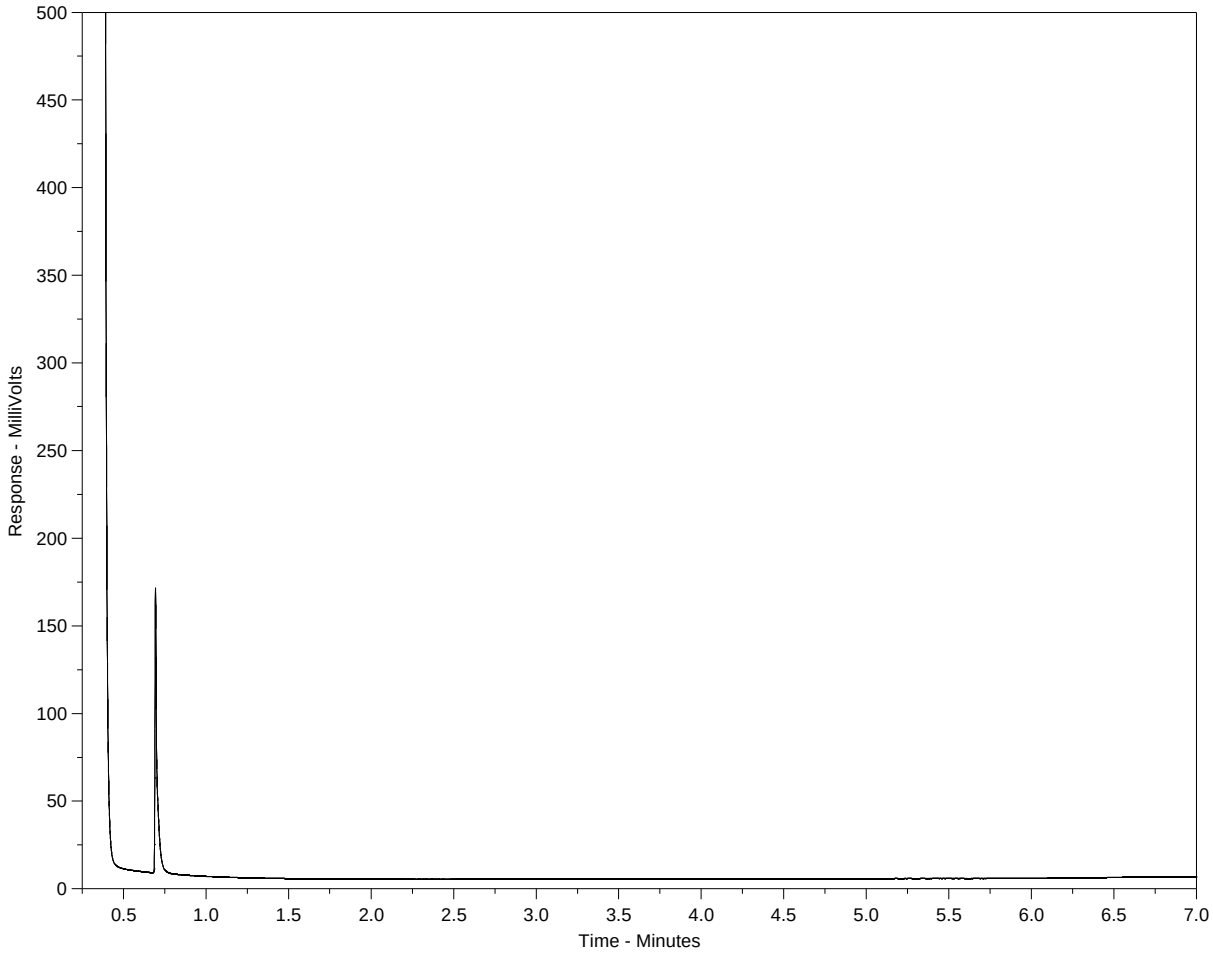
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (December 2007 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: **L884286-6**
Client ID: **MW-04**



<nC10----------nC16----------nC34----------nC50->
<----------Gasoline----------> <----------Heavy Oils---------->
|----------Diesel----------|

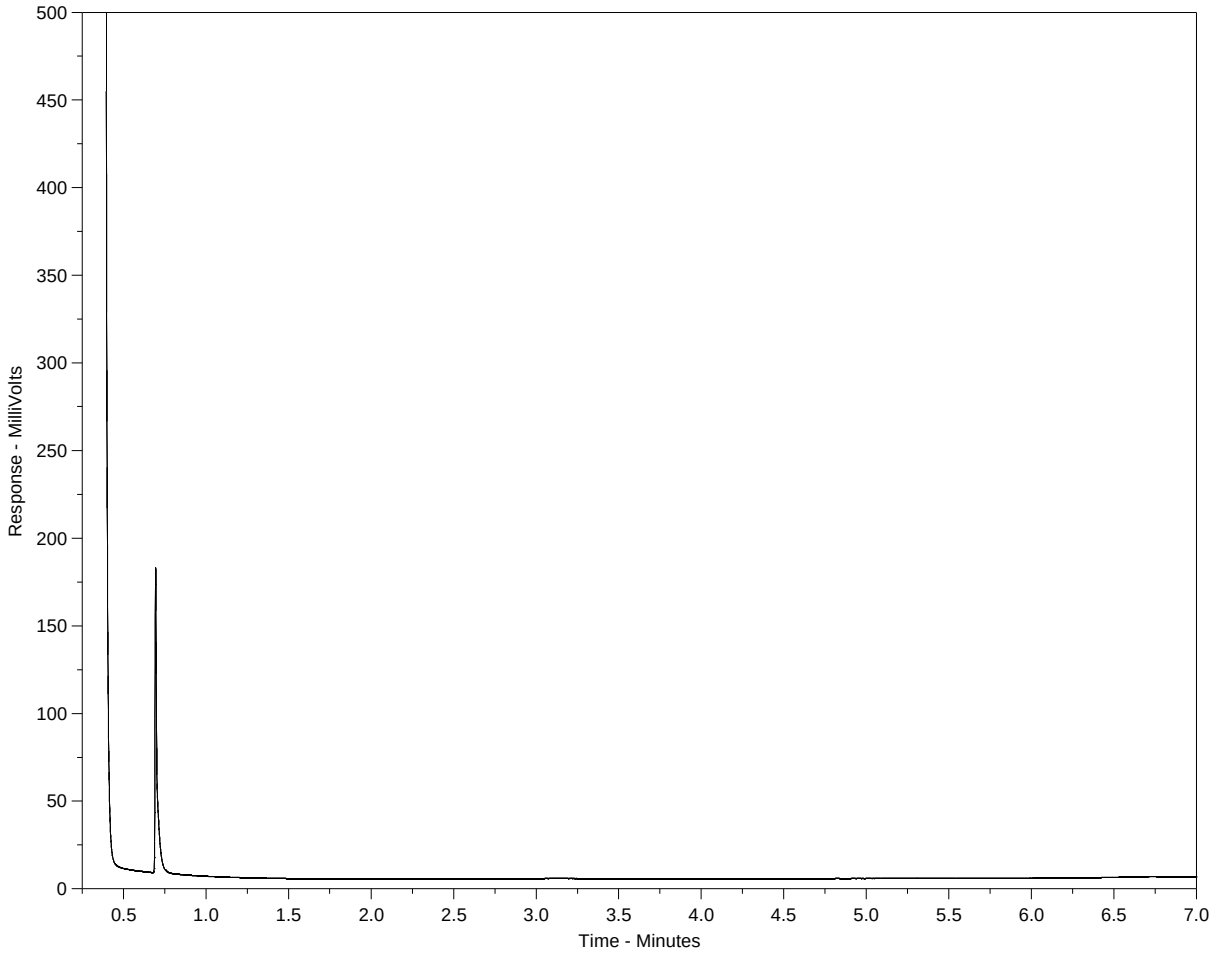
The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (December 2007 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

Hydrocarbon Distribution Report

ALS Sample ID: **L884286-7**
Client ID: **DUP II**



<nC10----------nC16----------nC34----------nC50->
<----------Gasoline----------> <----------Heavy Oils---------->
|----------Diesel----------|

The Canada Wide Standard Hydrocarbon Distribution Report is intended to assist you in characterizing hydrocarbon products that may be present in your sample. The scale at the bottom of the chromatogram indicates the approximate retention times of common petroleum products as well as a number of specified n-alkane hydrocarbon marker compounds. Comparison of this report with those of reference standards may also assist in characterizing hydrocarbons present in the sample.

Peak heights in this report are a function of the sample concentration, the sample amount extracted, the sample dilution factor, and the scale at left.

Note: This chromatogram was produced with a high temperature GC method that is specific to the Canada-Wide Standard method (December 2007 version). Note that retention times and distribution profiles from reports produced using different GC programs will differ.

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
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01006

COC # 1006

Page 1 of 2

Report To		Report Format / Distribution		Service Requested (Rush for routine analysis subject to availability)
Company:	WorleyParsons	☑ Standard ☐ Other		◉ Regular (Default)
Contact:	Ken Sommerstad	☑ PDF ☑ Excel ☑ Digital ☐ Fax		○ Priority (Specify Date Required → →) Surcharges apply
Address:	Suite 705, 10240 - 124th Street	Email 1:	ken.sommerstad@worleyparsons.com	○ Emergency (1 Business Day) - 100% Surcharge
	Edmonton, Alberta, T5N 3W6	Email 2:	edm.chemistry@worleyparsons.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	Fax:			
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**		**Analysis Request**
Company:		Job #:	E00100101	Please indicate below Filtered, Preserved or both (F, P, F/P)
Contact:		PO / AFE:		
Address:		LSD:		
Phone:	Fax:	Quote #:	Q23924	
		ALS Contact:	Maureen Olinek	Sampler: BD/KS

Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Routine+PO4+F	BTEX F1, F2	Phenols	DOC	Dissolved Ammonia	Dissolved Metals							Number of Containers
						P	F/P	F/P	F/P							
MW-03	06-May-10	8:00	Groundwater	X	X	X	X	X	X							10
MW-09	06-May-10	9:15	Groundwater	X	X	X	X	X	X							10
MW-06	06-May-10	10:30	Groundwater	X	X	X	X	X	X							10
MW-12	06-May-10	12:00	Groundwater	X	X	X	X	X	X							10

Special Instructions / Regulations / Hazardous Details

Please include all dissolved metals on quote
ABT1

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (ALS use only)				SHIPMENT VERIFICATION (ALS use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Ken Sommerstad	07-May-10	12:17	RS	7-MAY-10	12:18	23 °C				

GENF 18.02 Front

ALS Laboratory Group
ANALYTICAL CHEMISTRY & TESTING SERVICES

Environmental Division

Chain of Custody / Analytical Request Form

Canada Toll Free: 1 800 668 9878
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COC # 1006

Report To		**Report Format / Distribution**	**Service Requested** (Rush for routine analysis subject to availability)
Company:	WorleyParsons	☑ Standard ☐ Other	◉ Regular (Default)
Contact:	Ken Sommerstad	☑ PDF ☑ Excel ☑ Digital ☐ Fax	○ Priority (Specify Date Required → →) Surcharges apply
Address:	Suite 705, 10240 - 124th Street	Email 1: ken.sommerstad@worleyparsons.com	○ Emergency (1 Business Day) - 100% Surcharge
	Edmonton, Alberta, T5N 3W6	Email 2: edm.chemistry@worleyparsons.com	○ For Emergency < 1 Day, ASAP or Weekend - Contact ALS
Phone:	Fax:		**Analysis Request**
Invoice To	Same as Report ? ☑ Yes ☐ No	**Client / Project Information**	Please indicate below Filtered, Preserved or both (F, P, F/P)
Company:		Job #: E00100101	
Contact:		PO / AFE:	
Address:		LSD:	
Phone:	Fax:	Quote #: Q23924	
		ALS Contact: Maureen Olinek	Sampler: BD/KS

Sample Identification (This description will appear on the report)	Date (dd-mmm-yy)	Time (hh:mm)	Sample Type	Routine+PO4+F	BTEX F1, F2	Phenols	DOC	Dissolved Ammonia	Dissolved Metals							Number of Containers
						P	F/P	F/P	F/P							
MW-13	06-May-10	13:15	Groundwater	X	X	X	X	X	X							10
MW-04	06-May-10	15:40	Groundwater	X	X	X	X	X	X							10
DUP II	06-May-10	12:00	Groundwater	X	X	X	X	X	X							10

Special Instructions / Regulations / Hazardous Details

Please include all dissolved metals on quote
ABT1

Failure to complete all portions of this form may delay analysis. Please fill in this form LEGIBLY.
By the use of this form the user acknowledges and agrees with the Terms and Conditions as provided on a separate Excel tab.
Also provided on another Excel tab are the ALS location addresses, phone numbers and sample container / preservation / holding time table for common analyses.

SHIPMENT RELEASE (client use)			SHIPMENT RECEPTION (ALS use only)				SHIPMENT VERIFICATION (ALS use only)			
Released by:	Date (dd-mmm-yy)	Time (hh-mm)	Received by:	Date:	Time:	Temperature:	Verified by:	Date:	Time:	Observations: Yes / No ? If Yes add SIF
Ken Sommerstad	07-May-10	12:17	RS	7-MAY-10	12:18	°C				

Appendix 5 Mann-Kendall/Sen's Slope Analysis and Hydrochemical Control Charts

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Appendix 5 - Table 1

pH Trend Analysis:
Mann Kendall and Sen's Slope

Filtered Trend Results, Probability > 95% AND Slope > +/-10%/year

Location	Count	Probability	Slope (mg/L per year)	Normalized slope (%/year)	Min (mg/L)	Median (mg/L)	Max (mg/L)

Full Mann-Kendall Analysis, Sorted by Slope

Location	Count	Probability	Slope (mg/L per year)	Normalized slope (%/year)	Min (mg/L)	Median (mg/L)	Max (mg/L)
MW-10	7	0.845	0.06640934	0.8624591	7.5	7.7	8.07
MW-08	7	0.764	0.0494283	0.641926	7.5	7.7	8.04
MW-04	7	0.764	0.04681185	0.6079461	7.5	7.7	8.01
MW-12	7	0.6665	0.04447195	0.5701532	7.4	7.8	8.13
MW-03	7	0.764	0.0412301	0.528591	7.4	7.8	8.03
MW-11	7	0.764	0.03206508	0.4164297	7.4	7.7	8.04
MW-09	7	0.614	0.01563267	0.1954083	7.73	8	8.17
MW-01	7	0.557	0.01540037	0.1974406	7.67	7.8	8.06
MW-06	7	0.557	0.0133954	0.1739662	7.47	7.7	8.06
MW-13	7	0.6665	0.007047848	0.0880981	7.8	8	8.22
MW-02	7	0	0	0	7.36	7.9	7.97
MW-05	7	0	0	0	7.58	7.7	8.1
MW-07	7	0	0	0	7.19	7.5	7.9

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Appendix 5 - Table 2

Chloride Trend Analysis:
Mann Kendall and Sen's Slope

Filtered Trend Results, Probability > 95% AND Slope > +/-10%/year

Location	Count	Probability	Slope (mg/L per year)	Normalized slope (%/year)	Min (mg/L)	Median (mg/L)	Max (mg/L)
MW-05	7	0.9966	2.627698	11.94408	15	22	30.6

Full Mann-Kendall Analysis, Sorted by Slope

Location	Count	Probability	Slope (mg/L per year)	Normalized slope (%/year)	Min (mg/L)	Median (mg/L)	Max (mg/L)
MW-05	7	0.9966	2.627698	11.94408	15	22	30.6
MW-03	7	0.932	0.9701195	2.77177	31	35	44.3
MW-11	7	0.614	0.4857048	4.857048	8	10	16
MW-12	7	0.614	0.01280685	0.182955	5	7	8
MW-10	7	0	0	0	0.5	2	3
MW-13	7	0	0	0	2	2.15	4
MW-01	7	0.6665	-0.1044661	-2.611654	2	4	5
MW-09	7	0.719	-0.2917332	-4.86222	4	6	7
MW-08	7	0.932	-0.3036453	-10.12151	1.43	3	4
MW-06	7	0.6665	-0.3972837	-4.701582	3	8.45	13
MW-07	7	0.5	-0.427193	-3.23631	9	13.2	18
MW-02	7	0.845	-0.5867305	-4.513311	11.6	13	38
MW-04	7	0.5	-1.157975	-0.7470807	131	155	200

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Appendix 5 - Table 3

Iron Trend Analysis:
Mann Kendall and Sen's Slope

Filtered Trend Results, Probability > 95% AND Slope > +/-10%/year

Location	Count	Probability	Slope (mg/L per year)	Normalized slope (%/year)	Min (mg/L)	Median (mg/L)	Max (mg/L)
MW-09	7	0.965	0.1538423	10.68349	0.03	1.44	2.04

Full Mann-Kendall Analysis, Sorted by Slope

Location	Count	Probability	Slope (mg/L per year)	Normalized slope (%/year)	Min (mg/L)	Median (mg/L)	Max (mg/L)
MW-02	7	0.809	1.097991	73.19939	0.03	1.5	9.35
MW-06	7	0.932	0.5402774	15.09155	0.03	3.58	5.7
MW-07	7	0.845	0.4063635	3.728106	0.0025	10.9	14
MW-10	7	0.932	0.2669602	4.532431	0.03	5.89	6.8
MW-12	7	0.965	0.1939972	5.159501	0.03	3.76	4.24
MW-09	7	0.965	0.1538423	10.68349	0.03	1.44	2.04
MW-03	7	0.6665	0.09740003	2.178972	0.03	4.47	5.23
MW-11	7	0.809	0.09733012	1.39043	0.03	7	7.61
MW-13	7	0.965	0.08247888	6.930998	0.03	1.19	1.45
MW-01	7	0.6665	0.05390092	3.2276	0.03	1.67	2.02
MW-05	7	0	0	0	0.03	3.31	4
MW-08	7	0	0	0	0.03	5.66	7.29
MW-04	7	0.6665	-0.005795752	-19.31917	0.0025	0.03	0.173

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Appendix 5 - Table 4

Manganese Trend Analysis: Mann Kendall and Sen's Slope

Filtered Trend Results, Probability > 95% AND Slope > +/-10%/year

Location	Count	Probability	Slope (mg/L per year)	Normalized slope (%/year)	Min (mg/L)	Median (mg/L)	Max (mg/L)

Full Mann-Kendall Analysis, Sorted by Slope

Location	Count	Probability	Slope (mg/L per year)	Normalized slope (%/year)	Min (mg/L)	Median (mg/L)	Max (mg/L)
MW-06	7	0.932	0.09979502	7.560229	0.943	1.32	1.7
MW-05	7	0.9986	0.05518166	8.360857	0.402	0.66	0.758
MW-09	7	0.965	0.02204833	2.808705	0.714	0.785	0.86
MW-10	7	0.965	0.01723106	2.626686	0.639	0.656	0.735
MW-01	7	0.881	0.01369697	2.062797	0.605	0.664	0.73
MW-12	7	0.965	0.01261969	2.990448	0.365	0.422	0.456
MW-07	7	0.5	0.003870124	0.2080712	1.6	1.86	2.3
MW-11	7	0.5	0.000485713	0.07370456	0.61	0.659	0.67
MW-08	7	0.5	-0.00077362	-0.1704009	0.384	0.454	0.481
MW-13	7	0.719	-0.001057155	-0.419506	0.243	0.252	0.263
MW-03	7	0.614	-0.002125795	-0.8503181	0.239	0.25	0.264
MW-04	7	0.5	-0.006715228	-12.67024	0.009	0.053	0.258
MW-02	7	0.614	-0.03711699	-5.531593	0.236	0.671	1.09

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Appendix 5 - Table 5

Sodium Trend Analysis:
Mann Kendall and Sen's Slope

Filtered Trend Results, Probability > 95% AND Slope > +/-10%/year

Location	Count	Probability	Slope (mg/L per year)	Normalized slope (%/year)	Min (mg/L)	Median (mg/L)	Max (mg/L)

Full Mann-Kendall Analysis, Sorted by Slope

Location	Count	Probability	Slope (mg/L per year)	Normalized slope (%/year)	Min (mg/L)	Median (mg/L)	Max (mg/L)
MW-09	7	0.985	2.70769	1.17216	226	231	240
MW-04	7	0.9065	1.456146	2.311343	57	63	71
MW-10	7	0.9065	1.280197	1.094185	108	117	124
MW-11	7	0.6665	1.179458	1.296108	85	91	98.1
MW-06	7	0.5	0.718996	0.3950528	138	182	211
MW-13	7	0	0	0	103	110	1112
MW-12	7	0.557	-0.2915004	-0.2750004	99	106	111
MW-01	7	0.557	-0.3508645	-0.9746237	33	36	40
MW-05	7	0.6665	-0.6057214	-1.408654	41	43	51
MW-03	7	0.881	-0.8758993	-1.67476	49	52.3	56
MW-07	7	0.5	-2.515583	-0.9351609	230	269	320
MW-08	7	0.719	-2.809615	-2.341346	110	120	137
MW-02	7	0.9485	-7.275897	-8.343919	81	87.2	120

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Appendix 5 - Table 6

Sulphate Trend Analysis:
Mann Kendall and Sen's Slope

Filtered Trend Results, Probability > 95% AND Slope > +/-10%/year

Location	Count	Probability	Slope (mg/L per year)	Normalized slope (%/year)	Min (mg/L)	Median (mg/L)	Max (mg/L)

Full Mann-Kendall Analysis, Sorted by Slope

Location	Count	Probability	Slope (mg/L per year)	Normalized slope (%/year)	Min (mg/L)	Median (mg/L)	Max (mg/L)
MW-06	7	0.809	11.52074	2.410196	420	478	560
MW-05	7	0.985	10.19734	7.844104	105	130	150
MW-09	7	0.985	5.619231	1.745103	312	322	350
MW-03	7	0.764	2.050526	1.680759	98	122	130
MW-02	7	0.614	1.772156	0.6612523	227	268	290
MW-11	7	0.5	0.8338816	0.4254498	170	196	212
MW-07	7	0	0	0	940	1010	1200
MW-13	7	0.9485	-0.3885639	-4.072997	9	9.54	12.5
MW-01	7	0.5	-0.4712921	-0.8210664	44	57.4	62
MW-10	7	0.5	-1.250088	-0.5656508	190	221	230
MW-12	7	0.809	-1.341091	-3.034143	32	44.2	52.5
MW-04	7	0.5	-1.398091	-1.654546	74	84.5	92.1
MW-08	7	0.557	-2.051206	-0.6159778	300	333	370

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Appendix 5 - Table 7

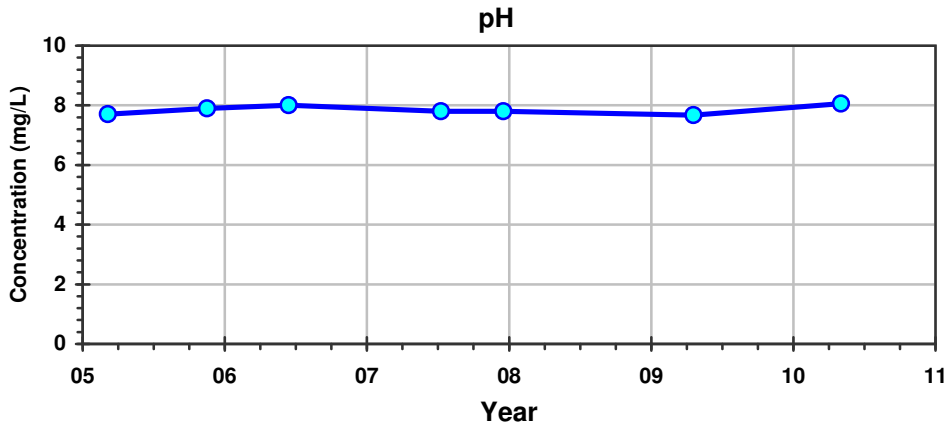
Total Dissolved Solids Trend Analysis: Mann Kendall and Sen's Slope

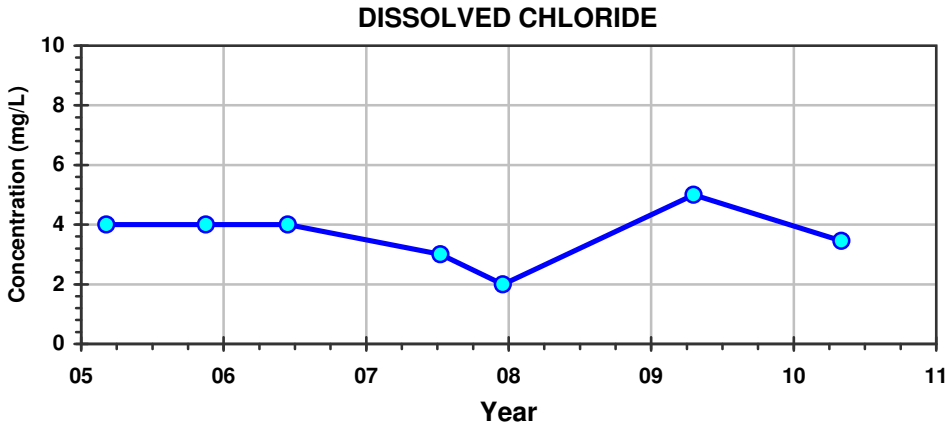
Filtered Trend Results, Probability > 95% AND Slope > +/-10%/year

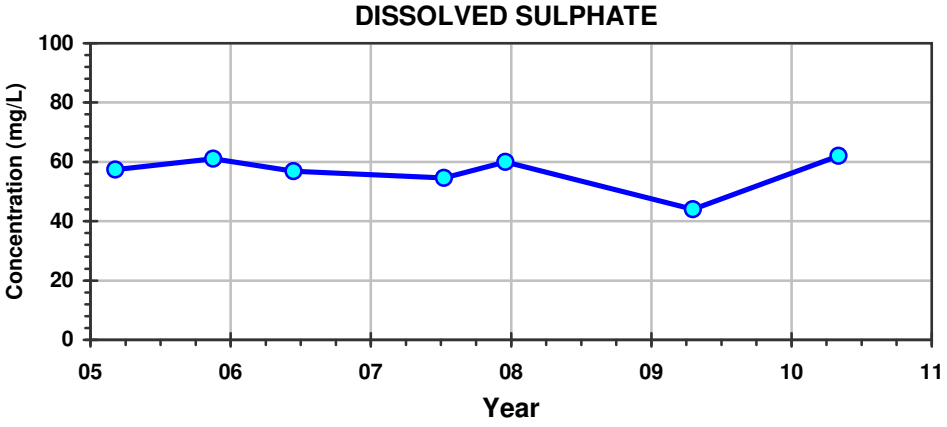
Location	Count	Probability	Slope (mg/L per year)	Normalized slope (%/year)	Min (mg/L)	Median (mg/L)	Max (mg/L)

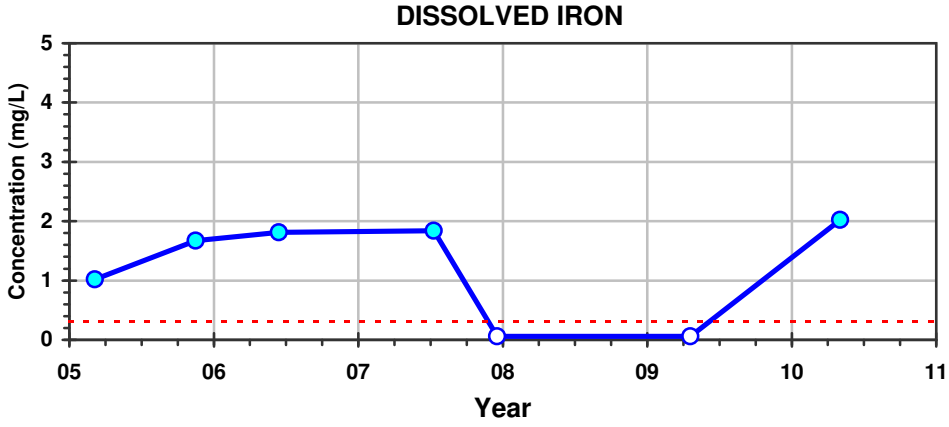
Full Mann-Kendall Analysis, Sorted by Slope

Location	Count	Probability	Slope (mg/L per year)	Normalized slope (%/year)	Min (mg/L)	Median (mg/L)	Max (mg/L)
MW-05	7	0.9998	16.68655	2.963863	499	563	596
MW-09	7	0.9898	13.28182	1.328182	954	1000	1030
MW-06	7	0.809	6.697653	0.548988	1100	1220	1250
MW-03	7	0.719	1.985054	0.3476453	520	571	579
MW-10	7	0.557	1.080621	0.131944	800	819	847
MW-12	7	0.614	0.5122721	0.08397903	600	610	651
MW-01	7	0	0	0	410	442	456
MW-04	7	0	0	0	690	724	774
MW-07	7	0	0	0	1870	2010	2400
MW-13	7	0.6665	-1.057153	-0.2313245	453	457	470
MW-11	7	0.5	-1.081688	-0.1335417	800	810	840
MW-02	7	0.5	-4.962038	-0.5638679	759	880	925
MW-08	7	0.719	-13.58924	-1.465937	862	927	999









Notes: - *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *pH: 6.0-8.5*
* *DISSOLVED CHLORIDE: 250 (mg/L)*
* *DISSOLVED SULPHATE: 500 (mg/L)*
* *DISSOLVED IRON: 0.3 (mg/L)*

Infrastructure & Environment

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-01

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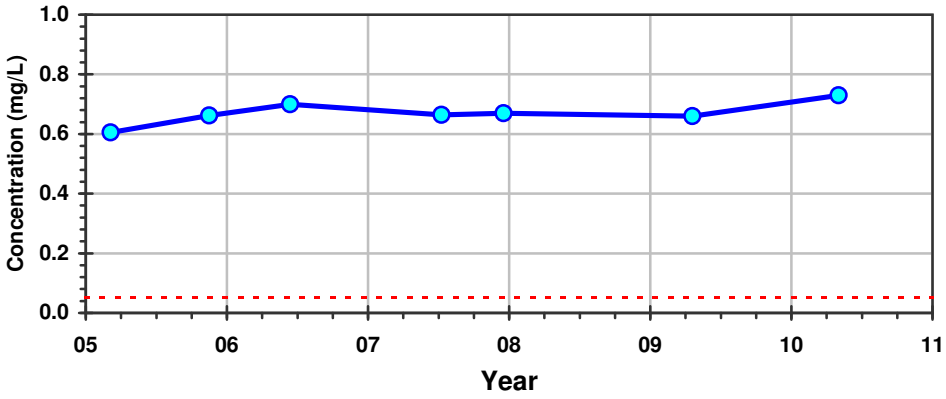
09-JUN-10 date	edited by	KS drawn by	app by

PROJECT NUMBER: **E00100101**

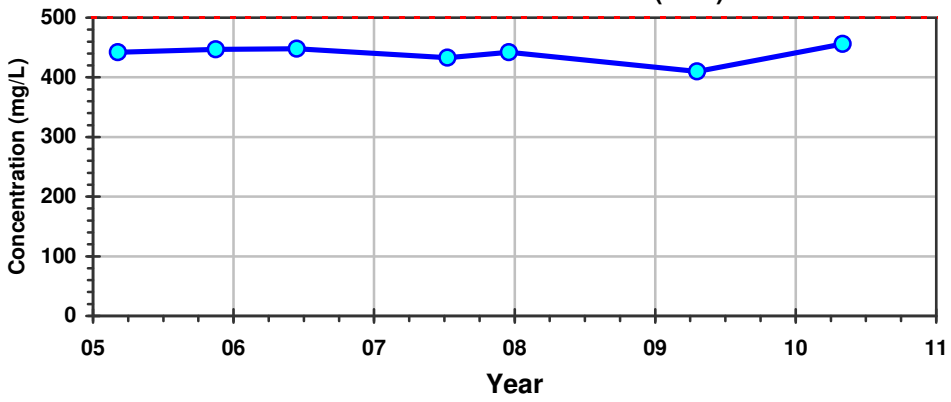
FIGURE: **A5-1**

J:\E001s\E00100101 (NCIA 2010 Beverly Channel GW Monitoring)\12.0_Reports\12.3_Backend\Appendices\Appendix 5 - Hydrochemical Control Charts

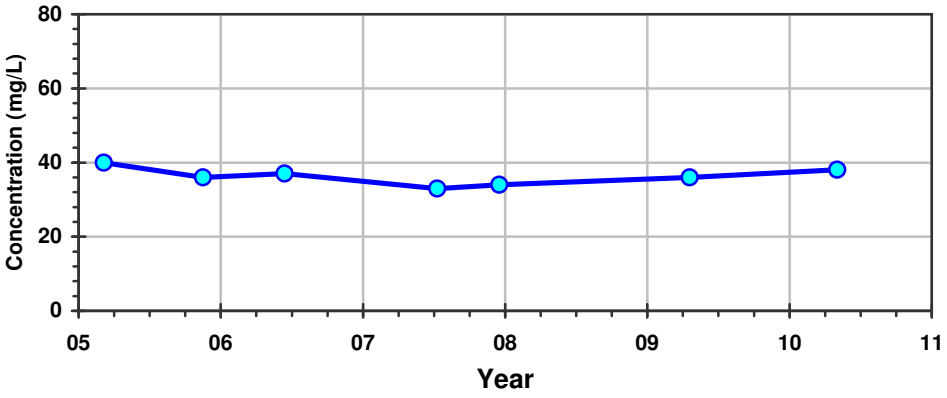
DISSOLVED MANGANESE



TOTAL DISSOLVED SOLIDS (TDS)



DISSOLVED SODIUM



Notes:
- *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *DISSOLVED MANGANESE: 0.05 (mg/L)*
* *TOTAL DISSOLVED SOLIDS (TDS): 500 (mg/L)*
* *DISSOLVED SODIUM: 200 (mg/L)*

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NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-01

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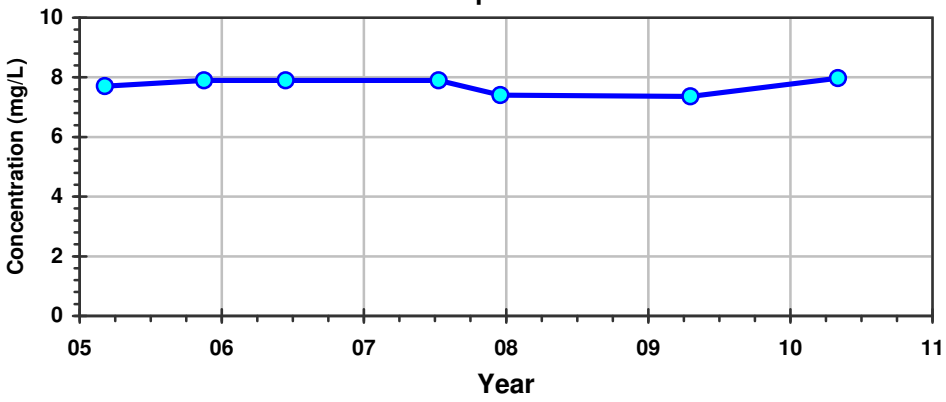
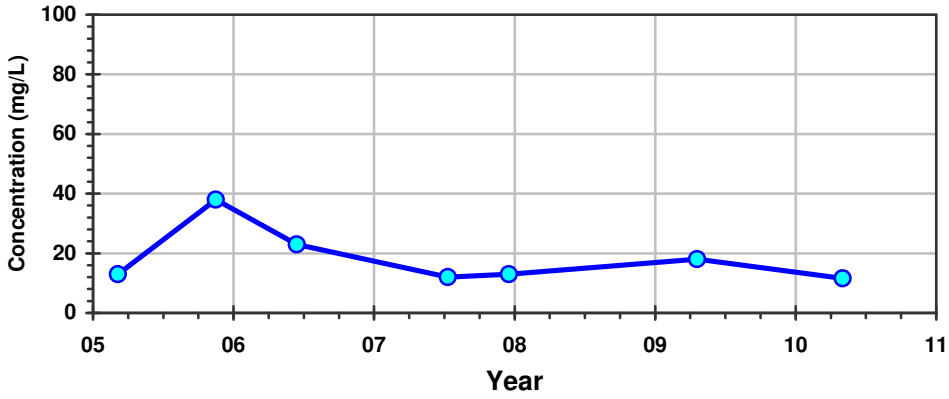
09-JUN-10 date	edited by	KS drawn by	app by

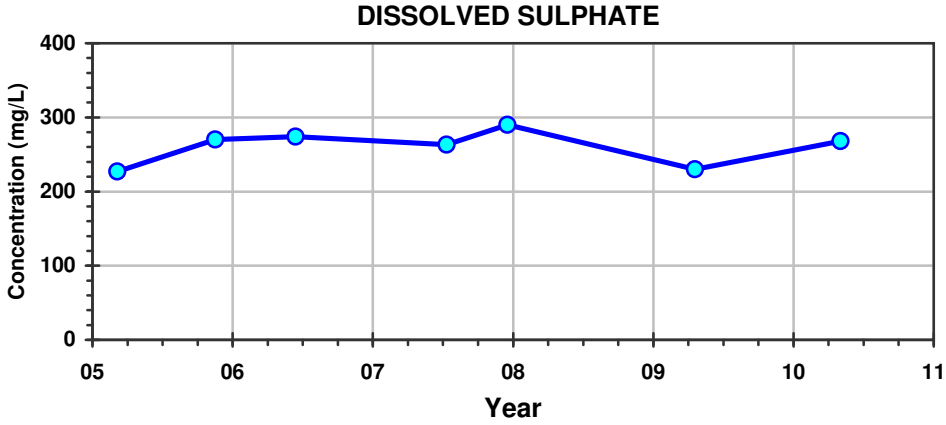
PROJECT NUMBER: **E00100101**

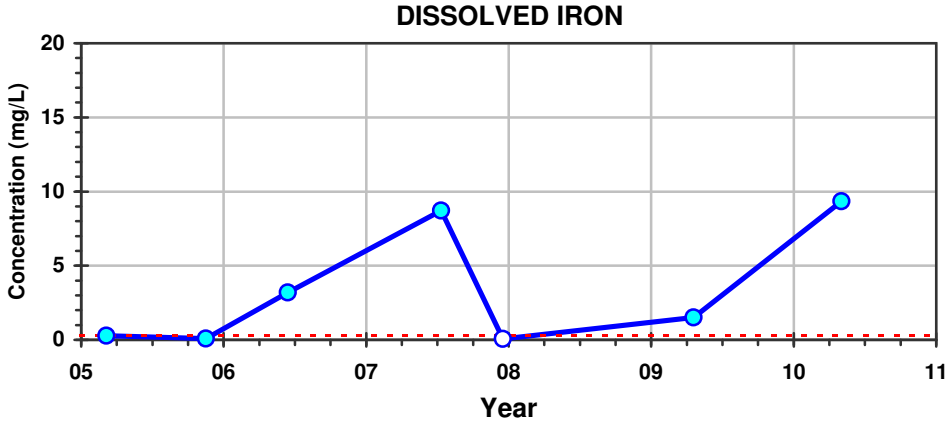
FIGURE: **A5-2**

J:\E001s\E00100101 (NCIA 2010 Beverly Channel GW Monitoring)\12.0_Reports\12.3_Backend\Appendices\Appendix 5 - Hydrochemical Control Charts









Notes: - *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *pH: 6.0-8.5*
* *DISSOLVED CHLORIDE: 250 (mg/L)*
* *DISSOLVED SULPHATE: 500 (mg/L)*
* *DISSOLVED IRON: 0.3 (mg/L)*

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NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-02

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09-JUN-10 date	edited by	KS drawn by	app by

PROJECT NUMBER: **E00100101**

FIGURE: **A5-3**

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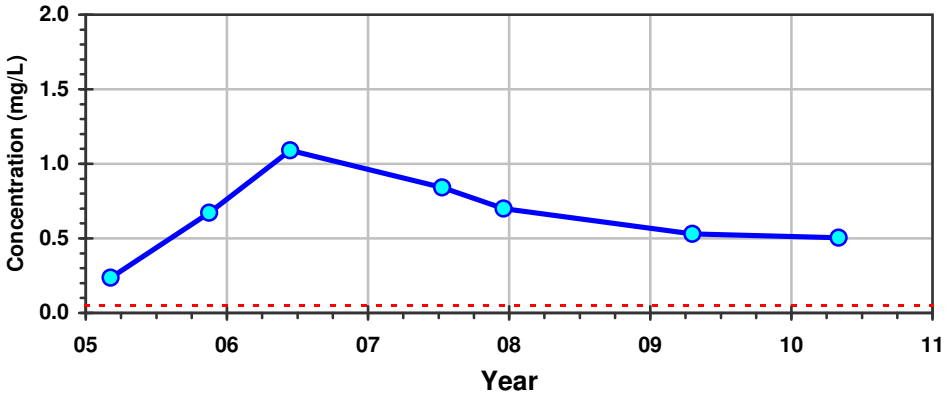
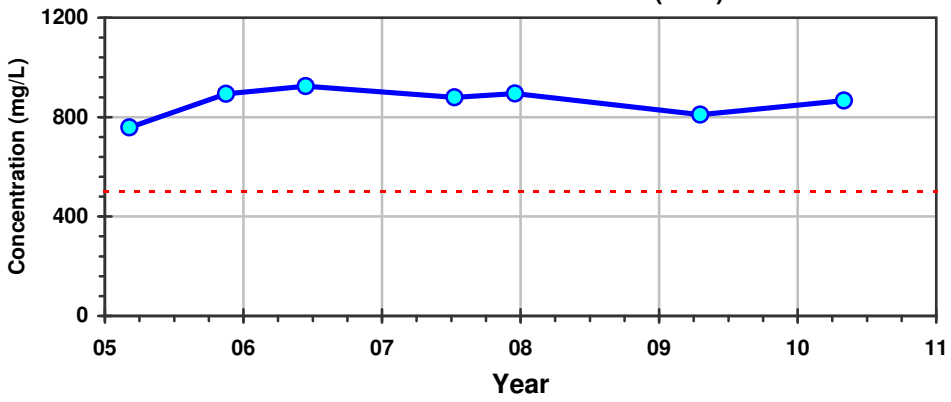
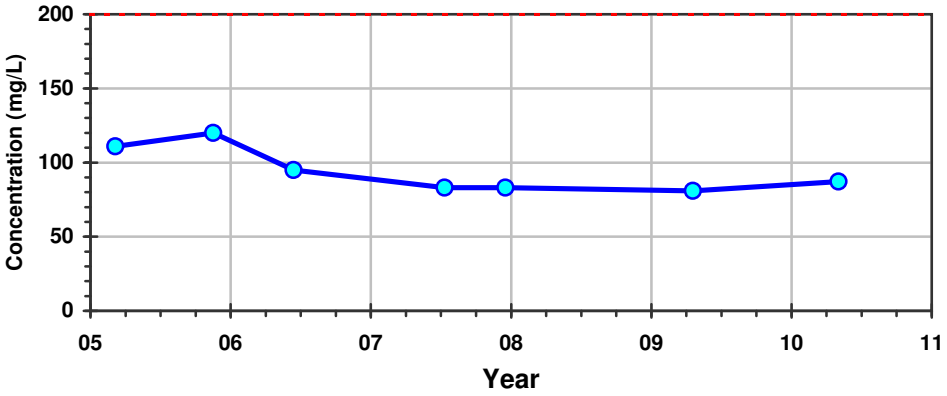
DISSOLVED MANGANESE



TOTAL DISSOLVED SOLIDS (TDS)



DISSOLVED SODIUM



Notes:
- *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *DISSOLVED MANGANESE: 0.05 (mg/L)*
* *TOTAL DISSOLVED SOLIDS (TDS): 500 (mg/L)*
* *DISSOLVED SODIUM: 200 (mg/L)*

Infrastructure & Environment

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-02

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09-JUN-10 date	edited by	KS drawn by	app by

PROJECT NUMBER: **E00100101**

FIGURE: **A5-4**

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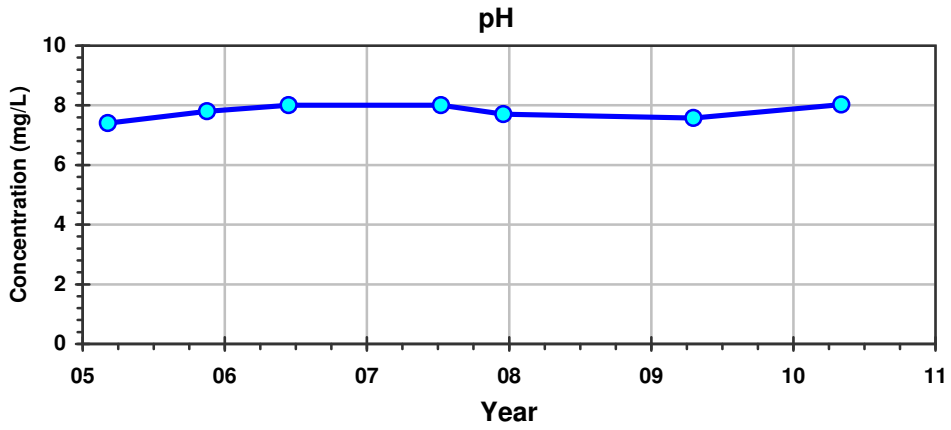

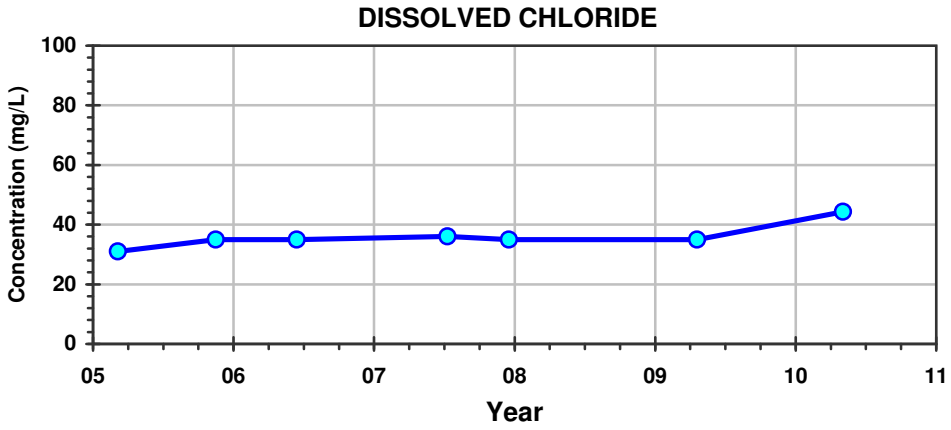

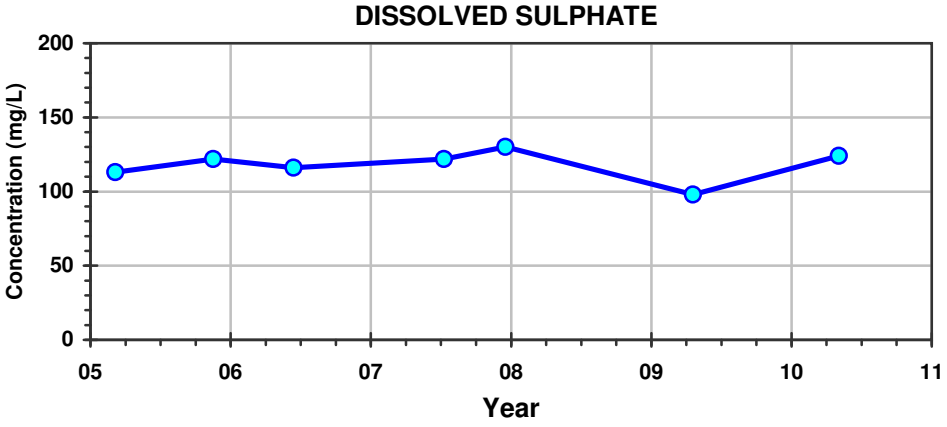

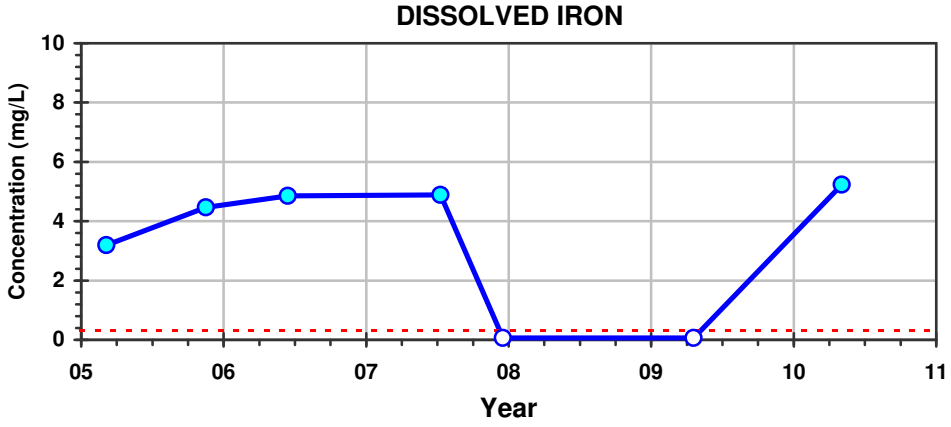

Notes: - *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *pH: 6.0-8.5*
* *DISSOLVED CHLORIDE: 250 (mg/L)*
* *DISSOLVED SULPHATE: 500 (mg/L)*
* *DISSOLVED IRON: 0.3 (mg/L)*

Infrastructure & Environment

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-03

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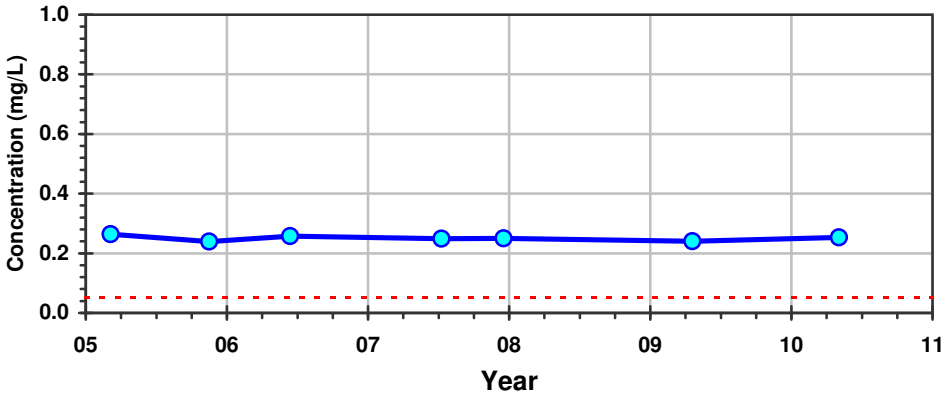
PROJECT NUMBER: **E00100101**

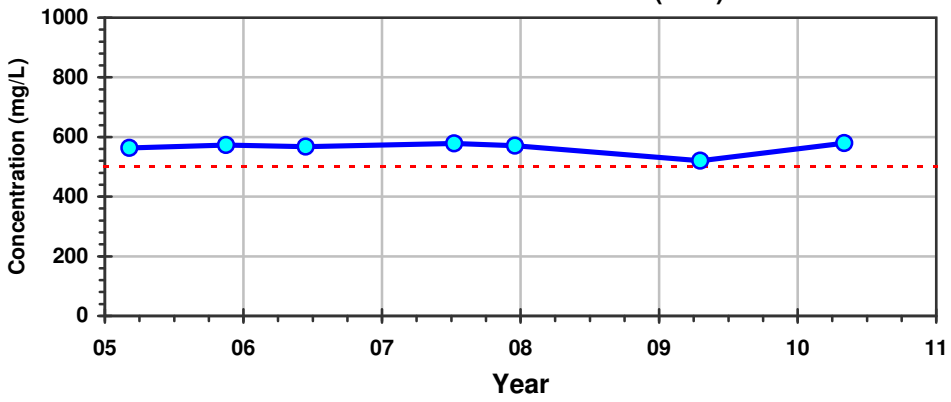
FIGURE: **A5-5**

J:\E001s\E00100101 (NCIA 2010 Beverly Channel GW Monitoring)\12.0_Reports\12.3_Backend\Appendices\Appendix 5 - Hydrochemical Control Charts

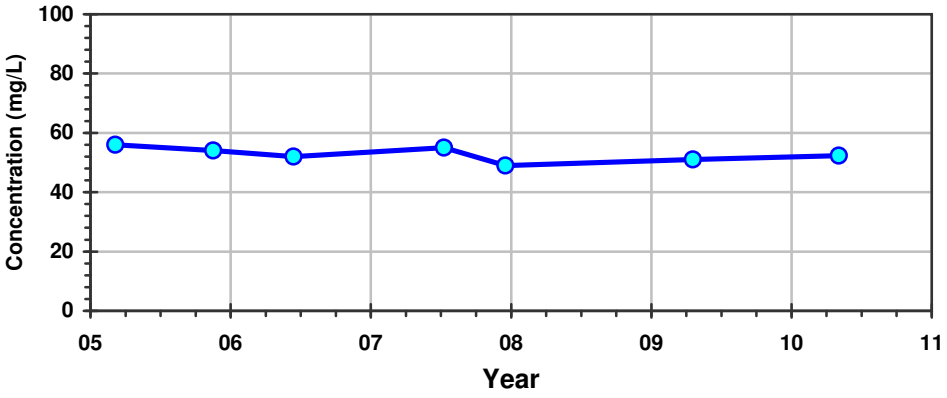
DISSOLVED MANGANESE



TOTAL DISSOLVED SOLIDS (TDS)



DISSOLVED SODIUM



Notes:
- *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *DISSOLVED MANGANESE: 0.05 (mg/L)*
* *TOTAL DISSOLVED SOLIDS (TDS): 500 (mg/L)*
* *DISSOLVED SODIUM: 200 (mg/L)*

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NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-03

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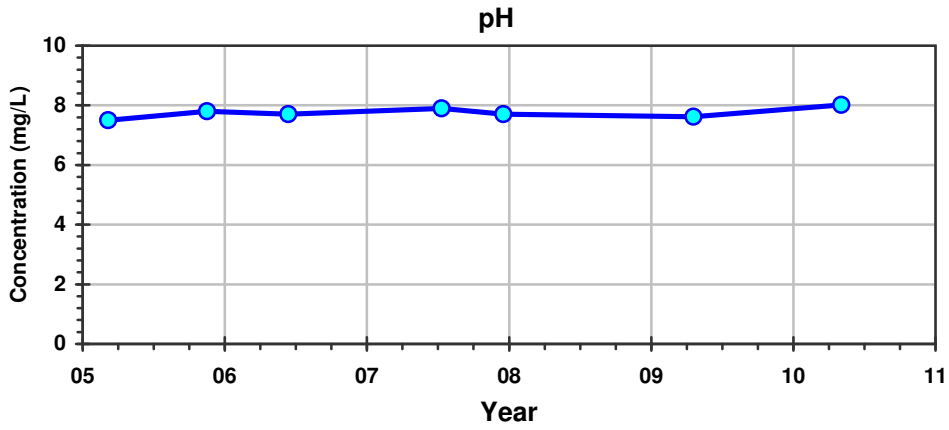
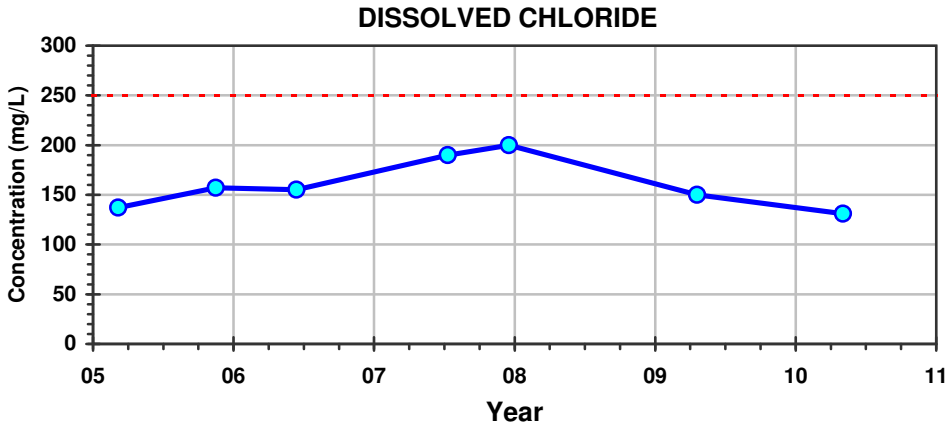
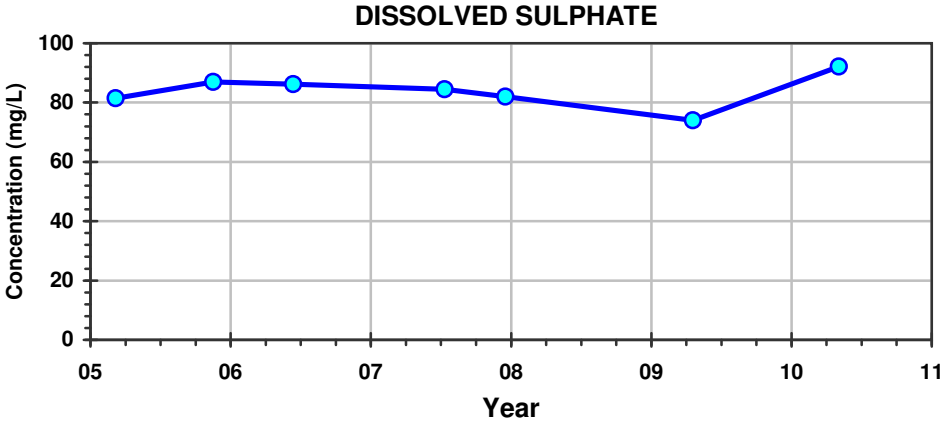
PROJECT NUMBER: E00100101

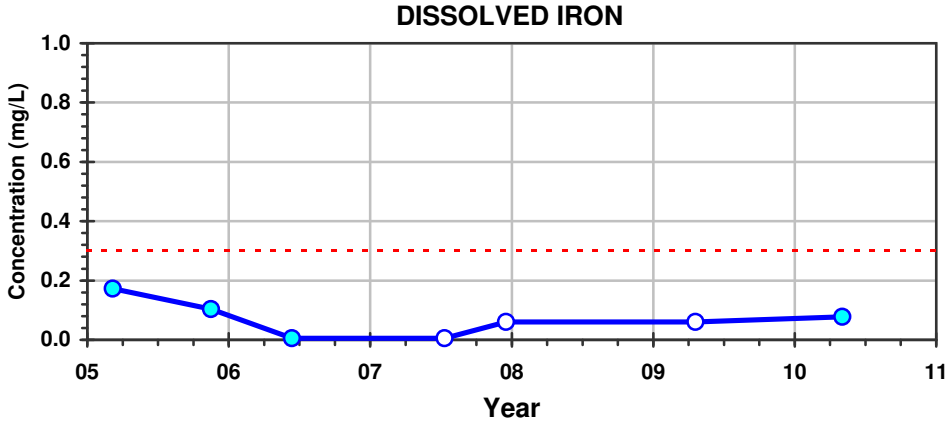
FIGURE: A5-6

J:\E001s\E00100101 (NCIA 2010 Beverly Channel GW Monitoring)\12.0_Reports\12.3_Backend\Appendices\Appendix 5 - Hydrochemical Control Charts









Notes: - *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *pH: 6.0-8.5*
* *DISSOLVED CHLORIDE: 250 (mg/L)*
* *DISSOLVED SULPHATE: 500 (mg/L)*
* *DISSOLVED IRON: 0.3 (mg/L)*

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2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-04

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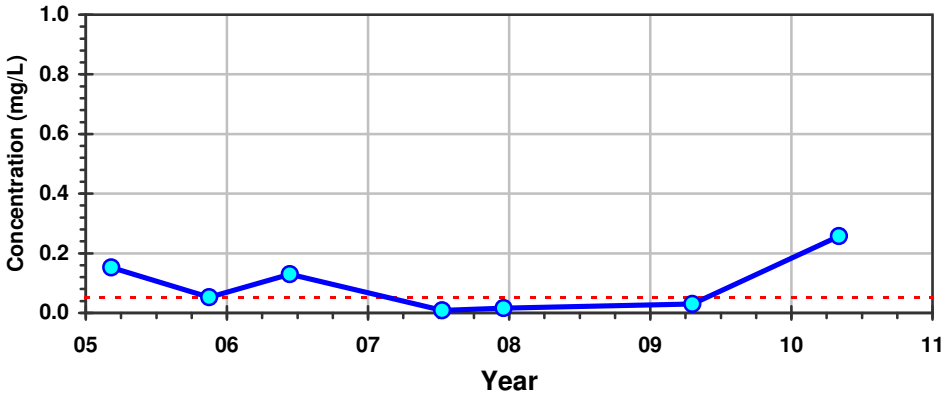
PROJECT NUMBER: E00100101

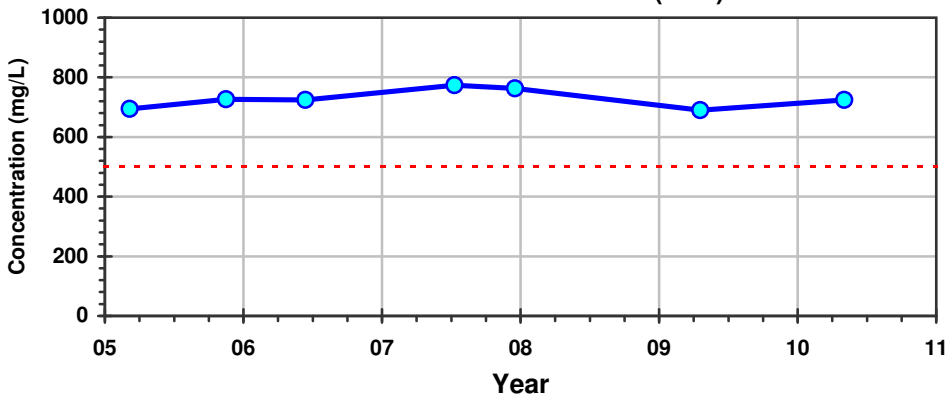
FIGURE: A5-7

J:\E001s\E00100101 (NCIA 2010 Beverly Channel GW Monitoring)\12.0_Reports\12.3_Backend\Appendices\Appendix 5 - Hydrochemical Control Charts

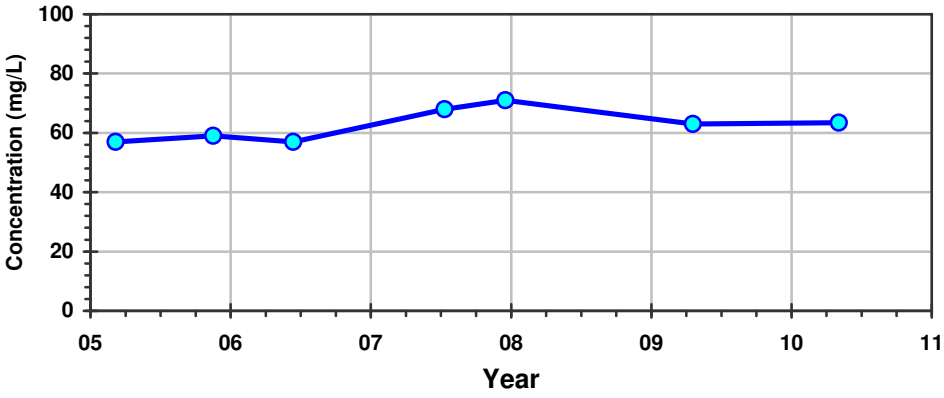
DISSOLVED MANGANESE



TOTAL DISSOLVED SOLIDS (TDS)



DISSOLVED SODIUM



Notes:
- *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *DISSOLVED MANGANESE: 0.05 (mg/L)*
* *TOTAL DISSOLVED SOLIDS (TDS): 500 (mg/L)*
* *DISSOLVED SODIUM: 200 (mg/L)*

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HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-04

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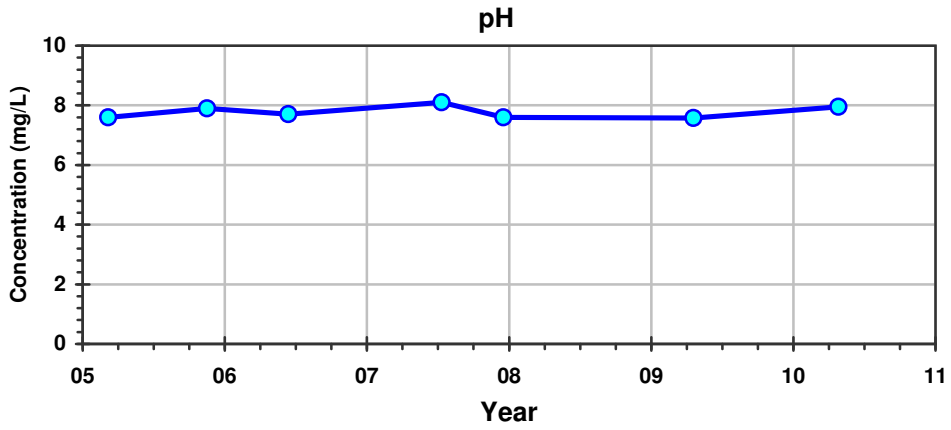
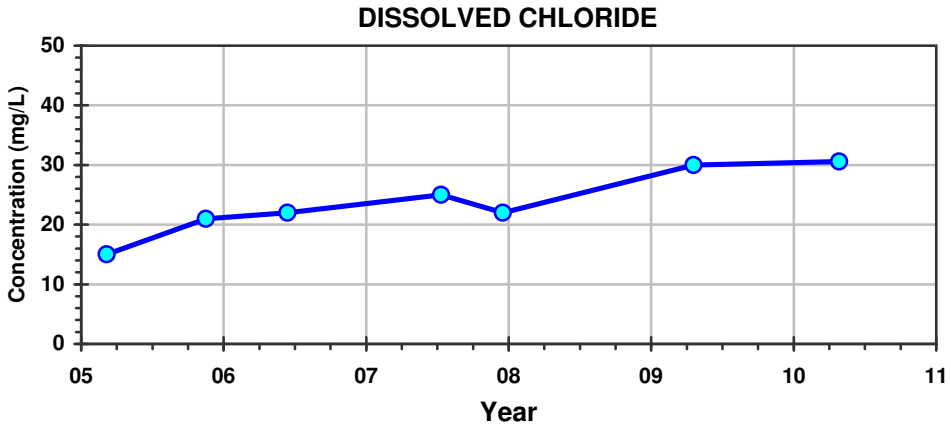
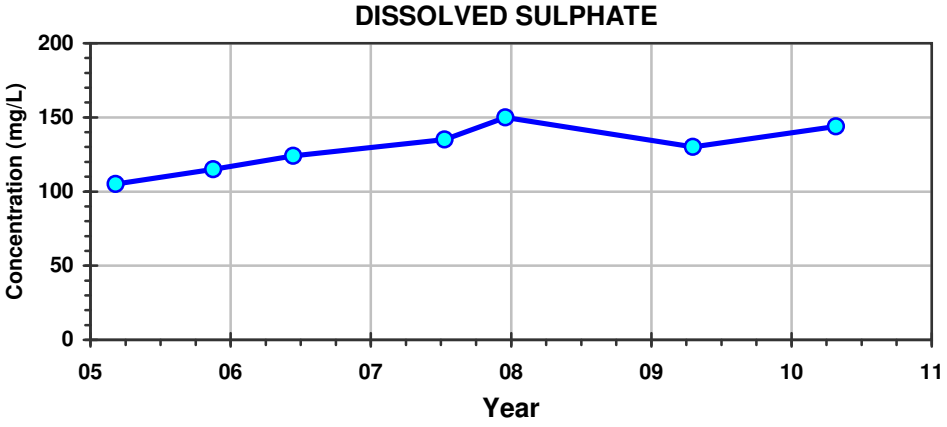
PROJECT NUMBER: **E00100101**

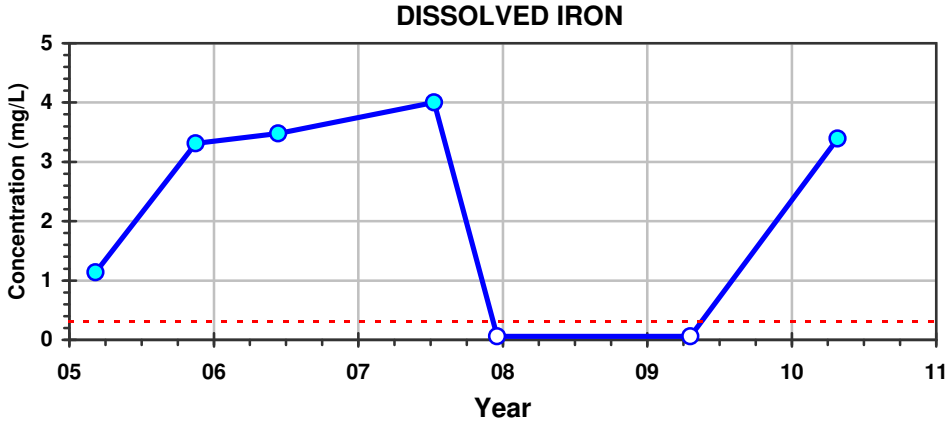
FIGURE: **A5-8**

J:\E001s\E00100101 (NCIA 2010 Beverly Channel GW Monitoring)\12.0_Reports\12.3_Backend\Appendices\Appendix 5 - Hydrochemical Control Charts









Notes: - *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *pH: 6.0-8.5*
* *DISSOLVED CHLORIDE: 250 (mg/L)*
* *DISSOLVED SULPHATE: 500 (mg/L)*
* *DISSOLVED IRON: 0.3 (mg/L)*

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HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-05

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PROJECT NUMBER: **E00100101**

FIGURE: **A5-9**

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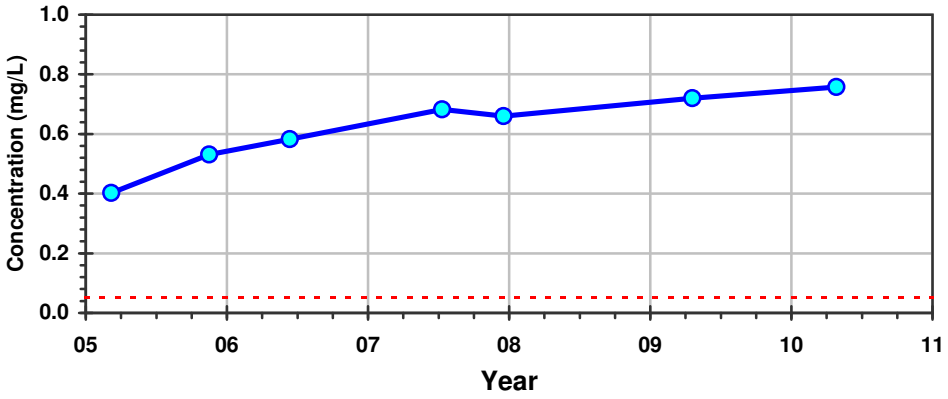
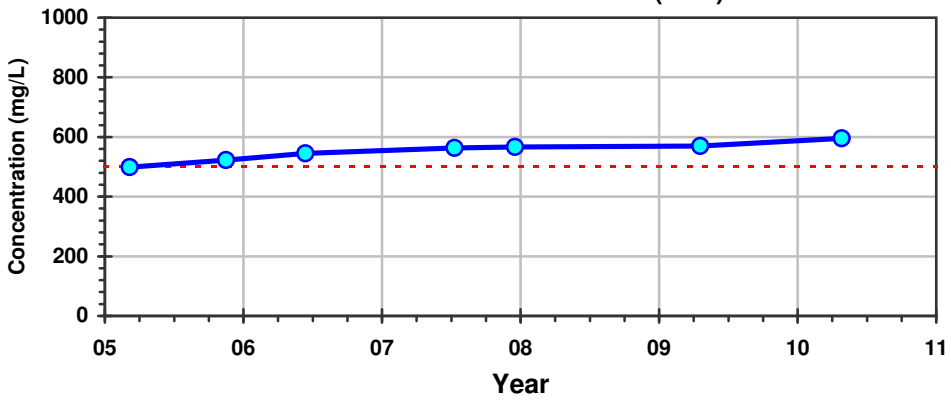
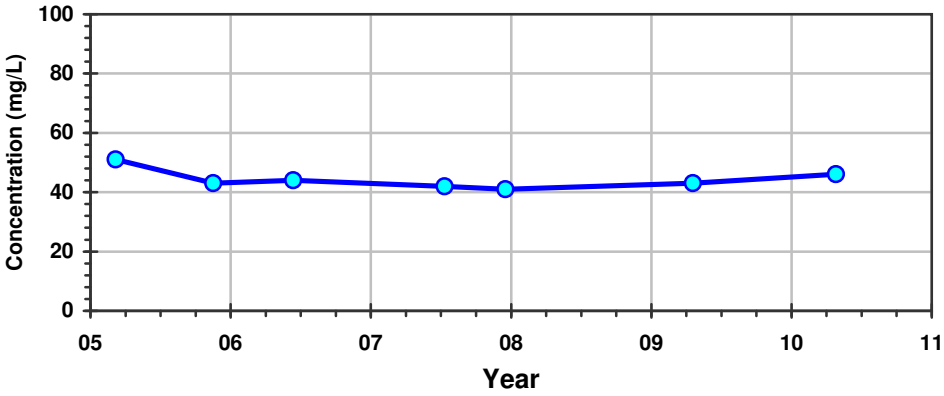
DISSOLVED MANGANESE



TOTAL DISSOLVED SOLIDS (TDS)



DISSOLVED SODIUM



Notes:
- *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *DISSOLVED MANGANESE: 0.05 (mg/L)*
* *TOTAL DISSOLVED SOLIDS (TDS): 500 (mg/L)*
* *DISSOLVED SODIUM: 200 (mg/L)*

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PROJECT NUMBER: E00100101

FIGURE: A5-10

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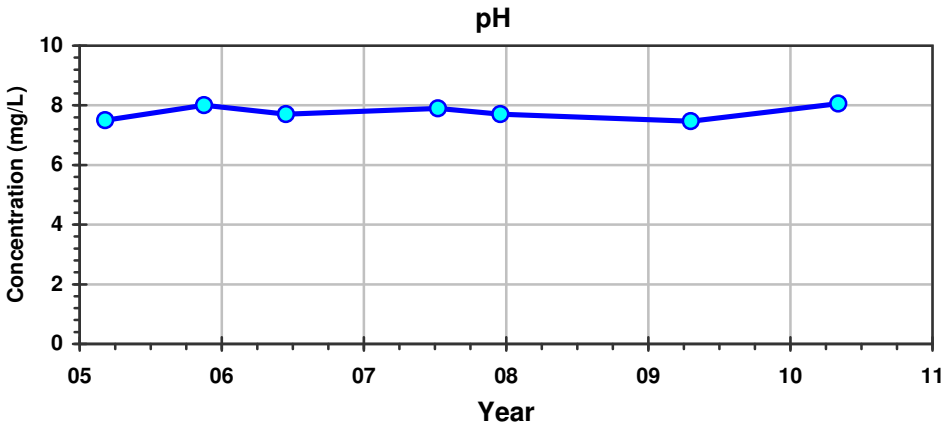

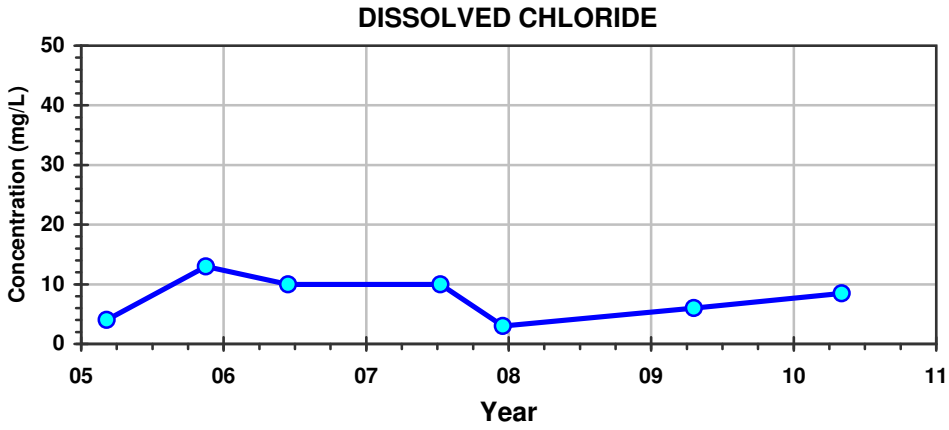

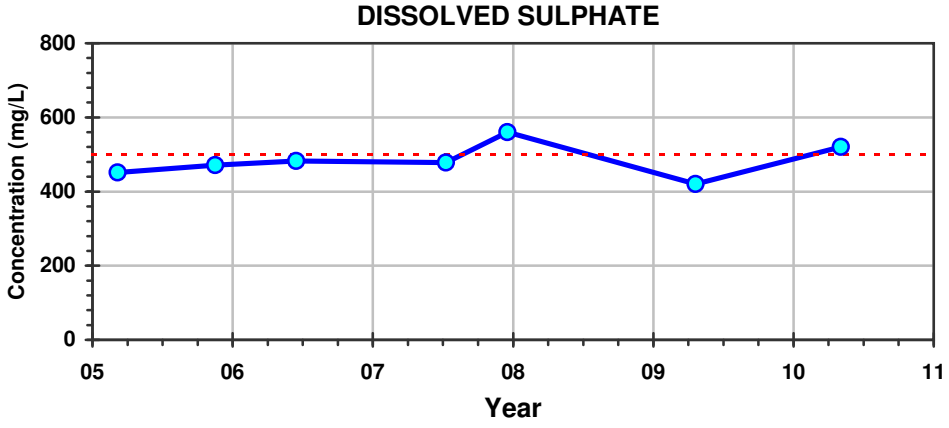

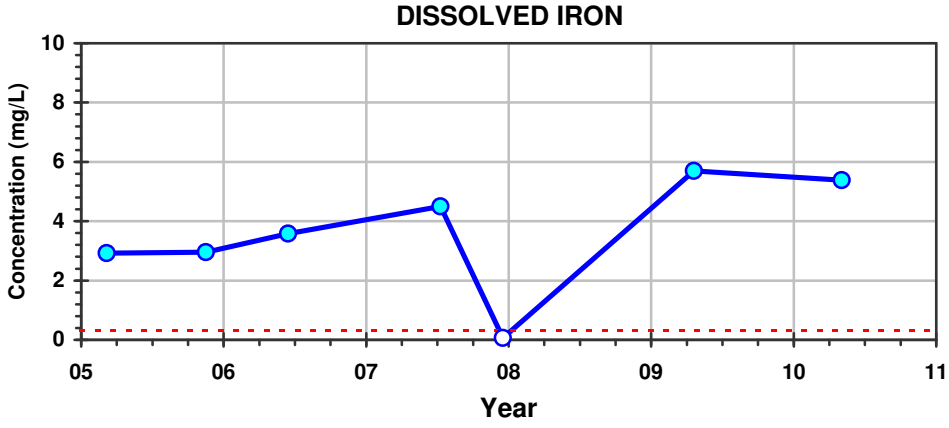

Notes: - *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *pH: 6.0-8.5*
* *DISSOLVED CHLORIDE: 250 (mg/L)*
* *DISSOLVED SULPHATE: 500 (mg/L)*
* *DISSOLVED IRON: 0.3 (mg/L)*

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2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-06

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PROJECT NUMBER: E00100101

FIGURE: A5-11

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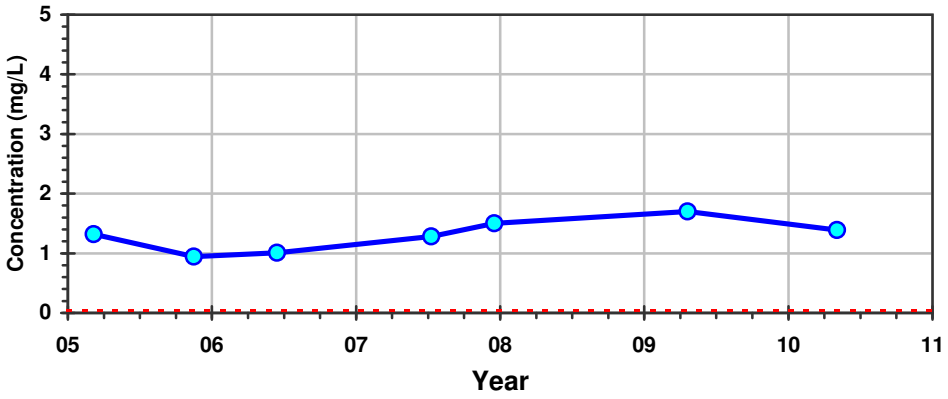
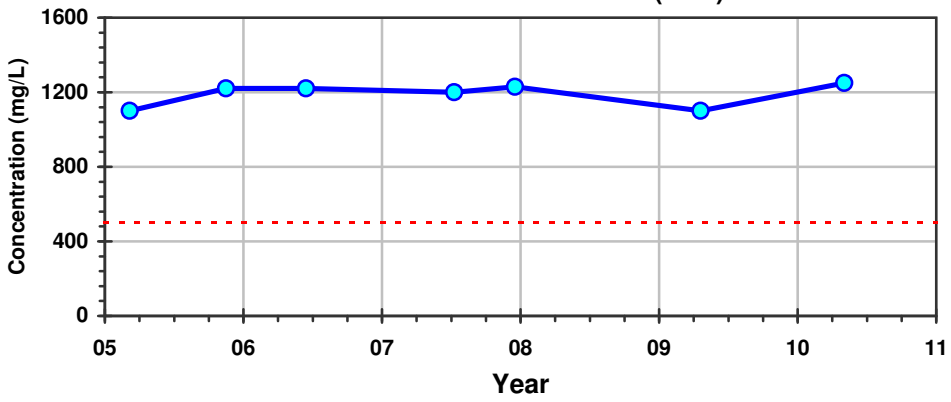
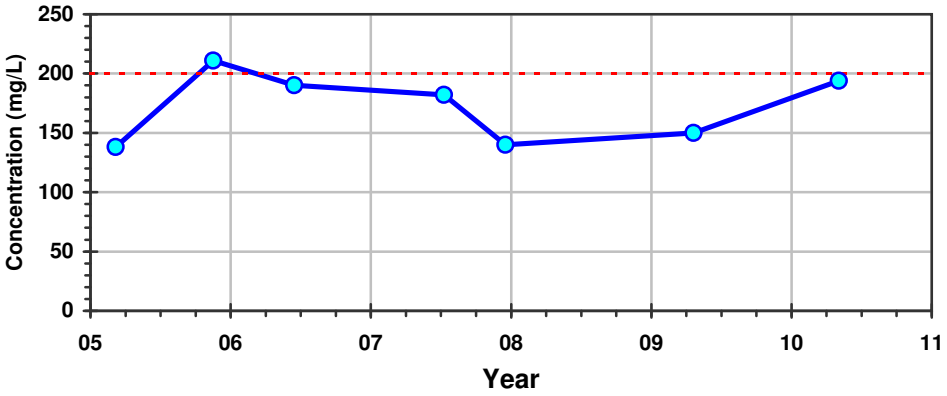
DISSOLVED MANGANESE



TOTAL DISSOLVED SOLIDS (TDS)



DISSOLVED SODIUM



Notes:
- *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *DISSOLVED MANGANESE: 0.05 (mg/L)*
* *TOTAL DISSOLVED SOLIDS (TDS): 500 (mg/L)*
* *DISSOLVED SODIUM: 200 (mg/L)*

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HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-06

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PROJECT NUMBER: **E00100101**

FIGURE: **A5-12**

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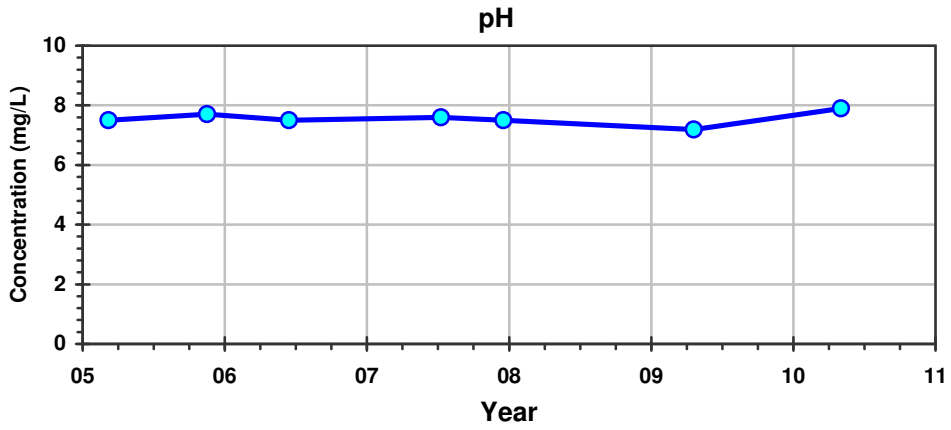

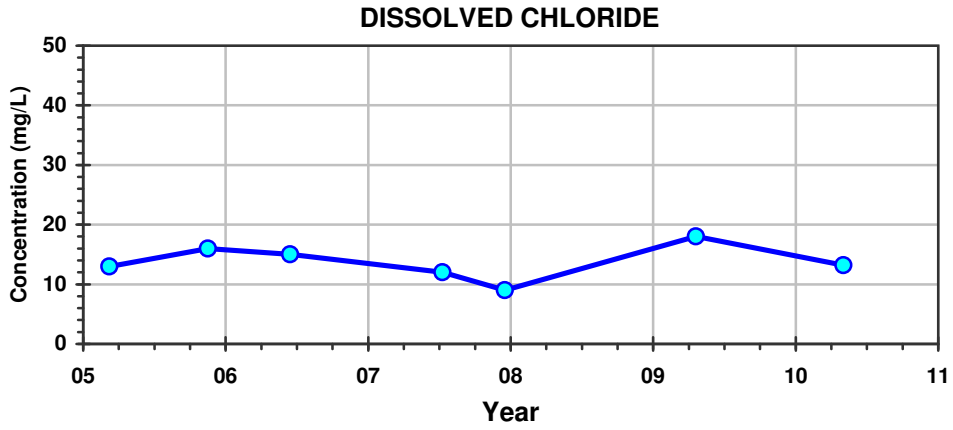

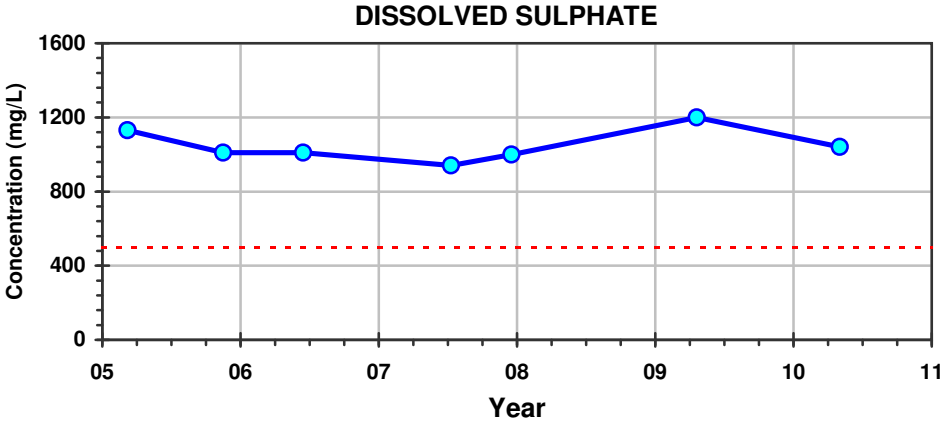

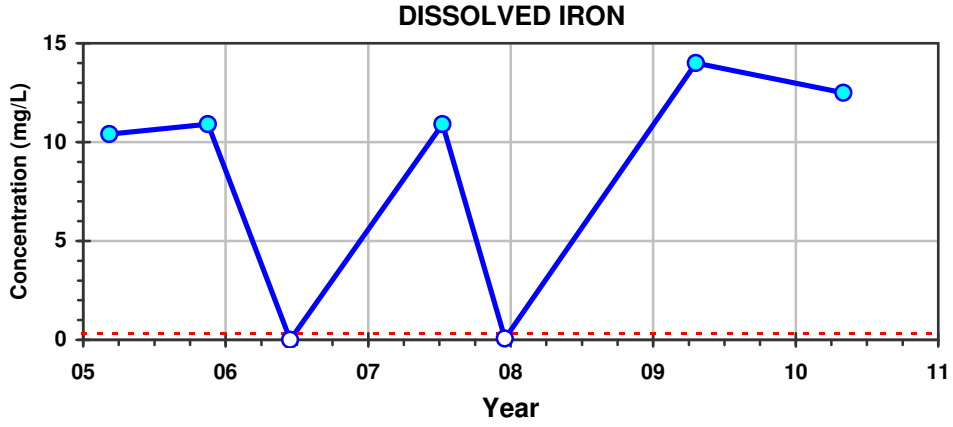

Notes: - *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *pH: 6.0-8.5*
* *DISSOLVED CHLORIDE: 250 (mg/L)*
* *DISSOLVED SULPHATE: 500 (mg/L)*
* *DISSOLVED IRON: 0.3 (mg/L)*

Infrastructure & Environment

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2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS
MONITORING STATION: MW-07

WorleyParsons
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PROJECT NUMBER: E00100101

FIGURE: A5-13

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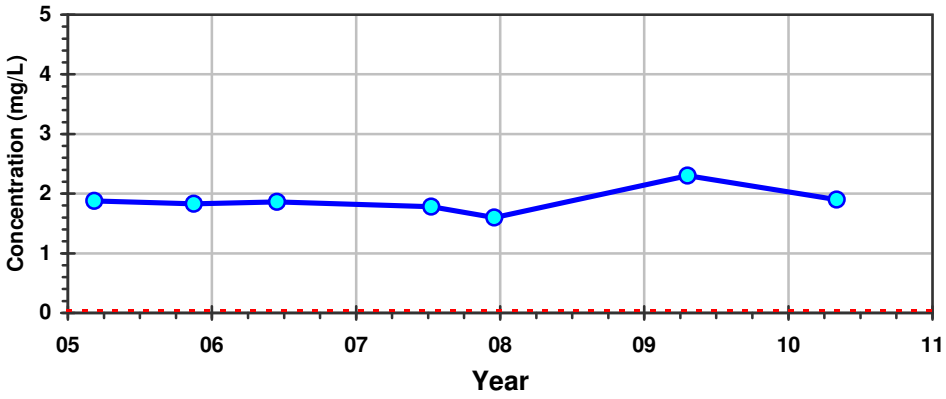
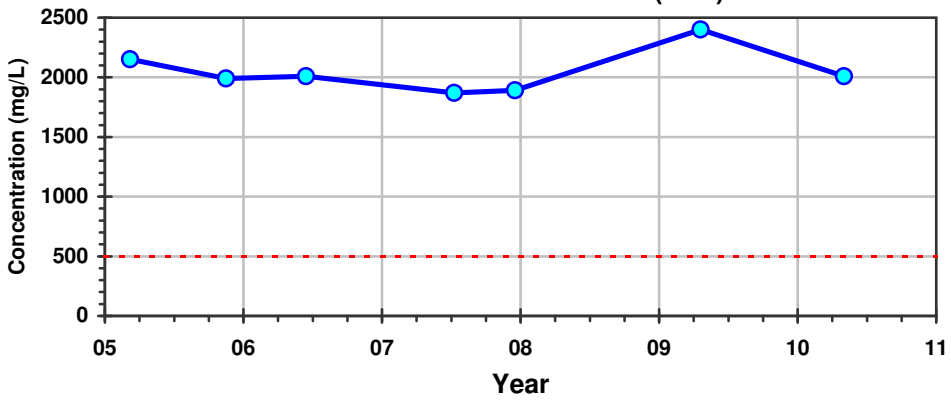
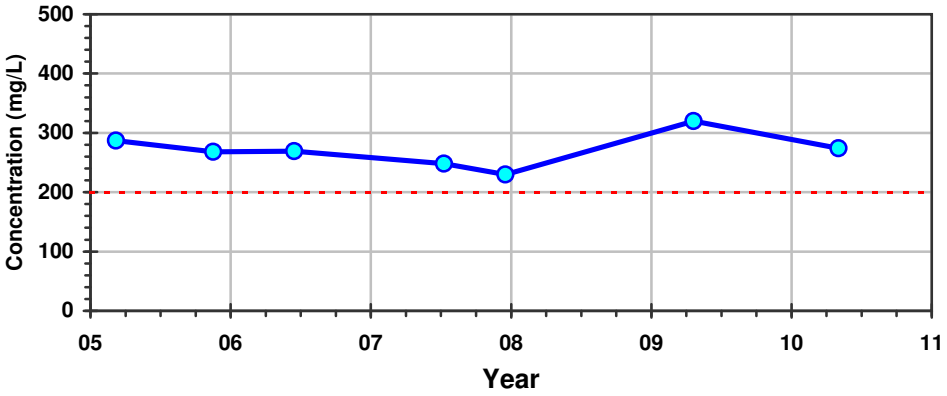
DISSOLVED MANGANESE



TOTAL DISSOLVED SOLIDS (TDS)



DISSOLVED SODIUM



Notes: - *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *DISSOLVED MANGANESE: 0.05 (mg/L)*
* *TOTAL DISSOLVED SOLIDS (TDS): 500 (mg/L)*
* *DISSOLVED SODIUM: 200 (mg/L)*

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2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-07

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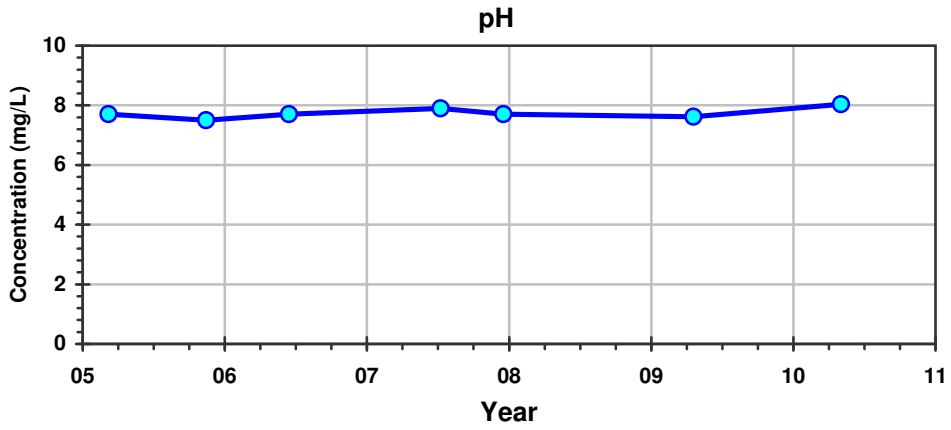
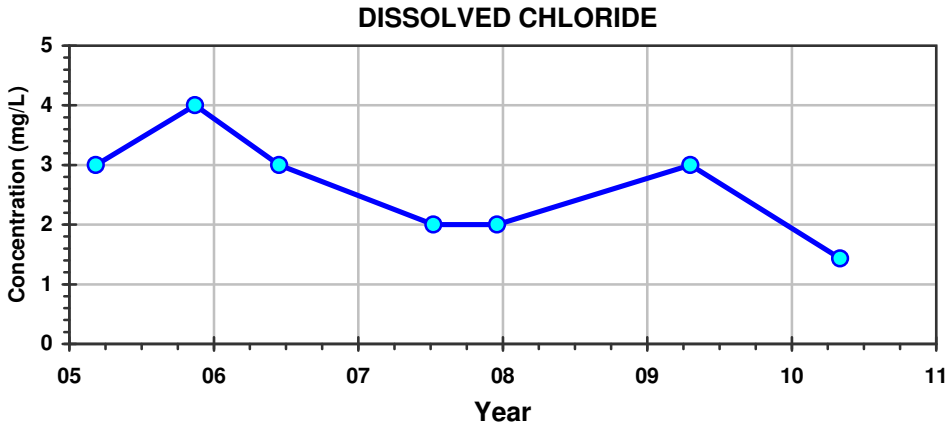
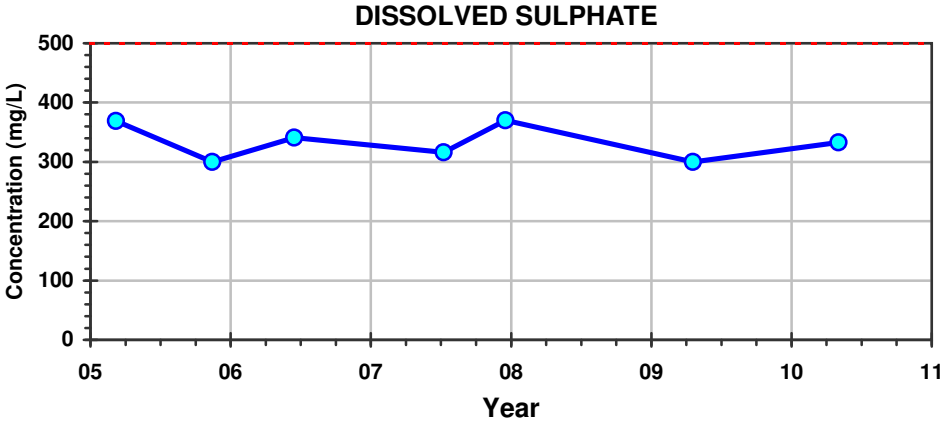
PROJECT NUMBER: E00100101

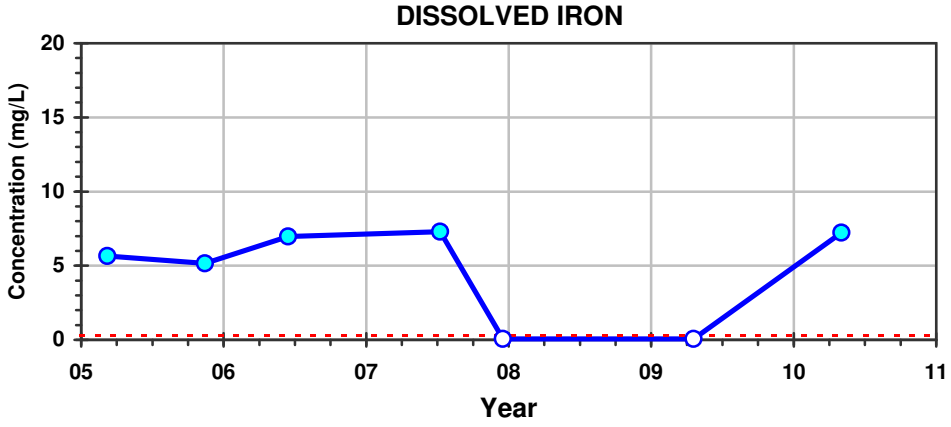
FIGURE: A5-14

J:\E001s\E00100101 (NCIA 2010 Beverly Channel GW Monitoring)\12.0_Reports\12.3_Backend\Appendices\Appendix 5 - Hydrochemical Control Charts









Notes: - *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *pH: 6.0-8.5*
* *DISSOLVED CHLORIDE: 250 (mg/L)*
* *DISSOLVED SULPHATE: 500 (mg/L)*
* *DISSOLVED IRON: 0.3 (mg/L)*

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NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-08

WorleyParsons
resources & energy

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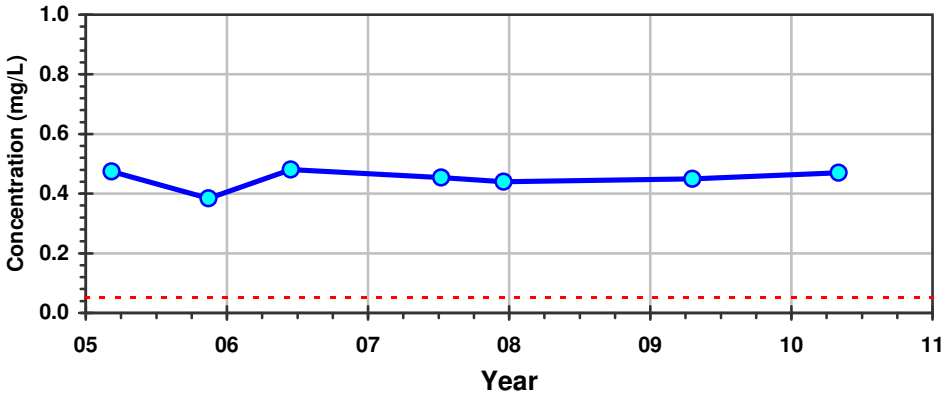
PROJECT NUMBER: E00100101

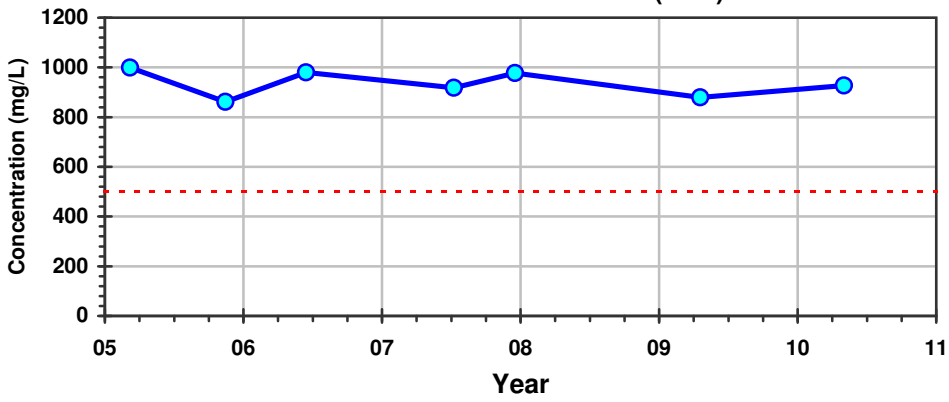
FIGURE: A5-15

J:\E001s\E00100101 (NCIA 2010 Beverly Channel GW Monitoring)\12.0_Reports\12.3_Backend\Appendices\Appendix 5 - Hydrochemical Control Charts

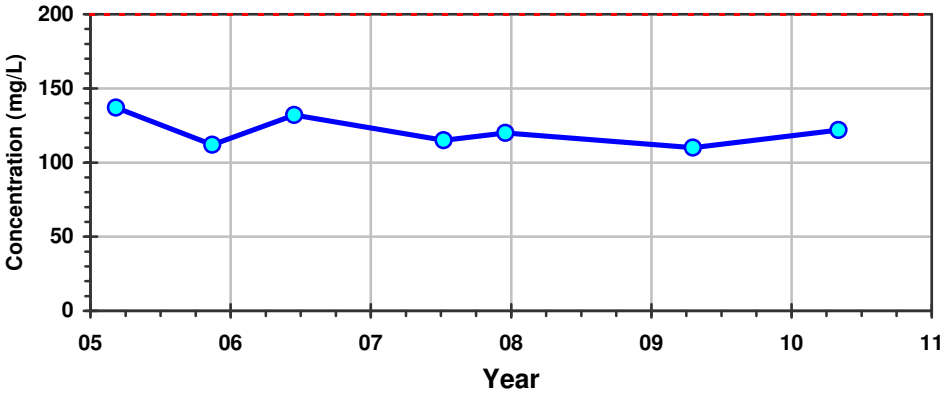
DISSOLVED MANGANESE



TOTAL DISSOLVED SOLIDS (TDS)



DISSOLVED SODIUM



Notes:
- *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *DISSOLVED MANGANESE: 0.05 (mg/L)*
* *TOTAL DISSOLVED SOLIDS (TDS): 500 (mg/L)*
* *DISSOLVED SODIUM: 200 (mg/L)*

Infrastructure & Environment

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-08

WorleyParsons
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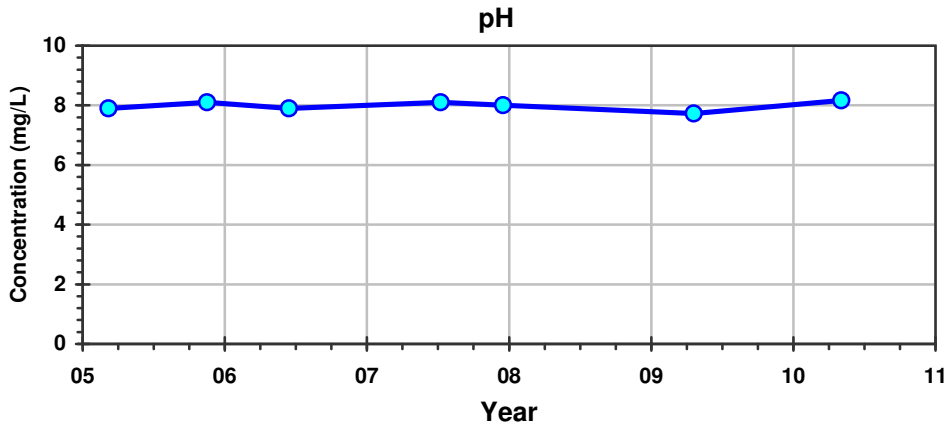
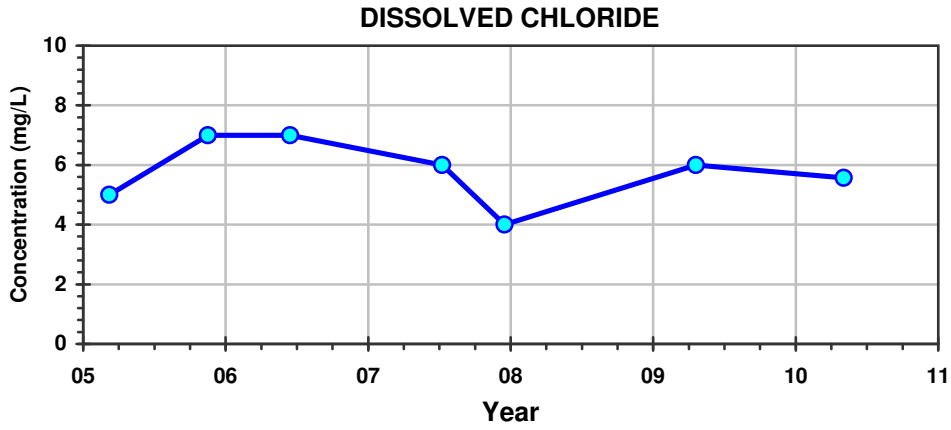
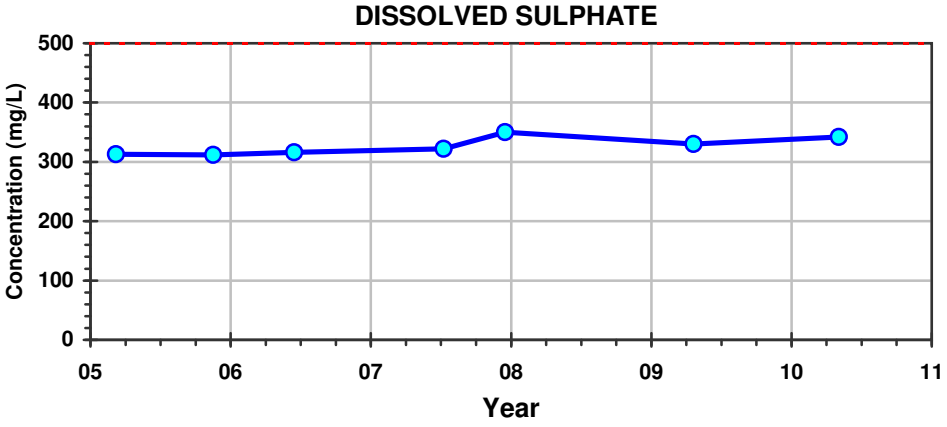
PROJECT NUMBER: E00100101

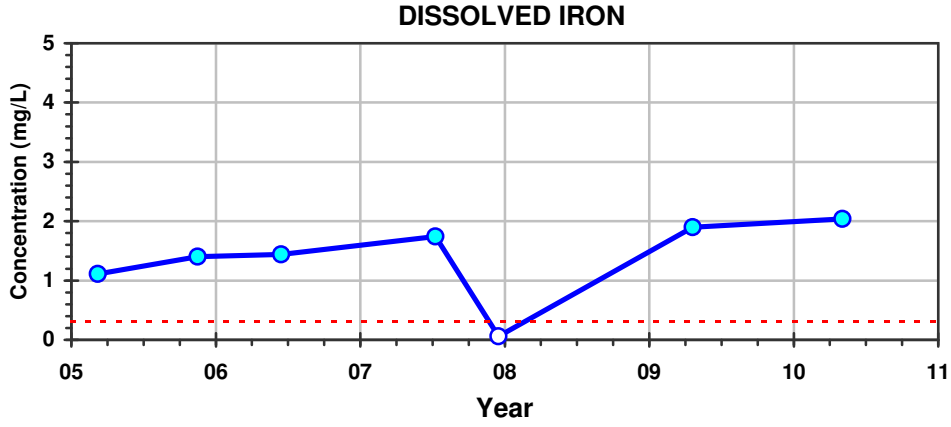
FIGURE: A5-16

J:\E001s\E00100101 (NCIA 2010 Beverly Channel GW Monitoring)\12.0_Reports\12.3_Backend\Appendices\Appendix 5 - Hydrochemical Control Charts









Notes: - *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *pH: 6.0-8.5*
* *DISSOLVED CHLORIDE: 250 (mg/L)*
* *DISSOLVED SULPHATE: 500 (mg/L)*
* *DISSOLVED IRON: 0.3 (mg/L)*

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NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-09

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PROJECT NUMBER: E00100101

FIGURE: A5-17

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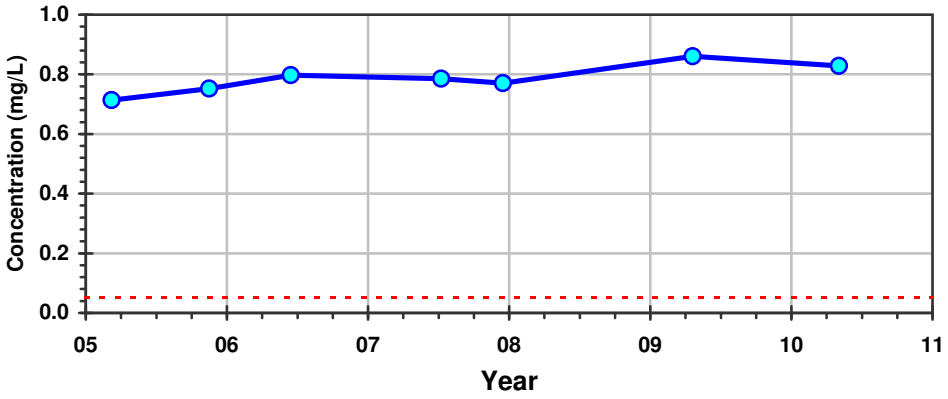
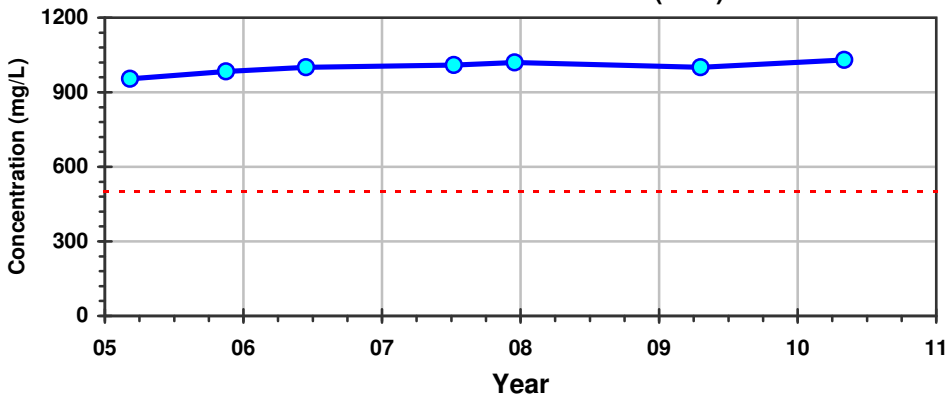
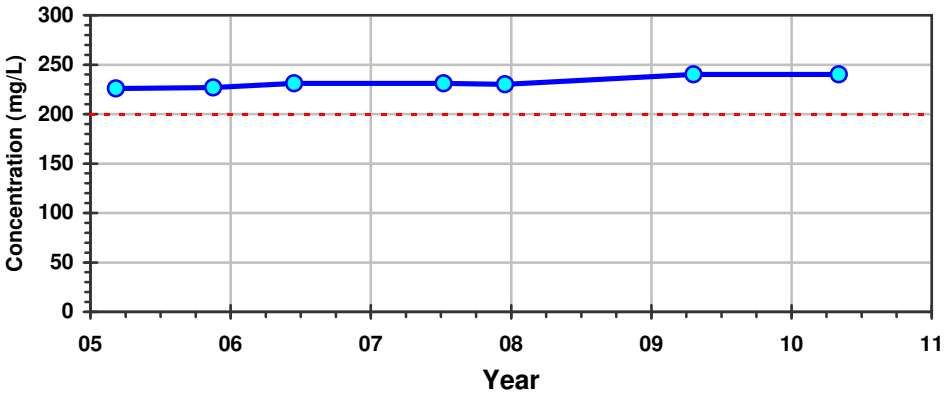
DISSOLVED MANGANESE



TOTAL DISSOLVED SOLIDS (TDS)



DISSOLVED SODIUM



Notes: - *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *DISSOLVED MANGANESE: 0.05 (mg/L)*
* *TOTAL DISSOLVED SOLIDS (TDS): 500 (mg/L)*
* *DISSOLVED SODIUM: 200 (mg/L)*

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NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-09

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PROJECT NUMBER: **E00100101**

FIGURE: **A5-18**

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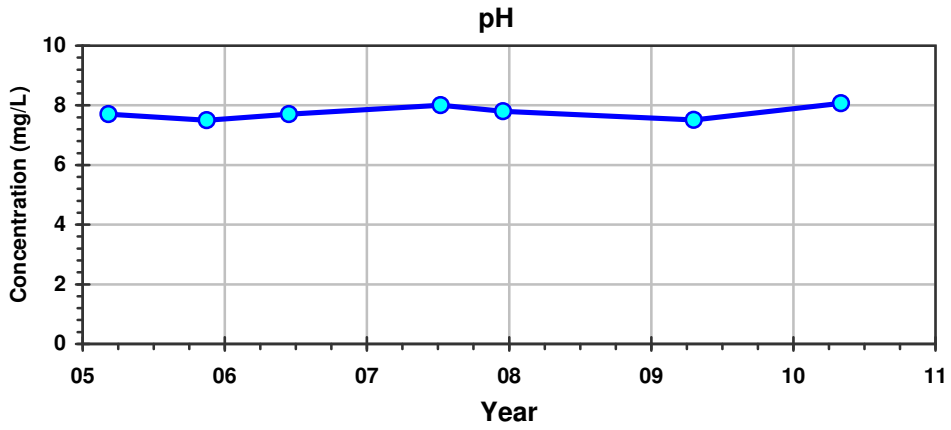

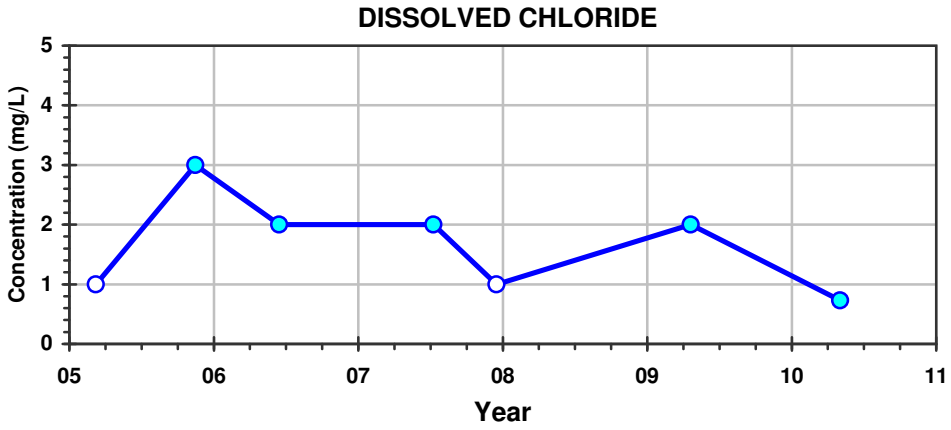

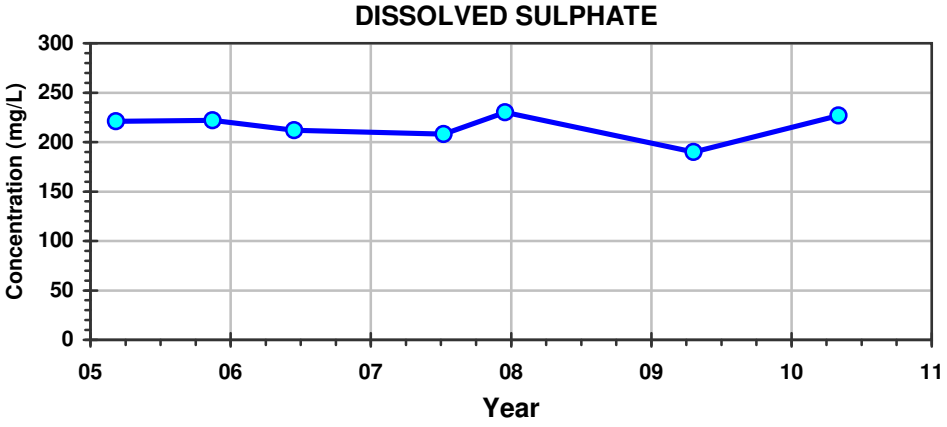

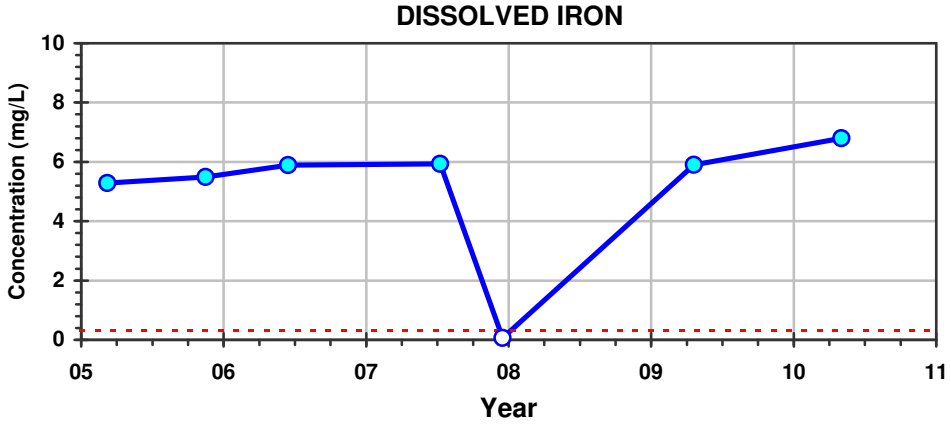

Notes: - *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *pH: 6.0-8.5*
* *DISSOLVED CHLORIDE: 250 (mg/L)*
* *DISSOLVED SULPHATE: 500 (mg/L)*
* *DISSOLVED IRON: 0.3 (mg/L)*

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NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-10

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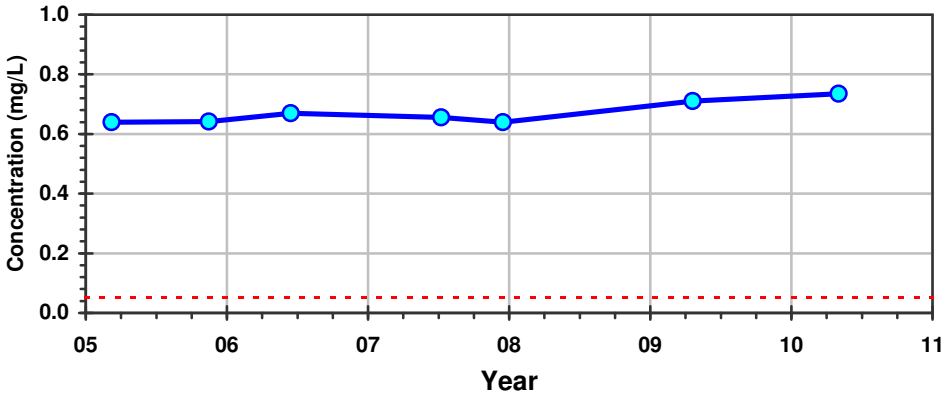
PROJECT NUMBER: **E00100101**

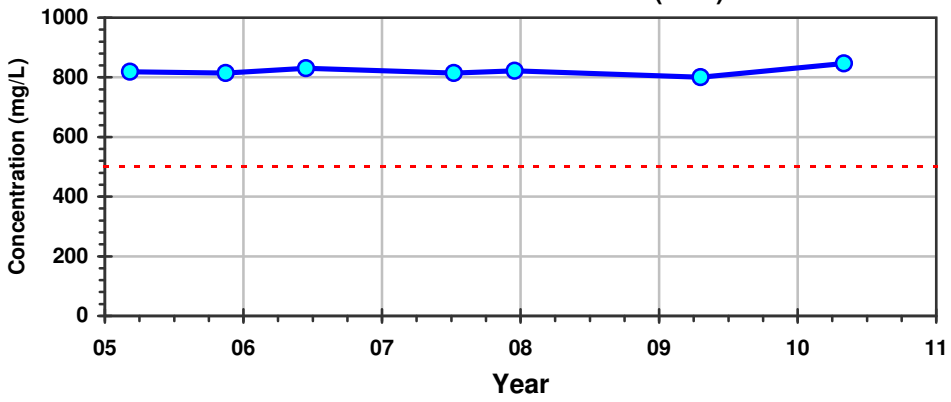
FIGURE: **A5-19**

J:\E001s\E00100101 (NCIA 2010 Beverly Channel GW Monitoring)\12.0_Reports\12.3_Backend\Appendices\Appendix 5 - Hydrochemical Control Charts

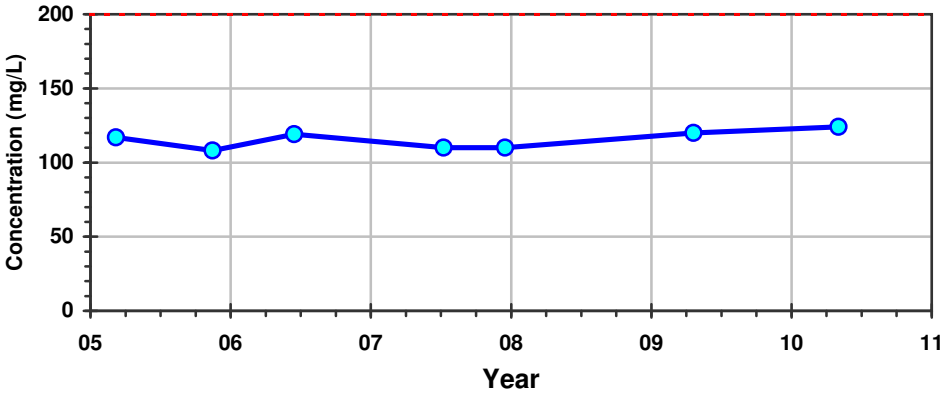
DISSOLVED MANGANESE



TOTAL DISSOLVED SOLIDS (TDS)



DISSOLVED SODIUM



Notes:
- *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *DISSOLVED MANGANESE: 0.05 (mg/L)*
* *TOTAL DISSOLVED SOLIDS (TDS): 500 (mg/L)*
* *DISSOLVED SODIUM: 200 (mg/L)*

Infrastructure & Environment

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-10

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PROJECT NUMBER: **E00100101**

FIGURE: **A5-20**

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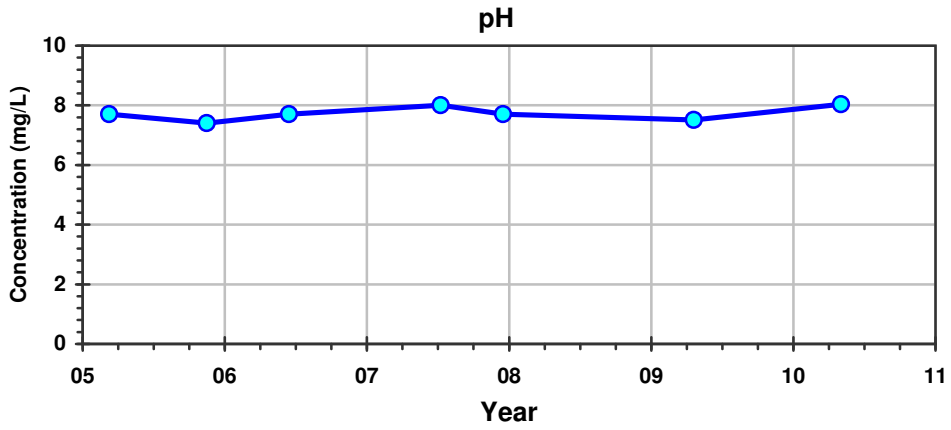

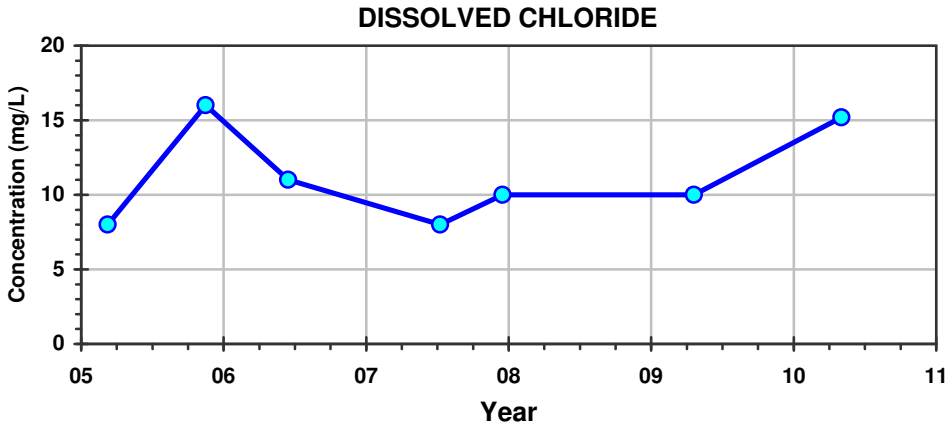

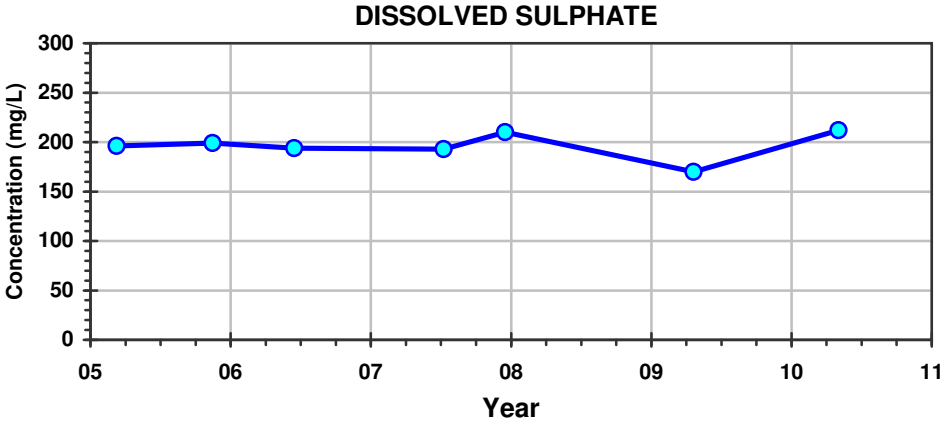

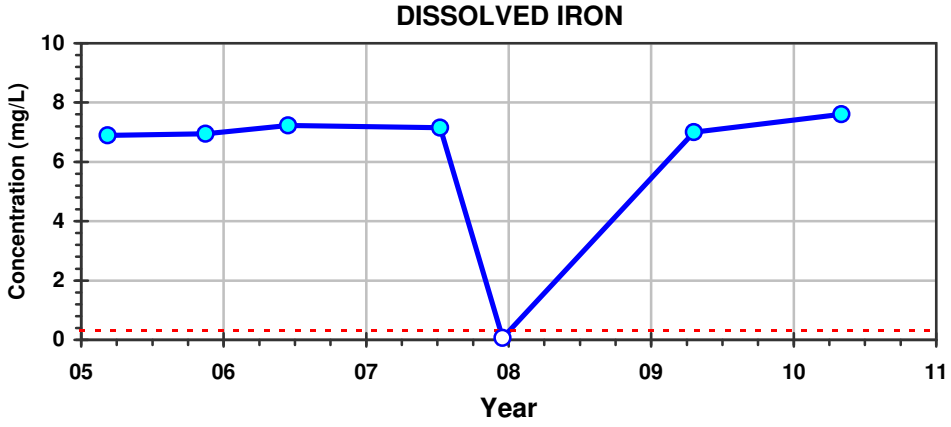

Notes: - *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *pH: 6.0-8.5*
* *DISSOLVED CHLORIDE: 250 (mg/L)*
* *DISSOLVED SULPHATE: 500 (mg/L)*
* *DISSOLVED IRON: 0.3 (mg/L)*

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NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-11

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PROJECT NUMBER: **E00100101**

FIGURE: **A5-21**

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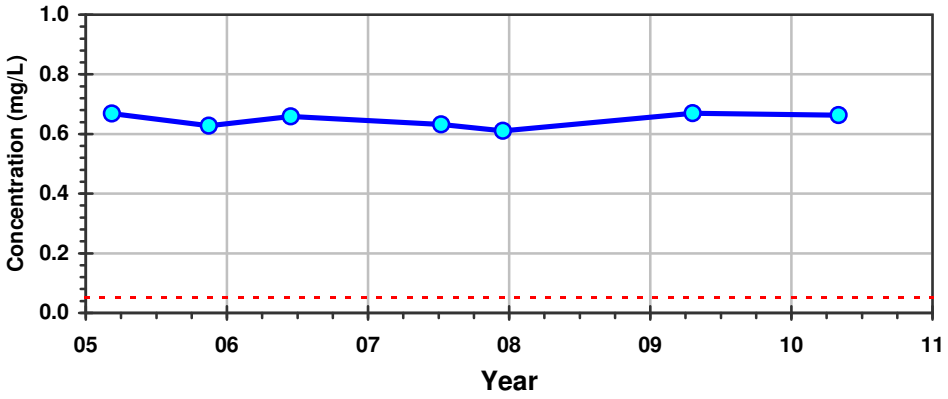
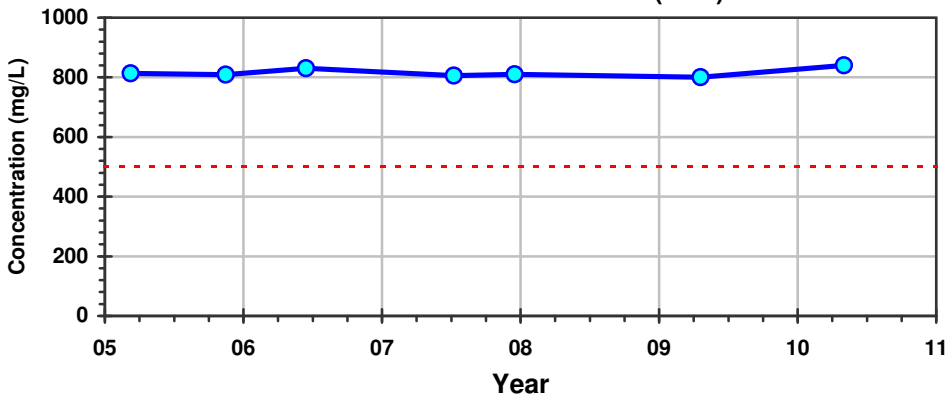
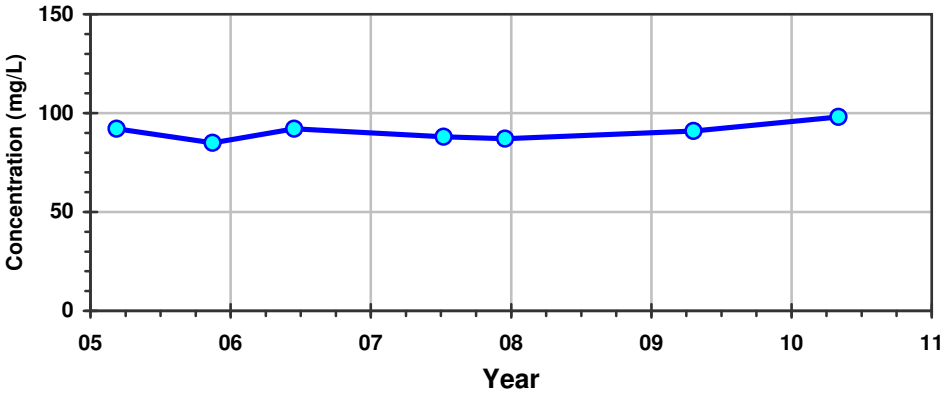
DISSOLVED MANGANESE



TOTAL DISSOLVED SOLIDS (TDS)



DISSOLVED SODIUM



Notes:
- *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *DISSOLVED MANGANESE: 0.05 (mg/L)*
* *TOTAL DISSOLVED SOLIDS (TDS): 500 (mg/L)*
* *DISSOLVED SODIUM: 200 (mg/L)*

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NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-11

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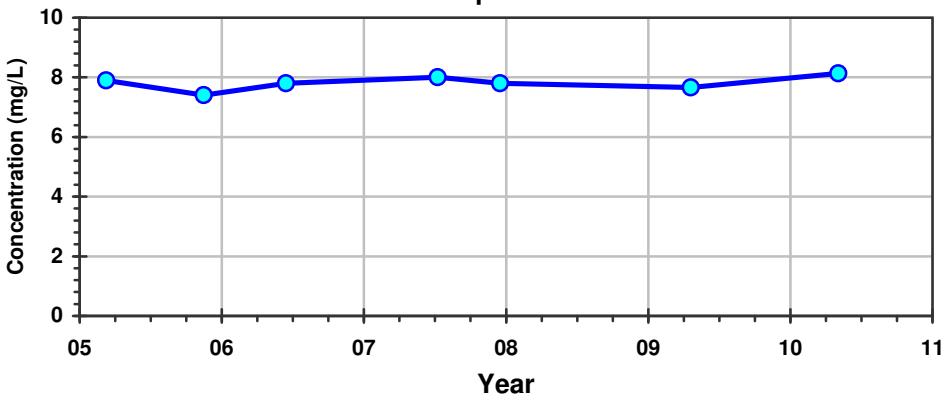
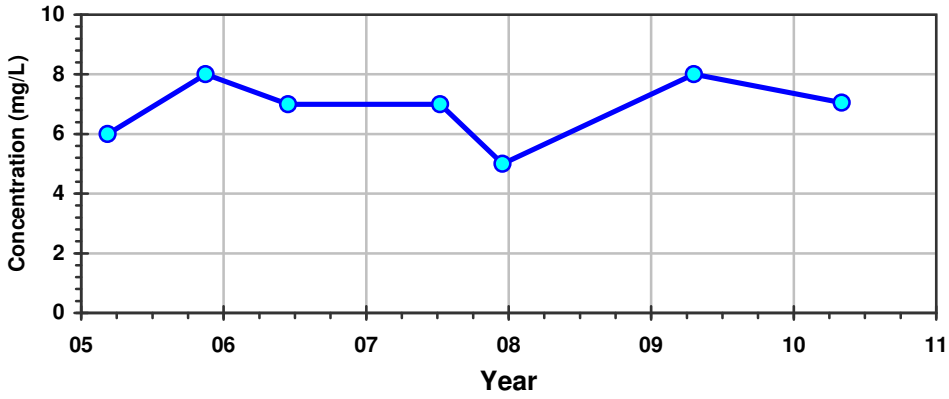
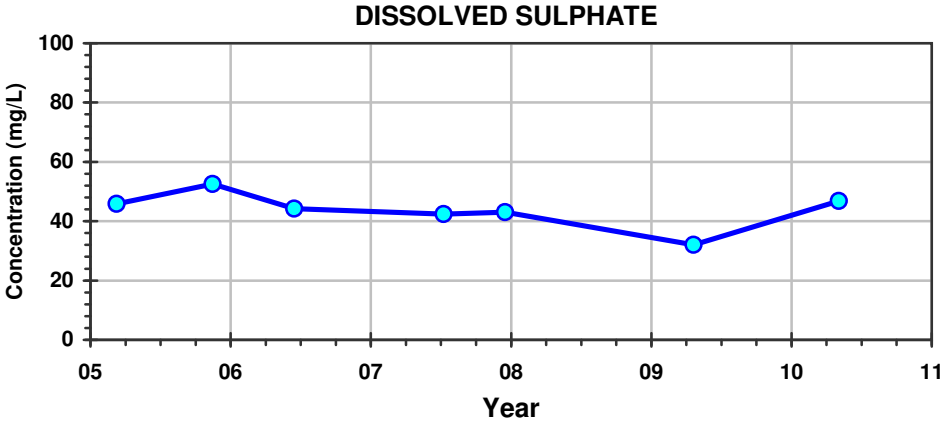
PROJECT NUMBER: E00100101

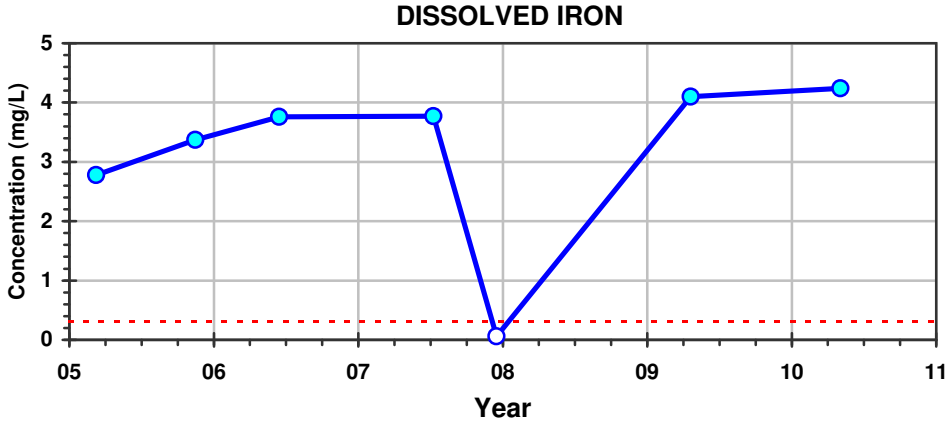
FIGURE: A5-22

J:\E001s\E00100101 (NCIA 2010 Beverly Channel GW Monitoring)\12.0_Reports\12.3_Backend\Appendices\Appendix 5 - Hydrochemical Control Charts









Notes: - *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *pH: 6.0-8.5*
* *DISSOLVED CHLORIDE: 250 (mg/L)*
* *DISSOLVED SULPHATE: 500 (mg/L)*
* *DISSOLVED IRON: 0.3 (mg/L)*

Infrastructure & Environment

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-12

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PROJECT NUMBER: **E00100101**

FIGURE: **A5-23**

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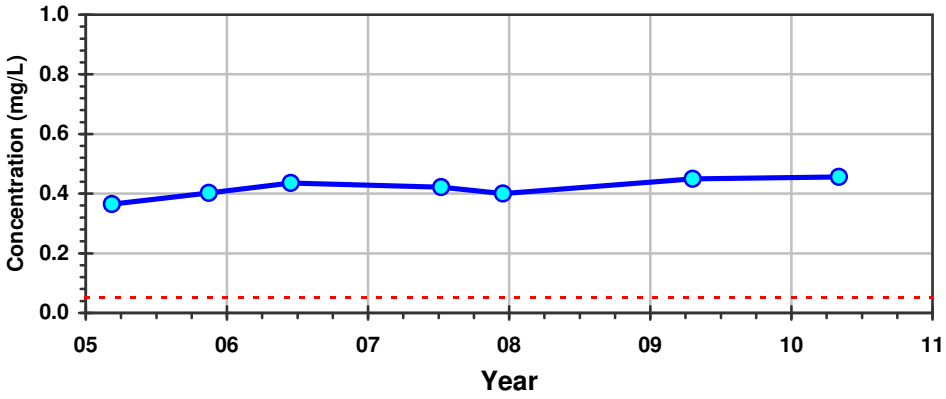
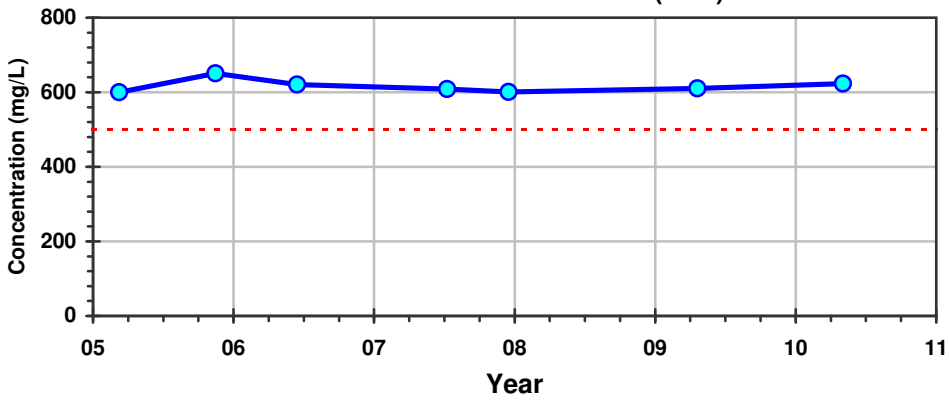
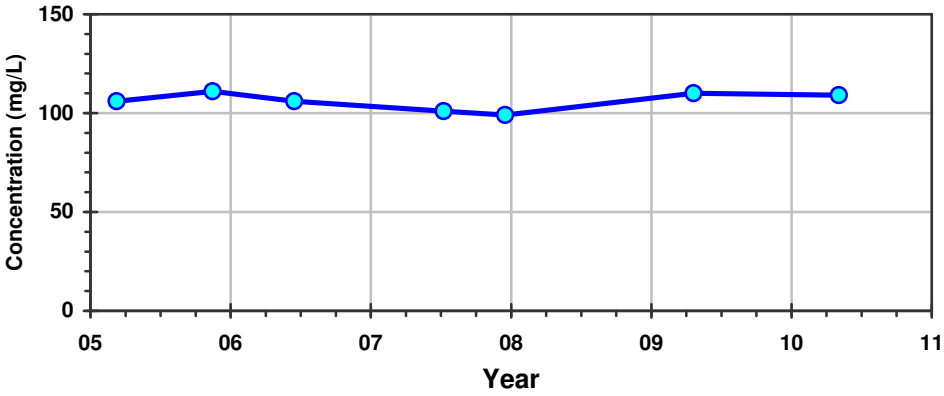
DISSOLVED MANGANESE



TOTAL DISSOLVED SOLIDS (TDS)



DISSOLVED SODIUM



Notes:
- *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *DISSOLVED MANGANESE: 0.05 (mg/L)*
* *TOTAL DISSOLVED SOLIDS (TDS): 500 (mg/L)*
* *DISSOLVED SODIUM: 200 (mg/L)*

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NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-12

WorleyParsons
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PROJECT NUMBER: **E00100101**

FIGURE: **A5-24**

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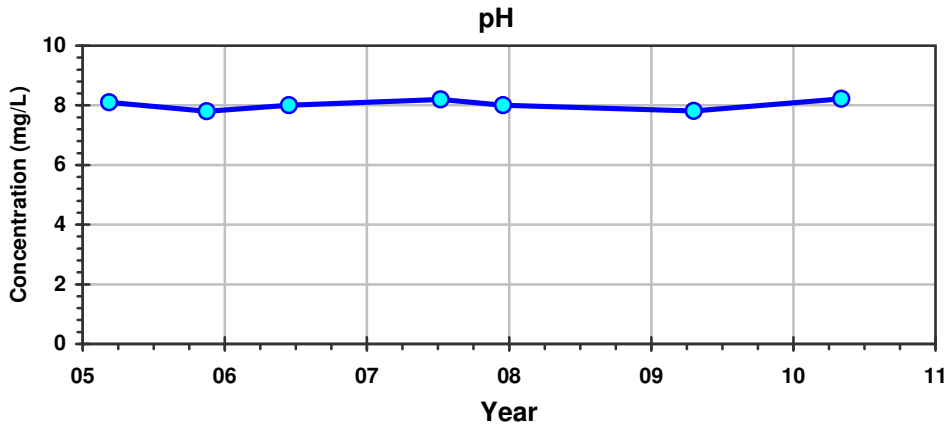

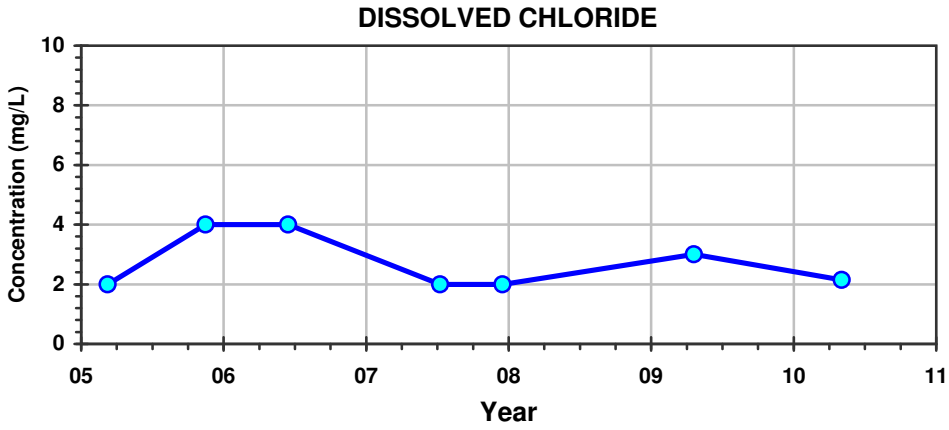

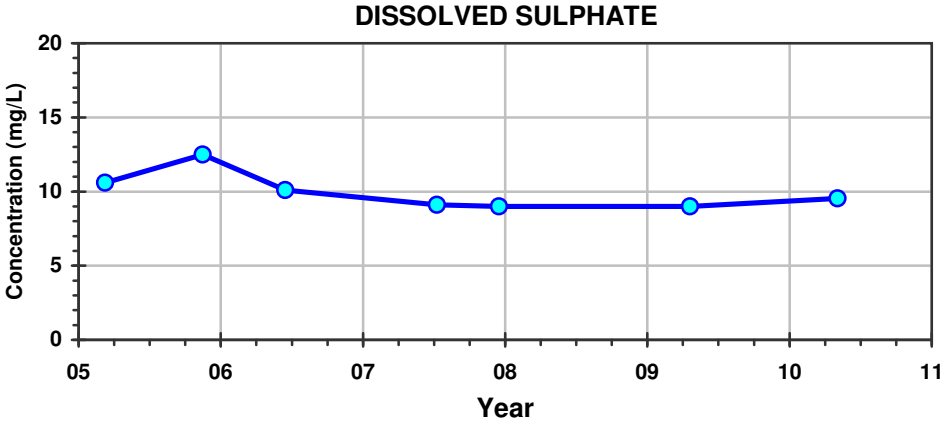

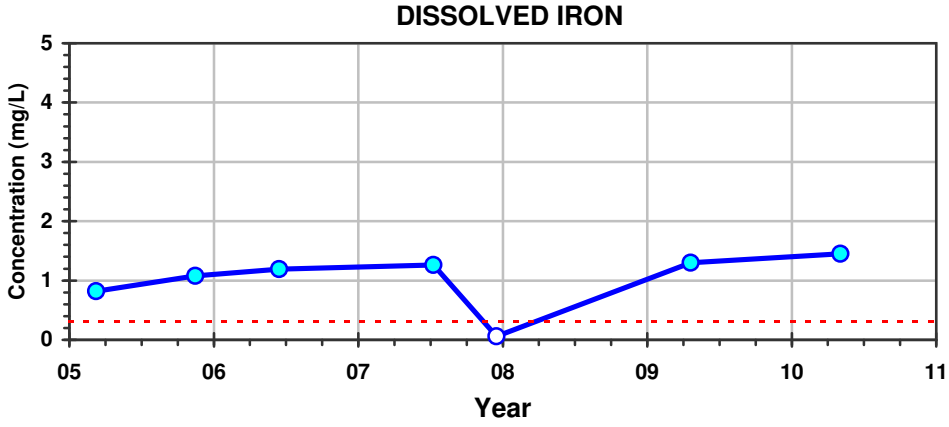

Notes: - *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *pH: 6.0-8.5*
* *DISSOLVED CHLORIDE: 250 (mg/L)*
* *DISSOLVED SULPHATE: 500 (mg/L)*
* *DISSOLVED IRON: 0.3 (mg/L)*

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NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-13

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PROJECT NUMBER: **E00100101**

FIGURE: **A5-25**

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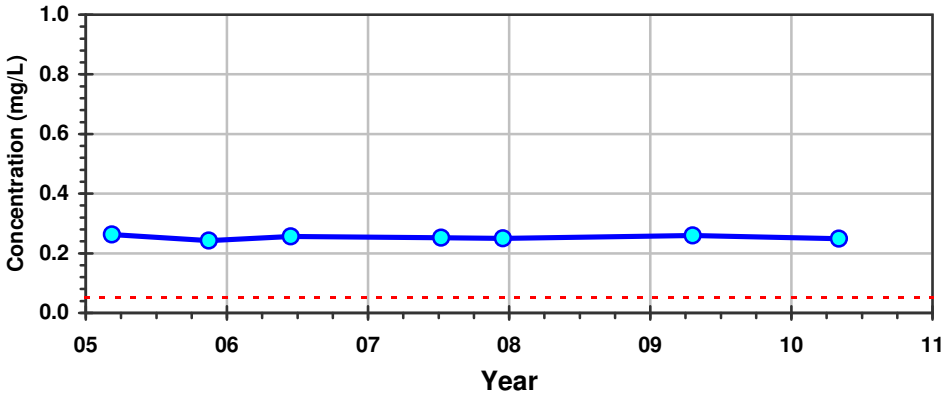
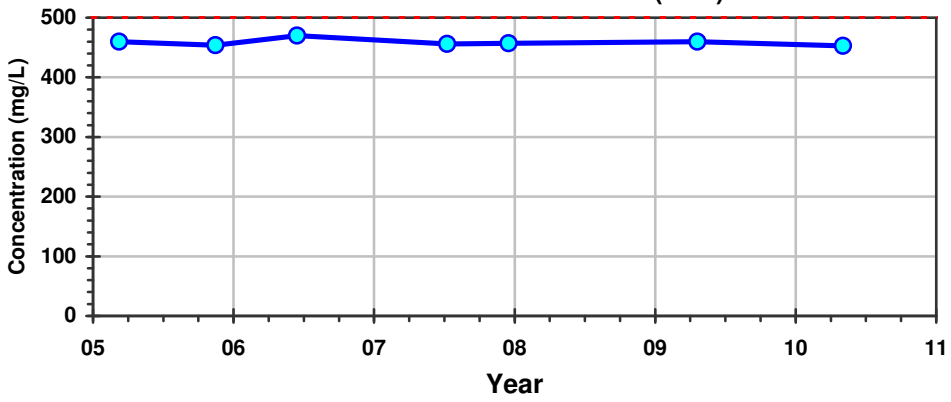
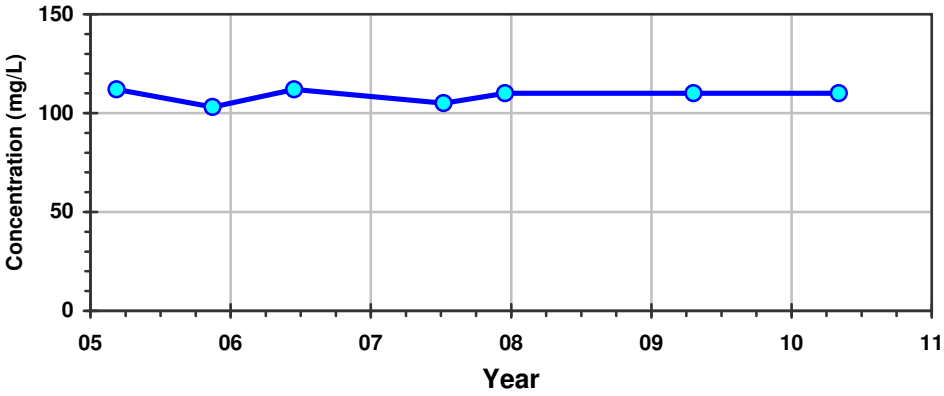
DISSOLVED MANGANESE



TOTAL DISSOLVED SOLIDS (TDS)



DISSOLVED SODIUM



Notes:
- *Filled symbols denote sample values*
- *Unfilled symbols denote values are less than detection limit(s)*

--- Canadian Drinking Water AO Guidelines (Health Canada, 2008)

* *DISSOLVED MANGANESE: 0.05 (mg/L)*
* *TOTAL DISSOLVED SOLIDS (TDS): 500 (mg/L)*
* *DISSOLVED SODIUM: 200 (mg/L)*

Infrastructure & Environment

NORTHEAST CAPITAL INDUSTRIAL ASSOCIATION
2010 GROUNDWATER QUALITY MONITORING
HYDROCHEMICAL CONTROL CHARTS

MONITORING STATION: MW-13

WorleyParsons
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09-JUN-10 date	edited by	KS drawn by	app by

PROJECT NUMBER: E00100101

FIGURE: A5-26

J:\E001s\E00100101 (NCIA 2010 Beverly Channel GW Monitoring)\12.0_Reports\12.3_Backend\Appendices\Appendix 5 - Hydrochemical Control Charts

Appendix 6 Statistical Tables

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Appendix 6
Statistical Tables: MW-01

PROJECT NO.: E00100101

Monitoring Station	Units	Spring 2005	Fall 2005	Spring 2006	Summer 2007	Fall 2007	Spring 2009	Spring 2010	Minimum	Maximum	Mean	Standard Deviation	Count
Groundwater Elevation													
Depth To Groundwater	(m btoc)	15.55	15.64	15.23	15.23	15.38	15.29	15.70	15.23	15.7	15.4	0.2	7
Groundwater Surface Elevation	(m asl)	602.49	602.4	602.81	602.81	602.66	602.75	602.34	602.34	602.81	602.6	0.2	7
Field-Measured Parameters													
Electrical Conductivity	(µS/cm)	---	---	---	---	---	---	749	N/A	N/A	N/A	N/A	1
pH	(---)	---	---	---	---	---	---	6.95	N/A	N/A	N/A	N/A	1
Temperature	(°C)	---	---	---	---	---	---	5.6	N/A	N/A	N/A	N/A	1
Select Indicator Parameters													
Calcium	(mg/L)	94.6	94.8	99.7	95.1	87	84	98.6	84	99.7	93.4	5.8	7
Chloride	(mg/L)	4	4	4	3	2	5	3.46	2	5	3.6	0.9	7
Fluoride	(mg/L)	0.19	0.13	0.14	0.13	0.2	0.14	0.15	0.13	0.2	0.2	0.0	7
Iron	(mg/L)	1.02	1.67	1.81	1.84	<0.06	<0.06	2.02	1.02	2.02	1.7	0.4	7
Magnesium	(mg/L)	24.8	26.9	27.3	26.1	23	24	28.4	23	28.4	25.8	1.9	7
Manganese	(mg/L)	0.605	0.662	0.7	0.664	0.67	0.66	0.73	0.605	0.73	0.7	0.0	7
Potassium	(mg/L)	3.1	2.3	2.9	2.3	2.2	2.4	---	2.2	3.1	2.5	0.4	6
Sodium	(mg/L)	40	36	37	33	34	36	38.1	33	40	36.3	2.4	7
Bicarbonate	(mg/L)	444	451	448	445	470	450	453	444	470	451.6	8.7	7
Carbonate	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Hydroxide	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Nitrite-as-Nitrogen	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.06	<0.003	<0.050	N/A	N/A	N/A	N/A	7
Nitrate-as-Nitrogen	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.2	0.003	<0.050	0.003	0.003	0.003	N/A	7
Nitrite-plus-Nitrate-as-Nitrogen	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.2	0.003	<0.071	0.003	0.003	0.003	N/A	7
Sulphate	(mg/L)	57.4	61.1	56.8	54.6	60	44	62	44	62	56.6	6.1	7
Dissolved Organic Carbon	(mg/L)	3	3	3	3	2	2.3	3	2	3	2.8	0.4	7
Electrical Conductivity	(µS/cm)	762	760	748	718	770	770	762	718	770	755.7	18.2	7
Ion Balance	(%)	100	97.6	103	98.6	0.87	93	102	0.87	103	85.0	37.2	7
pH	(---)	7.7	7.9	8	7.8	7.8	7.67	8.06	7.67	8.06	7.8	0.1	7
Phenols	(mg/L)	<0.001	<0.001	<0.001	<0.001	0.002	0.003	<0.0010	0.002	0.003	0.003	0.001	7
Total Dissolved Solids	(mg/L)	442	447	448	433	442	410	456	410	456	439.7	14.9	7
Total Alkalinity as $CaCO_3$	(mg/L)	364	370	367	365	390	370	371	364	390	371.0	8.8	7
Total Hardness as $CaCO_3$	(mg/L)	338	347	361	345	310	310	363	310	363	339.1	21.8	7
Dissolved Metals Parameters													
Aluminum	(mg/L)	0.02	0.01	<0.01	<0.01	<0.001	<0.001	<0.0050	0.01	0.02	0.0	0.0	7
Antimony	(mg/L)	0.0008	0.0005	0.0006	0.0004	<0.0002	<0.0002	<0.00040	0.0004	0.0008	0.0006	0.0002	7
Arsenic	(mg/L)	0.0008	0.0009	0.0009	0.0009	<0.001	0.0008	0.00095	0.0008	0.00095	0.0009	0.0001	7
Barium	(mg/L)	0.199	0.143	0.134	0.127	0.11	---	0.132	0.11	0.199	0.14	0.03	6
Beryllium	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.00050	N/A	N/A	N/A	N/A	7
Bismuth	(mg/L)	<0.00005	<0.0001	<0.00005	<0.00005	---	---	---	N/A	N/A	N/A	N/A	4
Boron	(mg/L)	0.053	0.046	0.045	0.054	0.05	---	0.053	0.045	0.054	0.1	0.004	6
Cadmium	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.000005	<0.00010	N/A	N/A	N/A	N/A	7
Chromium	(mg/L)	0.0009	<0.0004	0.0027	0.0011	<0.001	<0.001	<0.0050	0.0009	0.0027	0.0016	0.0010	7
Cobalt	(mg/L)	0.0017	0.0015	0.0008	0.0009	0.0009	0.0008	0.00088	0.0008	0.0017	0.0011	0.0004	7
Copper	(mg/L)	<0.0006	0.0007	<0.0006	<0.0006	<0.0002	0.0005	<0.0010	0.0005	0.0007	0.0006	N/A	7
Lead	(mg/L)	0.0004	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.00010	0.0004	0.0004	0.0	N/A	7
Mercury	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	0.000001	<0.00010	0.000001	0.000001	0.000001	N/A	7
Molybdenum	(mg/L)	0.0007	0.0013	0.0004	0.0009	0.0008	0.0004	0.00046	0.0004	0.0013	0.0007	0.0003	7
Nickel	(mg/L)	0.0004	0.0012	<0.0001	0.003	0.0027	0.0009	0.0025	0.0004	0.003	0.0018	0.0011	7
Selenium	(mg/L)	<0.0004	<0.0004	<0.0004	0.0005	<0.001	<0.0002	<0.00040	0.0005	0.0005	0.0005	N/A	7
Silver	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.00010	N/A	N/A	N/A	N/A	7
Strontium	(mg/L)	0.579	0.551	0.554	0.558	0.53	---	---	0.53	0.579	0.6	0.018	5
Thallium	(mg/L)	<0.0005	<0.0001	<0.00005	<0.00005	<0.0002	<0.0002	<0.000050	N/A	N/A	N/A	N/A	7
Tin	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	---	N/A	N/A	N/A	N/A	6
Titanium	(mg/L)	0.0013	0.0012	0.001	0.0008	0.001	<0.001	0.00081	0.0008	0.0013	0.0010	0.0002	7
Uranium	(mg/L)	0.0026	0.0023	0.0022	0.0022	0.0024	0.0021	0.00209	0.00209	0.0026	0.0023	0.0002	7
Vanadium	(mg/L)	0.0003	0.0001	<0.0001	<0.0001	<0.001	<0.001	<0.00010	0.0001	0.0003	0.0	0.0	7
Zinc	(mg/L)	0.004	<0.002	0.005	<0.002	<0.003	<0.003	<0.0020	0.004	0.005	0.005	N/A	7
Petroleum Hydrocarbon Parameters													
Benzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Toluene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00075	N/A	N/A	N/A	N/A	7
Ethylbenzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Xylenes-total	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0008	<0.0008	<0.001	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10})	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10}) - BTEX	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F2 ($C_{>10}$-C_{16})	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.25	N/A	N/A	N/A	N/A	7

NOTES:

1. ***Electrical conductivity values standardized to 25°C (within the limitations of the equipment).***
2. ***--- Denotes parameter not measured.***
3. ***Highlighting indicates parameters exceeding Canadian Drinking Water AO Guidelines (Health Canada, 2008).***

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Appendix 6
Statistical Tables: MW-02

PROJECT NO.: E00100101

Monitoring Station	Units	Spring 2005	Fall 2005	Spring 2006	Summer 2007	Fall 2007	Spring 2009	Spring 2010	Minimum	Maximum	Mean	Standard Deviation	Count
Groundwater Elevation													
Depth To Groundwater	(m btoc)	27.14	27.23	27.05	27.18	26.99	27.13	27.20	26.99	27.23	27.1	0.1	7
Groundwater Surface Elevation	(m asl)	604.17	604.08	604.26	604.13	604.32	604.18	604.11	604.08	604.32	604.2	0.1	7
Field-Measured Parameters													
Electrical Conductivity	(µS/cm)	---	---	---	---	---	---	1,306	N/A	N/A	N/A	N/A	1
pH	(---)	---	---	---	---	---	---	7.04	N/A	N/A	N/A	N/A	1
Temperature	(°C)	---	---	---	---	---	---	4.8	N/A	N/A	N/A	N/A	1
Select Indicator Parameters													
Calcium	(mg/L)	113	125	162	154	140	130	147	113	162	138.7	17.2	7
Chloride	(mg/L)	13	38	23	12	13	18	11.6	11.6	38	18.4	9.6	7
Fluroide	(mg/L)	0.21	0.11	0.09	0.09	0.1	0.08	0.094	0.08	0.21	0.1	0.04	7
Iron	(mg/L)	0.275	0.085	3.19	8.72	<0.06	1.5	9.35	0.085	9.35	3.9	4.2	7
Magnesium	(mg/L)	34.5	51.3	55.4	54.4	46	44	54	34.5	55.4	48.5	7.6	7
Manganese	(mg/L)	0.236	0.671	1.09	0.841	0.7	0.53	0.505	0.236	1.09	0.7	0.3	7
Potassium	(mg/L)	6.8	7.2	5.5	4.3	4.5	4.4	---	4.3	7.2	5.5	1.3	6
Sodium	(mg/L)	111	120	95	83	83	81	87.2	81	120	94.3	15.4	7
Bicarbonate	(mg/L)	514	575	629	630	660	610	597	514	660	602.1	47.3	7
Carbonate	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Hydroxide	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Nitrite-as-Nitrogen	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.06	<0.003	<0.050	N/A	N/A	N/A	N/A	7
Nitrate-as-Nitrogen	(mg/L)	0.1	<0.1	<0.1	<0.1	<0.2	0.005	<0.050	0.005	0.1	0.053	0.1	7
Nitrite-plus-Nitrate-as-Nitrogen	(mg/L)	0.1	<0.1	<0.1	<0.1	<0.2	0.005	<0.071	0.005	0.1	0.053	0.1	7
Sulphate	(mg/L)	227	270	274	263	290	230	268	227	290	260.3	23.3	7
Dissolved Organic Carbon	(mg/L)	8	6	5	6	5	4.1	5.4	4.1	8	5.6	1.2	7
Electrical Conductivity	(µS/cm)	1210	1400	1420	1360	1400	1400	1290	1210	1420	1354.3	77.0	7
Ion Balance	(%)	101	98.4	102	98.7	0.84	89	100	0.84	102	84.3	37.0	7
pH	(---)	7.7	7.9	7.9	7.9	7.4	7.36	7.97	7.36	7.97	7.7	0.3	7
Phenols	(mg/L)	<0.001	<0.001	<0.001	0.002	0.002	0.002	<0.0010	0.002	0.002	0.002	0.0000	7
Total Dissolved Solids	(mg/L)	759	894	925	880	895	810	866	759	925	861.3	57.3	7
Total Alkalinity as $CaCO_3$	(mg/L)	422	471	516	516	540	500	489	422	540	493.4	38.4	7
Total Hardness as $CaCO_3$	(mg/L)	424	523	633	609	530	500	589	424	633	544.0	72.0	7
Dissolved Metals Parameters													
Aluminum	(mg/L)	0.02	0.03	<0.01	<0.01	<0.001	<0.001	<0.0050	0.02	0.03	0.03	0.01	7
Antimony	(mg/L)	0.001	0.0006	0.0007	0.0005	<0.0002	<0.0002	<0.00040	0.0005	0.001	0.0007	0.0002	7
Arsenic	(mg/L)	0.0025	0.0014	0.0024	0.0036	0.003	0.0038	0.00369	0.0014	0.0038	0.0029	0.0009	7
Barium	(mg/L)	0.204	0.152	0.107	0.0749	0.04	---	0.0544	0.04	0.204	0.11	0.06	6
Beryllium	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.00050	N/A	N/A	N/A	N/A	7
Bismuth	(mg/L)	<0.00005	<0.0001	0.00005	<0.00005	---	---	---	N/A	N/A	N/A	N/A	4
Boron	(mg/L)	0.12	0.189	0.152	0.136	0.13	---	0.144	0.12	0.189	0.1	0.024	6
Cadmium	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.000005	<0.00010	N/A	N/A	N/A	N/A	7
Chromium	(mg/L)	0.0013	<0.0004	0.004	<0.0004	0.004	<0.001	<0.0050	0.0013	0.004	0.0031	0.0016	7
Cobalt	(mg/L)	0.0008	0.0031	0.0031	0.0032	0.0026	0.0017	0.00157	0.0008	0.0032	0.0023	0.0009	7
Copper	(mg/L)	0.0015	0.0021	0.0011	0.0007	0.0005	0.0002	<0.0010	0.0002	0.0021	0.0010	0.0007	7
Lead	(mg/L)	0.0004	<0.0001	<0.0001	<0.0001	0.0003	<0.0002	<0.00010	0.0003	0.0004	0.0	0.0001	7
Mercury	(mg/L)	0.0001	<0.0001	<0.0001	<0.0001	<0.00005	0.000001	<0.00010	0.000001	0.0001	0.000051	0.0001	7
Molybdenum	(mg/L)	0.0046	0.0148	0.0009	0.0008	0.0006	0.0005	0.00041	0.00041	0.0148	0.0032	0.0053	7
Nickel	(mg/L)	<0.0001	0.0644	0.0012	0.0055	0.0046	0.0019	0.0043	0.0012	0.0644	0.0137	0.0249	7
Selenium	(mg/L)	0.0008	0.0006	0.0005	<0.0004	<0.001	<0.0002	<0.00040	0.0005	0.0008	0.0006	0.0002	7
Silver	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.00010	N/A	N/A	N/A	N/A	7
Strontium	(mg/L)	1.03	1.54	1.46	1.46	1.3	---	---	1.03	1.54	1.4	0.20	5
Thallium	(mg/L)	<0.0005	0.00006	<0.00005	<0.00005	<0.0002	<0.0002	<0.000050	0.00006	0.00006	0.0	N/A	7
Tin	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	---	N/A	N/A	N/A	N/A	6
Titanium	(mg/L)	0.0012	0.0015	0.0012	0.0011	0.002	<0.001	0.00104	0.00104	0.002	0.0013	0.0004	7
Uranium	(mg/L)	0.0032	0.0053	0.0023	0.0019	0.0014	0.0014	0.00139	0.00139	0.0053	0.0024	0.0014	7
Vanadium	(mg/L)	0.0017	0.0005	<0.0001	<0.0001	0.002	<0.001	<0.00010	0.0005	0.002	0.001	0.001	7
Zinc	(mg/L)	0.004	<0.002	0.1012	<0.002	<0.003	<0.003	0.0044	0.004	0.1012	0.037	0.056	7
Petroleum Hydrocarbon Parameters													
Benzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Toluene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00075	N/A	N/A	N/A	N/A	7
Ethylbenzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Xylenes-total	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0008	<0.0008	<0.001	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10})	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10}) - BTEX	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F2 ($C_{>10}$-C_{16})	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.25	N/A	N/A	N/A	N/A	7

NOTES:

1. ***Electrical conductivity values standardized to 25°C (within the limitations of the equipment).***
2. ***--- Denotes parameter not measured.***
3. ***Highlighting indicates parameters exceeding Canadian Drinking Water AO Guidelines (Health Canada, 2008).***

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Appendix 6
Statistical Tables: MW-03

PROJECT NO.: E00100101

Monitoring Station	Units	Spring 2005	Fall 2005	Spring 2006	Summer 2007	Fall 2007	Spring 2009	Spring 2010	Minimum	Maximum	Mean	Standard Deviation	Count
Groundwater Elevation													
Depth To Groundwater	(m btoc)	22.5	23.47	22.5	22.45	23.36	22.54	22.82	22.45	23.47	22.8	0.4	7
Groundwater Surface Elevation	(m asl)	601.93	600.96	601.93	601.98	601.07	601.89	601.61	600.96	601.98	601.6	0.4	7
Field-Measured Parameters													
Electrical Conductivity	(µS/cm)	---	---	---	---	---	---	974	N/A	N/A	N/A	N/A	1
pH	(---)	---	---	---	---	---	---	7.14	N/A	N/A	N/A	N/A	1
Temperature	(°C)	---	---	---	---	---	---	6.6	N/A	N/A	N/A	N/A	1
Select Indicator Parameters													
Calcium	(mg/L)	106	104	109	108	98	92	104	92	109	103.0	6.0	7
Chloride	(mg/L)	31	35	35	36	35	35	44.3	31	44.3	35.9	4.0	7
Fluroide	(mg/L)	0.14	0.1	0.1	0.11	0.1	0.11	0.117	0.1	0.14	0.1	0.01	7
Iron	(mg/L)	3.19	4.47	4.85	4.89	<0.06	<0.06	5.23	3.19	5.23	4.5	0.8	7
Magnesium	(mg/L)	36.1	36.4	36.6	37.7	32	32	36.8	32	37.7	35.4	2.4	7
Manganese	(mg/L)	0.264	0.239	0.258	0.249	0.25	0.24	0.253	0.239	0.264	0.3	0.009	7
Potassium	(mg/L)	3.5	3	3	3	2.7	2.8	---	2.7	3.5	3.0	0.3	6
Sodium	(mg/L)	56	54	52	55	49	51	52.3	49	56	52.8	2.4	7
Bicarbonate	(mg/L)	442	445	439	440	460	430	435	430	460	441.6	9.5	7
Carbonate	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Hydroxide	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Nitrite-as-Nitrogen	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.06	<0.003	<0.050	N/A	N/A	N/A	N/A	7
Nitrate-as-Nitrogen	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.2	0.009	<0.050	0.009	0.009	0.009	N/A	7
Nitrite-plus-Nitrate-as-Nitrogen	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.2	0.009	<0.071	0.009	0.009	0.009	N/A	7
Sulphate	(mg/L)	113	122	116	122	130	98	124	98	130	117.9	10.3	7
Dissolved Organic Carbon	(mg/L)	5	4	3	3	3	2.5	5.3	2.5	5.3	3.7	1.1	7
Electrical Conductivity	(µS/cm)	937	949	943	930	960	950	967	930	967	948.0	12.8	7
Ion Balance	(%)	103	98.1	102	102	0.87	95	96.4	0.87	103	85.3	37.4	7
pH	(---)	7.4	7.8	8	8	7.7	7.57	8.03	7.4	8.03	7.8	0.2	7
Phenols	(mg/L)	<0.001	<0.001	<0.001	<0.001	0.002	0.003	<0.0010	0.002	0.003	0.003	0.001	7
Total Dissolved Solids	(mg/L)	563	573	568	578	571	520	579	520	579	564.6	20.4	7
Total Alkalinity as $CaCO_3$	(mg/L)	362	365	360	361	380	350	357	350	380	362.1	9.2	7
Total Hardness as $CaCO_3$	(mg/L)	413	410	423	425	370	360	411	360	425	401.7	25.9	7
Dissolved Metals Parameters													
Aluminum	(mg/L)	<0.01	0.01	<0.01	<0.01	<0.001	<0.001	<0.0050	0.01	0.01	0.01	N/A	7
Antimony	(mg/L)	0.0007	0.0006	0.0006	0.0004	<0.0002	<0.0002	<0.00040	0.0004	0.0007	0.0006	0.0001	7
Arsenic	(mg/L)	0.0012	0.0014	0.0013	0.0014	<0.001	0.0013	0.00154	0.0012	0.00154	0.0014	0.0001	7
Barium	(mg/L)	0.0744	0.0418	0.0411	0.0379	0.03	---	0.038	0.03	0.0744	0.04	0.02	6
Beryllium	(mg/L)	<0.0005	<0.0005	<0.00045	<0.0005	<0.001	<0.001	<0.00050	N/A	N/A	N/A	N/A	7
Bismuth	(mg/L)	<0.00005	0.00009	<0.00005	<0.00005	---	---	---	N/A	N/A	N/A	N/A	4
Boron	(mg/L)	0.128	0.119	0.109	0.115	0.11	---	0.116	0.109	0.128	0.1	0.007	6
Cadmium	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.000005	<0.00010	N/A	N/A	N/A	N/A	7
Chromium	(mg/L)	0.0009	<0.0004	0.0029	0.0012	0.002	<0.001	<0.0050	0.0009	0.0029	0.0018	0.0009	7
Cobalt	(mg/L)	0.0012	0.0008	0.0008	0.0008	0.0008	0.0006	0.00076	0.0006	0.0012	0.0008	0.0002	7
Copper	(mg/L)	<0.0006	0.0008	0.0007	<0.0006	0.0002	0.0007	<0.0010	0.0002	0.0008	0.0006	0.0003	7
Lead	(mg/L)	<0.0001	<0.0001	<0.0001	0.0005	0.0002	<0.0002	<0.00010	0.0002	0.0005	0.0004	0.0002	7
Mercury	(mg/L)	<0.0001	<0.0001	<0.0001	0.00009	<0.00005	0.000001	<0.00010	0.000001	0.00009	0.000046	0.0001	7
Molybdenum	(mg/L)	0.0008	0.0015	0.0007	0.0029	0.0012	0.0007	0.00079	0.0007	0.0029	0.0012	0.0008	7
Nickel	(mg/L)	<0.0001	0.0003	<0.0001	<0.00001	0.0042	0.001	0.0027	0.0003	0.0042	0.0021	0.0018	7
Selenium	(mg/L)	<0.0004	0.0005	0.0005	<0.0002	<0.001	<0.0002	<0.00040	0.0005	0.0005	0.0005	0.0000	7
Silver	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.00010	N/A	N/A	N/A	N/A	7
Strontium	(mg/L)	0.811	0.828	0.845	0.001	0.82	---	---	0.001	0.845	0.7	0.3692	5
Thallium	(mg/L)	<0.0005	<0.0001	<0.00005	0.0007	<0.0002	<0.0002	<0.000050	0.0007	0.0007	0.0007	N/A	7
Tin	(mg/L)	<0.0002	<0.0002	<0.0002	0.882	<0.001	<0.001	---	N/A	N/A	N/A	N/A	6
Titanium	(mg/L)	0.001	0.0019	0.001	<0.00005	0.002	<0.001	0.00079	0.00079	0.002	0.0013	0.0006	7
Uranium	(mg/L)	0.0007	0.0007	0.0007	0.0002	0.0006	0.0006	0.00056	0.0002	0.0007	0.0006	0.0002	7
Vanadium	(mg/L)	<0.0001	<0.0001	<0.0001	<0.001	0.001	<0.001	0.00036	0.00036	0.001	0.001	0.0005	7
Zinc	(mg/L)	0.003	<0.002	0.01	<0.002	<0.003	<0.003	<0.0020	0.003	0.01	0.007	0.0049	7
Petroleum Hydrocarbon Parameters													
Benzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Toluene	(mg/L)	<0.0005	<0.0005	0.0005	<0.0005	<0.0004	<0.0004	<0.00075	0.0005	0.0005	0.0005	N/A	7
Ethylbenzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Xylenes-total	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0008	<0.0008	<0.001	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10})	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10}) - BTEX	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F2 ($C_{>10}$-C_{16})	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.25	N/A	N/A	N/A	N/A	7

NOTES:

1. ***Electrical conductivity values standardized to 25°C (within the limitations of the equipment).***
2. ***--- Denotes parameter not measured.***
3. ***Highlighting indicates parameters exceeding Canadian Drinking Water AO Guidelines (Health Canada, 2008).***

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Appendix 6
Statistical Tables: MW-04

PROJECT NO.: E00100101

Monitoring Station	Units	Spring 2005	Fall 2005	Spring 2006	Summer 2007	Fall 2007	Spring 2009	Spring 2010	Minimum	Maximum	Mean	Standard Deviation	Count
Groundwater Elevation													
Depth To Groundwater	(m btoc)	18.59	18.57	18.59	18.55	18.52	18.66	18.87	18.52	18.87	18.6	0.1	7
Groundwater Surface Elevation	(m asl)	602.2	602.22	602.2	602.24	602.27	602.13	601.92	601.92	602.27	602.2	0.1	7
Field-Measured Parameters													
Electrical Conductivity	(µS/cm)	---	---	---	---	---	---	1,213	N/A	N/A	N/A	N/A	1
pH	(---)	---	---	---	---	---	---	7.14	N/A	N/A	N/A	N/A	1
Temperature	(°C)	---	---	---	---	---	---	8.2	N/A	N/A	N/A	N/A	1
Select Indicator Parameters													
Calcium	(mg/L)	142	147	147	154	140	140	152	140	154	146.0	5.6	7
Chloride	(mg/L)	137	157	155	190	200	150	131	131	200	160.0	25.8	7
Fluroide	(mg/L)	0.15	0.12	0.13	0.14	0.1	0.14	0.129	0.1	0.15	0.1	0.02	7
Iron	(mg/L)	0.173	0.104	0.005	<0.005	<0.06	<0.06	0.078	0.005	0.173	0.1	0.1	7
Magnesium	(mg/L)	37.7	40	42.7	43.6	35	37	44	35	44	40.0	3.5	7
Manganese	(mg/L)	0.152	0.053	0.13	0.009	0.016	0.03	0.258	0.009	0.258	0.1	0.092	7
Potassium	(mg/L)	9.9	9.5	10.2	10.4	10	9.4	---	9.4	10.4	9.9	0.4	6
Sodium	(mg/L)	57	59	57	68	71	63	63.4	57	71	62.6	5.4	7
Bicarbonate	(mg/L)	458	449	455	449	460	450	470	449	470	455.9	7.6	7
Carbonate	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Hydroxide	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Nitrite-as-Nitrogen	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.06	<0.003	<0.050	N/A	N/A	N/A	N/A	7
Nitrate-as-Nitrogen	(mg/L)	0.8	1.2	0.5	0.5	0.6	0.4	0.09	0.09	1.2	0.584	0.3	7
Nitrite-plus-Nitrate-as-Nitrogen	(mg/L)	0.8	1.2	0.5	0.5	0.6	0.4	0.09	0.09	1.2	0.584	0.3	7
Sulphate	(mg/L)	81.4	87	86.2	84.5	82	74	92.1	74	92.1	83.9	5.6	7
Dissolved Organic Carbon	(mg/L)	1	5	4	3	3	2.8	3	1	5	3.1	1.2	7
Electrical Conductivity	(µS/cm)	1200	1280	1280	1360	1400	1200	1220	1200	1400	1277.1	78.7	7
Ion Balance	(%)	98.5	98.2	99.4	99.9	0.9	99	107	0.9	107	86.1	37.7	7
pH	(---)	7.5	7.8	7.7	7.9	7.7	7.62	8.01	7.5	8.01	7.7	0.2	7
Phenols	(mg/L)	<0.001	<0.001	<0.001	<0.001	0.002	<0.002	<0.0010	0.002	0.002	0.002	N/A	7
Total Dissolved Solids	(mg/L)	694	726	724	774	763	690	724	690	774	727.9	31.6	7
Total Alkalinity as $CaCO_3$	(mg/L)	375	368	373	368	380	370	385	368	385	374.1	6.4	7
Total Hardness as $CaCO_3$	(mg/L)	510	532	543	564	500	500	561	500	564	530.0	27.4	7
Dissolved Metals Parameters													
Aluminum	(mg/L)	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.0050	N/A	N/A	N/A	N/A	7
Antimony	(mg/L)	0.0009	0.0007	0.0008	<0.0004	<0.0002	<0.0002	<0.00040	0.0007	0.0009	0.0008	0.0001	7
Arsenic	(mg/L)	0.0011	0.0006	0.0006	0.0008	<0.001	<0.0002	0.00117	0.0006	0.00117	0.0009	0.0003	7
Barium	(mg/L)	0.0737	0.0809	0.764	0.085	0.08	---	0.0843	0.0737	0.764	0.19	0.2790	6
Beryllium	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.00050	N/A	N/A	N/A	N/A	7
Bismuth	(mg/L)	<0.00005	0.00007	<0.00005	<0.00005	---	---	---	N/A	N/A	N/A	N/A	4
Boron	(mg/L)	0.101	0.093	0.092	0.1	0.09	---	0.098	0.09	0.101	0.1	0.0046	6
Cadmium	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	0.000024	<0.00010	0.000024	2.4E-05	0.00002	N/A	7
Chromium	(mg/L)	0.0018	0.0007	0.0017	0.0047	0.001	<0.001	<0.0050	0.0007	0.0047	0.0020	0.0016	7
Cobalt	(mg/L)	0.0007	0.0049	<0.0001	0.0001	<0.0003	<0.0003	0.00054	0.0001	0.0049	0.0016	0.0022	7
Copper	(mg/L)	0.0008	0.0012	0.0009	<0.0006	0.0006	0.0009	<0.0010	0.0006	0.0012	0.0009	0.0002	7
Lead	(mg/L)	0.0002	<0.0001	<0.0001	<0.0001	0.0002	<0.0002	<0.00010	0.0002	0.0002	0.0002	0.0000	7
Mercury	(mg/L)	<0.0001	0.0002	<0.0001	0.0002	<0.00005	0.000003	<0.00010	0.000003	0.0002	0.000134	0.0001	7
Molybdenum	(mg/L)	0.0005	0.003	0.0005	0.0005	0.0006	0.0004	0.00038	0.00038	0.003	0.0008	0.0010	7
Nickel	(mg/L)	<0.0001	0.014	0.0007	0.0042	0.0052	0.0021	0.0047	0.0007	0.014	0.0052	0.0047	7
Selenium	(mg/L)	0.0006	0.0009	0.001	0.0006	<0.001	<0.0002	0.00106	0.0006	0.00106	0.0008	0.0002	7
Silver	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.00010	N/A	N/A	N/A	N/A	7
Strontium	(mg/L)	0.561	0.616	0.585	0.59	0.61	---	---	0.561	0.616	0.6	0.0219	5
Thallium	(mg/L)	<0.0005	<0.0001	<0.00005	0.00024	<0.0002	<0.0002	<0.000050	0.00024	0.00024	0.0002	N/A	7
Tin	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	---	N/A	N/A	N/A	N/A	6
Titanium	(mg/L)	0.0007	0.0004	0.0003	0.0004	0.002	<0.001	0.00046	0.0003	0.002	0.0007	0.0006	7
Uranium	(mg/L)	0.0029	0.0025	0.0028	0.0027	0.0023	0.0029	0.00284	0.0023	0.0029	0.0027	0.0002	7
Vanadium	(mg/L)	<0.0001	<0.0001	0.0022	0.0009	<0.001	<0.001	0.00072	0.00072	0.0022	0.001	0.0008	7
Zinc	(mg/L)	0.004	0.029	0.005	0.005	<0.003	<0.003	<0.0020	0.004	0.029	0.011	0.0122	7
Petroleum Hydrocarbon Parameters													
Benzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Toluene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00075	N/A	N/A	N/A	N/A	7
Ethylbenzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Xylenes-total	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0008	<0.0008	<0.001	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10})	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10}) - BTEX	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F2 ($C_{>10}$-C_{16})	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.25	N/A	N/A	N/A	N/A	7

NOTES:

1. ***Electrical conductivity values standardized to 25°C (within the limitations of the equipment).***
2. ***--- Denotes parameter not measured.***
3. ***Highlighting indicates parameters exceeding Canadian Drinking Water AO Guidelines (Health Canada, 2008).***

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Appendix 6
Statistical Tables: MW-05

PROJECT NO.: E00100101

Monitoring Station	Units	Spring 2005	Fall 2005	Spring 2006	Summer 2007	Fall 2007	Spring 2009	Spring 2010	Minimum	Maximum	Mean	Standard Deviation	Count
Groundwater Elevation													
Depth To Groundwater	(m btoc)	25.32	26.77	25.7	25.52	25.34	25.61	25.92	25.32	26.77	25.7	0.5	7
Groundwater Surface Elevation	(m asl)	599.57	598.12	599.19	599.37	599.55	599.28	598.97	598.12	599.57	599.2	0.5	7
Field-Measured Parameters													
Electrical Conductivity	(µS/cm)	---	---	---	---	---	---	985	N/A	N/A	N/A	N/A	1
pH	(---)	---	---	---	---	---	---	7.08	N/A	N/A	N/A	N/A	1
Temperature	(°C)	---	---	---	---	---	---	7.6	N/A	N/A	N/A	N/A	1
Select Indicator Parameters													
Calcium	(mg/L)	96.2	98.6	107	110	100	120	120	96.2	120	107.4	9.8	7
Chloride	(mg/L)	15	21	22	25	22	30	30.6	15	30.6	23.7	5.4	7
Fluroide	(mg/L)	0.18	0.11	0.11	0.11	0.1	0.12	0.107	0.1	0.18	0.1	0.03	7
Iron	(mg/L)	1.14	3.31	3.48	4	<0.06	<0.06	3.39	1.14	4	3.1	1.1	7
Magnesium	(mg/L)	27.5	30.1	33.5	34.3	30	34	36.7	27.5	36.7	32.3	3.2	7
Manganese	(mg/L)	0.402	0.531	0.583	0.682	0.66	0.72	0.758	0.402	0.758	0.6	0.123	7
Potassium	(mg/L)	6.1	6.9	7.6	7.3	7.4	7.6	---	6.1	7.6	7.2	0.6	6
Sodium	(mg/L)	51	43	44	42	41	43	46.1	41	51	44.3	3.4	7
Bicarbonate	(mg/L)	403	422	421	426	440	420	428	403	440	422.9	11.1	7
Carbonate	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Hydroxide	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Nitrite-as-Nitrogen	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.06	<0.003	<0.050	N/A	N/A	N/A	N/A	7
Nitrate-as-Nitrogen	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.2	0.007	<0.050	0.007	0.007	0.007	N/A	7
Nitrite-plus-Nitrate-as-Nitrogen	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.2	0.007	<0.071	0.007	0.007	0.007	N/A	7
Sulphate	(mg/L)	105	115	124	135	150	130	144	105	150	129.0	15.8	7
Dissolved Organic Carbon	(mg/L)	5	4	4	4	3	2.5	3.3	2.5	5	3.7	0.8	7
Electrical Conductivity	(µS/cm)	831	881	902	931	930	960	969	831	969	914.9	48.0	7
Ion Balance	(%)	103	95.4	101	98.5	0.88	100	103	0.88	103	86.0	37.6	7
pH	(---)	7.6	7.9	7.7	8.1	7.6	7.58	7.95	7.58	8.1	7.8	0.2	7
Phenols	(mg/L)	<0.001	<0.001	<0.001	0.002	<0.001	0.003	<0.0010	0.002	0.003	0.003	0.0007	7
Total Dissolved Solids	(mg/L)	499	522	545	563	566	570	596	499	596	551.6	32.5	7
Total Alkalinity as $CaCO_3$	(mg/L)	330	346	345	349	360	350	351	330	360	347.3	9.1	7
Total Hardness as $CaCO_3$	(mg/L)	353	370	405	416	380	430	451	353	451	400.7	34.9	7
Dissolved Metals Parameters													
Aluminum	(mg/L)	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.0050	N/A	N/A	N/A	N/A	7
Antimony	(mg/L)	0.0008	0.0005	0.0007	0.0005	<0.0002	<0.0002	0.00052	0.0005	0.0008	0.0006	0.0001	7
Arsenic	(mg/L)	0.0035	0.0081	0.0051	0.0018	0.001	0.0014	0.0017	0.001	0.0081	0.0032	0.0026	7
Barium	(mg/L)	0.0618	0.0564	0.454	0.0455	0.04	---	0.0478	0.04	0.454	0.12	0.16	6
Beryllium	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.00050	N/A	N/A	N/A	N/A	7
Bismuth	(mg/L)	<0.00005	0.00006	<0.00005	<0.00005	---	---	---	N/A	N/A	N/A	N/A	4
Boron	(mg/L)	0.14	0.116	0.081	0.052	0.06	---	0.064	0.052	0.14	0.1	0.035	6
Cadmium	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.000005	<0.00010	N/A	N/A	N/A	N/A	7
Chromium	(mg/L)	0.0009	<0.0004	0.0016	0.0005	0.003	<0.001	<0.0050	0.0005	0.003	0.0015	0.0011	7
Cobalt	(mg/L)	0.0008	0.001	0.0007	0.0008	0.0007	0.0007	0.00082	0.0007	0.001	0.0008	0.0001	7
Copper	(mg/L)	<0.0006	0.0007	0.0006	0.0009	<0.0002	0.0008	<0.0010	0.0006	0.0009	0.0008	0.0001	7
Lead	(mg/L)	0.0002	<0.0001	<0.0001	<0.0001	0.0002	<0.0002	<0.00010	0.0002	0.0002	0.0002	0.0000	7
Mercury	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	0.000001	<0.00010	0.000001	0.000001	0.000001	N/A	7
Molybdenum	(mg/L)	0.0022	0.0029	0.0013	0.0006	0.0005	0.0006	0.00063	0.0005	0.0029	0.0012	0.0010	7
Nickel	(mg/L)	<0.0001	0.0022	0.0002	0.0034	0.0029	0.0014	0.0039	0.0002	0.0039	0.0023	0.0014	7
Selenium	(mg/L)	0.0004	0.0004	<0.0004	0.0005	<0.001	<0.0002	0.00086	0.0004	0.00086	0.0005	0.0002	7
Silver	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.00010	N/A	N/A	N/A	N/A	7
Strontium	(mg/L)	0.71	0.667	0.659	0.684	0.63	---	---	0.63	0.71	0.7	0.030	5
Thallium	(mg/L)	<0.0005	<0.0001	<0.00005	<0.00005	<0.0002	<0.0002	<0.000050	N/A	N/A	N/A	N/A	7
Tin	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	---	N/A	N/A	N/A	N/A	6
Titanium	(mg/L)	0.0008	0.0009	0.0005	0.0006	0.002	<0.001	0.00088	0.0005	0.002	0.0009	0.0005	7
Uranium	(mg/L)	0.0014	0.0008	0.0007	0.0007	0.0007	0.0007	0.0007	0.0007	0.0014	0.0008	0.0003	7
Vanadium	(mg/L)	0.0002	0.0001	0.0008	<0.0001	0.001	<0.001	0.00017	0.0001	0.001	0.000	0.0004	7
Zinc	(mg/L)	0.003	<0.002	0.004	0.005	<0.003	<0.003	0.0025	0.0025	0.005	0.004	0.0011	7
Petroleum Hydrocarbon Parameters													
Benzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Toluene	(mg/L)	<0.0005	<0.0005	0.0005	<0.0005	<0.0004	<0.0004	<0.00075	0.0005	0.0005	0.0005	N/A	7
Ethylbenzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Xylenes-total	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0008	<0.0008	<0.001	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10})	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10}) - BTEX	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F2 ($C_{>10}$-C_{16})	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.25	N/A	N/A	N/A	N/A	7

NOTES:

1. ***Electrical conductivity values standardized to 25°C (within the limitations of the equipment).***
2. ***--- Denotes parameter not measured.***
3. ***Highlighting indicates parameters exceeding Canadian Drinking Water AO Guidelines (Health Canada, 2008).***

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Appendix 6
Statistical Tables: MW-06

PROJECT NO.: E00100101

Monitoring Station	Units	Spring 2005	Fall 2005	Spring 2006	Summer 2007	Fall 2007	Spring 2009	Spring 2010	Minimum	Maximum	Mean	Standard Deviation	Count
Groundwater Elevation													
Depth To Groundwater	(m btoc)	32.17	32.17	32.76	32.13	31.97	31.99	32.24	31.97	32.76	32.2	0.3	7
Groundwater Surface Elevation	(m asl)	598.11	598.11	597.52	598.15	598.31	598.29	598.04	597.52	598.31	598.1	0.3	7
Field-Measured Parameters													
Electrical Conductivity	(µS/cm)	---	---	---	---	---	---	1,773	N/A	N/A	N/A	N/A	1
pH	(---)	---	---	---	---	---	---	7.21	N/A	N/A	N/A	N/A	1
Temperature	(°C)	---	---	---	---	---	---	5.7	N/A	N/A	N/A	N/A	1
Select Indicator Parameters													
Calcium	(mg/L)	171	148	168	157	160	180	156	148	180	162.9	10.8	7
Chloride	(mg/L)	4	13	10	10	3	6	8.45	3	13	7.8	3.6	7
Fluroide	(mg/L)	0.18	0.15	0.14	0.17	0.2	0.14	0.173	0.14	0.2	0.2	0.02	7
Iron	(mg/L)	2.92	2.96	3.58	4.5	<0.06	5.7	5.38	2.92	5.7	4.2	1.2	7
Magnesium	(mg/L)	58.9	52	57.7	55.3	54	62	57.1	52	62	56.7	3.3	7
Manganese	(mg/L)	1.32	0.943	1.01	1.28	1.5	1.7	1.39	0.943	1.7	1.3	0.265	7
Potassium	(mg/L)	6.1	5	5.5	4.8	5	5.5	---	4.8	6.1	5.3	0.5	6
Sodium	(mg/L)	138	211	190	182	140	150	194	138	211	172.1	29.1	7
Bicarbonate	(mg/L)	560	641	633	637	630	590	626	560	641	616.7	30.2	7
Carbonate	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Hydroxide	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Nitrite-as-Nitrogen	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.06	<0.003	<0.050	N/A	N/A	N/A	N/A	7
Nitrate-as-Nitrogen	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.2	0.004	<0.050	0.004	0.004	0.004	N/A	7
Nitrite-plus-Nitrate-as-Nitrogen	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.2	0.004	<0.071	0.004	0.004	0.004	N/A	7
Sulphate	(mg/L)	451	471	482	478	560	420	520	420	560	483.1	45.6	7
Dissolved Organic Carbon	(mg/L)	5	8	7	7	6	5.1	6.7	5	8	6.4	1.1	7
Electrical Conductivity	(µS/cm)	1580	1780	1700	1760	1700	1700	1770	1580	1780	1712.9	68.5	7
Ion Balance	(%)	105	101	104	99.4	0.85	110	98.8	0.85	110	88.4	38.8	7
pH	(---)	7.5	8	7.7	7.9	7.7	7.47	8.06	7.47	8.06	7.8	0.2	7
Phenols	(mg/L)	<0.001	<0.001	<0.001	<0.001	0.002	0.003	<0.0010	0.002	0.003	0.003	0.0007	7
Total Dissolved Solids	(mg/L)	1,100	1,220	1,220	1,200	1,230	1,100	1,250	1100	1250	1188.6	62.3	7
Total Alkalinity as $CaCO_3$	(mg/L)	459	526	519	522	510	490	513	459	526	505.6	23.6	7
Total Hardness as $CaCO_3$	(mg/L)	670	584	657	620	620	710	625	584	710	640.9	41.3	7
Dissolved Metals Parameters													
Aluminum	(mg/L)	<0.01	0.01	<0.01	<0.01	<0.001	<0.001	<0.0050	0.01	0.01	0.01	N/A	7
Antimony	(mg/L)	0.0009	0.0005	0.0009	0.0005	<0.0002	<0.0002	<0.00040	0.0005	0.0009	0.0007	0.0002	7
Arsenic	(mg/L)	0.0042	0.0038	0.0034	0.0042	0.003	0.005	0.00507	0.003	0.00507	0.0041	0.0008	7
Barium	(mg/L)	0.071	0.0557	0.0666	0.043	0.03	---	0.0353	0.03	0.071	0.05	0.02	6
Beryllium	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.00050	N/A	N/A	N/A	N/A	7
Bismuth	(mg/L)	<0.00005	0.00006	<0.00005	<0.00005	---	---	---	N/A	N/A	N/A	N/A	4
Boron	(mg/L)	0.148	0.16	0.149	0.159	0.13	---	0.15	0.13	0.16	0.1	0.011	6
Cadmium	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	0.000009	<0.00010	0.000009	9.0E-06	0.00001	N/A	7
Chromium	(mg/L)	0.0035	<0.0004	0.0015	0.0014	0.002	<0.001	<0.0050	0.0014	0.0035	0.0021	0.0010	7
Cobalt	(mg/L)	0.0012	0.0012	0.0007	0.0009	0.0008	0.0004	0.00052	0.0004	0.0012	0.0008	0.0003	7
Copper	(mg/L)	0.0011	0.0012	0.0014	0.0014	0.0011	<0.0002	0.0012	0.0011	0.0014	0.0012	0.0001	7
Lead	(mg/L)	0.0004	<0.0001	<0.0001	<0.0001	0.0002	<0.0002	<0.00010	0.0002	0.0004	0.0003	0.0001	7
Mercury	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.000001	<0.00010	N/A	N/A	N/A	N/A	7
Molybdenum	(mg/L)	0.0014	0.0015	0.0014	0.0016	0.0012	0.001	0.00094	0.00094	0.0016	0.0013	0.0003	7
Nickel	(mg/L)	<0.0001	0.0004	<0.0001	0.006	0.0052	0.0015	0.0039	0.0004	0.006	0.0034	0.0024	7
Selenium	(mg/L)	0.0005	0.0005	0.0007	<0.0004	<0.001	<0.0002	0.00041	0.00041	0.0007	0.0005	0.0001	7
Silver	(mg/L)	<0.0002	<0.0002	<0.0002	<0.00021	<0.0001	<0.0001	<0.00010	N/A	N/A	N/A	N/A	7
Strontium	(mg/L)	1.2	1.26	1.28	1.42	1.4	---	---	1.2	1.42	1.3	0.094	5
Thallium	(mg/L)	<0.0005	<0.0001	<0.0005	<0.0005	<0.0002	<0.0002	<0.000050	N/A	N/A	N/A	N/A	7
Tin	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	---	N/A	N/A	N/A	N/A	6
Titanium	(mg/L)	0.0008	0.0015	0.001	0.0014	0.002	<0.001	0.00125	0.0008	0.002	0.0013	0.0004	7
Uranium	(mg/L)	0.0023	0.0015	0.0016	0.0016	0.0018	0.0017	0.00146	0.00146	0.0023	0.0017	0.0003	7
Vanadium	(mg/L)	0.0002	0.0001	<0.001	<0.0001	0.001	<0.001	0.00016	0.0001	0.001	0.000	0.0004	7
Zinc	(mg/L)	0.004	<0.002	0.008	0.003	<0.003	<0.003	0.0063	0.003	0.008	0.005	0.0023	7
Petroleum Hydrocarbon Parameters													
Benzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Toluene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00075	N/A	N/A	N/A	N/A	7
Ethylbenzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Xylenes-total	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0008	<0.0008	<0.001	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10})	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10}) - BTEX	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F2 ($C_{>10}$-C_{16})	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.25	N/A	N/A	N/A	N/A	7

NOTES:

1. ***Electrical conductivity values standardized to 25°C (within the limitations of the equipment).***
2. ***--- Denotes parameter not measured.***
3. ***Highlighting indicates parameters exceeding Canadian Drinking Water AO Guidelines (Health Canada, 2008).***

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Appendix 6
Statistical Tables: MW-07

PROJECT NO.: E00100101

Monitoring Station	Units	Spring 2005	Fall 2005	Spring 2006	Summer 2007	Fall 2007	Spring 2009	Spring 2010	Minimum	Maximum	Mean	Standard Deviation	Count
Groundwater Elevation													
Depth To Groundwater	(m btoc)	33.98	34.23	34.6	33.97	33.78	34	34.32	33.78	34.6	34.1	0.3	7
Groundwater Surface Elevation	(m asl)	597.03	596.78	596.41	597.04	597.23	597.01	596.69	596.41	597.23	596.9	0.3	7
Field-Measured Parameters													
Electrical Conductivity	(µS/cm)	---	---	---	---	---	---	2,640	N/A	N/A	N/A	N/A	1
pH	(---)	---	---	---	---	---	---	6.91	N/A	N/A	N/A	N/A	1
Temperature	(°C)	---	---	---	---	---	---	7.2	N/A	N/A	N/A	N/A	1
Select Indicator Parameters													
Calcium	(mg/L)	287	270	284	257	220	330	262	220	330	272.9	33.6	7
Chloride	(mg/L)	13	16	15	12	9	18	13.2	9	18	13.7	2.9	7
Fluroide	(mg/L)	0.11	0.08	0.07	0.09	0.1	0.08	0.135	0.07	0.135	0.1	0.02	7
Iron	(mg/L)	10.4	10.9	<0.005	10.9	<0.06	14	12.5	10.4	14	11.7	1.5	7
Magnesium	(mg/L)	100	94.8	96.4	89.8	72	110	93.5	72	110	93.8	11.5	7
Manganese	(mg/L)	1.88	1.83	1.86	1.78	1.6	2.3	1.9	1.6	2.3	1.9	0.2	7
Potassium	(mg/L)	6.6	5.5	6.2	4.6	5.1	6.6	---	4.6	6.6	5.8	0.8	6
Sodium	(mg/L)	287	268	269	248	230	320	274	230	320	270.9	28.5	7
Bicarbonate	(mg/L)	664	666	661	641	660	730	657	641	730	668.4	28.4	7
Carbonate	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Hydroxide	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Nitrite-as-Nitrogen	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.06	<0.003	<0.050	N/A	N/A	N/A	N/A	7
Nitrate-as-Nitrogen	(mg/L)	0.1	<0.1	0.1	<0.1	<0.2	0.004	<0.050	0.004	0.1	0.068	0.1	7
Nitrite-plus-Nitrate-as-Nitrogen	(mg/L)	0.1	<0.1	0.1	<0.1	<0.2	0.004	<0.071	0.004	0.1	0.068	0.1	7
Sulphate	(mg/L)	1,130	1,010	1,010	940	1,000	1,200	1,040	940	1200	1047.1	88.3	7
Dissolved Organic Carbon	(mg/L)	5	6	6	6	6	6.6	5.8	5	6.6	5.9	0.5	7
Electrical Conductivity	(µS/cm)	2680	2670	2530	2290	2500	3000	2600	2290	3000	2610.0	216.6	7
Ion Balance	(%)	102	102	105	103	0.84	110	100	0.84	110	89.0	39.0	7
pH	(---)	7.5	7.7	7.5	7.6	7.5	7.19	7.9	7.19	7.9	7.6	0.2	7
Phenols	(mg/L)	<0.001	<0.001	<0.001	<0.001	0.002	0.003	<0.0010	0.002	0.003	0.003	0.001	7
Total Dissolved Solids	(mg/L)	2,150	1,990	2,010	1,870	1,890	2,400	2,010	1870	2400	2045.7	181.3	7
Total Alkalinity as $CaCO_3$	(mg/L)	544	546	542	526	540	600	538	526	600	548.0	23.8	7
Total Hardness as $CaCO_3$	(mg/L)	1130	1060	1110	1010	850	1300	1040	850	1300	1071.4	136.1	7
Dissolved Metals Parameters													
Aluminum	(mg/L)	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.0050	N/A	N/A	N/A	N/A	7
Antimony	(mg/L)	0.0008	0.0007	0.0007	0.0005	<0.0002	<0.0002	<0.00040	0.0005	0.0008	0.0007	0.0001	7
Arsenic	(mg/L)	0.0017	0.0019	0.0022	0.0027	0.001	0.0021	0.00361	0.001	0.00361	0.0022	0.0008	7
Barium	(mg/L)	0.0733	0.053	0.0543	0.0596	0.04	---	0.049	0.04	0.0733	0.05	0.0111	6
Beryllium	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.00050	N/A	N/A	N/A	N/A	7
Bismuth	(mg/L)	<0.00005	0.00005	<0.00005	<0.00005	---	---	---	N/A	N/A	N/A	N/A	4
Boron	(mg/L)	0.366	0.311	0.312	0.289	0.26	---	0.279	0.26	0.366	0.3	0.0367	6
Cadmium	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	0.000016	<0.00010	0.000016	1.6E-05	0.00002	N/A	7
Chromium	(mg/L)	0.0017	<0.0004	0.0018	0.0011	0.004	<0.001	<0.0050	0.0011	0.004	0.0022	0.0013	7
Cobalt	(mg/L)	0.0026	0.002	0.0012	0.0014	0.0013	0.0013	0.00128	0.0012	0.0026	0.0016	0.0005	7
Copper	(mg/L)	0.0024	0.0018	0.0023	0.0015	0.0016	0.0007	0.0014	0.0007	0.0024	0.0017	0.0006	7
Lead	(mg/L)	0.0004	<0.0001	<0.0001	<0.0001	0.0003	<0.0002	<0.00010	0.0003	0.0004	0.0004	0.0001	7
Mercury	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.000001	<0.00010	N/A	N/A	N/A	N/A	7
Molybdenum	(mg/L)	0.001	0.001	0.0008	0.0012	0.0011	0.0004	0.00097	0.0004	0.0012	0.0009	0.0003	7
Nickel	(mg/L)	<0.0001	<0.0001	<0.0001	0.0056	0.0059	0.0024	0.0056	0.0024	0.0059	0.0049	0.0017	7
Selenium	(mg/L)	0.0008	<0.0004	0.0007	0.0008	<0.001	<0.0002	0.00127	0.0007	0.00127	0.0009	0.0003	7
Silver	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.00010	N/A	N/A	N/A	N/A	7
Strontium	(mg/L)	2.49	2.45	2.58	2.49	2.2	---	---	2.2	2.58	2.4	0.1	5
Thallium	(mg/L)	<0.0005	<0.0001	<0.00005	<0.00005	<0.0002	<0.0002	<0.000050	N/A	N/A	N/A	N/A	7
Tin	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	---	N/A	N/A	N/A	N/A	6
Titanium	(mg/L)	0.0012	0.0009	0.001	0.0011	0.002	<0.001	0.00109	0.0009	0.002	0.0012	0.0004	7
Uranium	(mg/L)	0.0018	0.0017	0.0017	0.0016	0.0014	0.0016	0.00156	0.0014	0.0018	0.0016	0.0001	7
Vanadium	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	0.002	<0.001	<0.00010	0.002	0.002	0.002	N/A	7
Zinc	(mg/L)	0.006	<0.002	0.006	0.002	0.003	<0.003	0.0057	0.002	0.006	0.005	0.002	7
Petroleum Hydrocarbon Parameters													
Benzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Toluene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00075	N/A	N/A	N/A	N/A	7
Ethylbenzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Xylenes-total	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0008	<0.0008	<0.001	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10})	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10}) - BTEX	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F2 ($C_{>10}$-C_{16})	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.25	N/A	N/A	N/A	N/A	7

NOTES:

1. ***Electrical conductivity values standardized to 25°C (within the limitations of the equipment).***
2. ***--- Denotes parameter not measured.***
3. ***Highlighting indicates parameters exceeding Canadian Drinking Water AO Guidelines (Health Canada, 2008).***

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Appendix 6
Statistical Tables: MW-08

PROJECT NO.: E00100101

Monitoring Station	Units	Spring 2005	Fall 2005	Spring 2006	Summer 2007	Fall 2007	Spring 2009	Spring 2010	Minimum	Maximum	Mean	Standard Deviation	Count
Groundwater Elevation													
Depth To Groundwater	(m btoc)	27.74	27.74	27.58	27.72	27.57	27.63	27.83	27.57	27.83	27.7	0.1	7
Groundwater Surface Elevation	(m asl)	598.7	598.7	598.86	598.72	598.87	598.81	598.61	598.61	598.87	598.8	0.1	7
Field-Measured Parameters													
Electrical Conductivity	(µS/cm)	---	---	---	---	---	---	1,359	N/A	N/A	N/A	N/A	1
pH	(---)	---	---	---	---	---	---	7.09	N/A	N/A	N/A	N/A	1
Temperature	(°C)	---	---	---	---	---	---	5.4	N/A	N/A	N/A	N/A	1
Select Indicator Parameters													
Calcium	(mg/L)	147	133	161	150	130	150	146	130	161	145.3	10.6	7
Chloride	(mg/L)	3	4	3	2	2	3	1.43	1.43	4	2.6	0.9	7
Fluoride	(mg/L)	0.13	0.11	0.09	0.08	0.1	0.11	0.13	0.08	0.13	0.1	0.02	7
Iron	(mg/L)	5.66	5.16	6.97	7.29	<0.06	<0.06	7.22	5.16	7.29	6.5	1.0	7
Magnesium	(mg/L)	45	37.4	44.2	42.9	36	40	43.2	36	45	41.2	3.5	7
Manganese	(mg/L)	0.474	0.384	0.481	0.454	0.44	0.45	0.47	0.384	0.481	0.5	0.03	7
Potassium	(mg/L)	6	5.2	6.1	5	5.4	5.6	---	5	6.1	5.6	0.4	6
Sodium	(mg/L)	137	112	132	115	120	110	122	110	137	121.1	10.1	7
Bicarbonate	(mg/L)	593	549	594	583	630	560	558	549	630	581.0	28.0	7
Carbonate	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Hydroxide	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Nitrite-as-Nitrogen	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.06	<0.003	<0.050	N/A	N/A	N/A	N/A	7
Nitrate-as-Nitrogen	(mg/L)	0.1	<0.1	<0.1	<0.1	<0.2	0.007	<0.050	0.007	0.1	0.054	0.1	7
Nitrite-plus-Nitrate-as-Nitrogen	(mg/L)	0.1	<0.1	<0.1	<0.1	<0.2	0.007	<0.071	0.007	0.1	0.054	0.1	7
Sulphate	(mg/L)	369	300	341	316	370	300	333	300	370	332.7	29.4	7
Dissolved Organic Carbon	(mg/L)	5	6	6	7	5	5.3	5.3	5	7	5.7	0.7	7
Electrical Conductivity	(µS/cm)	1470	1310	1240	1390	1400	1400	1360	1240	1470	1367.1	73.9	7
Ion Balance	(%)	98.8	95.9	104	100	0.84	100	101	0.84	104	85.8	37.5	7
pH	(---)	7.7	7.5	7.7	7.9	7.7	7.62	8.04	7.5	8.04	7.7	0.2	7
Phenols	(mg/L)	<0.001	<0.001	<0.001	<0.001	0.001	0.002	<0.0010	0.001	0.002	0.002	0.001	7
Total Dissolved Solids	(mg/L)	999	862	980	918	977	880	927	862	999	934.7	52.6	7
Total Alkalinity as $CaCO_3$	(mg/L)	486	450	487	478	520	450	458	450	520	475.6	25.3	7
Total Hardness as $CaCO_3$	(mg/L)	552	486	584	551	480	530	542	480	584	532.1	37.4	7
Dissolved Metals Parameters													
Aluminum	(mg/L)	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.0050	N/A	N/A	N/A	N/A	7
Antimony	(mg/L)	0.0006	0.0005	0.0006	0.0005	<0.0002	<0.0002	<0.00040	0.0005	0.0006	0.0006	0.0001	7
Arsenic	(mg/L)	0.0042	0.0046	0.0044	0.0052	0.002	0.0062	0.00672	0.002	0.00672	0.0048	0.002	7
Barium	(mg/L)	0.084	0.115	0.0629	0.0519	0.03	---	0.0675	0.03	0.115	0.07	0.029	6
Beryllium	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.00050	N/A	N/A	N/A	N/A	7
Bismuth	(mg/L)	<0.00005	0.00009	<0.00005	<0.00005	---	---	---	N/A	N/A	N/A	N/A	4
Boron	(mg/L)	0.244	0.184	0.206	0.176	0.17	---	0.179	0.17	0.244	0.2	0.028	6
Cadmium	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.000005	<0.00010	N/A	N/A	N/A	N/A	7
Chromium	(mg/L)	0.0011	0.0005	0.0012	0.0016	0.003	<0.001	<0.0050	0.0005	0.003	0.0015	0.0009	7
Cobalt	(mg/L)	0.0008	0.0009	0.0004	0.0005	0.0004	<0.0003	0.00035	0.00035	0.0009	0.0006	0.0002	7
Copper	(mg/L)	0.001	0.001	0.0011	0.0012	0.0006	0.0016	<0.0010	0.0006	0.0016	0.0011	0.0003	7
Lead	(mg/L)	0.0004	<0.0001	<0.0001	<0.0001	0.0002	<0.0002	<0.00010	0.0002	0.0004	0.0003	0.0001	7
Mercury	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.000001	<0.00010	N/A	N/A	N/A	N/A	7
Molybdenum	(mg/L)	0.0012	0.0025	0.0011	0.0016	0.0014	0.002	0.00168	0.0011	0.0025	0.0016	0.0005	7
Nickel	(mg/L)	<0.0001	<0.0001	<0.0001	0.0031	0.0036	0.0017	0.0027	0.0017	0.0036	0.0028	0.0008	7
Selenium	(mg/L)	0.0004	0.0005	<0.0004	<0.0004	<0.001	<0.0002	<0.00040	0.0004	0.0005	0.0005	0.0001	7
Silver	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.00010	N/A	N/A	N/A	N/A	7
Strontium	(mg/L)	1.4	1.27	1.45	1.59	1.4	---	---	1.27	1.59	1.4	0.1	5
Thallium	(mg/L)	<0.0005	<0.0001	<0.00005	<0.00005	<0.0002	<0.0002	<0.000050	N/A	N/A	N/A	N/A	7
Tin	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	---	N/A	N/A	N/A	N/A	6
Titanium	(mg/L)	0.0008	0.001	0.0008	0.0012	0.002	<0.001	0.00094	0.0008	0.002	0.0011	0.0005	7
Uranium	(mg/L)	0.0011	0.0015	0.0009	0.0008	0.0008	0.0007	0.00072	0.0007	0.0015	0.0009	0.0003	7
Vanadium	(mg/L)	<0.0001	<0.0001	<0.0001	0.0004	0.001	<0.001	0.00017	0.00017	0.001	0.001	0.0004	7
Zinc	(mg/L)	0.003	<0.002	0.006	0.004	<0.003	<0.003	0.0163	0.003	0.0163	0.007	0.0061	7
Petroleum Hydrocarbon Parameters													
Benzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Toluene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00075	N/A	N/A	N/A	N/A	7
Ethylbenzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Xylenes-total	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0008	<0.0008	<0.001	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10})	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10}) - BTEX	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F2 ($C_{>10}$-C_{16})	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.25	N/A	N/A	N/A	N/A	7

NOTES:

1. ***Electrical conductivity values standardized to 25°C (within the limitations of the equipment).***
2. ***--- Denotes parameter not measured.***
3. ***Highlighting indicates parameters exceeding Canadian Drinking Water AO Guidelines (Health Canada, 2008).***

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Appendix 6
Statistical Tables: MW-09

PROJECT NO.: E00100101

Monitoring Station	Units	Spring 2005	Fall 2005	Spring 2006	Summer 2007	Fall 2007	Spring 2009	Spring 2010	Minimum	Maximum	Mean	Standard Deviation	Count
Groundwater Elevation													
Depth To Groundwater	(m btoc)	28.41	28.48	28.27	28.35	28.34	28.27	28.61	28.27	28.61	28.4	0.1	7
Groundwater Surface Elevation	(m asl)	596.32	596.25	596.46	596.38	596.39	596.46	596.12	596.12	596.46	596.3	0.1	7
Field-Measured Parameters													
Electrical Conductivity	(µS/cm)	---	---	---	---	---	---	1,538	N/A	N/A	N/A	N/A	1
pH	(---)	---	---	---	---	---	---	7.35	N/A	N/A	N/A	N/A	1
Temperature	(°C)	---	---	---	---	---	---	6.8	N/A	N/A	N/A	N/A	1
Select Indicator Parameters													
Calcium	(mg/L)	71.6	92.6	98.1	94.9	83	97	93.1	71.6	98.1	90.0	9.5	7
Chloride	(mg/L)	5	7	7	6	4	6	5.57	4	7	5.8	1.1	7
Fluoride	(mg/L)	0.29	0.22	0.23	0.21	0.2	0.22	0.251	0.2	0.29	0.2	0.03	7
Iron	(mg/L)	1.11	1.4	1.44	1.74	<0.06	1.9	2.04	1.11	2.04	1.6	0.3	7
Magnesium	(mg/L)	26	27.3	27.7	27.6	22	27	27.8	22	27.8	26.5	2.1	7
Manganese	(mg/L)	0.714	0.752	0.797	0.785	0.77	0.86	0.828	0.714	0.86	0.8	0.05	7
Potassium	(mg/L)	4.2	3.9	3.9	3.3	3.5	4.1	---	3.3	4.2	3.8	0.3	6
Sodium	(mg/L)	226	227	231	231	230	240	240	226	240	232.1	5.7	7
Bicarbonate	(mg/L)	626	640	644	656	670	630	639	626	670	643.6	15.2	7
Carbonate	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Hydroxide	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Nitrite-as-Nitrogen	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.06	<0.003	<0.050	N/A	N/A	N/A	N/A	7
Nitrate-as-Nitrogen	(mg/L)	0.1	<0.1	<0.1	<0.1	<0.2	0.005	<0.050	0.005	0.1	0.053	0.1	7
Nitrite-plus-Nitrate-as-Nitrogen	(mg/L)	0.1	<0.1	<0.1	<0.1	<0.2	0.005	<0.071	0.005	0.1	0.053	0.1	7
Sulphate	(mg/L)	313	312	316	322	350	330	342	312	350	326.4	14.9	7
Dissolved Organic Carbon	(mg/L)	5	6	8	7	9	5.5	5.6	5	9	6.6	1.5	7
Electrical Conductivity	(µS/cm)	1520	1550	1520	1530	1500	1500	1540	1500	1550	1522.9	18.9	7
Ion Balance	(%)	93.2	98	99.9	97.9	0.86	100	98.4	0.86	100	84.0	36.7	7
pH	(---)	7.9	8.1	7.9	8.1	8	7.73	8.17	7.73	8.17	8.0	0.2	7
Phenols	(mg/L)	<0.001	<0.001	<0.001	<0.001	0.002	0.003	<0.0010	0.002	0.003	0.003	0.001	7
Total Dissolved Solids	(mg/L)	954	984	1,000	1,010	1,020	1,000	1,030	954	1030	999.7	25.1	7
Total Alkalinity as $CaCO_3$	(mg/L)	513	524	528	538	550	520	524	513	550	528.1	12.3	7
Total Hardness as $CaCO_3$	(mg/L)	286	344	359	351	300	350	347	286	359	333.9	28.6	7
Dissolved Metals Parameters													
Aluminum	(mg/L)	0.14	0.02	<0.01	<0.01	<0.001	0.1	<0.0050	0.02	0.14	0.09	0.1	7
Antimony	(mg/L)	0.0007	0.0006	0.0006	0.0004	<0.0002	<0.0002	<0.00040	0.0004	0.0007	0.0006	0.0001	7
Arsenic	(mg/L)	0.0019	0.0018	0.0018	0.002	0.002	0.0023	0.00255	0.0018	0.00255	0.0021	0.0003	7
Barium	(mg/L)	0.0608	0.052	0.0389	0.0302	0.02	---	0.025	0.02	0.0608	0.04	0.02	6
Beryllium	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.00050	N/A	N/A	N/A	N/A	7
Bismuth	(mg/L)	<0.00005	<0.0001	<0.00005	<0.00005	---	---	---	N/A	N/A	N/A	N/A	4
Boron	(mg/L)	0.339	0.294	0.289	0.26	0.26	---	0.267	0.26	0.339	0.3	0.03	6
Cadmium	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	0.000008	<0.00010	0.000008	8.0E-06	0.00001	N/A	7
Chromium	(mg/L)	0.0016	0.0006	0.0013	0.0016	<0.001	<0.001	<0.0050	0.0006	0.0016	0.0013	0.0005	7
Cobalt	(mg/L)	0.0011	0.0023	0.0011	0.0009	0.0009	0.0008	0.00085	0.0008	0.0023	0.0011	0.0005	7
Copper	(mg/L)	0.001	0.0011	0.0012	0.0008	0.0008	0.0003	<0.0010	0.0003	0.0012	0.0009	0.0003	7
Lead	(mg/L)	0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.00010	0.0001	0.0001	0.0001	N/A	7
Mercury	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.000001	<0.00010	N/A	N/A	N/A	N/A	7
Molybdenum	(mg/L)	0.0019	0.0038	0.0015	0.0017	0.0018	0.0016	0.00158	0.0015	0.0038	0.0020	0.001	7
Nickel	(mg/L)	0.0002	0.0087	<0.0001	0.003	0.0023	0.0017	0.0027	0.0002	0.0087	0.0031	0.003	7
Selenium	(mg/L)	<0.0004	0.0005	<0.0004	<0.0004	<0.001	<0.0002	<0.00040	0.0005	0.0005	0.0005	N/A	7
Silver	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.00010	N/A	N/A	N/A	N/A	7
Strontium	(mg/L)	0.843	0.869	0.861	0.961	0.81	---	---	0.81	0.961	0.9	0.1	5
Thallium	(mg/L)	<0.0005	<0.0001	<0.00005	<0.00005	<0.0002	<0.0002	<0.000050	N/A	N/A	N/A	N/A	7
Tin	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	---	N/A	N/A	N/A	N/A	6
Titanium	(mg/L)	0.0058	0.0038	0.0008	0.0009	0.002	0.005	0.00078	0.00078	0.0058	0.0027	0.0021	7
Uranium	(mg/L)	0.0019	0.0015	0.0014	0.0014	0.0014	0.0012	0.00121	0.0012	0.0019	0.0014	0.0002	7
Vanadium	(mg/L)	0.0005	0.0002	<0.0001	0.0005	<0.001	<0.001	<0.00010	0.0002	0.0005	0.000	0.0002	7
Zinc	(mg/L)	0.003	<0.002	0.005	<0.002	0.003	<0.003	<0.0020	0.003	0.005	0.004	0.0012	7
Petroleum Hydrocarbon Parameters													
Benzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Toluene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00075	N/A	N/A	N/A	N/A	7
Ethylbenzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Xylenes-total	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0008	<0.0008	<0.001	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10})	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10}) - BTEX	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F2 ($C_{>10}$-C_{16})	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.1	0.3	<0.25	0.3	0.3	0.3	N/A	7

NOTES:

1. ***Electrical conductivity values standardized to 25°C (within the limitations of the equipment).***
2. ***--- Denotes parameter not measured.***
3. ***Highlighting indicates parameters exceeding Canadian Drinking Water AO Guidelines (Health Canada, 2008).***

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Appendix 6
Statistical Tables: MW-10

PROJECT NO.: E00100101

Monitoring Station	Units	Spring 2005	Fall 2005	Spring 2006	Summer 2007	Fall 2007	Spring 2009	Spring 2010	Minimum	Maximum	Mean	Standard Deviation	Count
Groundwater Elevation													
Depth To Groundwater	(m btoc)	26.89	26.9	26.72	26.87	26.74	26.72	26.93	26.72	26.93	26.8	0.1	7
Groundwater Surface Elevation	(m asl)	597.78	597.77	597.95	597.8	597.93	597.95	597.74	597.74	597.95	597.8	0.1	7
Field-Measured Parameters													
Electrical Conductivity	(µS/cm)	---	---	---	---	---	---	1,287	N/A	N/A	N/A	N/A	1
pH	(---)	---	---	---	---	---	---	7.11	N/A	N/A	N/A	N/A	1
Temperature	(°C)	---	---	---	---	---	---	6.6	N/A	N/A	N/A	N/A	1
Select Indicator Parameters													
Calcium	(mg/L)	131	129	139	132	120	140	139	120	140	132.9	7.2	7
Chloride	(mg/L)	<1	3	2	2	<1	2	0.73	0.73	3	1.9	0.8	7
Fluoride	(mg/L)	0.18	0.12	0.13	0.12	0.2	0.14	0.169	0.12	0.2	0.2	0.03	7
Iron	(mg/L)	5.29	5.49	5.89	5.93	<0.06	5.9	6.8	5.29	6.8	5.9	0.5	7
Magnesium	(mg/L)	36.1	35.2	37.8	36.9	29	36	39.1	29	39.1	35.7	3.2	7
Manganese	(mg/L)	0.639	0.642	0.67	0.656	0.64	0.71	0.735	0.639	0.735	0.7	0.04	7
Potassium	(mg/L)	5.3	5	5.6	4.7	4.8	5.6	---	4.7	5.6	5.2	0.4	6
Sodium	(mg/L)	117	108	119	110	110	120	124	108	124	115.4	6.1	7
Bicarbonate	(mg/L)	628	634	641	651	660	620	633	620	660	638.1	13.7	7
Carbonate	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Hydroxide	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Nitrite-as-Nitrogen	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.06	<0.003	<0.050	N/A	N/A	N/A	N/A	7
Nitrate-as-Nitrogen	(mg/L)	0.1	<0.1	<0.1	<0.1	<0.2	0.005	<0.050	0.005	0.1	0.053	0.1	7
Nitrite-plus-Nitrate-as-Nitrogen	(mg/L)	0.1	<0.1	<0.1	<0.1	<0.2	0.005	<0.071	0.005	0.1	0.053	0.1	7
Sulphate	(mg/L)	221	222	212	208	230	190	227	190	230	215.7	13.7	7
Dissolved Organic Carbon	(mg/L)	5	6	6	5	5	4.7	5.1	4.7	6	5.3	0.5	7
Electrical Conductivity	(µS/cm)	1270	1260	1120	1270	1300	1300	1270	1120	1300	1255.7	61.9	7
Ion Balance	(%)	99.7	93.8	103	97.2	0.84	110	104	0.84	110	86.9	38.3	7
pH	(---)	7.7	7.5	7.7	8	7.8	7.51	8.07	7.5	8.07	7.8	0.2	7
Phenols	(mg/L)	<0.001	<0.001	<0.001	<0.001	0.002	0.002	<0.0010	0.002	0.002	0.002	0.000	7
Total Dissolved Solids	(mg/L)	819	814	831	814	822	800	847	800	847	821.0	14.8	7
Total Alkalinity as $CaCO_3$	(mg/L)	514	520	525	533	540	510	519	510	540	523.0	10.6	7
Total Hardness as $CaCO_3$	(mg/L)	476	467	503	482	410	490	508	410	508	476.6	32.7	7
Dissolved Metals Parameters													
Aluminum	(mg/L)	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.0050	N/A	N/A	N/A	N/A	7
Antimony	(mg/L)	0.0007	0.0006	0.0006	0.0005	<0.0002	<0.0002	<0.00040	0.0005	0.0007	0.0006	0.0001	7
Arsenic	(mg/L)	0.003	0.0037	0.0036	0.0039	0.002	0.0044	0.00459	0.002	0.00459	0.0036	0.0009	7
Barium	(mg/L)	0.0296	0.0331	0.0319	0.0291	0.02	---	0.029	0.02	0.0331	0.03	0.005	6
Beryllium	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.00050	N/A	N/A	N/A	N/A	7
Bismuth	(mg/L)	<0.00005	<0.0001	<0.00005	<0.00005	---	---	---	N/A	N/A	N/A	N/A	4
Boron	(mg/L)	0.209	0.202	0.187	0.168	0.16	---	0.177	0.16	0.209	0.2	0.02	6
Cadmium	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	0.000007	<0.00010	0.000007	7.0E-06	0.00001	N/A	7
Chromium	(mg/L)	0.0012	<0.0004	0.0011	0.0015	<0.001	<0.001	<0.0050	0.0011	0.0015	0.0013	0.0002	7
Cobalt	(mg/L)	0.0003	0.0005	0.0003	0.0004	0.0005	<0.0003	0.00044	0.0003	0.0005	0.0004	0.0001	7
Copper	(mg/L)	0.0007	0.0009	0.0009	0.0008	0.0006	0.0006	0.0015	0.0006	0.0015	0.0009	0.0003	7
Lead	(mg/L)	0.0004	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.00010	0.0004	0.0004	0.0004	N/A	7
Mercury	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	<0.000001	<0.00010	N/A	N/A	N/A	N/A	7
Molybdenum	(mg/L)	0.0009	0.001	0.0009	0.0009	0.0011	0.0009	0.00097	0.0009	0.0011	0.0010	0.0001	7
Nickel	(mg/L)	<0.0001	<0.0001	<0.0001	0.003	0.0029	0.001	0.0029	0.001	0.003	0.0025	0.0010	7
Selenium	(mg/L)	<0.0004	0.0006	<0.0004	<0.0004	<0.001	<0.0002	<0.00040	0.0006	0.0006	0.0006	N/A	7
Silver	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.00010	N/A	N/A	N/A	N/A	7
Strontium	(mg/L)	1.29	1.43	1.41	1.55	1.3	---	---	1.29	1.55	1.4	0.1	5
Thallium	(mg/L)	<0.0005	<0.0001	<0.00005	<0.00005	<0.0002	<0.0002	<0.000050	N/A	N/A	N/A	N/A	7
Tin	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	---	N/A	N/A	N/A	N/A	6
Titanium	(mg/L)	0.0008	0.0008	0.0007	0.0007	0.002	<0.001	0.00083	0.0007	0.002	0.0010	0.0005	7
Uranium	(mg/L)	0.0019	0.0015	0.0014	0.0013	0.0014	0.0011	0.00115	0.0011	0.0019	0.0014	0.0003	7
Vanadium	(mg/L)	<0.0001	<0.0001	<0.0001	0.0004	<0.001	<0.001	<0.00010	0.0004	0.0004	0.000	N/A	7
Zinc	(mg/L)	0.003	<0.002	0.009	0.015	<0.003	<0.003	0.0023	0.0023	0.015	0.007	0.006	7
Petroleum Hydrocarbon Parameters													
Benzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Toluene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00075	N/A	N/A	N/A	N/A	7
Ethylbenzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Xylenes-total	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0008	<0.0008	<0.001	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10})	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10}) - BTEX	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F2 ($C_{>10}$-C_{16})	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.25	N/A	N/A	N/A	N/A	7

NOTES:

1. ***Electrical conductivity values standardized to 25°C (within the limitations of the equipment).***
2. ***--- Denotes parameter not measured.***
3. ***Highlighting indicates parameters exceeding Canadian Drinking Water AO Guidelines (Health Canada, 2008).***

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Appendix 6
Statistical Tables: MW-11

PROJECT NO.: E00100101

Monitoring Station	Units	Spring 2005	Fall 2005	Spring 2006	Summer 2007	Fall 2007	Spring 2009	Spring 2010	Minimum	Maximum	Mean	Standard Deviation	Count
Groundwater Elevation													
Depth To Groundwater	(m btoc)	30.6	30.41	30.34	30.38	30.4	30.35	30.64	30.34	30.64	30.4	0.1	7
Groundwater Surface Elevation	(m asl)	594.56	594.75	594.82	594.78	594.76	594.81	594.52	594.52	594.82	594.7	0.1	7
Field-Measured Parameters													
Electrical Conductivity	(µS/cm)	---	---	---	---	---	---	1,303	N/A	N/A	N/A	N/A	1
pH	(---)	---	---	---	---	---	---	7.06	N/A	N/A	N/A	N/A	1
Temperature	(°C)	---	---	---	---	---	---	7.2	N/A	N/A	N/A	N/A	1
Select Indicator Parameters													
Calcium	(mg/L)	150	140	153	143	130	150	144	130	153	144.3	7.8	7
Chloride	(mg/L)	8	16	11	8	10	10	15.2	8	16	11.2	3.2	7
Fluroide	(mg/L)	0.14	0.09	0.09	0.09	0.1	0.11	0.132	0.09	0.14	0.1	0.02	7
Iron	(mg/L)	6.89	6.95	7.23	7.15	<0.06	7	7.61	6.89	7.61	7.1	0.3	7
Magnesium	(mg/L)	45.8	42.5	45.7	45.3	38	45	45.9	38	45.9	44.0	2.9	7
Manganese	(mg/L)	0.668	0.628	0.659	0.632	0.61	0.67	0.663	0.61	0.67	0.6	0.02	7
Potassium	(mg/L)	4.9	4.5	4.8	3.9	4.3	4.9	---	3.9	4.9	4.6	0.4	6
Sodium	(mg/L)	92	85	92	88	87	91	98.1	85	98.1	90.4	4.3	7
Bicarbonate	(mg/L)	642	654	672	662	680	640	650	640	680	657.1	15.0	7
Carbonate	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Hydroxide	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Nitrite-as-Nitrogen	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.06	<0.003	<0.050	N/A	N/A	N/A	N/A	7
Nitrate-as-Nitrogen	(mg/L)	0.1	<0.1	<0.1	<0.1	<0.2	0.003	<0.050	0.003	0.1	0.052	0.1	7
Nitrite-plus-Nitrate-as-Nitrogen	(mg/L)	0.1	<0.1	<0.1	<0.1	<0.2	0.003	<0.071	0.003	0.1	0.052	0.1	7
Sulphate	(mg/L)	196	199	194	193	210	170	212	170	212	196.3	13.8	7
Dissolved Organic Carbon	(mg/L)	15	7	7	8	6	5.5	6	5.5	15	7.8	3.3	7
Electrical Conductivity	(µS/cm)	1270	1270	1100	1280	1300	1300	1290	1100	1300	1258.6	71.0	7
Ion Balance	(%)	104	93.4	101	98.6	0.87	110	99.1	0.87	110	86.7	38.2	7
pH	(---)	7.7	7.4	7.7	8	7.7	7.51	8.04	7.4	8.04	7.7	0.2	7
Phenols	(mg/L)	<0.001	<0.001	<0.001	<0.001	0.002	0.004	<0.0010	0.002	0.004	0.003	0.001	7
Total Dissolved Solids	(mg/L)	813	809	831	806	810	800	840	800	840	815.6	14.4	7
Total Alkalinity as $CaCO_3$	(mg/L)	526	536	551	542	560	530	533	526	560	539.7	12.1	7
Total Hardness as $CaCO_3$	(mg/L)	563	525	570	544	480	560	549	480	570	541.6	30.9	7
Dissolved Metals Parameters													
Aluminum	(mg/L)	<0.01	0.02	<0.01	<0.01	<0.001	<0.001	<0.0050	0.02	0.02	0.02	N/A	7
Antimony	(mg/L)	0.0008	0.0006	0.0006	0.0004	<0.0002	<0.0002	<0.00040	0.0004	0.0008	0.0006	0.0002	7
Arsenic	(mg/L)	0.0022	0.0025	0.0022	0.0023	<0.001	0.0024	0.00259	0.0022	0.00259	0.0024	0.0002	7
Barium	(mg/L)	0.0494	0.0466	0.044	0.0377	0.03	---	0.0396	0.03	0.0494	0.04	0.01	6
Beryllium	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.00050	N/A	N/A	N/A	N/A	7
Bismuth	(mg/L)	<0.00005	0.00008	<0.00005	<0.00005	---	---	---	N/A	N/A	N/A	N/A	4
Boron	(mg/L)	0.189	0.227	0.205	0.186	0.18	---	0.189	0.18	0.227	0.2	0.02	6
Cadmium	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	0.000009	<0.00010	0.000009	9.0E-06	0.00001	N/A	7
Chromium	(mg/L)	0.0011	0.0006	0.0013	0.0016	<0.001	<0.001	<0.0050	0.0006	0.0016	0.0012	0.0004	7
Cobalt	(mg/L)	0.0006	0.0007	0.0003	0.0004	0.0006	0.0004	0.00047	0.0003	0.0007	0.0005	0.0001	7
Copper	(mg/L)	<0.0006	0.0009	0.0009	<0.0006	0.0008	0.0007	<0.0010	0.0007	0.0009	0.0008	0.0001	7
Lead	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.00010	N/A	N/A	N/A	N/A	7
Mercury	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.00005	0.000001	<0.00010	0.000001	0.000001	0.000001	N/A	7
Molybdenum	(mg/L)	0.001	0.0009	0.0006	0.0007	0.001	0.0007	0.00072	0.0006	0.001	0.0008	0.0002	7
Nickel	(mg/L)	<0.0001	<0.0001	<0.0001	0.0027	0.0027	0.0008	0.0027	0.0008	0.0027	0.0022	0.0010	7
Selenium	(mg/L)	<0.0004	<0.0004	0.0004	<0.0004	<0.001	<0.0002	<0.00040	0.0004	0.0004	0.0004	N/A	7
Silver	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.00010	N/A	N/A	N/A	N/A	7
Strontium	(mg/L)	1.27	1.24	1.22	1.35	1.1	---	---	1.1	1.35	1.2	0.1	5
Thallium	(mg/L)	<0.0005	<0.0001	<0.00005	<0.00005	<0.0002	<0.0002	<0.000050	N/A	N/A	N/A	N/A	7
Tin	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	---	N/A	N/A	N/A	N/A	6
Titanium	(mg/L)	0.0008	0.001	0.001	0.0024	0.003	<0.001	0.00102	0.0008	0.003	0.0015	0.0009	7
Uranium	(mg/L)	0.0012	0.0012	0.0011	0.0011	0.0013	0.001	0.001	0.001	0.0013	0.0011	0.0001	7
Vanadium	(mg/L)	0.0001	<0.0001	<0.0001	0.0004	<0.001	<0.001	<0.00010	0.0001	0.0004	0.000	0.0002	7
Zinc	(mg/L)	0.004	<0.002	0.009	<0.002	<0.003	<0.003	0.0023	0.0023	0.009	0.005	0.0035	7
Petroleum Hydrocarbon Parameters													
Benzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Toluene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00075	N/A	N/A	N/A	N/A	7
Ethylbenzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Xylenes-total	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0008	<0.0008	<0.001	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10})	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10}) - BTEX	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F2 ($C_{>10}$-C_{16})	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.25	N/A	N/A	N/A	N/A	7

NOTES:

1. ***Electrical conductivity values standardized to 25°C (within the limitations of the equipment).***
2. ***--- Denotes parameter not measured.***
3. ***Highlighting indicates parameters exceeding Canadian Drinking Water AO Guidelines (Health Canada, 2008).***

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Appendix 6
Statistical Tables: MW-12

PROJECT NO.: E00100101

Monitoring Station	Units	Spring 2005	Fall 2005	Spring 2006	Summer 2007	Fall 2007	Spring 2009	Spring 2010	Minimum	Maximum	Mean	Standard Deviation	Count
Groundwater Elevation													
Depth To Groundwater	(m btoc)	32.95	33.05	33.62	32.9	32.77	32.76	33.01	32.76	33.62	33.0	0.3	7
Groundwater Surface Elevation	(m asl)	593.12	593.02	592.45	593.17	593.3	593.31	593.06	592.45	593.31	593.1	0.3	7
Field-Measured Parameters													
Electrical Conductivity	(µS/cm)	---	---	---	---	---	---	1,032	N/A	N/A	N/A	N/A	1
pH	(---)	---	---	---	---	---	---	7.32	N/A	N/A	N/A	N/A	1
Temperature	(°C)	---	---	---	---	---	---	5.1	N/A	N/A	N/A	N/A	1
Select Indicator Parameters													
Calcium	(mg/L)	95.7	94.9	100	95.4	82	98	96.4	82	100	94.6	5.8	7
Chloride	(mg/L)	6	8	7	7	5	8	7.05	5	8	6.9	1.1	7
Fluoride	(mg/L)	0.13	0.07	0.07	0.08	<0.1	0.09	0.114	0.07	0.13	0.1	0.02	7
Iron	(mg/L)	2.78	3.37	3.76	3.77	<0.06	4.1	4.24	2.78	4.24	3.7	0.5	7
Magnesium	(mg/L)	27.9	28.5	29.1	29.2	23	29	30.2	23	30.2	28.1	2.4	7
Manganese	(mg/L)	0.365	0.402	0.436	0.422	0.4	0.45	0.456	0.365	0.456	0.4	0.03	7
Potassium	(mg/L)	5	5.2	5.1	4.2	4.3	4.9	---	4.2	5.2	4.8	0.4	6
Sodium	(mg/L)	106	111	106	101	99	110	109	99	111	106.0	4.5	7
Bicarbonate	(mg/L)	636	712	669	670	700	650	667	636	712	672.0	26.5	7
Carbonate	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Hydroxide	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Nitrite-as-Nitrogen	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.06	<0.003	<0.050	N/A	N/A	N/A	N/A	7
Nitrate-as-Nitrogen	(mg/L)	0.1	<0.1	<0.1	<0.1	<0.2	0.005	<0.050	0.005	0.1	0.053	0.1	7
Nitrite-plus-Nitrate-as-Nitrogen	(mg/L)	0.1	<0.1	<0.1	<0.1	<0.2	0.005	<0.071	0.005	0.1	0.053	0.1	7
Sulphate	(mg/L)	46	53	44	42.4	43	32	47	32	52.5	43.8	6.2	7
Dissolved Organic Carbon	(mg/L)	6	7	7	7	7	6.4	10.5	6	10.5	7.3	1.5	7
Electrical Conductivity	(µS/cm)	1000	1020	904	1020	1000	1000	1030	904	1030	996.3	42.5	7
Ion Balance	(%)	102	92.7	100	97.4	0.84	110	100	0.84	110	86.1	38.0	7
pH	(---)	7.9	7.4	7.8	8	7.8	7.66	8.13	7.4	8.13	7.8	0.2	7
Phenols	(mg/L)	<0.001	<0.001	<0.001	<0.001	0.002	0.003	<0.0010	0.002	0.003	0.003	0.001	7
Total Dissolved Solids	(mg/L)	600	651	621	609	601	610	623	600	651	616.4	17.6	7
Total Alkalinity as $CaCO_3$	(mg/L)	521	584	549	550	570	540	547	521	584	551.6	20.4	7
Total Hardness as $CaCO_3$	(mg/L)	354	354	370	358	300	360	365	300	370	351.6	23.5	7
Dissolved Metals Parameters													
Aluminum	(mg/L)	<0.01	<0.01	<0.01	<0.01	<0.001	<0.001	<0.0050	N/A	N/A	N/A	N/A	7
Antimony	(mg/L)	0.0008	0.0005	0.0006	0.0005	<0.0002	<0.0002	<0.00040	0.0005	0.0008	0.0006	0.0001	7
Arsenic	(mg/L)	0.0022	0.0026	0.0023	0.0025	0.002	0.0026	0.00285	0.002	0.00285	0.0024	0.0003	7
Barium	(mg/L)	0.153	0.182	0.178	0.146	0.1	---	0.143	0.1	0.182	0.15	0.030	6
Beryllium	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.00050	N/A	N/A	N/A	N/A	7
Bismuth	(mg/L)	<0.00005	0.00006	<0.00005	<0.00005	---	---	---	N/A	N/A	N/A	N/A	4
Boron	(mg/L)	0.234	0.282	0.251	0.233	0.22	---	0.242	0.22	0.282	0.2	0.02	6
Cadmium	(mg/L)	<0.0001	<0.0001	<0.00012	<0.001	<0.0002	0.000006	<0.00010	0.000006	6.0E-06	0.00001	N/A	7
Chromium	(mg/L)	0.0038	<0.0004	0.0016	0.0015	<0.001	<0.001	<0.0050	0.0015	0.0038	0.0023	0.0013	7
Cobalt	(mg/L)	0.0008	0.001	0.0007	0.0012	0.0007	0.0006	0.00065	0.0006	0.0012	0.0008	0.0002	7
Copper	(mg/L)	<0.0006	0.0008	<0.0006	<0.0006	<0.0002	0.0008	<0.0010	0.0008	0.0008	0.0008	0.0000	7
Lead	(mg/L)	0.0004	<0.0001	<0.0001	<0.0001	<0.0002	<0.0002	<0.00010	0.0004	0.0004	0.0004	N/A	7
Mercury	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	0.00007	0.000001	<0.00010	0.000001	0.00007	0.000036	0.0000	7
Molybdenum	(mg/L)	0.0015	0.0013	0.0012	0.0017	0.0014	0.0012	0.00115	0.00115	0.0017	0.0014	0.0002	7
Nickel	(mg/L)	<0.0001	<0.0001	<0.0001	0.0033	0.0021	0.0012	0.0022	0.0012	0.0033	0.0022	0.0009	7
Selenium	(mg/L)	<0.0004	<0.0004	<0.0004	<0.0004	<0.001	<0.0002	<0.00040	N/A	N/A	N/A	N/A	7
Silver	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.00010	N/A	N/A	N/A	N/A	7
Strontium	(mg/L)	0.915	0.903	0.925	0.972	0.84	---	---	0.84	0.972	0.9	0.05	5
Thallium	(mg/L)	<0.0005	<0.0001	<0.00005	<0.00005	<0.0002	<0.0002	<0.000050	N/A	N/A	N/A	N/A	7
Tin	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	---	N/A	N/A	N/A	N/A	6
Titanium	(mg/L)	0.0011	0.0008	0.0008	0.0007	0.002	<0.001	0.00081	0.0007	0.002	0.0010	0.0005	7
Uranium	(mg/L)	0.001	0.0011	0.001	0.0009	0.0011	0.0008	0.00083	0.0008	0.0011	0.0010	0.0001	7
Vanadium	(mg/L)	<0.0001	<0.0001	<0.0001	0.0004	<0.001	<0.001	<0.00010	0.0004	0.0004	0.000	N/A	7
Zinc	(mg/L)	0.01	<0.002	0.007	0.004	<0.003	<0.003	<0.0020	0.004	0.01	0.007	0.003	7
Petroleum Hydrocarbon Parameters													
Benzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Toluene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00075	N/A	N/A	N/A	N/A	7
Ethylbenzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Xylenes-total	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0008	<0.0008	<0.001	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10})	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10}) - BTEX	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F2 ($C_{>10}$-C_{16})	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.25	N/A	N/A	N/A	N/A	7

NOTES:

1. ***Electrical conductivity values standardized to 25°C (within the limitations of the equipment).***
2. ***--- Denotes parameter not measured.***
3. ***Highlighting indicates parameters exceeding Canadian Drinking Water AO Guidelines (Health Canada, 2008).***

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Appendix 6
Statistical Tables: MW-13

PROJECT NO.: E00100101

Monitoring Station	Units	Spring 2005	Fall 2005	Spring 2006	Summer 2007	Fall 2007	Spring 2009	Spring 2010	Minimum	Maximum	Mean	Standard Deviation	Count
Groundwater Elevation													
Depth To Groundwater	(m btoc)	32.6	33.45	33.24	32.54	32.39	32.41	32.68	32.39	33.45	32.8	0.4	7
Groundwater Surface Elevation	(m asl)	593.68	592.83	593.04	593.74	593.89	593.87	593.6	592.83	593.89	593.5	0.4	7
Field-Measured Parameters													
Electrical Conductivity	(µS/cm)	---	---	---	---	---	---	776	N/A	N/A	N/A	N/A	1
pH	(---)	---	---	---	---	---	---	7.53	N/A	N/A	N/A	N/A	1
Temperature	(°C)	---	---	---	---	---	---	7.0	N/A	N/A	N/A	N/A	1
Select Indicator Parameters													
Calcium	(mg/L)	53.7	51.2	55.6	53	45	54	50	45	55.6	51.8	3.5	7
Chloride	(mg/L)	2	4	4	2	2	3	2.15	2	4	2.7	0.9	7
Fluoride	(mg/L)	0.2	0.14	0.14	0.13	0.2	0.15	0.16	0.13	0.2	0.2	0.03	7
Iron	(mg/L)	0.818	1.08	1.19	1.26	<0.06	1.3	1.45	0.818	1.45	1.2	0.2	7
Magnesium	(mg/L)	16.5	16.2	17.1	16.9	14	17	16.4	14	17.1	16.3	1.1	7
Manganese	(mg/L)	0.263	0.243	0.256	0.252	0.25	0.26	0.249	0.243	0.263	0.3	0.007	7
Potassium	(mg/L)	4.2	3.4	3.9	3.5	3.5	3.9	---	3.4	4.2	3.7	0.3	6
Sodium	(mg/L)	112	103	112	105	110	110	110	103	112	108.9	3.5	7
Bicarbonate	(mg/L)	531	537	715	541	560	520	530	520	715	562.0	68.6	7
Carbonate	(mg/L)	<5	<5	541	<5	<1	<0.5	<5.0	541	541	541.0	N/A	7
Hydroxide	(mg/L)	<5	<5	<5	<5	<1	<0.5	<5.0	N/A	N/A	N/A	N/A	7
Nitrite-as-Nitrogen	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.06	<0.003	<0.050	N/A	N/A	N/A	N/A	7
Nitrate-as-Nitrogen	(mg/L)	0.1	<0.1	0.2	<0.1	<0.2	0.005	<0.050	0.005	0.2	0.102	0.1	7
Nitrite-plus-Nitrate-as-Nitrogen	(mg/L)	0.1	<0.1	0.2	<0.1	<0.2	0.005	<0.071	0.005	0.2	0.102	0.1	7
Sulphate	(mg/L)	11	13	10	9.1	9	9	10	9	12.5	10.0	1.3	7
Dissolved Organic Carbon	(mg/L)	4	5	5	5	5	4.5	4.1	4	5	4.7	0.5	7
Electrical Conductivity	(µS/cm)	784	782	715	782	790	770	776	715	790	771.3	25.6	7
Ion Balance	(%)	100	92.2	99.4	96.3	0.87	100	97.5	0.87	100	83.8	36.7	7
pH	(---)	8.1	7.8	8	8.2	8	7.81	8.22	7.8	8.22	8.0	0.2	7
Phenols	(mg/L)	<0.001	<0.001	<0.001	0.001	<0.001	0.003	<0.0010	0.001	0.003	0.002	0.001	7
Total Dissolved Solids	(mg/L)	460	454	470	456	457	460	453	453	470	458.6	5.7	7
Total Alkalinity as $CaCO_3$	(mg/L)	435	440	443	444	460	430	435	430	460	441.0	9.7	7
Total Hardness as $CaCO_3$	(mg/L)	202	195	209	202	170	200	192	170	209	195.7	12.6	7
Dissolved Metals Parameters													
Aluminum	(mg/L)	<0.01	0.07	<0.01	<0.01	<0.001	<0.001	<0.0050	0.07	0.07	0.07	N/A	7
Antimony	(mg/L)	0.0008	0.0006	0.0006	0.0004	<0.0002	<0.0002	<0.00040	0.0004	0.0008	0.0006	0.0002	7
Arsenic	(mg/L)	0.0012	0.0016	0.0014	0.0014	0.001	0.0015	0.00162	0.001	0.00162	0.0014	0.0002	7
Barium	(mg/L)	0.389	0.413	0.424	0.428	0.29	---	0.407	0.29	0.428	0.39	0.1	6
Beryllium	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.001	<0.001	<0.00050	N/A	N/A	N/A	N/A	7
Bismuth	(mg/L)	<0.00005	<0.0001	<0.00005	<0.00005	---	---	---	N/A	N/A	N/A	N/A	4
Boron	(mg/L)	0.258	0.301	0.273	0.246	0.25	---	0.254	0.246	0.301	0.3	0.0	6
Cadmium	(mg/L)	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002	0.000005	<0.00010	0.000005	5.0E-06	0.00001	N/A	7
Chromium	(mg/L)	0.0048	0.0007	0.0011	0.0016	<0.001	<0.001	<0.0050	0.0007	0.0048	0.0021	0.0019	7
Cobalt	(mg/L)	0.0008	0.0033	0.0007	0.0009	0.0009	0.0007	0.00092	0.0007	0.0033	0.0012	0.0009	7
Copper	(mg/L)	<0.0006	0.0007	<0.0006	<0.0006	<0.0002	0.0003	<0.0010	0.0003	0.0007	0.0005	0.0003	7
Lead	(mg/L)	0.0002	0.0002	<0.0001	<0.0001	<0.0002	<0.0002	<0.00010	0.0002	0.0002	0.0002	0.00000	7
Mercury	(mg/L)	<0.0001	0.0001	<0.0001	<0.0001	0.00007	<0.000001	<0.00010	0.00007	0.0001	0.000085	0.00002	7
Molybdenum	(mg/L)	0.0023	0.0027	0.0021	0.0023	0.0028	0.0022	0.00219	0.0021	0.0028	0.0024	0.0003	7
Nickel	(mg/L)	0.0009	0.0015	<0.0001	0.0022	0.0016	0.0012	0.0021	0.0009	0.0022	0.0016	0.0005	7
Selenium	(mg/L)	<0.0004	0.0005	<0.0004	<0.0004	<0.001	<0.0002	<0.00040	0.0005	0.0005	0.0005	N/A	7
Silver	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.0001	<0.0001	<0.00010	N/A	N/A	N/A	N/A	7
Strontium	(mg/L)	0.57	0.542	0.553	0.58	0.5	---	---	0.5	0.58	0.5	0.031	5
Thallium	(mg/L)	<0.0005	<0.0001	<0.00005	<0.00005	<0.0002	<0.0002	<0.000050	N/A	N/A	N/A	N/A	7
Tin	(mg/L)	<0.0002	<0.0002	<0.0002	<0.0002	<0.001	<0.001	---	N/A	N/A	N/A	N/A	6
Titanium	(mg/L)	0.0006	0.0006	0.0006	0.0006	0.002	<0.001	0.0007	0.0006	0.002	0.0009	0.001	7
Uranium	(mg/L)	0.0008	0.0009	0.0008	0.0008	0.0009	0.0007	0.00069	0.00069	0.0009	0.0008	0.0001	7
Vanadium	(mg/L)	<0.0001	<0.0001	<0.0001	0.0004	<0.001	<0.001	<0.00010	0.0004	0.0004	0.000	N/A	7
Zinc	(mg/L)	0.005	<0.002	0.009	<0.002	<0.003	<0.003	<0.0020	0.005	0.009	0.007	0.003	7
Petroleum Hydrocarbon Parameters													
Benzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Toluene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00075	N/A	N/A	N/A	N/A	7
Ethylbenzene	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0004	<0.0004	<0.00050	N/A	N/A	N/A	N/A	7
Xylenes-total	(mg/L)	<0.0005	<0.0005	<0.0005	<0.0005	<0.0008	<0.0008	<0.001	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10})	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F1 (C_6-C_{10}) - BTEX	(mg/L)	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.10	N/A	N/A	N/A	N/A	7
PHC F2 ($C_{>10}$-C_{16})	(mg/L)	<0.05	<0.05	<0.05	<0.05	<0.1	<0.1	<0.25	N/A	N/A	N/A	N/A	7

NOTES:

1. ***Electrical conductivity values standardized to 25°C (within the limitations of the equipment).***
2. ***--- Denotes parameter not measured.***
3. ***Highlighting indicates parameters exceeding Canadian Drinking Water AO Guidelines (Health Canada, 2008).***